Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Missile Defense Agency											Date: February 2016	
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 0603881C *I Ballistic Missile Defense Terminal Defense Segment*							
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: *THAAD*	928.249	140.019	200.395	192.699	-	192.699	215.417	181.703	232.169	241.539	Continuing	Continuing
MC07: *Cyber Operations*	0.799	0.389	0.652	3.367	-	3.367	3.325	4.117	3.964	4.069	Continuing	Continuing
MD06: *Patriot Advanced Capability-3 (PAC-3)*	5.526	0.960	1.154	1.130	-	1.130	1.168	1.186	1.248	1.267	Continuing	Continuing
MD40: *Program-Wide Support*	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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Missile Defense Agency	Date: February 2016
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603881C *I Ballistic Missile Defense Terminal Defense Segment*

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. Program Change Summary ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
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.

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

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: *THAAD*	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.

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

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
Title: Terminal High Altitude Area Defense (THAAD) Development	82.158	133.622	124.616
Articles:	-	-	-

Description: 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.
- 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).
- 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).
- 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).

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.

FY 2015 Accomplishments:
- 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).
- Continued development of Phase II debris mitigation functionality and integration into the weapon system to improve interoperability with other BMDS elements.
- Continued Models and Simulations (M&S) development to support element and Ballistic Missile Defense System (BMDS) events including all Integrated Master Test Plan (IMTP) M&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&S by the Operational Test Agency (OTA).
- Continued to design, develop, qualification test, and field annual release of THAAD system software to ensure continued performance and operation of fielded batteries.
- Continued to maintain laboratory assets and equipment, for both system simulations and Hardware-in-the-Loop (HWIL), that supported:

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

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
* the testing and verification of THAAD software build 2.70 and TFCC Engagement Manager 5.3.0 * the integration and testing of the leap second addition for THAAD software builds 1.4.1 and 2.2.1 * the integration and testing of THAAD software build 2.30 * the verification of Debris Mitigation Phase II capability and testing of TFCC Engagement Manager 5.4.0 * risk reduction activities in support of Flight Test Operational-02 Event 2 (FTO-02 E2) and Flight Test THAAD-18 (FTT-18) - 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. - 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. - Continued requirements development, engineering analysis, capability integration, and performance verification for BMDS and THAAD element-level development and integration. - Continued system performance and requirement studies to assess capability development plans. - Performed Information Assurance Vulnerability Assessments (IAVA) to mitigate potential system vulnerabilities and to ensure continued performance and operation of fielded batteries. - Updated THAAD software and hardware to ensure compliance with DoD Weapon System Information Assurance Programs and guidance			
FY 2016 Plans: - 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 - Continue development of Phase II debris mitigation functionality and integration into the weapon system to improve interoperability with other BMDS elements - 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. - 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 - 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,			

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

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
and Communications (C2BMC) and MDA Engineering. These changes require implementation by all members of the Network Participation Group to be effective - Continue Models and Simulations (M&S) development to support element and Ballistic Missile Defense System (BMDS) events including all Integrated Master Test Plan (IMTP) M&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&S by the Operational Test Agency (OTA) - 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 - 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. - 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. - 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 - 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 - Continue system performance and requirement studies to assess capability development plans - Perform Information Assurance Vulnerability Assessments (IAVA) to mitigate potential system vulnerabilities and to ensure continued performance and operation of fielded batteries - Update THAAD software and hardware to ensure compliance with Department of Defense (DoD) Weapon System Information Assurance Programs and guidance - 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. - 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).			

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

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
- 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. - 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. ***FY 2017 Plans:*** - The decrease in cost between FY 2016 and FY 2017 is primarily due to a reduction in RDT&E funding for system software support. Beginning in FY 2017, THAAD has requested funding in O&M to provide deployment support for previously fielded software, reducing the RDT&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&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&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: - Continue development of Phase II debris mitigation functionality and integrate into the weapon system to improve interoperability with other BMDS elements. - 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. - 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. - 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. - Continue Models and Simulations (M&S) development to support element and BMDS events, per the approved Integrated Master Test Plan (IMTP). Support M&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&S validation and accreditation. - 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.			

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

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
- 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. - Continue to design, develop, qualification test, and field the annual release of THAAD system software to ensure continued performance and operation of fielded batteries. - 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. - 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. - 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. - 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). - 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. - 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.			
Title: THAAD Program Support	8.713	6.141	2.276
Articles:	-	-	-
Description: This activity provides support for efforts such as communications and interoperability, safety and mission assurance, and it provided verification testing of THAAD reliability growth. ***FY 2015 Accomplishments:*** - 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.			

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

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
- 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. - 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. - 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).			
FY 2016 Plans: - 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 - 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 - 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). - 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.			
FY 2017 Plans: - The decrease in cost between FY 2016 and FY 2017 is due the completion of ICOFT testbed upgrades in FY 2016. - 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.			

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

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
- 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.			
Title: Program Operations ***Articles:*** ***Description:*** 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. ***FY 2015 Accomplishments:*** -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 -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 -Conducted internal Baseline Execution Reviews to measure program progress against the six Missile Defense Agency approved baselines -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 -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 ***FY 2016 Plans:*** -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 -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 -Conduct internal Baseline Execution Reviews to measure program progress against the six Missile Defense Agency approved baselines	44.227 -	43.372 -	44.552 -

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

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
-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 -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 ***FY 2017 Plans:*** -Continue providing Program Office activities as noted in FY 2016.			
Title: Project Redwood- Details at a Higher Classification ***Articles:*** ***Description:*** See Description Below ***FY 2015 Accomplishments:*** 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. ***FY 2016 Plans:*** 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. ***FY 2017 Plans:*** 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.	4.921 -	4.400 -	4.212 -
Title: THAAD Follow-On ***Articles:*** ***Description:*** 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.	0.000 -	12.860 -	17.043 -

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

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
FY 2015 Accomplishments: N/A ***FY 2016 Plans:*** - 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. ***FY 2017 Plans:*** - 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.			
Accomplishments/Planned Programs Subtotals	140.019	200.395	192.699

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: *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	373.901	-	373.901	340.057	329.221	292.896	308.805	0.001	2,558.772

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

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
• 0604876C: *Ballistic Missile Defense Terminal Defense Segment Test*	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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603881C / *Ballistic Missile Defense Terminal Defense Segment*	**Project (Number/Name)** MD07 / *THAAD*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
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
		Subtotal	739.737	82.158		146.482		141.659		-		141.659	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Missile Defense Agency			Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603881C / *Ballistic Missile Defense Terminal Defense Segment*	Project (Number/Name) MD07 / *THAAD*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

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.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Missile Defense Agency			Date: February 2016
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603881C / *Ballistic Missile Defense Terminal Defense Segment*	**Project (Number/Name)** MD07 / *THAAD*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		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
		Subtotal	188.512	57.861		53.913		51.040		-		51.040	-	-	-

Remarks
N/A

Test and Evaluation ($ in Millions)

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

Remarks
N/A

Management Services ($ in Millions)

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

Remarks
N/A

	Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	928.249	140.019		200.395		192.699		-		192.699	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Missile Defense Agency			Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603881C / *Ballistic Missile Defense Terminal Defense Segment*	Project (Number/Name) MD07 / *THAAD*	

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

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

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603881C / *Ballistic Missile Defense Terminal Defense Segment*	**Project (Number/Name)** MD07 / *THAAD*

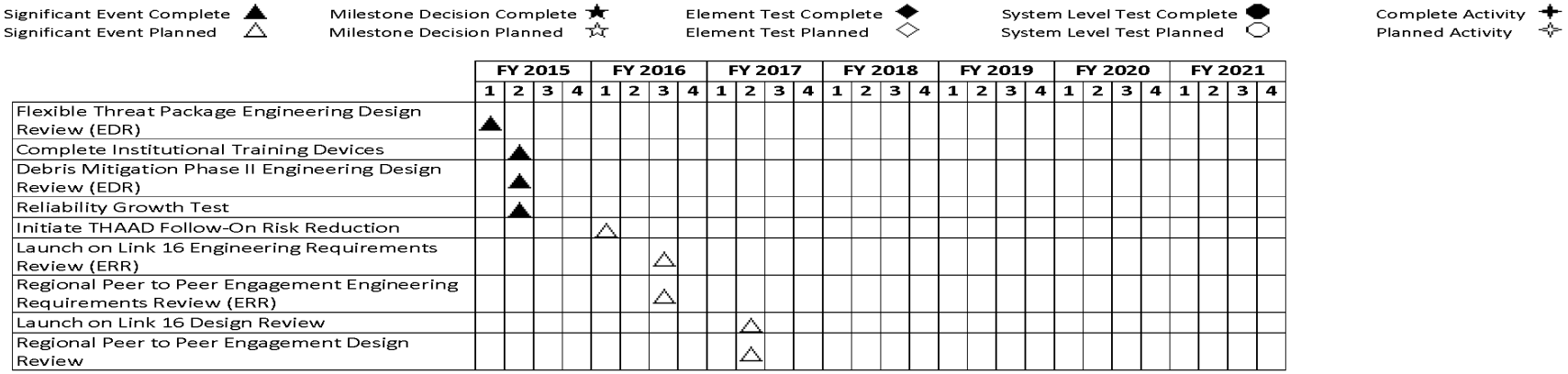


Exhibit R-4A, RDT&E Schedule Details: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603881C / *Ballistic Missile Defense Terminal Defense Segment*	**Project (Number/Name)** MD07 / *THAAD*

Schedule Details

	Start		End	
Events	**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

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency			Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603881C / *Ballistic Missile Defense Terminal Defense Segment*	Project (Number/Name) MC07 / *Cyber Operations*	

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
MC07: *Cyber Operations*	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)	FY 2015	FY 2016	FY 2017
Title: Network / System Certification and Accreditation (C&A)	0.389	0.652	3.367
Articles:	-	-	-
Description: N/A			
FY 2015 Accomplishments: - 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			

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603881C / *Ballistic Missile Defense Terminal Defense Segment*	**Project (Number/Name)** MC07 / *Cyber Operations*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
- Conducted annual information assurance reviews on the THAAD enclaves to assess compliance in implementing and maintaining IA controls ***FY 2016 Plans:*** - Conduct cyber security / information assurance engineering and architecture planning for THAAD information technology systems - Develop and test cyber security/information assurance control measures for Ballistic Missile Defense System (BMDS) THAAD systems - Develop THAAD DIACAP certification and accreditation packages - Support Controls Validation Testing (CVT) of THAAD mission, test, and training systems - Develop Plan of Action and Milestones (POA&Ms) to resource and remediate information assurance deficiencies - Conduct annual information assurance reviews on the THAAD enclaves to assess compliance in implementing and maintaining IA controls - Transition THAAD systems to Risk Management Framework for DoD IT IAW new DoD cybersecurity direction ***FY 2017 Plans:*** - 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&A) to better depict cyber security funding. - Perform Information Assurance Vulnerability Assessments (IAVA) to mitigate potential system vulnerabilities and to ensure continued performance and operation of fielded batteries - Update THAAD software and hardware to ensure compliance with DoD Weapon System Information Assurance Programs and guidance - Conduct cyber security/information assurance engineering and architecture planning for THAAD information technology systems - Develop and test cyber security/information assurance control measures for BMDS THAAD systems - Develop THAAD Risk Management Framework for DoD IT certification and accreditation packages - Support CVT of THAAD mission, test, and training systems - Develop POA&Ms to resource and remediate information assurance deficiencies - Conduct annual information assurance reviews on the THAAD enclaves to assess compliance in implementing and maintaining IA controls - Complete transition of THAAD systems to Risk Management Framework for DoD IT IAW new DoD cybersecurity direction			
Accomplishments/Planned Programs Subtotals	0.389	0.652	3.367

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency			Date: February 2016
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603881C / *Ballistic Missile Defense Terminal Defense Segment*	**Project (Number/Name)** MC07 / *Cyber Operations*	

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
• 0603896C: *Ballistic Missile Defense Command and Control, Battle Management & Communication*	420.516	429.853	439.617	-	439.617	413.198	432.763	454.601	462.065	Continuing	Continuing
• 0603898C: *Ballistic Missile Defense Joint Warfighter Support*	44.220	47.898	47.776	-	47.776	49.621	50.564	53.151	54.042	Continuing	Continuing
• 0603904C: *Missile Defense Integration and Operations Center (MDIOC)*	53.972	47.939	54.750	-	54.750	53.894	55.524	58.100	59.029	Continuing	Continuing
• 0901598C: *Management HQ - MDA*	35.598	35.871	31.160	-	31.160	29.814	27.889	27.131	27.737	Continuing	Continuing
• D1300639: *Fort Drum, New York, IDT Complex*	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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603881C / *Ballistic Missile Defense Terminal Defense Segment*	**Project (Number/Name)** MC07 / *Cyber Operations*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
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
		Subtotal	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
Project Cost Totals	0.799	0.389		0.652		3.367		-		3.367	-	-	-

Remarks

N/A

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

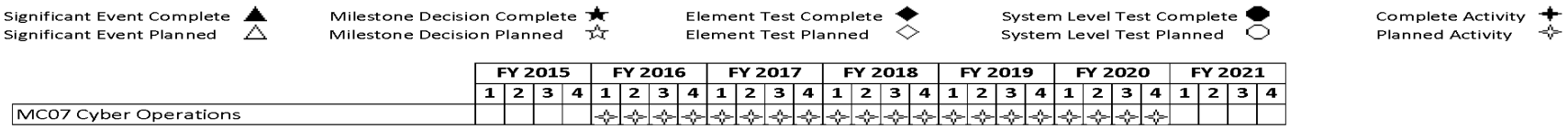


Exhibit R-4A, RDT&E Schedule Details: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603881C / *Ballistic Missile Defense Terminal Defense Segment*	**Project (Number/Name)** MC07 / *Cyber Operations*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
MC07 Cyber Operations	1	2016	4	2020

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

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: *Patriot Advanced Capability-3 (PAC-3)*	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
Title: General Support	0.960	1.154	1.130
Articles:	-	-	-
Description: 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.			
FY 2015 Accomplishments: -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.			
FY 2016 Plans: -Support the day-to-day tasking that is leveraged upon LTPO by MDA based on the Transfer and Transition Plan Annex L.			
FY 2017 Plans: -Support the day-to-day tasking that is leveraged upon LTPO by MDA based on the Transfer and Transition Plan Annex L.			
Accomplishments/Planned Programs Subtotals	0.960	1.154	1.130

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

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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Missile Defense Agency			Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603881C / *Ballistic Missile Defense Terminal Defense Segment*	Project (Number/Name) MD06 / *Patriot Advanced Capability-3 (PAC-3)*	

Product Development ($ in Millions)

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

Remarks

N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
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
		Subtotal	5.526	0.960		1.154		1.130		-		1.130	-	-	-

Remarks

N/A

Test and Evaluation ($ in Millions)

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

Remarks

N/A

Management Services ($ in Millions)

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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Missile Defense Agency			Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603881C / *Ballistic Missile Defense Terminal Defense Segment*	Project (Number/Name) MD06 / *Patriot Advanced Capability-3 (PAC-3)*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

N/A

	Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	5.526	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.

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 0603881C / *Ballistic Missile Defense Terminal Defense Segment*	**Project (Number/Name)** MD06 / *Patriot Advanced Capability-3 (PAC-3)*

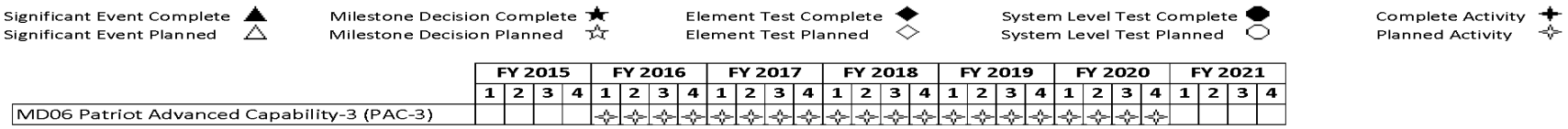


Exhibit R-4A, RDT&E Schedule Details: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603881C / *Ballistic Missile Defense Terminal Defense Segment*	**Project (Number/Name)** MD06 / *Patriot Advanced Capability-3 (PAC-3)*

Schedule Details

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

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency			Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603881C / *Ballistic Missile Defense Terminal Defense Segment*	Project (Number/Name) MD40 / *Program-Wide Support*	

COST ($ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
MD40: *Program-Wide Support*	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
Title: Program Wide Support	19.930	10.029	9.638
Articles:	-	-	-
Description: N/A			
FY 2015 Accomplishments: See paragraph A: Mission Description and Budget Item Justification			
FY 2016 Plans: See paragraph A: Mission Description and Budget Item Justification			
FY 2017 Plans: - See paragraph A: Mission Description and Budget Item Justification.			
Accomplishments/Planned Programs Subtotals	19.930	10.029	9.638

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603881C / *Ballistic Missile Defense Terminal Defense Segment*	**Project (Number/Name)** MD40 / *Program-Wide Support*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Missile Defense Agency			Date: February 2016
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603881C / *Ballistic Missile Defense Terminal Defense Segment*	**Project (Number/Name)** MD40 / *Program-Wide Support*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency 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
		Subtotal	45.752	19.930		10.029		9.638		-		9.638	-	-	-

Remarks

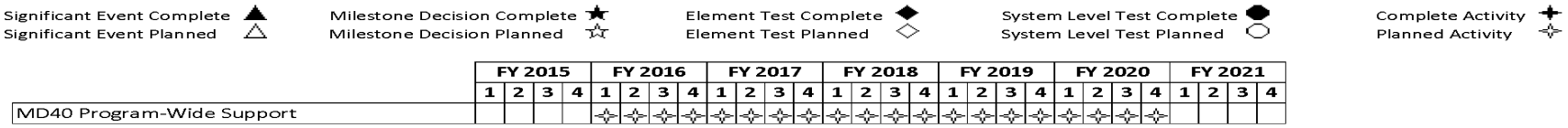
N/A

	Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	45.752	19.930		10.029		9.638		-		9.638	-	-	-

Remarks

N/A

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603881C / *Ballistic Missile Defense Terminal Defense Segment*	**Project (Number/Name)** MD40 / *Program-Wide Support*



	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MD40 Program-Wide Support					✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧				

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603881C / *Ballistic Missile Defense Terminal Defense Segment*	**Project (Number/Name)** MD40 / *Program-Wide Support*

Schedule Details

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