Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Missile Defense Agency	Date: February 2018
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	4,608.032	889.489	860.788	767.539	-	767.539	780.085	707.901	693.256	562.748	Continuing	Continuing
MD09: *Aegis BMD*	4,257.845	771.211	292.063	253.686	-	253.686	392.027	392.393	356.791	309.348	Continuing	Continuing
MG09: *Aegis BMD SM-3 Development Articles*	-	0.000	253.276	120.217	-	120.217	0.000	0.000	0.000	0.000	0.000	373.493
MM09: *Aegis BMD SM-3 Development*	-	0.000	98.150	161.958	-	161.958	158.636	87.272	101.329	17.317	0.000	624.662
MC09: *Cyber Operations*	2.925	2.301	2.340	10.886	-	10.886	13.718	16.238	10.274	11.164	Continuing	Continuing
MX09: *Aegis BMD Development Support*	115.328	74.920	173.325	185.742	-	185.742	182.219	183.780	194.068	194.217	Continuing	Continuing
MD40: *Program-Wide Support*	231.934	41.057	41.634	35.050	-	35.050	33.485	28.218	30.794	30.702	Continuing	Continuing

Program MDAP/MAIS Code: 362

Note

Decrease from FY 2018 to FY 2019 reflects SM-3 Block IIA incremental funding levels synchronized to support manufacturing expenditure profile for seventeen FY16 contracted SM-3 Block IIA AURs.

FY 2018 MISSILE DEFEAT AND DEFENSE ENCHANCEMENT (MDDE) BUDGET AMENDMENT: +$8.736 million is required to address emergency warfighting requirements in support of USPACOM Joint Emergent Operational Need Statement (JEON) and Aegis SM-3 Block IIA Missile Test.

A. Mission Description and Budget Item Justification

The Aegis BMD mission is to deliver an enduring, operationally effective and supportable BMD capability to defend the nation, deployed forces, friends and allies, and to increase this capability by delivering evolutionary improvements as part of Ballistic Missile Defense System (BMDS) upgrades. The Aegis BMD element of the BMDS capitalizes upon and evolves from the existing United States Navy Aegis Weapons System (AWS) and Standard Missile (SM) infrastructures. Aegis BMD provides a forward-deployable, mobile capability to detect and track Ballistic Missiles of all ranges, and the ability to destroy Short-Range Ballistic Missiles (SRBMs), Medium-Range Ballistic Missiles (MRBMs), and Intermediate-Range Ballistic Missiles (IRBMs) in the midcourse phase of flight, and shorter range missiles in the terminal phase of flight. Aegis BMD also provides a Long Range Surveillance and Track (LRS&T) capability to the BMDS. Upgrades to both the Aegis BMD Weapon System and the Standard Missile-3 (SM-3) configuration enable Aegis BMD to provide effective, supportable defensive capability against longer range, more sophisticated threats and an enduring Aegis Ashore defensive capability.

This Program Element includes BMDS threat discrimination improvements, which will enhance BMDS effectiveness against the evolving adversary threat. The result will be a BMDS architecture more capable of discriminating and destroying reentry vehicles with a higher degree of confidence, improving Warfighter shot doctrine, and

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more efficiently using interceptor inventory. BMDS threat discrimination improvements are funded from the Enabling (0603890C), Midcourse (0603882C), BMD Sensors (0603884C), C2BMC (0603896C), and Aegis BMD (0603892C) PEs.

This Program Element also investigates concepts and performs systems engineering to address hypersonic threats.

B. Program Change Summary ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	959.066	852.052	805.051	-	805.051
Current President's Budget	889.489	860.788	767.539	-	767.539
Total Adjustments	-69.577	8.736	-37.512	-	-37.512
• Congressional General Reductions	-40.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-10.000	0.000			
• SBIR/STTR Transfer	-19.577	0.000			
• FY 2017 Request for Additional Appropriations	0.000	0.000	0.000	-	0.000
• Missile Defeat and Defense Enhancement	0.000	8.736	0.000	-	0.000
• Other Adjustment	0.000	0.000	-37.512	-	-37.512

Change Summary Explanation

Decrease from FY 2018 to FY 2019 is reflects the completion of FY16 SM-3 Block IIA RDT&E All Up Rounds (AURs) purchase and of Aegis Ballistic Missile Defense(BMD) 5.0x Development and Navy certification of the baseline and related development efforts.

FY 2018 MISSILE DEFEAT AND DEFENSE ENCHANCEMENT (MDDE) BUDGET AMENDMENT: +$8.736 million is required to address emergency warfighting requirements in support of USPACOM Joint Emergent Operational Need Statement (JEON) and Aegis SM-3 Block IIA Missile Test.

PB19 reflects approved out year Missile Defeat and Defense Enhancement (MDDE) tails.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency											Date: February 2018	
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603892C / *AEGIS BMD*				Project (Number/Name) MD09 / *Aegis BMD*			
COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
MD09: *Aegis BMD*	4,257.845	771.211	292.063	253.686	-	253.686	392.027	392.393	356.791	309.348	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

N/A

A. Mission Description and Budget Item Justification

Aegis BMD continues development of a Sea-Based BMD capability in support of the MDA's mission to protect the homeland, deployed forces, friends and allies from ballistic missile threats of all ranges and in all stages of flight.

Aegis BMD 4.1 capability builds upon legacy Aegis BMD 4.0 and captured all the threats built into Aegis BMD 5.0 CU. It includes an increased BMD threat set, and provides increased maximum engagements and maximum missiles-in-flight over BMD 4.0.

Aegis BMD 5.1 builds upon Aegis BMD 5.0 CU (COTS based open architecture) and further expands the threat set to include threats which are required for EPAA Phase III. This includes the integration of the SM-3 Block IIA, introduction of an Engage on Remote (EoR) capability, and improved BMDS interoperability and engagement coordination.

Aegis BL 5.4 (BMD 4.1) merges the BMD 4.1 capability with the U. S. Navy (USN) Aegis Baseline 5.3 into a single integrated computer program with planned U.S. Navy Certification in FY 2019. Twenty-one legacy Aegis Flight I/II Destroyers, not planned for Aegis Modernization (AMOD), possess two separate certified computer programs: Aegis BMD 4.0 for Ballistic Missile Defense missions and Aegis Baseline 5.3 for Anti-Air Warfare (AAW), Surface Warfare (SUW), and Undersea Warfare (USW). The Aegis BL 5.4 (BMD 4.1) computer program integrates Aegis Baseline 5.3 and Aegis BMD 4.0 to remedy the need for the warfighter to use both simultaneously.
An additional benefit of the single integrated computer program is enabling future SPY-1 Low Noise Amplifier (LNA) Refurbishment efforts to be added during the ship's Service Life

Following Aegis BL 5.4, the Aegis BL 5.4.X (BMD 4.2) AN/SPY-1 upgrade with the U.S. Navy will provide refurbishment of existing ship AN/SPY-1 radar arrays with the installation of antenna Low Noise Amplifiers (LNAs) (MDA funding beginning in FY 2019). These refurbished and upgraded antennas, when integrated with Aegis BL 5.4.X (BMD 4.2), will increase BMD capabilities with improved sensitivity, discrimination, and more efficient radar resource utilization.

Aegis BMD 6.0 provides an increased BMD capability by incorporating the Air and Missile Defense Radar (AMDR), now designated SPY-6, for introduction on the first DDG Flight III. Aegis BMD 6.0 will enable BMDS element utilization of AMDR data for remote engagement and supplement deployed assets with simultaneous multi-mission capabilities (e.g. Integrated Air and Missile Defense (IAMD)). It will include IAMD planning; search, track, and discrimination. SPY-6 will support force level (multi-asset) approach to raid defense and enable U.S. Navy ships greater stand-off range from threat environments.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MD09 / *Aegis BMD*

Weapon System Capability Insertion will capture Aegis BMD capability upgrades to modernized U.S. Navy Destroyers (FLT II, IIA and III). Future capability developments beyond Aegis BMD 6.0 will incrementally continue to provide increased BMD capability with the SPY-1 and SPY-6 radars. These will include further updates for advanced threats, advanced mission planning, search, track, discrimination improvements; and kill assessment updates. SPY-6 will support force-level (multi-asset) approach to raid defense and will enable U.S. Navy ships to have a greater stand-off range from threat environments. These future capabilities will serve as the path forward to achieve BMDS Increment 6 requirements and beyond for all COTS based open architecture baselines.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019
Title: Aegis BMD 4.x Development	47.330	28.071	25.231
Articles:	-	-	-
Description: Aegis BMD 4.1 incorporates the BMD 5.0 CU capability of EPAA Phase II ENDO/EXO requirements including EPAA Phase II Exo-atmospheric threats, integration of the SM-3 Block IB Threat Upgrade (TU), and reintroduction of other Aegis capabilities integrated with the SM-6 Dual I (Endo only). It provides Aegis Modernization capabilities comparable to the BMD 4.0 ships with legacy computer processing architecture. Specific and/or unique accomplishments to each FY are as follows: ***FY 2018 Plans:*** Decrease from FY 2017 to FY 2018 reflects refinement of integration scope with USN. - Conduct Aegis Baseline 5.4 (BMD 4.1) computer program integration efforts, capability development and coding - Conduct Aegis Baseline 5.4 (BMD 4.1) unit test and element computer program integration and test - Conduct Aegis Baseline 5.4 (BMD 4.1) Engineering Test and Evaluation (ET&E), Multi-Element Integration and Test (MEIT) with regression testing - Accelerated delivery of certified 4.1 baseline ***FY 2019 Plans:*** - Complete Aegis Baseline 5.4 (BMD 4.1) computer program integration efforts, capability development and coding - Complete Aegis Baseline 5.4 (BMD 4.1) unit test and element computer program integration and test - Complete Aegis Baseline 5.4 (BMD 4.1) Engineering Test and Evaluation (ET&E), Multi-Element Integration and Test (MEIT) with regression testing - Conduct Aegis Baseline 5.4 (BMD 4.1) Engineering Assessment (EA), Ship Installation and Test, U.S. Navy At-Sea Testing and Certification ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease from FY 2018 to FY 2019 reflects majority of development for Aegis Baseline 5.4 (BMD 4.1) completion in 2018. Final development, testing and certification will be done in FY 2019.			
Title: Aegis BMD 5.x Development	97.368	63.400	16.177
Articles:	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MD09 / *Aegis BMD*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019
Description: Aegis BMD 5.1 builds upon BMD 5.0 CU and will further expand the threat set to include those threats required for EPAA Phase III through the integration of the SM-3 Block IIA, introduction of EoR capability, and improved BMDS interoperability and engagement coordination. In addition to expanding the BMD battlespace, EoR with SM-3 Block IIA frees up radar resources and increases the number and type of threats that can be engaged simultaneously over previous baselines. Aegis BMD Phase 1 capabilities include SM-3 Block IIA missile integration, SM-3 weapons selection algorithm, enhanced tracking, discrimination and mission planner updates to support organic engagements, Launch-on-Remote (LoR) engagements, and Long Range Surveillance & Tracking (LRS&T) missions. Aegis BMD 5.1 Phase 1 integration, testing, and evaluation (IT&E) events include various lab-based and shipboard weapon-system-to-missile integration testing utilizing the Virtual Operational Missile (VOM) and the Inert Operational Missile (IOM), as well as participation in BMDS-wide ground test campaigns. Aegis BMD 5.1 Phase 1 development supports early integration and testing with the SM-3 Block IIA missile testing planned for SFTM-1 and SFTM-2. The development of partial capability is contiguous across both Phase 1 and Phase 2 and supports delivery for EPAA Phase III. Aegis BMD 5.1 Combat System certification occurs in FY 2018. Recurring Accomplishments: - Continue supporting BMDS ground test events, collecting Objective Qualitative Evidence (OQE) to support MDA OCB reviews, and EPAA Phase III TCD Specific and/or unique accomplishments to each FY are as follows: ***FY 2018 Plans:*** Decrease from FY 2017 to FY 2018 reflects completion of development functionality implementation and completion of baseline certification testing - Continue development testing at-sea, supporting BMDS ground test events, collecting objective qualitative evidence (OQE) to support U.S. Navy certification, MDA Operational Capability Baseline review, and EPAA Phase III Technical Capability Declaration (TCD) - Incorporate developmental and maintenance Computer Program Correction Reports (CPCRs) as defined from Developmental Testing (DT) - Complete system functional testing at both lab-based and shipboard installations. Includes integration, checkout, pre-mission analysis, preparation activities, and post-mission analyses to provide the critical Objective Qualify Evidence (OBE) in support U.S. Navy certification of the Aegis BMD 5.1 computer program - Conduct C2P Tech Refresh and Common Data Link Management System (CDLMS) 3.9 to support pre-mission analysis of EoR engagement, to support the installation on ships and ashore - Conduct development testing to assess Aegis BMD 5.1 computer program compliance with maintainability requirements - Perform assessment cycles to evaluate system maturity and progress towards certification and deployment of the Aegis BMD 5.1 computer program at sea and ashore for EPAA Phase III ***FY 2019 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019
- Continue supporting BMDS ground test events, collecting Objective Qualitative Evidence (OQE) to support MDA OCB reviews, and EPAA Phase III TCD - Conduct Flight Test Events, and related preparation activities (pre-mission analysis, shipboard and land-based test site installation, checkout, and integration, and post-mission analysis) ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease from FY 2018 to FY 2019 reflects completion of Navy certification of the baseline and related development efforts in FY 2018.			
Title: Aegis BMD 6.x Development	15.807	80.917	65.030
Articles:	-	-	-
Description: U.S. Navy is developing the Advance Capability Build (ACB) 20 Combat System (CS) and the Air and Missile Defense Radar (AMDR), now designated SPY-6, for introduction on the first DDG Flight III. . Aegis BMD 6.0 will integrate BMD 5.1 capability with the ACB 20 Combat System, to include new SPY-6 requirements; this will enable BMDS element utilization of AMDR data for remote engagements and supplement deployed assets with simultaneous multi-mission capabilities (e.g. IAMD). SPY-6 will support force-level (multi-asset) approach to raid defense and will enable U.S. Navy ships to have a greater stand-off range from threat environments. Recurring Accomplishments: - Develop CIDS, Interface Description Specifications (IDS) and all supporting engineering document and plans - Conduct trade studies and concepts supporting development - Conduct Aegis BMD low-level performance analysis supporting Interim Progress Reviews (IPR) - Continued participation in program leadership and technical forums including Program Management Team, System Engineering Cross Product Team (CPT), Capability Working Groups, Modeling & Simulation CPT, and Test, Evaluation & Certification CPT - Continue computer program development for Aegis BMD 6.0 Specific and/or unique accomplishments to each FY are as follows: ***FY 2018 Plans:*** Increase from FY 2017 to FY 2018 attributed to detailed design of Aegis BMD 6.0 in preparation for Critical Design Review (CDR) which will finalize the baseline program performance requirements. ***FY 2019 Plans:*** - Execute coordinated development with U.S. Navy on the combined computer program - Prepare for and conduct Aegis BMD performance analysis supporting CDR/Interim Program Review (IPR) - Compile Element Review Team (ERT) and CDR/IPR data packages and begin Element Technical Reviews (ETR) to validate system requirements -MDA/Navy co-funded effort to provide BMD capability on Flight III DDGs			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MD09 / *Aegis BMD*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019
-Continue BMD 6.0 requirement updates, trade studies, design efforts, computer program coding and performance testing All efforts beyond 6.0 have transitioned to Budget Project, MD09 Weapon System Capability Insertion. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease from FY 2018 to FY 2019 due to the Aegis Weapon System Program has changed its strategy for computer program development. The program is moving away from the incremental development strategy and is implementing an Agile Software Development Approach. Decrease from FY 2018 to FY 2019 reflects transitioning effort beyond 6.0 to Budget Project MD09, Weapon System Capability Insertion and transitioning to 6.0 SM-3 Missile efforts to Budget Project MM09. FY 2019 BMD 6.0 development increase reflects addition of scope beyond BMD 5.1 and transitioning from requirements efforts to design and software development efforts to include BMD 6.0 Tactical Computer Program Integration into U.S. Navy Baseline 10/ ACB20 Program.			
Title: Weapon System Capability Insertion	0.000	0.000	30.463
Articles:	-	-	-
Description: New capability insertion methodology to capture Aegis BMD capability upgrades to U.S. Navy Destroyers (FLT II, IIA and III). Future capability developments beyond Aegis BMD 6.0 will incrementally continue to provide increased BMD capability with the SPY-1 and SPY-6 radars. These will include further updates for advanced threats, advanced mission planning, search, track, discrimination improvements; and kill assessment updates. SPY-6 will support force-level (multi-asset) approach to raid defense and will enable Navy ships to have a greater stand-off range from threat environments. These future capabilities will serve as the path forward to achieve BMDS Increment 6 requirements and beyond for all modernized BMD baselines. Specific and/or unique accomplishments to each FY are as follows: ***FY 2018 Plans:*** N/A ***FY 2019 Plans:*** All efforts for this accomplishment have transitioned from Budget Project, MD09 Aegis 6.0 development (beyond 6.0 efforts). - Transition technology mature capability to BMD baselines for development and testing and align with the U.S. Navy on Aegis ship and ashore capability deliveries on an annual basis - Initiate execution of coordinated development with U.S. Navy on the combined computer program - Prepare and conduct Software Incremental Reviews (SWIRs) to provide status of development - Conduct Element Technical Reviews (ETR) to validate system requirements			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MD09 / *Aegis BMD*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019
- Conduct integration and development level testing to verify element and system level requirements ***FY 2018 to FY 2019 Increase/Decrease Statement:*** In FY 2019, the Aegis Weapon System Program has changed its strategy for computer program development. The Program is moving away from the incremental development strategy and is implementing an Agile Software Development approach.			
Title: Standard Missile-3 (SM-3) Block IB Development	2.116	0.000	0.000
Articles:	-	-	-
Description: This effort develops the SM-3 Block IB missile, which improves on the SM-3 Block IA performance and enables engagement of more sophisticated ballistic missiles and larger raid sizes. SM-3 Block IB Modernization will provide the following upgrades: - Upgraded SM-3 KW Common Avionics Package will provide improved producibility and reduced cost resulting from utilization of common components between SM-3 Block IIA and the Redesigned Kill Vehicle (RKV). SM-3 Block IB Common Components will be extendable to support different form/fit in circuit card assemblies across SM-3 Block IB, SM-3 Block IIA, and RKV and will mitigate SM-3 Block IB hardware availability issues. - Upgraded SM-3 Block IB Guidance Section (GS) will resolve Computer Processing Unit 3 and Plate 3A hardware availability issues, enable use of 5.1/IIA Target Object Map (TOM) and similar software to SM-3 Block IIA Mission Computer; and enable additional capability against complex threats. Specific and/or unique accomplishments to each FY are as follows: ***FY 2018 Plans:*** All efforts for this accomplishment have transitioned to Budget Project, MM09 Aegis BMD SM-3 Development ***FY 2019 Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** N/A			
Title: Standard Missile-3 (SM-3) Block IIA Development	182.681	0.000	0.000
Articles:	-	-	-
Description: The SM-3 Block IIA is required to meet EPAA Phase III. It will increase the area that can be defended by Aegis BMD, increase the probability of kill against a larger threat set, and leverage enhanced capability provided by BMDS sensor upgrades. Recurring Accomplishments: - Conduct SM-3 Block IIA software update to support engagements against additional complex threats identified during Aegis BMD 5.1 design process conducted after missile Critical Design Review (CDR)			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MD09 / *Aegis BMD*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019
- Conduct End to End Distributed Development System (ETEDDS) integration testing; and flight test support - Continue implementation of SM-3 Block IIA cost reduction initiatives to support meeting cost goals to reduce the current estimated Average Unit Production Price (AUPP) Specific and/or unique accomplishments to each FY are as follows: ***FY 2018 Plans:*** All efforts for this accomplishment have transitioned to Budget Project, MM09 Aegis BMD SM-3 Development. ***FY 2019 Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** N/A			
Title: Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion	36.745	38.558	36.389
Articles:	-	-	-
Description: Aegis BMD Core System Engineering enables cross-baseline specification management and capability assessments to ensure consistent application of technical standards, processes, and procedures across the Aegis BMD program. Efforts include: systems engineering and architecture (process and execution), modeling and simulation (M&S), test and evaluation support, ship integration, quality, safety and mission assurance. Recurring Accomplishments: - Test and certify Deterministic Routing for Aegis Ashore and Aegis BMD ships to maintain interoperability with the BMDS - Conduct U.S. Navy and Joint Link certifications required for BMD Baseline certifications for operational deployment - Continue Ground Test Campaign support for BMDS in support of Operational Capability Baseline (OCB) declaration - Conduct BMDS-level V& V activities and provide results to MDA System Verification Team and the OTA in support of BMD system level accreditation for BMDS events - Continue model development and sustainment required for participation in exercises and force-on-force analysis in support of the warfighter/Combatant Commands (CCMDs) - Provide BMDS M&S Requirements Management and Development - Conduct further development of Aegis BMD System Architecture and overarching system concepts - Conduct BMDS system level requirements allocation and Aegis BMD system requirements development, trace, validation and verification, and configuration management for coordination with all participating external agencies and organizations - Conduct Command, Control, Computer, Communications and Intelligence (C4I) systems engineering to further develop Aegis BMD requirements, and to identify and resolve BMDS interoperability issues - Define and coordinate development and implementation of C4I capabilities in U.S. Navy C4I programs of record to meet Aegis BMD requirements			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019
- Conduct Threat Engineering analysis - Conduct Systems Engineering for Aegis BMD system-level M&S development and interfaces to the BMDS architecture - Provide verified, validated, accredited models in support of U.S. Navy certification, MDA characterization of system-level performance, Operational Test Agency (OTA) assessment of operational capabilities, and representation of Aegis BMD capabilities in BMD test and exercise venues - Provide target engineering, test planning activities, and IMTP process/inputs for Aegis BMD - Conduct Performance Assessment and Verification (PAV) processes which assess the sufficiency of Objective Quality Evidence (OQE) to provide a traceable evidence to verify ES requirements traced to BMDS requirements - Provide oversight of all Aegis BMD analysis in support of systems assessment and verification supporting test and analysis requirements and test planning inputs to align with MDA and U.S. Navy test programs - Provide consolidated analysis and reporting for firing events Specific and/or unique accomplishments to each FY are as follows: ***FY 2018 Plans:*** Increase from FY 2017 to FY 2018 reflects the development of C4I capabilities to support commencement of Aegis BMD 6.x baseline, and increased element-level support for discrimination improvements and countermeasures mitigation. - Continue software upgrades for SM-3 6DoF integration and IAMD in support of COMOPTEVFOR Verification, Validation & Assessment (VV&A) and OT RFRs - Continue Aegis BMD CEC/EME tasks to support improvement of development and models of System or Element behaviors - Complete development of discrimination improvements to improve detection, tracking, discriminating, and correlation of threats - Complete Near-Term discrimination algorithm insertion and testing - Continue to develop and mature RF and IR Mid-Term discrimination algorithms, modeling and simulation, and prototype codes for AN/SPY-1 and SM-3, respectively - Continue to develop and mature Weapon Systems algorithm concepts and modeling and simulation updates which exploit AN/SPY-6 design features - Complete system modifications required for implementation of Link 16 Interface Change Proposals required for Mid-Term discrimination ***FY 2019 Plans:*** - Conduct Science & Technology evaluations, identify solutions for identified system needs, conduct concept exploration and related trade studies - Complete development of initial RF Mid-Term discrimination algorithms within the B/L 9 architecture - Execute Electronic Protection analysis and develop initial Electronic Attack mitigation concepts			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019
- Design, develop, test, and certify overhead satellite data sources to meet Aegis BMD fire control capabilities in support of dual path requirement in Aegis BMD 5.1 - Continue model development and V&V in support of COMOPTEVFORBL 9.C2 M&S accreditation - Continue support and oversight of development, integration and sustainment of M&S in support of BMD 6 - Continue to develop and mature Regional Sensor Advanced Discrimination solutions and modeling and simulation updates for multiple Aegis BMD architectures ***FY 2018 to FY 2019 Increase/Decrease Statement:*** N/A			
Title: Program Operations	114.541	0.000	0.000
Articles:	-	-	-
Description: This accomplishment has recurring efforts. This activity funds the Government, contractor, and Federally Funded Research and Development Center (FFRDC) workforce that manage the overall Aegis Ballistic Missile Defense (BMD) program and enables the program to develop, build, and test standard missiles and the associated Aegis Weapon Systems. This project includes all operations support for the Aegis program office in Engineering, Testing, Logistics, Acquisition, Safety, Quality Assurance, Finance, Budget Formulation and Execution, Cost Estimation, and Earned Value Management in support of development activities. Specific and/or unique accomplishments to each FY are as follows: ***FY 2018 Plans:*** All efforts for this accomplishment have transitioned to Budget Project, MX09 Aegis Ballistic Weapon System Integration and Operations ***FY 2019 Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** N/A			
Title: FY16 SM-3 Block IIA RDT&E All Up Rounds	185.687	0.000	0.000
Articles:	-	-	-
Description: Manufacture FY 2016 SM-3 Block IIA All Up Rounds (AURs) for the purposes of flight testing and delivery to the fleet as operational assets prior to an initial production decision. Recurring Accomplishment: Deliver SM-3 Block IIA AURs Specific and/or unique accomplishments to each FY are as follows:			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MD09 / *Aegis BMD*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019
FY 2018 Plans: All efforts for this accomplishment have transitioned to Budget Project, MG09 Aegis BMD SM-3 Development Articles ***FY 2019 Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** N/A			
Title: Modeling & Simulation Objective Simulation Framework	41.535	37.141	35.882
Articles:	-	-	-
Description: This effort develops, maintains and deploys the framework hardware and software for use at element laboratories and Combatant Command (CCMD) locations to support IMTP events, BMDS capability delivery assessments, Warfighter training, exercises, and wargames. Recurring Accomplishments: - Develop and implement Objective Simulation Framework (OSF) upgrades to incorporate advanced tracking, discrimination, engagement and associated upper tier debris mitigation capabilities, as well as other requirements and capabilities to meet MDA's evolving M&S Enterprise needs. - Sustain and enhance framework products to maintain capabilities to support stakeholders. - Develop plans, procedures and documentation for scheduled events including Wargames and Combatant Command Exercises and the Distributed, Focused and Integrated HWIL Events as presented in the IMTP. Provide event architecture integration and checkout of Wargames for these same IMTP scheduled events. - Provide the ground test architecture integration expertise to meet the testing requirements of the IMTP. Support delivery of integrated architectures for test across all test venues using the BMDS test framework to integrate distributed architectures in support of BMDS. - Develop, maintain, test, field, and operate model representations for use in events and other MDA M&S stakeholder application areas. Deploy hardware and software updates to distributed sites. Perform regular maintenance and critical repairs of hardware and software. - Support MDA's Experimental End-to-end Digital Integrated System-level Simulation (X-EDISS) requirements, referred to Tier 2 Digital in previous reports, requirements, including hardware and software, data storage and transmission, and verification tools. - Control and maintain the M&S Integration and Development Laboratories for Element M&S. Maintain venue for stakeholders to conduct early integration efforts and identification of issues prior to event architecture integration to support system development. - Deploy System Interface Units (SIUs) for BMDS testing - materials, licenses, SIU fleet purchasing. Deploy SIUs and components to maintain and sustain SIU fleet including cybersecurity; enables Developmental and Operational testing with full BMDS as required in IMTP.			

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019
- Continue maintenance of the Single Stimulation Framework in the required venues until the transition of the Objective Simulation Framework into the venues completes. Specific and/or unique accomplishments to each FY are as follows: ***FY 2018 Plans:*** -SEE ABOVE. ***FY 2019 Plans:*** -SEE ABOVE. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** N/A			
Title: Systems Engineering & Integration	20.108	18.530	19.310
Articles:	-	-	-
Description: Perform requirements development, engineering analysis, capability integration, and performance verification for Aegis BMD development and BMDS integration, including Aegis BMD compliance with the BMDS Specification, BMDS Description Document, and Master Integration Plan (MIP). Recurring Accomplishments: - Conduct system level performance analyses to support ongoing BMDS Architecture and Systems Engineering efforts - Perform top-down system level engineering analysis, capability integration, and performance verification for Aegis BMD development and BMDS integration, including Aegis BMD compliance with the BMD System Specification, BMD System Description Document, and Master Integration Plan (MIP) - Identify architecture alternatives that improve the BMD System's performance and are complementary to and interoperable with NATO systems and theaters around the world - Define BMDS technical content expectations and develop system requirements, to include integration of new capabilities, such as the U.S. Navy's Air and Missile Defense Radar (AMDR) - Develop functional performance, interface, and design suitability requirements in collaboration with Aegis BMD engineers to ensure correct flow-down and allocation of BMD System-level requirements to Aegis BMD - Respond to Warfighter, Combatant Command and other requests for analyses and requests for information; provide analytical support for real-world events - Conduct non-advocate assessments of BMDS capabilities and limitations prior to capability delivery decisions to determine fielding readiness (including Theater/Regional BMD) - Conduct extensive analysis of data collected in BMD test events to evaluate BMD System operations and performance. Specific and/or unique accomplishments to each FY are as follows:			

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019
FY 2018 Plans: - SEE ABOVE. ***FY 2019 Plans:*** - SEE ABOVE. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** N/A			
Title: M&S BMDS Simulations & Tools	5.158	5.227	4.767
Articles:	-	-	-
Description: This effort includes: development and sustainment of digital products and the architecture framework, and delivery/ maintenance of infrastructure for BMDS performance assessments. Recurring Accomplishments: - Integrate, test, and verify the M&S enterprise supporting BMDS testing, assessment, exercises, and wargaming, including testing infrastructure. Guide and facilitate integration testing of MDA's M&S frameworks and core truth models, and all M&S components into virtual representations of the BMDS that are credible, affordable, and provide decision makers with the data needed - Integrate, test, functionally qualify, and deliver M&S tools and complex test architectures to provide system test capabilities to support MDA IMTP based test events, wargames, and exercises - Continue the transition of real-time digital simulation capability to the OSF to support Intended Uses - Provide HWIL/M&S Benchmarking/Integration documentation and coordination - Conduct M&S system integration and verification to support M&S system architecture development. Provide developmental integration testing to support M&S system architecture integration Specific and/or unique accomplishments to each FY are as follows: ***FY 2018 Plans:*** - SEE ABOVE. ***FY 2019 Plans:*** - SEE ABOVE. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** N/A			
Title: BMDS Verification, Validation & Assessment (VV&A)	22.135	20.219	20.437
Articles:	-	-	-

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019
Description: This activity funds BMD System Assessment and VV&A activities to support BMDS Operational Capacity Baseline (OCB) delivery decisions and Technical Capability Declarations (TCDs), and anchor System modeling and simulation. Recurring Accomplishments: - Verify BMDS performance, and produce BMDS verification status reports - Conduct extensive analysis of data collected in BMDS ground and flight test events, instrumental to understanding BMD System operations and performance and anchoring models and simulations - Identify mitigation approaches for BMDS performance issues uncovered during system level analysis and assessment - Maintain M&S VV&A database, and verification data for BMD System Specification Change Notices - Develop, maintain, and update the M&S VV&A tool kit - Provide recommendations for improving assessment confidence, including M&S and testing issue resolutions - Conduct verification and validation (V&V) in support of MDA BMD System level accreditation process in support of BMDS Ground Test and performance assessment events - Conduct specified BMD System post-flight reconstructions, element post-flight reconstructions, and pre-mission testing events so as to optimize the body of evidence and analysis supporting system-level BMDS accreditation. Specific and/or unique accomplishments to each FY are as follows: ***FY 2018 Plans:*** - SEE ABOVE. ***FY 2019 Plans:*** - SEE ABOVE. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** N/A			
Accomplishments/Planned Programs Subtotals	771.211	292.063	253.686

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• 0604878C: *Aegis BMD Test*	131.012	137.783	95.756	-	95.756	80.684	94.138	146.910	137.601	Continuing	Continuing
• 0604880C: *Land Based SM-3 (LBSM3)*	40.452	30.486	27.692	-	27.692	29.263	28.370	27.228	28.225	Continuing	Continuing
• 0604881C: *AEGIS SM-3 Block IIA Co-Development*	102.272	9.739	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	112.011

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C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost

Remarks

D. Acquisition Strategy

The Aegis BMD element acquisition approach supports evolutionary development, continuously building upon demonstrated capabilities to advance overall BMDS capability. After considering all the technical and management aspects of the program and to meet the requirements presented by an evolving ballistic missile threat, the Aegis BMD program awarded sole source contracts to Raytheon and Lockheed Martin to continue development of the SM-3 and the Aegis BMD Weapon System, respectively.

The M&S acquisition strategy utilizes full and open competition to develop, acquire and deliver the integrated architectures/frameworks, as well as develop and deliver models of Aegis systems. The Digital and HWIL product centers integrate the suite of M&S into a composite simulation capability, all based on an open architecture. M&S achieves this end-state via close collaboration between its integrating contractor teams (Digital and HWIL) and those of the Aegis BMD prime contractors, with additional technical standards and engineering oversight provided by Federally Funded Research and Development Centers (FFRDCs) and University Affiliated Research Centers (UARCs).

E. Performance Metrics

Aegis BMD utilizes Award Fee and Incentive-based contracts to ensure project completes on time

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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Aegis BMD 4.x Development - BMD 4.0 Dev -MD09- Aegis Techrep	MIPR	AEGIS Techrep : Moorestown, NJ	2.114	0.539	Nov 2016	1.422	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Aegis BMD 4.x Development - BMD 4.0 Dev. - MD09 - D	MIPR	MDA : VA	25.651	4.745	Jul 2017	2.608	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Aegis BMD 4.x Development - BMD 4.0 Dev. - MD09 - Dahlgren	MIPR	NSWC/DD : DAHLGREN, VA	140.805	6.272	Nov 2016	1.956	Nov 2017	3.769	Nov 2018	-		3.769	Continuing	Continuing	Continuing
Aegis BMD 4.x Development - BMD 4.0 Dev. - MD09 - Lockheed Martin	SS/CPIF	LOCKHEED MARTIN : MOORESTOWN, NJ	760.116	35.774	Nov 2016	22.085	Nov 2017	19.954	Nov 2018	-		19.954	Continuing	Continuing	Continuing
Aegis BMD 4.x Development - BMD 4.0 Dev. -MD09- BMD 4.0 Dev- No longer funded in the FYDP	Various	Various : Various	43.102	0.000		0.000		1.508		-		1.508	0.000	44.610	0.000
Aegis BMD 5.x Development - 6.x - D	MIPR	MDA : Ft. Belvoir, VA	0.000	0.000		2.708	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Aegis BMD 5.x Development - MD09 - 20117142323680	MIPR	NSWC/DD : DAHLGREN, VA	46.545	13.589	Nov 2016	12.270	Nov 2017	2.409	Nov 2018	-		2.409	Continuing	Continuing	Continuing
Aegis BMD 5.x Development - MD09 - 20117142323684	MIPR	NSWC/PHD : PT HUENEME, CA	7.873	1.715	Nov 2016	1.230	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Aegis BMD 5.x Development - MD09 - 20117142323686	SS/CPFF	JHU/APL/MD : COLUMBIA, MD	46.298	5.238	Nov 2016	3.720	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Aegis BMD 5.x Development - MD09 - 20117142323689	SS/CPAF	LOCKHEED MARTIN : MOORESTOWN, NJ	591.317	69.776	Nov 2016	40.632	Nov 2017	12.120	Nov 2018	-		12.120	Continuing	Continuing	Continuing
Aegis BMD 5.x Development - MD09 - AW	MIPR	Aegis Tech Rep : Moorestown, NJ	2.049	0.352	Nov 2016	1.560	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing

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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Aegis BMD 5.x Development - MD09 - Various	MIPR	Various : MA, MD, VA, NJ	70.525	6.698		1.280	Nov 2017	1.648	Nov 2018	-		1.648	Continuing	Continuing	Continuing
Aegis BMD 5.x Development - MD09- No longer funded in the FYDP	Various	Various : various	129.494	0.000		0.000		0.000		-		0.000	0.000	129.494	0.000
Aegis BMD 6.x Development - Hanscom AFB - MIT/LL - TD	MIPR	Hanscom AFB - MIT/ LL : MA	0.975	0.995		1.679	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Aegis BMD 6.x Development - JHU/APL	SS/CPFF	JHU/APL : MD	1.775	2.086	Nov 2016	9.054	Nov 2017	3.902	Nov 2018	-		3.902	Continuing	Continuing	Continuing
Aegis BMD 6.x Development - Lockheed Martin	C/CPFF	Lockheed Martin : NJ	5.836	4.269	Nov 2016	53.463	Nov 2017	53.324	Nov 2018	-		53.324	Continuing	Continuing	Continuing
Aegis BMD 6.x Development - MD09 - DD	MIPR	NSWC/DD : Dahlgren, VA	2.225	2.751	Nov 2016	4.500	Nov 2017	3.902	Nov 2018	-		3.902	Continuing	Continuing	Continuing
Aegis BMD 6.x Development - NAVSEA	MIPR	NAVSEA : Sudbury, MA	0.000	0.000		2.600	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Aegis BMD 6.x Development - NSWC DD-TD	MIPR	NSWC/DD : VA	0.894	2.427	Jul 2017	1.733	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Aegis BMD 6.x Development - Raytheon	MIPR	Raytheon : Tucson, AZ	1.375	0.000		6.508	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Aegis BMD 6.x Development - Tech Rep	MIPR	Aegis TechRep : Moorestown, NJ	0.045	0.294		1.380	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Aegis BMD 6.x Development - Various	MIPR	Various : MA, MD, VA, NJ, CA	0.000	2.985		0.000		3.902	Nov 2018	-		3.902	Continuing	Continuing	Continuing
Weapon System Capability Insertion - Capability Insertion	MIPR	NSWC DD : Dahlgren VA	0.000	0.000		0.000		5.896	Nov 2018	-		5.896	Continuing	Continuing	Continuing
Weapon System Capability Insertion - Capability Insertion 2	MIPR	NSWC PHD : Dahlgren VA	0.000	0.000		0.000		0.591	Nov 2018	-		0.591	Continuing	Continuing	Continuing

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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Weapon System Capability Insertion - Capability Insertion 3	SS/CPFF	JHU/APL : Columbia MD	0.000	0.000		0.000		1.787	Nov 2018	-		1.787	Continuing	Continuing	Continuing
Weapon System Capability Insertion - Capability Insertion 4	SS/CPAF	Lockheed Martin : Moorestown NJ	0.000	0.000		0.000		20.824	Nov 2018	-		20.824	Continuing	Continuing	Continuing
Weapon System Capability Insertion - Capability Insertion 6	MIPR	Various : MA, MD, VA, NJ	0.000	0.000		0.000		0.615	Nov 2018	-		0.615	Continuing	Continuing	Continuing
Weapon System Capability Insertion - Weapon Insertion 5	MIPR	Aegis Tech Rep : Moorestown NJ	0.000	0.000		0.000		0.750	Nov 2018	-		0.750	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IB Development - Standard Missile-3 (SM-3) Block IB Development-MD09- Corona	MIPR	NSWC Corona : Corona, CA	1.349	0.233	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IB Development - Standard Missile-3 (SM-3) Block IB Development-MD09	SS/CPAF	Raytheon : Tucson	1,022.526	1.073	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IB Development - Standard Missile-3 (SM-3) Block IB Development-MD09- No longer funding in the FYDP	Various	Various : Various	127.066	0.733	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IB Development - Standard Missile-3 (SM-3) Block IB Development-MD09-2011742332259	MIPR	NSWC/PHD : Port Huememe, CA	14.082	0.077	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IIA Development - CA,VA, MD	MIPR	Various : CA, VA, MD	0.191	4.532	Oct 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing

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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Standard Missile-3 (SM-3) Block IIA Development - MD09 - SM-3 BLK IIA AFFORDABILITY DEVELOPMENT- No longer funding in the FYDP	SS/CPIF	Raytheon : Tucson, AZ	12.100	0.000		0.000		0.000		-		0.000	0.000	12.100	0.000
Standard Missile-3 (SM-3) Block IIA Development - MD09 - SM-3 BLK IIA INTEGRATION	SS/CPIF	Raytheon : Tucson, AZ	103.892	160.132	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IIA Development - MD09 - SM-3 BLK IIA INTEGRATION - APL	MIPR	JHU/APL : Laurel, MD	13.625	13.981	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IIA Development - MD09 - SM-3 BLK IIA INTEGRATION - DD	MIPR	NSWC DD : VA	10.247	1.939	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IIA Development - NSWC Corona	MIPR	NSWC : Corona, CA	0.010	1.259	Oct 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IIA Development - NSWC/Crane	MIPR	NSWC/Crane : IN	0.000	0.838	Oct 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - MD09 - TD APL	MIPR	JHU/APL : Columbia, MD	9.462	7.878	Nov 2016	7.793	Nov 2017	7.904	Nov 2018	-		7.904	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - MD09 - TD LM	C/CPFF	Lockheed Martin : Moorestown, NJ	8.822	8.782	Nov 2016	6.212	Nov 2017	5.039	Nov 2018	-		5.039	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - MD09 - TD MIT	MIPR	Hanscom AFB - MIT/LL : Lexington, MA	5.829	4.674	Dec 2016	3.169	Nov 2017	3.169	Nov 2018	-		3.169	Continuing	Continuing	Continuing

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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - MD09 - TD MITRE	MIPR	CECOM - MITRE : Dahlgren, VA	0.626	0.391	Dec 2016	1.228	Nov 2017	1.228	Nov 2018	-		1.228	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - MD09 - TD NSWCDD	MIPR	NSWC DD : Dahlgren, VA	8.477	8.936	Feb 2017	7.753	Nov 2017	7.285	Nov 2018	-		7.285	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - MD09 Raytheon	SS/CPAF	Raytheon : AZ	1.587	0.000		0.825	Apr 2018	0.825	Nov 2018	-		0.825	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - MD09- Technology Design and Insertion-TD No longer funding in the FYDP	Various	Various, : Various	2.500	5.334	Feb 2017	0.000		0.000		-		0.000	0.000	7.834	0.000
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - SPAWAR	MIPR	SPAWAR : San Diego, CA	0.322	0.750		5.255	Dec 2017	5.255	Nov 2018	-		5.255	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - Technology Design and Insertion - Discrimination	MIPR	Various - MDA : AL,VA	9.972	0.000		6.000	Nov 2017	5.684	Nov 2018	-		5.684	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - Various - MDA	MIPR	Various - MDA : AL,VA,CA	2.471	0.000		0.323	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing
FY16 SM-3 Block IIA RDT&E All Up Rounds	MIPR	MIT/LL : MA	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing

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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
- FY 16 SM-3 Block IIA RDT&E All Up Rounds-MIT/LL															
FY16 SM-3 Block IIA RDT&E All Up Rounds - NSWC/DD	MIPR	NSWC/DD : Dahlgren, VA	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
FY16 SM-3 Block IIA RDT&E All Up Rounds - SM-3 MANUFACTURING - MD09	SS/CPAF	Raytheon : Tucson, AZ	471.421	170.037	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
FY16 SM-3 Block IIA RDT&E All Up Rounds - Various	MIPR	Various : Washington DC	0.000	15.650	May 2017	0.000		0.000		-		0.000	0.000	15.650	0.000
Modeling & Simulation Objective Simulation Framework - M&S OSF Engineering	Various	MDA : AL, VA	8.319	4.269	Nov 2016	1.763	Nov 2017	3.211	Nov 2018	-		3.211	Continuing	Continuing	Continuing
Modeling & Simulation Objective Simulation Framework - M&S OSF Engineering - CSS Support	C/CPFF	MiDAESS / TEAMS : AL, CO	16.098	1.451		1.095	Nov 2017	4.480	Nov 2018	-		4.480	Continuing	Continuing	Continuing
Modeling & Simulation Objective Simulation Framework - M&S OSF Engineering - Engineering Support	C/CPAF	Northrop Grumman : CO	17.644	6.222	Nov 2016	8.613	Nov 2017	5.845	Nov 2018	-		5.845	Continuing	Continuing	Continuing
Modeling & Simulation Objective Simulation Framework - M&S OSF Engineering - Integration	MIPR	AMRDEC : AL	16.455	4.043	Nov 2016	4.318	Nov 2017	2.887	Nov 2018	-		2.887	Continuing	Continuing	Continuing
Modeling & Simulation Objective Simulation Framework - M&S OSF Engineering - Prime	C/CPFF	Teledyne Brown Engineering : AL, CO	91.410	25.550	Nov 2016	21.352	Nov 2017	19.459	Nov 2018	-		19.459	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MD09 / *Aegis BMD*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering & Integration - Systems Engineering	Various	MDA Various : VA, AL	55.572	6.787	Nov 2016	3.620	Oct 2017	2.111	Nov 2018	-		2.111	Continuing	Continuing	Continuing
Systems Engineering & Integration - Systems Engineering - CSS	C/CPFF	MiDAESS / TEAMS : VA	14.227	2.236	Nov 2016	0.945	Nov 2017	3.113	Nov 2018	-		3.113	Continuing	Continuing	Continuing
Systems Engineering & Integration - Systems Engineering - Industry	C/CPAF	Boeing : VA	37.940	11.085	Nov 2016	13.965	Nov 2017	14.086	Nov 2018	-		14.086	Continuing	Continuing	Continuing
M&S BMDS Simulations & Tools - Sims & Tools	C/CPFF	Teledyne Brown Engineering : AL, CO	0.000	1.130	Nov 2016	1.243	Nov 2017	1.298	Nov 2018	-		1.298	Continuing	Continuing	Continuing
M&S BMDS Simulations & Tools - Sims & Tools - Industry	C/CPAF	Northrop Grumman : CO	29.042	4.028	Nov 2016	3.984	Nov 2017	3.469	Nov 2018	-		3.469	Continuing	Continuing	Continuing
BMDS Verification, Validation & Assessment (VV&A) - Verification & Assessment	Various	MDA Various : AL, VA	0.000	0.773		0.709	Nov 2017	1.759	Nov 2018	-		1.759	Continuing	Continuing	Continuing
BMDS Verification, Validation & Assessment (VV&A) - Verification & Assessment - CSS Support	C/CPFF	MiDAESS / TEAMS : AL	8.572	3.960	Nov 2016	2.210	Nov 2017	1.323	Nov 2018	-		1.323	Continuing	Continuing	Continuing
BMDS Verification, Validation & Assessment (VV&A) - Verification & Assessment - CSS Support (2)-No longer funding in the FYDP	C/CPFF	Sparta : AL	1.030	0.555	Nov 2016	0.000		0.000		-		0.000	0.000	1.585	0.000
BMDS Verification, Validation & Assessment (VV&A) - Verification & Assessment - Industry	C/CPAF	Boeing : AL	7.989	6.927	Nov 2016	6.165	Nov 2017	6.429	Nov 2018	-		6.429	Continuing	Continuing	Continuing
BMDS Verification, Validation & Assessment	MIPR	MITRE : VA	5.108	1.539	Nov 2016	1.174	Nov 2017	1.196	Nov 2018	-		1.196	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MD09 / *Aegis BMD*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
(VV&A) - Verification & Assessment - Labs															
BMDS Verification, Validation & Assessment (VV&A) - Verification & Assessment - OGA	MIPR	AMRDEC : AL	13.052	7.338	Nov 2016	7.432	Nov 2017	7.662	Nov 2018	-		7.662	Continuing	Continuing	Continuing
BMDS Verification, Validation & Assessment (VV&A) - Verification & Assessment - UARC	MIPR	GTRI : GA, AL	1.119	1.043	Nov 2016	1.100	Nov 2017	0.000		-		0.000	0.000	3.262	0.000
BMDS Verification, Validation & Assessment (VV&A) - Verification & Assessment - UARC2	MIPR	JHU/APL : AL, VA	0.000	0.000		1.429	Nov 2017	2.068	Nov 2018	-		2.068	Continuing	Continuing	Continuing
		Subtotal	4,029.168	656.670		292.063		253.686		-		253.686	Continuing	Continuing	N/A

Remarks
N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Operations - MD09 - Civ Sal	MIPR	MDA : Arlington, VA	60.610	34.746	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Operations - MD09 - DD PM	MIPR	NSWC DD : Dahlgren, VA	14.649	8.658	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Operations - MD09 - IT	MIPR	MDA : Arlington, VA	0.700	1.618	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Operations - MD09 - MDA Travel	MIPR	MDA : Arlington, VA	3.675	2.737	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Operations - MD09 - MIDAESS	MIPR	MDA : Arlington, VA	97.571	48.679	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MD09 / *Aegis BMD*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Operations - MD09 - NAVSEA Civ Sal	MIPR	NAVSEA : Washington, DC	26.681	13.392	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Operations - MD09 - NAVSEA RB Sal	MIPR	NAVSEA : Washington, DC	3.270	2.161	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Operations - MD09 - NAVSEA Training, Various	MIPR	NAVSEA : Washington, DC	2.676	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Operations - MD09 - NAVSEA Travel	MIPR	NAVSEA : Washington, DC	2.083	1.372	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Operations - MD09 - Security	MIPR	Various : VA	2.768	1.178	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Operations - MD09-Program Operations- No longer funding in the FYDP	MIPR	Various : VA	13.994	0.000		0.000		0.000		-		0.000	0.000	13.994	0.000
		Subtotal	228.677	114.541		0.000		0.000		-		0.000	Continuing	Continuing	N/A

Remarks

Remarks
*Increase from FY 2017 to FY 2018 (Lockheed Martin, NJ) due to detailed design of BMD 6.0 in preparation for CDR which will finalize the Baseline Program Performance requirements and Commencement of the BMD 6.1

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	4,257.845	771.211		292.063		253.686		-		253.686	Continuing	Continuing	N/A

Remarks

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

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Missile Defense Agency		**Date:** February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MD09 / *Aegis BMD*

Significant Event Complete ▲ Milestone Decision Complete ★ Element Test Complete ◆ System Level Test Complete ● Complete Activity ✦
Significant Event Planned △ Milestone Decision Planned ☆ Element Test Planned ◇ System Level Test Planned ○ Planned Activity ✧

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
BL 5.4 IPR #2					✧																							
BMD 6.0 IPR #1					✧																							
BMD 5.1 Certification								△																				
BMD 6.0 IPR #2								✧																				
BL 5.4/BMD 4.x EA										✧																		
BL 5.3.x/BMD 4.x Certification												☆																
BL 5.4 SRR										△																		
BMD 6.0 IPR #3										✧																		
BMD 6.0 IPR #4													✧															
BL 5.4 PRD														☆														
BMD 6.0 IPR #5																✧												
BL 5.4 CDR																		☆										
BMD 6.0 Demo																		△										
BMD 5.4 Demo																						✧						
BL 5.4 Certification																								✧				
BMD 6.0 Certification																										☆		

Exhibit R-4A, **RDT&E Schedule Details:** PB 2019 Missile Defense Agency		**Date:** February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MD09 / *Aegis BMD*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
BL 5.4 IPR #2	1	2018	1	2018
BMD 6.0 IPR #1	1	2018	1	2018
BMD 5.1 Certification	4	2018	4	2018
BMD 6.0 IPR #2	4	2018	4	2018
BL 5.4/BMD 4.x EA	2	2019	2	2019
BL 5.3.x/BMD 4.x Certification	4	2019	4	2019
BL 5.4 SRR	2	2019	2	2019
BMD 6.0 IPR #3	2	2019	2	2019
BMD 6.0 IPR #4	1	2020	1	2020
BL 5.4 PRD	2	2020	2	2020
BMD 6.0 IPR #5	4	2020	4	2020
BL 5.4 CDR	2	2021	2	2021
BMD 6.0 Demo	2	2021	2	2021
BMD 5.4 Demo	2	2022	2	2022
BL 5.4 Certification	4	2022	4	2022
BMD 6.0 Certification	2	2023	2	2023

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MG09 / *Aegis BMD SM-3 Development Articles*

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
MG09: *Aegis BMD SM-3 Development Articles*	-	0.000	253.276	120.217	-	120.217	0.000	0.000	0.000	0.000	0.000	373.493
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Decrease from FY 2018 to FY 2019 reflects the completion of the SM-3 Block IIA FY16 manufacturing contract.

A. Mission Description and Budget Item Justification

This project supports Aegis BMD purchase of Development Articles to use as test articles, and initial deployment in support of EPAA Phase III. Includes Manufacturing of SM-3 Block IIA All Up Round (AUR) for the purposes of flight testing and delivery to the fleet as operational assets, and to ensure the maturation of SM-3 Block IIA manufacturing process.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019
Title: FY16 SM-3 Block IIA RDT&E All Up Rounds	0.000	212.029	120.217
Articles:	-	-	-
Description: Manufacture seventeen (17) SM-3 Block IIA All Up Rounds (AURs) (delivered FY 2018 through FY 2020) for the purposes of flight testing as reflected in the IMTP and delivery to the fleet as operational assets prior to an initial production decision in support of EPAA Phase III. SM-3 Block IIA AURs validate the Engineering Manufacturing Readiness Level 3 criteria for an Initial Production Decision scheduled 4Q FY 2018. Recurring Accomplishment: Deliver SM-3 Block IIA AURs Specific and/or unique accomplishments to each FY are as follows: ***FY 2018 Plans:*** FY16 SM-3 Block IIA RDT&E All Up Rounds efforts transferred from Project MD09, Aegis BMD. Decrease from FY 2017 to FY 2018 to match manufacturing schedule for incremental phasing of FY 2016 All-Up-Rounds. Continue funding for quantity 17 SM-3 Block IIA AURs (delivered FY 2018 through FY 2020) for use in flight test as reflected in the IMTP, and initial deployment of EPAA Phase III. SM-3 Block IIA AURs validate the Engineering Manufacturing Readiness Level 3 criteria for an Initial Production Decision scheduled 4Q FY 2018. ***FY 2019 Plans:*** - Complete FY16 SM-3 Block IIA RDT&E All Up Rounds purchase. ***FY 2018 to FY 2019 Increase/Decrease Statement:***			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MG09 / *Aegis BMD SM-3 Development Articles*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019
Decrease from FY 2018 to FY 2019 reflects SM-3 Block IIA incremental funding levels synchronized to support manufacturing expenditure profile for seventeen FY16 contracted SM-3 Block IIA AURs funding requirements aligned with increments of component, sub-section and section manufacturing and delivery schedules to support AUR deliveries beginning FY2018.			
Title: FY18 SM-3 Block IIA RDT&E All Up Rounds	0.000	41.247	0.000
Articles:	-	-	-
Description: Purchase of six (6) SM-3 Block IIA AURs for delivery to the fleet as operational assets, delivered from FY 2021 through FY 2022 Recurring Accomplishment: - Continue Incremental funding of six SM-3 Block IIA AURs for flight testing and delivery to the fleet as operational assets - Ensure the maturation of SM-3 Block IIA manufacturing process and mitigate impacts of a production gap - All Up Rounds utilized to achieve Engineering Manufacturing Readiness Level 4 Specific and/or unique accomplishments to each FY are as follows: ***FY 2018 Plans:*** In PB-2017 this requirement was captured in Aegis BMD MD09 Procurement account - Incremental funding of six SM-3 Block IIA AURs for flight testing and delivery to the fleet as operational assets ***FY 2019 Plans:*** - SEE ABOVE. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease from FY 2018 to FY 2019 reflects FY18 Appropriation Conference marks			
Accomplishments/Planned Programs Subtotals	0.000	253.276	120.217

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The Aegis BMD element acquisition approach supports evolutionary development, continuously building upon demonstrated capabilities to advance overall BMDS capability. After considering all the technical and management aspects of the program and to meet the requirements presented by an evolving ballistic missile threat, the Aegis BMD program awarded sole source contracts to Raytheon and Lockheed Martin to continue development of the SM-3 and the Aegis BMD Weapon System, respectively.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MG09 / *Aegis BMD SM-3 Development Articles*

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MG09 / *Aegis BMD SM-3 Development Articles*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
FY16 SM-3 Block IIA RDT&E All Up Rounds - FY16 SM-3 Block IIA RDT&E All Up Rounds - IWS	MIPR	NAVSEA IWS : Washington DC	0.000	0.000		7.523	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing
FY16 SM-3 Block IIA RDT&E All Up Rounds - FY16 SM-3 Block IIA RDT&E All Up Rounds - NSWC/DD	MIPR	NSWC/DD : Dahlgren, VA	0.000	0.000		2.000	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing
FY16 SM-3 Block IIA RDT&E All Up Rounds - FY16 SM-3 Block IIA RDT&E All Up Rounds - SM-3 MANUFACTURING - MG09	SS/CPAF	Raytheon : Tuscon, AZ	0.000	0.000		202.506	Nov 2017	118.217		-		118.217	Continuing	Continuing	Continuing
FY16 SM-3 Block IIA RDT&E All Up Rounds - FY16 SM-3 Block IIA RDT&E All Up Rounds- Various	MIPR	Various : Various, CA, VA, MD	0.000	0.000		0.000		2.000	Apr 2019	-		2.000	Continuing	Continuing	Continuing
FY18 SM-3 Block IIA RDT&E All Up Rounds - FY18 SM-3 Block IIA RDT&E All Up Rounds - FY18 SM-3 Manufacturing	MIPR	NAVSEA IWS : Washington DC	0.000	0.000		5.534	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing
FY18 SM-3 Block IIA RDT&E All Up Rounds - FY18 SM-3 Block IIA RDT&E All Up Rounds - Raytheon	SS/CPAF	Raytheon : Tuscon, AZ	0.000	0.000		35.713	Jun 2018	0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		253.276		120.217		-		120.217	Continuing	Continuing	N/A

Remarks

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Missile Defense Agency			Date: February 2018
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603892C / *AEGIS BMD*	Project (Number/Name) MG09 / *Aegis BMD SM-3 Development Articles*	

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		253.276		120.217		-		120.217	Continuing	Continuing	N/A

Remarks

N/A

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Missile Defense Agency		**Date:** February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MG09 / *Aegis BMD SM-3 Development Articles*

Significant Event Complete ▲ Milestone Decision Complete ★ Element Test Complete ◆ System Level Test Complete ● Complete Activity ✦
Significant Event Planned △ Milestone Decision Planned ☆ Element Test Planned ◇ System Level Test Planned ○ Planned Activity ✧

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
FY16 SM-3 Block IIA AUR-first round delivery		✧					
FY16 SM-3 Block IIA AUR EPAA Phase III Declaration			✧				
FY18 SM-3 Block IIA AUR first round delivery					✧		

Exhibit R-4A, **RDT&E Schedule Details:** PB 2019 Missile Defense Agency		**Date:** February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MG09 / *Aegis BMD SM-3 Development Articles*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
FY16 SM-3 Block IIA AUR-first round delivery	3	2018	3	2018
FY16 SM-3 Block IIA AUR EPAA Phase III Declaration	1	2019	1	2019
FY18 SM-3 Block IIA AUR first round delivery	3	2021	3	2021

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency			Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MM09 / *Aegis BMD SM-3 Development*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
MM09: *Aegis BMD SM-3 Development*	-	0.000	98.150	161.958	-	161.958	158.636	87.272	101.329	17.317	0.000	624.662
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Reflects transfer of SM-3 Development efforts from Project MD09, Aegis BMD in FY 2018

A. Mission Description and Budget Item Justification

Provides development of SM-3 Missiles, Upgrade Modifications, and Integration into the Aegis Weapon System. The SM-3 Block IB improves Aegis BMD's ability to expand the BMD battlespace, engage longer range, more sophisticated ballistic missiles that may deploy countermeasures and launch in larger raid sizes. The SM-3 Block IB Kinetic Warhead's (KW) two color infra-red (IR) seeker and advanced signal processor provides a real-time discrimination and characterization capability while improving sensitivity for longer range targets and performance against more sophisticated threats. Additionally, the new Throttleable Divert and Attitude Control System (TDACS) KW divert engine has been upgraded over the SM-3 Block IA to provide a more flexible divert in order to maneuver the KW to intercept.

The SM-3 Block IIA consists of an upgrade to a 21-inch diameter SM-3 missile and expands beyond the SM-3 Block IB battlespace to counter Intermediate Range Ballistic Missile (IRBM). SM-3 Block IIA provides an increased kinematic envelope through improved infa-red (IR) discrimination and divert capability that provide performance against the EPAA phase III expanded threat set. When combined with Aegis BMD 5.1 weapon system modifications, the SM-3 Block IIA will provide Engage on Remote (EoR) capability, which allows the use of remote off board sensor information to launch and guide the SM-3 Block IIA to final intercept. Aegis BMD 5.1 EoR capability with SM-3 Block IIA also frees up Radar resources and increases the number and type of threats to be engaged simultaneously over previous baselines.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019
Title: Standard Missile-3 (SM-3) Block IB Development	0.000	21.148	49.259
Articles:	-	-	-
Description: This effort develops the SM-3 Block IB missile, which improves on the SM-3 Block IA performance and enables engagement of more sophisticated ballistic missiles and larger raid sizes. SM-3 Block IB Modernization will provide the following upgrades: - Upgraded SM-3 KW Common Avionics Package will provide improved producibility and reduced cost resulting from utilization of common components between SM-3 Block IIA and the Redesigned Kill Vehicle (RKV). SM-3 Block IB Common Components will be extendable to support different form/fit in circuit card assemblies across SM-3 Block IB, SM-3 Block IIA, and RKV and will mitigate SM-3 Block IB hardware availability issues.			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MM09 / *Aegis BMD SM-3 Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019
- Upgraded SM-3 Block IB Guidance Section (GS) will resolve Computer Processing Unit 3 and Plate 3A hardware availability issues, enable use of 5.1/IIA Target Object Map (TOM) and similar software to SM-3 Block IIA Mission Computer; and enable additional capability against complex threats. - Continue development of the upgraded SM-3 Block IB Guidance Section (GS) Recurring Accomplishments: - Assess performance with weapons systems upgrades/modifications and against emerging threats Specific and/or unique accomplishments to each FY are as follows: ***FY 2018 Plans:*** Increase from FY 2017 to FY 2018 is reflects SM-3 Block IB Modernization efforts to develop capabilities against future threats, resolve identified hardware availability issues and increase commonality within the SM-3 Missile family. SM-3 Block IB Modernization consists of two primary upgrade packages as follows: - Initiate development of the upgraded SM-3 KW Common Avionics Package ***FY 2019 Plans:*** - Complete detailed design of the KW Common Avionics Package - Initiate development of common KW Circuit Card Assembly ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase from FY 2018 to FY 2019 is reflects continued efforts for SM-3 Block IB Modernization efforts to develop capabilities against future threats, resolve identified hardware availability issues and increase commonality within the SM-3 Missile family with increased effort towards material acquisition of KW and GS.			
Title: Standard Missile-3 (SM-3) Block IIA Development	0.000	77.002	112.699
Articles:	-	-	-
Description: The SM-3 Block IIA is required to meet EPAA Phase III. It will increase the area that can be defended by Aegis BMD, increase the probability of kill against a larger threat set, and leverage enhanced capability provided by BMDS sensor upgrades. Recurring Accomplishments: - Conduct SM-3 Block IIA software update to support engagements against additional complex threats identified during Aegis BMD 5.1 design process conducted after missile Critical Design Review (CDR) - Conduct End to End Distributed Development System (ETEDDS) integration testing; and flight test support - Continue implementation of SM-3 Block IIA cost reduction initiatives to support meeting cost goals to reduce the current estimated Average Unit Production Price (AUPP) - Continue transition of KW hardware commonality effort (from design to material purchases) to system integration testing in order to demonstrate technology readiness level 7			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MM09 / *Aegis BMD SM-3 Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019
- Continue Engineering Manufacture Readiness Level (EMRL) 3 compliance to support life cycle progression Specific and/or unique accomplishments to each FY are as follows: ***FY 2018 Plans:*** Decrease from FY 2017 to FY 2018 reflects life cycle progression as program begins shift from development phase to initial production - Support execution of robust Flight Test Mission Campaign Series to ensure six successful SM-3 Block IIA Intercepts ***FY 2019 Plans:*** - Conduct Non-Recurring Engineering (NRE) services and materials to increase factory build and test capacity to sustain a rate capability of up to two SM-3 Block IIAs per month. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase from FY 2018 to FY 2019 reflects transition of KW hardware commonality efforts.			
Accomplishments/Planned Programs Subtotals	0.000	98.150	161.958

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The Aegis BMD element acquisition approach supports evolutionary development, continuously building upon demonstrated capabilities to advance overall BMDS capability. After considering all the technical and management aspects of the program and to meet the requirements presented by an evolving ballistic missile threat, the Aegis BMD program awarded sole source contracts to Raytheon and Lockheed Martin to continue development of the SM-3 and the Aegis BMD Weapon System, respectively.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MM09 / *Aegis BMD SM-3 Development*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Standard Missile-3 (SM-3) Block IB Development - Standard Missile-3 (SM-3) Block IB Development - MM09	SS/CPAF	Raytheon : Tuscon, AZ	0.000	0.000		17.598	Jan 2018	42.360	Dec 2018	-		42.360	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IB Development - Standard Missile-3 (SM-3) Block IB Development - MM09 - 20117142332259	MIPR	NSWC/PHD : Port Hueneme, CA	0.000	0.000		1.934	Nov 2017	0.246	Nov 2018	-		0.246	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IB Development - Standard Missile-3 (SM-3) Block IB Development - MM09 - Various	MIPR	NSWC Corona : Corona, CA	0.000	0.000		1.616	Nov 2017	0.343	Nov 2018	-		0.343	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IB Development - Standard Missile-3 (SM-3) Block IB Development- MM09 DD	MIPR	NSWC Dahlgren : Dahlgren, VA	0.000	0.000		0.000		1.415	Nov 2018	-		1.415	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IB Development - Standard Missile-3 (SM-3) Block IB Development- MM09 JHU/APL	SS/CPAF	JHUAPL : Laurel, MD	0.000	0.000		0.000		2.746	Nov 2018	-		2.746	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IB Development - Standard Missile-3 (SM-3) Block IB Development- MM09-NAVSEA	MIPR	NAVSEA BAE Systems : Baltimore, MD	0.000	0.000		0.000		2.149	Nov 2018	-		2.149	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IIA Development - Standard Missile-3 (SM-3) Block IIA Development - CA,VA, MD	MIPR	Various : CA, VA, MD	0.000	0.000		3.338	Nov 2017	3.202	Nov 2018	-		3.202	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IIA Development -	SS/CPIF	Raytheon : Tuscon, AZ	0.000	0.000		52.738	Nov 2017	96.570	Apr 2019	-		96.570	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MM09 / *Aegis BMD SM-3 Development*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Standard Missile-3 (SM-3) Block IIA Development - MM09 - SM-3 BLK IIA INTEGRATION															
Standard Missile-3 (SM-3) Block IIA Development - Standard Missile-3 (SM-3) Block IIA Development - MM09 - SM-3 BLK IIA INTEGRATION - APL	MIPR	JHU/APL : Laurel, MD	0.000	0.000		13.446	Nov 2017	6.514	Dec 2018	-		6.514	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IIA Development - Standard Missile-3 (SM-3) Block IIA Development - MM09 - SM-3 BLK IIA INTEGRATION - DD	MIPR	NSWC DD : Dahlgren, VA	0.000	0.000		5.053	Nov 2017	4.258	Nov 2018	-		4.258	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IIA Development - Standard Missile-3 (SM-3) Block IIA Development - NSWC Corona	MIPR	NSWC Corona : Corona, CA	0.000	0.000		1.266	Nov 2017	1.057	Nov 2018	-		1.057	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IIA Development - Standard Missile-3 (SM-3) Block IIA Development - NSWC/Crane	MIPR	NWSC/Crane : IN	0.000	0.000		1.161	Nov 2017	1.098	Nov 2018	-		1.098	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		98.150		161.958		-		161.958	Continuing	Continuing	N/A

Remarks

Increase from FY 2017 to FY 2018 (Raytheon, AZ) due to implementation of SM-3 IB Modernization

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		98.150		161.958		-		161.958	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Missile Defense Agency			Date: February 2018
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603892C / *AEGIS BMD*	Project (Number/Name) MM09 / *Aegis BMD SM-3 Development*	

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

N/A

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Missile Defense Agency		**Date:** February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MM09 / *Aegis BMD SM-3 Development*

Significant Event Complete ▲ Milestone Decision Complete ★ Element Test Complete ◆ System Level Test Complete ● Complete Activity ✦
Significant Event Planned △ Milestone Decision Planned ☆ Element Test Planned ◇ System Level Test Planned ○ Planned Activity ✧

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
IMTP v19.1 flight and ground test event details are at a higher classification.	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧
Kinetic Warhead hardware commonality (also known as Guidance Electronic Unit Engineering Change Proposal (GEU ECP)) CDR					✧																							
GEU ECP Host GEU delta-CDR									✧																			
GEU ECP Qualification													✧															

Exhibit R-4A, **RDT&E Schedule Details:** PB 2019 Missile Defense Agency		**Date:** February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MM09 / *Aegis BMD SM-3 Development*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
IMTP v19.1 flight and ground test event details are at a higher classification.	1	2017	4	2023
Kinetic Warhead hardware commonality (also known as Guidance Electronic Unit Engineering Change Proposal (GEU ECP)) CDR	1	2018	1	2018
GEU ECP Host GEU delta-CDR	1	2019	1	2019
GEU ECP Qualification	1	2020	1	2020

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency												Date: February 2018
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603892C / *AEGIS BMD*				Project (Number/Name) MC09 / *Cyber Operations*			
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
MC09: *Cyber Operations*	2.925	2.301	2.340	10.886	-	10.886	13.718	16.238	10.274	11.164	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Increase from FY 2018 to FY 2019 reflect the increasing cybersecurity requirements following the Secretary of Defense DoD Cybersecurity Discipline guidance to implement strong authentication, device hardening, reducing the attack surface and alignment to cybersecurity network defense services providers.

A. Mission Description and Budget Item Justification

Sustain the DoD RMF Certification and Accreditation process and Controls Validation Testing (CVT) activities, analysis of validation results, risk assessments and reviews of proposed Program Manager/Information Systems Security Manager (PM/ISSM).

This project supports the monitoring and tracking of Cybersecurity mitigation detailed in Information Technology Security POA&Ms. Activities include preparation of C&A documentation and accreditation recommendations to the MDA Authorizing Official (AO). Independent Verification and Validation (IV&V) team actions ensure the availability, integrity, authentication, confidentiality and non-repudiation of the AB mission and non-mission systems, which includes test and remote site 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 2017	FY 2018	FY 2019
Title: Network / System Certification and Accreditation (C&A)	2.301	2.340	10.886
Articles:	-	-	-
Description: This accomplishment has reoccurring efforts. Conduct cybersecurity engineering and architecture requirements planning or Aegis BMD systems. Plan and test the Risk Management Framework (RMF) controls for the BMDS in regards to Aegis BMD systems to comply with new directive, RMF for DoD Information Technology (DoDi 8510.01) to replace the DoD Information Assurance Certification and Accreditation process (DIACAP). In addition, conduct Controls Validation Testing (CVT). Recurring Accomplishments: - Continue coordination and development of new and existing accreditation packages that comply with new directive, RMF for DoD Information Technology (DoDi 8510.01) process - Conduct regular Controls Validation Testing (CVT) and cooperative risk assessments to mitigate cybersecurity deficiencies - Develop and deploy Hardware and Software HW/SW implementation strategies for Continuous Monitoring activities at remote sites and Aegis BMD assets Monthly reviews of systems through the eMass - Daily management of eMass System Plan of Action and Milestones (POAMs) Specific and/or unique accomplishments to each FY are as follows: - Daily management of eMass System Plan of Action and Milestones (POAMs)			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MC09 / *Cyber Operations*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019
FY 2018 Plans: Increase from FY 2017 to FY 2018 is attributed to increasing cybersecurity requirements and ensuring compliance of additional requirements. - SEE ABOVE. ***FY 2019 Plans:*** - SEE ABOVE. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase from FY 2018 to FY 2019 reflects steadily emerging and refined requirements.			
Accomplishments/Planned Programs Subtotals	2.301	2.340	10.886

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• 0603882C: *Ballistic Missile Defense Midcourse Defense Segment*	1,034.861	957.097	926.359	-	926.359	1,046.235	847.537	585.956	572.619	Continuing	Continuing
• 0603884C: *Ballistic Missile Defense Sensors*	252.665	278.145	220.876	-	220.876	250.238	267.502	263.758	260.273	Continuing	Continuing
• 0603896C: *Ballistic Missile Defense Command and Control, Battle Management & Communication*	465.433	454.862	475.168	-	475.168	515.239	494.873	492.119	515.529	Continuing	Continuing
• 0603898C: *Ballistic Missile Defense Joint Warfighter Support*	47.402	48.954	48.767	-	48.767	53.418	51.448	54.076	54.061	Continuing	Continuing
• 0603904C: *Missile Defense Integration and Operations Center (MDIOC)*	53.483	53.265	54.925	-	54.925	58.498	57.764	59.020	61.915	Continuing	Continuing
• 0604878C: *Aegis BMD Test*	131.012	137.783	95.756	-	95.756	80.684	94.138	146.910	137.601	Continuing	Continuing
• 0604880C: *Land Based SM-3 (LBSM3)*	40.452	30.486	27.692	-	27.692	29.263	28.370	27.228	28.225	Continuing	Continuing
• 0604881C: *AEGIS SM-3 Block IIA Co-Development*	102.272	9.739	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	112.011

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MC09 / *Cyber Operations*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• 0901598C: *Management HQ - MDA*	30.693	29.947	28.626	-	28.626	27.276	27.894	28.466	29.005	Continuing	Continuing

Remarks

D. Acquisition Strategy

Full and Open contract support through Missile Defense Agency Program Management Office.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MC09 / *Cyber Operations*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Network / System Certification and Accreditation (C&A) - BOOZ ALLEN HAMILTON INC	C/CPIF	MDA : MCLEAN, VA	1.729	1.747	Oct 2016	2.340	Nov 2017	4.059	Nov 2018	-		4.059	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - CND/IA Advisory and Assistance Services	C/CPIF	Torch Technologies : Huntsville, AL	1.196	0.554	Oct 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - Network System Certification and Accreditation	SS/CPAF	Lockheed Martin : Moorestown NJ	0.000	0.000		0.000		6.827	Nov 2018	-		6.827	Continuing	Continuing	Continuing
		Subtotal	2.925	2.301		2.340		10.886		-		10.886	Continuing	Continuing	N/A

Remarks
N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	2.925	2.301		2.340		10.886		-		10.886	Continuing	Continuing	N/A

Remarks
N/A

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Missile Defense Agency		**Date:** February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MC09 / *Cyber Operations*

Significant Event Complete ▲ Milestone Decision Complete ★ Element Test Complete ◆ System Level Test Complete ● Complete Activity ✦
Significant Event Planned △ Milestone Decision Planned ☆ Element Test Planned ◇ System Level Test Planned ○ Planned Activity ✧

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
MC09 Cyber Operations	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧				

Exhibit R-4A, **RDT&E Schedule Details:** PB 2019 Missile Defense Agency		**Date:** February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MC09 / *Cyber Operations*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
MC09 Cyber Operations	1	2017	4	2022

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency			Date: February 2018
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603892C / *AEGIS BMD*	Project (Number/Name) MX09 / *Aegis BMD Development Support*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
MX09: *Aegis BMD Development Support*	115.328	74.920	173.325	185.742	-	185.742	182.219	183.780	194.068	194.217	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

N/A

A. Mission Description and Budget Item Justification

Aegis Ballistic Missile Defense (BMD), in accordance with negotiated agreements between the U.S. Navy and the Missile Defense Agency (MDA) has identified and segregated funding for Developmental Support of Aegis BMD specific elements resident aboard Aegis capable U.S. Navy ships. Computer Program Support consists of, but is not limited to, reviews of Technical Observation Reports (TORs) that are generated by ship crews during exercises or deployments, determination of root causes and preparation of Computer Program Change Request (CPCR) to correct TORs, updates to the in-service computer program to apply, test and certify multiple CPCRs, and tests installation of Aegis Weapon System (AN/SPY-radar/Fire Control System (FCS)) alignment updates as required. Aegis BMD provides support to Annual Integration Events (AIEs) to ensure any updated Aegis Combat System (ACS) computer programs do not degrade BMD equipped ships and provides distance and technical support for BMD equipped ships.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019
Title: Fleet Integration	9.921	9.257	15.395
Articles:	-	-	-
Description: Provide Fleet operations and mission support to enable the conduct of sustained BMD operations; advocate war fighter requirements and fleet feedback in baseline development and capability upgrades to Aegis BMD weapon system; provide analysis and Mission Planning support for Geographic Combatant Commanders for operational application of Maritime BMD capabilities; and provide BMD Capabilities Analysis and Exercise Support for Aegis BMD baselines under development or currently deployed in the Operational Fleet. Recurring Accomplishments: - Define, develop and review Joint and Fleet Doctrine for incorporation of Aegis BMD capability transition to warfighter and baseline acceptance into MDA Operational Capacity Baseline (OCB) - Research and define certification and warfighter acceptance requirements for Aegis BMD baselines to ensure successful capability delivery - Develop Aegis BMD training simulations and scenarios to support shipboard training including BMD Qualification (BMDQ) and higher level exercises - Execute warfighter feedback process to enhance Aegis BMD functional capability development and influence future Aegis BMD requirements and support MDA Test Community and Combatant Commanders in BMD Exercises and Wargames			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MX09 / *Aegis BMD Development Support*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019
- Provide analysis for Anti-Ship Ballistic Missile Defense - Provide analysis on parametric organic sensor sensitivity - Provide analysis on up-range ship/sensor support for LoR, EoR, and Cued engagements - Provide analysis on impacts of countermeasures - Provide analysis on developing threats Specific and/or unique accomplishments to each FY are as follows: ***FY 2018 Plans:*** Increase from FY 2017 to FY 2018 reflects COCOM operational analysis to support and inform both regional and homeland defense design implementation for Aegis BMD ship capability. ***FY 2019 Plans:*** - Optimization of multi-baseline/ship defense designs - Limited anti-air warfare depth of fire calculations - Real-time mission planning for COCOMs and fleet components to facilitate regional defense design laydowns ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase from FY 2018 to FY 2019 reflects increased scope and complexity of COCOM operational analysis requirements to support and inform both regional and homeland defense design implementation for Aegis BMD ship capability.			
Title: Infrastructure Upgrades	20.439	20.866	25.297
Articles:	-	-	-
Description: This project includes Special Access Program (SAP) infrastructure labor to include Contractor Program Security Officers, Information Assurance Officers, and System Administrators that will oversee the data transfer efforts. Funds IT services in support of the Aegis RDT&E mission. This includes: IT help-desk services; portal and data services; records management; business automation services; and desktop and Special Purpose Processing Nodes (SPPNs) maintenance and licenses. In addition, funds will be used to replace critical IT infrastructure at end-of-life and to implement DoD mandated projects in support of the Joint Information Environment (JIE) initiative. Recurring Accomplishments: - Transfer necessary data between collateral and SAP environments to comply with Federal and DoD mandates (Cybersecurity and Joint Information Environment) - Configuration and data management to ensure Modeling and Simulation (M&S) and software builds are identical in collateral and SAP environment - Fund Aegis IT services such as IT help-desk services; portal and data services; records management; business automation services; and desktop and SPPN maintenance and licenses. - Fund critical end-of-life IT equipment replacements			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MX09 / *Aegis BMD Development Support*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019
- Fund IT infrastructure upgrade planning and implementation efforts to accomplish DoD mandated IT projects (JIE and DoD CIO Information Resources Management (IRM) initiatives) - Implement and manage C4I aspects of the BMDS Test Site (BTS) San Diego upgrade plan to maintain fleet representative C4I configurations to support testing, troubleshooting, and Fleet operations Specific and/or unique accomplishments to each FY are as follows: ***FY 2018 Plans:*** - Provide standard IT core user services in support of the Aegis BMD RDT&E mission as follows: - IT core services encompassing end user services including the Microsoft productivity suite including Microsoft Word, Excel, PowerPoint, Access and Lync - Public Key Enabling software such as Active Identity client software which enables secure workstations with smart cards to enforce strong authentication for network security - IT help-desk services, IT consumables, hardware break-fix, end-of-life equipment replacements and IT asset management. Access to the MDA business applications and portal services such as SharePoint for data management services and records management. It includes Unified Communications services such as telephony, wireless services and Video Teleconferencing capabilities - Provide security support, network administration, performance monitoring, and technical support for SAP infrastructures and computing suites ***FY 2019 Plans:*** - SEE ABOVE. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase from FY 2018 to FY 2019 reflects an expanding data management and M&S software builds in collateral and SAP environment. Reflects transfer of BTS upgrade effort from MD09.			
Title: Aegis Ballistic Weapon System Support	44.560	34.999	37.613
Articles:	-	-	-
Description: This project provides system engineering for fielded Aegis BMD Weapon Systems from warfighter feedback, investigation of BMDS Discrepancy Reports, and BMDS ground test observation analysis. It includes computer program defect corrections and supports assessment of flight test readiness. Recurring Accomplishments: - Monitor and address Fleet feedback concerns raised during waterfront technical exchanges and ship visits - Update threat adaptation data to keep pace with emergent threats - Provide operation and maintenance of land based test sites used for the development of Aegis BMD baselines. Operation and maintenance includes Quality Assurance, Configuration Management and other support activities to both baseline development			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MX09 / *Aegis BMD Development Support*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019
and the sites. Engineering, logistic, quality assurance, configuration management and administrative support for the operation and maintenance of the Aegis shore sites and centers in support of the delivery of BMD baselines - Provide support for contingency operations of National interest - Support the fielded Aegis BMD computer programs baselines approved as an Operational Capability Baseline - Provide engineering support to Operationally Capable Baseline ships that participate in BMD test events - Perform system troubleshooting and maintenance as required for Aegis BMD related systems - Provide preventative and corrective maintenance services and upgrades in support of Aegis BMD systems and associated support systems - Provide test site usage for maintenance and support of baselines under development - Sustain the classified computing infrastructure Specific and/or unique accomplishments to each FY are as follows: ***FY 2018 Plans:*** Increase from FY 2017 to FY 2018 is due to completion of BMD 5.x efforts ***FY 2019 Plans:*** - SEE ABOVE. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase from FY 2018 to FY 2019 stems from the need to increase threat adaptation data updates from annual to semi-annual. Increased periodicity required to maintain pace with new threats and the rapid evolution of existing threats. Funding increase also provides support to maintain the classified Modeling and Simulation infrastructure required to support accelerated threat adaption data updates to Aegis BMD Ships and Sites.			
Title: Program Operations	0.000	104.203	104.737
Articles:	-	-	-
Description: This activity funds the Government, contractor, and Federally Funded Research and Development Center (FFRDC) workforce that manage the overall Aegis Ballistic Missile Defense (BMD) program and enables the program to develop, build, and test standard missiles and the associated Aegis Weapon Systems. This project includes all operations support for the Aegis program office in Engineering, Testing, Logistics, Acquisition, Safety, Quality Assurance, Finance, Budget Formulation and Execution, Cost Estimation, and Earned Value Management in support of development activities. Specific and/or unique accomplishments to each FY are as follows: ***FY 2018 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MX09 / *Aegis BMD Development Support*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019
Reflects transfer of Program Operations from Project MD09, Aegis BMD. Decrease from FY 2017 to FY 2018 reflects cost savings attained through consolidation of contractor tasks and efforts performed in support of the Aegis program. ***FY 2019 Plans:*** - SEE ABOVE. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** N/A			
Title: United States Forces Korea (USFK) Joint Emergent Operational Needs Statement (JEONS)	0.000	4.000	2.700
Articles:	-	-	-
Description: Integrated upper tier Ballistic Missile Defense System that expands engagement options and increases coverage area. Provides updated Threat Adaptation Data necessary for successful mission planning and threat detection on Aegis BMD ships. JEON funding also supports initial development efforts for regional peer-to-peer engagement coordination with Terminal High-Altitude Area Defense (THADD). ***FY 2018 Plans:*** Provide updated Threat Adaptation Data necessary for successful mission planning and threat detection on Aegis BMD ships. JEON funding also supports initial development efforts for regional peer-to-peer engagement coordination with Terminal High-Altitude Area Defense (THAAD). ***FY 2019 Plans:*** Deliver an integrated upper tier Ballistic Missile Defense System that expands engagement options and increases coverage area. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** New Accomplishment			
Accomplishments/Planned Programs Subtotals	74.920	173.325	185.742

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• 0604878C: *Aegis BMD Test*	131.012	137.783	95.756	-	95.756	80.684	94.138	146.910	137.601	Continuing	Continuing
• 0604880C: *Land Based SM-3 (LBSM3)*	40.452	30.486	27.692	-	27.692	29.263	28.370	27.228	28.225	Continuing	Continuing
• 0604881C: *AEGIS SM-3 Block IIA Co-Development*	102.272	9.739	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	112.011

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MX09 / *Aegis BMD Development Support*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost

Remarks

D. Acquisition Strategy

The Aegis Ballistic Missile Defense (BMD) element acquisition approach supports evolutionary development, continuously building upon demonstrated capabilities to advance overall BMDS capability. After considering all the technical and management aspects of the program and to meet the requirements presented by an evolving ballistic missile threat, the Aegis BMD program awarded sole source contracts to Raytheon and Lockheed Martin to continue development of the Standard Missile-3 (SM-3) and the Aegis BMD Weapon System, respectively.

Competition will be maximized for purchase of any products or services as appropriate.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MX09 / *Aegis BMD Development Support*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Fleet Integration - MX09 - Fleet APL	C/CPAF	JHU/APL/MD : Columbia, MD	6.192	6.558	Nov 2016	4.746	Nov 2017	8.085	Nov 2018	-		8.085	Continuing	Continuing	Continuing
Fleet Integration - MX09 - Fleet DD	MIPR	NSWC DD : Dahlgren, VA	2.913	1.873	Nov 2016	2.979	Nov 2017	2.938	Nov 2018	-		2.938	Continuing	Continuing	Continuing
Fleet Integration - MX09 - Fleet PHD	MIPR	NSWC PHD : Port Huenmene	0.432	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Fleet Integration - MX09 - Fleet SMDC	MIPR	SMDC/ARSTRST : Huntsville, AL	0.369	0.468	Nov 2016	0.468	Nov 2017	0.639	Nov 2018	-		0.639	Continuing	Continuing	Continuing
Fleet Integration - MX09 - Fleet CSCS	MIPR	CSCS : Dahlgren, VA	1.074	1.022	Nov 2016	1.064	Nov 2017	1.053	Nov 2018	-		1.053	Continuing	Continuing	Continuing
Fleet Integration - MX09- Fleet System Engineering Group	C/CPFF	System Engineering Group : Laurel, MD	0.000	0.000		0.000		2.680	Nov 2018	-		2.680	Continuing	Continuing	Continuing
Infrastructure Upgrades - MX09 - ICT Funding	C/CPAF	Northrop Grumman / Jacobs Engineering : AL,CA,CO,NM,VA,HI	11.832	9.771	Oct 2016	13.282	Nov 2017	12.911	Nov 2018	-		12.911	Continuing	Continuing	Continuing
Infrastructure Upgrades - MX09 - S APL	SS/CPAF	JHU/APL : Laurel, MD	0.400	0.650	Nov 2016	0.700	Nov 2017	3.663	Nov 2018	-		3.663	Continuing	Continuing	Continuing
Infrastructure Upgrades - MX09 - S Corona	MIPR	NSWC Corona : Corona, CA	0.630	1.000	Nov 2016	1.000	Nov 2017	1.418	Nov 2018	-		1.418	Continuing	Continuing	Continuing
Infrastructure Upgrades - MX09 - S LM	C/CPAF	Lockheed Martin : Moorestown, NJ	8.828	2.410	Nov 2016	2.356	Nov 2017	2.645	Nov 2018	-		2.645	Continuing	Continuing	Continuing
Infrastructure Upgrades - MX09 - S MIT	C/CPAF	MIT : Lexington, MA	0.120	0.200	Nov 2016	0.200	Nov 2017	0.348	Nov 2018	-		0.348	Continuing	Continuing	Continuing
Infrastructure Upgrades - MX09 - S RMS	C/CPAF	Raytheon : Tucson, AZ	3.720	2.100	Nov 2016	2.100	Nov 2017	1.100	Nov 2018	-		1.100	Continuing	Continuing	Continuing
Infrastructure Upgrades - MX09- D/TD	MIPR	SPAWAR : CA	0.000	3.598	Nov 2016	0.426	Nov 2017	2.092	Nov 2018	-		2.092	Continuing	Continuing	Continuing
Infrastructure Upgrades - MX09- S DD	MIPR	NSWC DD : Dahlgren, VA	1.609	0.710	Nov 2016	0.802	Nov 2017	0.300	Nov 2018	-		0.300	Continuing	Continuing	Continuing
Infrastructure Upgrades - MX09-Various	MIPR	Various : Various	0.000	0.000		0.000		0.820	Nov 2018	-		0.820	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MX09 / *Aegis BMD Development Support*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Aegis Ballistic Weapon System Support - MX09 - AW APL	SS/CPFF	JHU/APL : Columbia, MD	3.790	0.892	Nov 2016	1.052	Nov 2017	1.182	Nov 2018	-		1.182	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - AW DD	MIPR	NSWC DD : Dahlgren, VA	13.991	4.060	Nov 2016	3.277	Nov 2017	3.946	Nov 2018	-		3.946	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - AW LM	C/CPFF	Lockheed Martin : Moorestown, NJ	22.740	8.139	Nov 2016	4.739	Nov 2017	8.373	Nov 2018	-		8.373	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - AW NAVSEA	MIPR	NAVSEA : Washington, DC	13.643	18.502	Nov 2016	18.644	Nov 2017	22.450	Nov 2018	-		22.450	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - AW SSCPAC	MIPR	SPAWAR : San Diego, CA	2.390	0.000		1.520	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - AW TECH REP	MIPR	Aegis Tech Rep : Moorestown, NJ	0.600	0.249	Nov 2016	0.358	Nov 2017	0.432	Nov 2018	-		0.432	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - AW Wallops	MIPR	SCSC : Wallops Island, VA	2.000	0.000		0.310	Nov 2017	0.374	Nov 2018	-		0.374	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - D	MIPR	MDA : Arlington, VA	1.037	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - IH	MIPR	NSWC Indian Head : MD	0.249	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - Raytheon	SS/CPAF	Raytheon : AZ	5.644	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - TD JHU/APL	SS/CPFF	JHU/APL : Columbia, MD	0.750	1.804	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MX09 / *Aegis BMD Development Support*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Aegis Ballistic Weapon System Support - MX09 - TD MITRE	MIPR	CECOM - MITRE : Dahlgren, VA	0.900	1.100		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - TD NSWC DD	MIPR	NSWC DD : Dahlgren, VA	0.820	1.013	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - TD PHD	MIPR	NSWC PHD : Port Hueneme, CA	0.250	0.307	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - TD SSCPAC	MIPR	SPAWAR : San Diego, CA	3.903	7.923		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - TD Various	MIPR	Various : San Diego, CA	4.002	0.571	Nov 2016	4.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - AW PHD	MIPR	NSWC PHD : Port Hueneme, CA	0.500	0.000		0.713	Nov 2017	0.856	Nov 2018	-		0.856	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09- AW MIT/LL	MIPR	Hanscom, AFB : Lexington, MA	0.000	0.000		0.036	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09- AW Various	MIPR	Various : MD, VA	0.000	0.000		0.350	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Program Operations - Program Operations - MD09 - Civ Sal	MIPR	MDA : Arlington, VA	0.000	0.000		35.358	Nov 2017	35.750	Nov 2018	-		35.750	Continuing	Continuing	Continuing
Program Operations - Program Operations - MD09 - DD PM	MIPR	NSWC DD : Dahlgren, VA	0.000	0.000		4.932	Nov 2017	3.186	Nov 2018	-		3.186	Continuing	Continuing	Continuing
Program Operations - Program Operations - MD09 - IT	MIPR	MDA : Arlington, VA	0.000	0.000		1.402	Nov 2017	1.752	Nov 2018	-		1.752	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MX09 / *Aegis BMD Development Support*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Operations - Program Operations - MD09 - MDA Travel	MIPR	MDA : Arlington, VA	0.000	0.000		2.165	Nov 2017	3.958	Nov 2018	-		3.958	Continuing	Continuing	Continuing
Program Operations - Program Operations - MD09 - MIDAESS	MIPR	MDA : Arlington, VA	0.000	0.000		40.197	Nov 2017	38.448	Nov 2018	-		38.448	Continuing	Continuing	Continuing
Program Operations - Program Operations - MD09 - NAVSEA Civ Sal	MIPR	NAVSEA : Washington, DC	0.000	0.000		13.691	Nov 2017	15.466	Nov 2018	-		15.466	Continuing	Continuing	Continuing
Program Operations - Program Operations - MD09 - NAVSEA RB Sal	MIPR	NAVSEA : Washington, DC	0.000	0.000		2.225	Nov 2017	2.499	Nov 2018	-		2.499	Continuing	Continuing	Continuing
Program Operations - Program Operations - MD09 - NAVSEA Training, Various	MIPR	NAVSEA : Washington, DC	0.000	0.000		1.526	Nov 2017	0.297	Nov 2018	-		0.297	Continuing	Continuing	Continuing
Program Operations - Program Operations - MD09 - NAVSEA Travel	MIPR	NAVSEA : Washington, DC	0.000	0.000		1.056	Nov 2017	0.659	Nov 2018	-		0.659	Continuing	Continuing	Continuing
Program Operations - Program Operations - MD09 - Security	MIPR	Various VA : VA	0.000	0.000		1.651	Nov 2017	2.722	Nov 2018	-		2.722	Continuing	Continuing	Continuing
United States Forces Korea (USFK) Joint Emergent Operational Needs Statement (JEONS) - United States Forces Korea (USFK) - MX09 AW JHU/APL	SS/CPFF	JHU/APL : Columbia, MD	0.000	0.000		0.753	Apr 2018	0.000		-		0.000	Continuing	Continuing	Continuing
United States Forces Korea (USFK) Joint Emergent Operational Needs Statement (JEONS) - United States Forces Korea (USFK) - MX09 AW Lockheed Martin	C/CPFF	Lockheed Martin : Moorestown, NJ	0.000	0.000		1.157	Apr 2018	0.000		-		0.000	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MX09 / *Aegis BMD Development Support*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
United States Forces Korea (USFK) Joint Emergent Operational Needs Statement (JEONS) - United States Forces Korea (USFK) - MX09 AW MIT/LL	MIPR	MIT/LL : Lexington, MA	0.000	0.000		0.427	Apr 2018	0.000		-		0.000	Continuing	Continuing	Continuing
United States Forces Korea (USFK) Joint Emergent Operational Needs Statement (JEONS) - United States Forces Korea (USFK) - MX09 AW NSWC	MIPR	NSWC DD : Dahlgren, VA	0.000	0.000		1.095	Apr 2018	0.000		-		0.000	Continuing	Continuing	Continuing
United States Forces Korea (USFK) Joint Emergent Operational Needs Statement (JEONS) - United States Forces Korea (USFK) - MX09 AW Various	MIPR	Various : Various	0.000	0.000		0.568	Apr 2018	0.000		-		0.000	Continuing	Continuing	Continuing
United States Forces Korea (USFK) Joint Emergent Operational Needs Statement (JEONS) - United States Forces Korea (USFK)-AW	SS/CPAF	LM : LM	0.000	0.000		0.000		2.700	Nov 2018	-		2.700	Continuing	Continuing	Continuing
		Subtotal	115.328	74.920		173.325		185.742		-		185.742	Continuing	Continuing	N/A

Remarks

N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	115.328	74.920		173.325		185.742		-		185.742	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Missile Defense Agency			Date: February 2018
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603892C / *AEGIS BMD*	Project (Number/Name) MX09 / *Aegis BMD Development Support*	

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

N/A

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Missile Defense Agency		**Date:** February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MX09 / *Aegis BMD Development Support*

Significant Event Complete ▲ Milestone Decision Complete ★ Element Test Complete ◆ System Level Test Complete ● Complete Activity ✦
Significant Event Planned △ Milestone Decision Planned ☆ Element Test Planned ◇ System Level Test Planned ○ Planned Activity ✧

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
MX09 Aegis BMD Development Support	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧				

Exhibit R-4A, **RDT&E Schedule Details:** PB 2019 Missile Defense Agency		**Date:** February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MX09 / *Aegis BMD Development Support*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
MX09 Aegis BMD Development Support	1	2017	4	2022

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency			Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MD40 / *Program-Wide Support*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
MD40: *Program-Wide Support*	231.934	41.057	41.634	35.050	-	35.050	33.485	28.218	30.794	30.702	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Wide Support (PWS) reflects proportional changes as a result of budget changes in the BMD Aegis program element. Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, Military Interdepartmental Purchase Requests on the R-3.

A. Mission Description and Budget Item Justification

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

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019
Title: Program Wide Support	41.057	41.634	35.050
Articles:	-	-	-
Description: N/A			
FY 2018 Plans: N/A			
FY 2019 Plans: N/A			
FY 2018 to FY 2019 Increase/Decrease Statement: N/A			
Accomplishments/Planned Programs Subtotals	41.057	41.634	35.050

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MD40 / *Program-Wide Support*

C. Other Program Funding Summary ($ in Millions)

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

NA

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MD40 / *Program-Wide Support*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Facilities and Maintenance SRM (MIPR)	MIPR	Various : Multi: AL, CO, CA, VA, AK	0.174	1.220	Jan 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations Management	C/CPAF	Various : Multi: AL, CA, CO, VA	1.552	0.334		0.833	Jul 2018	0.537	Jul 2019	-		0.537	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations User Services	C/CPAF	Various/Multi: AL, CA, CO, : NM, VA, various	0.623	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Civilian Salaries	Allot	MDA : Multi: AK, AL, CO, CA, VA	162.915	36.160	Nov 2016	37.906	Nov 2017	34.513		-		34.513	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services	MIPR	Various : Multi: AK/ AL/CA/CO/HI/MD/ VA/NJ/NY/OCONUS	30.979	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Multi: AL, CA, CO, VA	33.267	3.094	Aug 2017	2.895	Aug 2018	0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support, International, and materiel and Readiness	MIPR	Naval Surface Warfare Center : AL, VA	1.367	0.249	Mar 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - FFRDC/UARC	MIPR	Various : Multi: AL, CA, CO, VA	1.057	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	231.934	41.057		41.634		35.050		-		35.050	Continuing	Continuing	N/A

Remarks

N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	231.934	41.057		41.634		35.050		-		35.050	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Missile Defense Agency			Date: February 2018
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603892C / *AEGIS BMD*	Project (Number/Name) MD40 / *Program-Wide Support*	

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

N/A

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Missile Defense Agency		**Date:** February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MD40 / *Program-Wide Support*

Significant Event Complete ▲ Milestone Decision Complete ★ Element Test Complete ◆ System Level Test Complete ● Complete Activity ✦
Significant Event Planned △ Milestone Decision Planned ☆ Element Test Planned ◇ System Level Test Planned ○ Planned Activity ✧

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
MD40 Program-Wide Support	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧

Exhibit R-4A, **RDT&E Schedule Details:** PB 2019 Missile Defense Agency		**Date:** February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603892C / *AEGIS BMD*	**Project (Number/Name)** MD40 / *Program-Wide Support*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
MD40 Program-Wide Support	1	2017	4	2023