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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Missile Defense Agency										Date: March 2019		
Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 0604881C I AEGIS SM-3 Block IIA Co-Development							
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	2,271.722	9.531	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	2,281.253
MD09: SM-3 Block IIA Co-Development	2,195.799	8.608	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	2,204.407
MD40: Program-Wide Support	75.923	0.923	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	76.846
Program MDAP/MAIS Code: 362												
Note Aegis SM-3 Block IIA Co-Development RDT&E completed in FY 2018.												
A. Mission Description and Budget Item Justification The Aegis Ballistic Missile Defense (BMD) mission is to deliver an operationally effective and supportable BMD capability to defend the nation, deployed forces, and allies. Aegis BMD aims to increase this capability by delivering evolutionary improvements as part of Ballistic Missile Defense System (BMDS) upgrades. Aegis BMD provides a forward-deployable, mobile capability to detect and track ballistic missiles of all ranges, and the ability to destroy Short-Range Ballistic Missiles (SRBM), Medium-Range Ballistic Missiles (MRBM), and Intermediate-Range Ballistic Missiles (IRBM) in the midcourse phase of flight. Upgrades to both the Aegis BMD Weapon System and the Standard Missile-3 (SM-3) configuration enable Aegis BMD to provide effective, supportable defensive capability against longer range, more sophisticated threats and an enduring Aegis Ashore defensive capability. Beginning in 2006, Aegis BMD and the Japanese Ministry of Defense (JMOD) have undertaken an SM-3 Cooperative Development (SCD) Project. The objective of the SCD project is the development and initial at-sea flight test of the SM-3 Block IIA. The U.S. and Japan will bear equitable burden to complete the project, as documented in the U.S./Japan Memorandum of Understanding (MOU) SCD Annex. Each nation will fund the full extent of its participation in the project. No funds are transferred between the U.S. and Japan under the MOU. The SM-3 Block IIA provides important improvements over SM-3 Block IB capability, including increased velocity and range provided by a 21-inch diameter rocket motor propulsion stack, more than doubled seeker sensitivity, and more than tripled divert capability incorporated in an advanced Kinetic Warhead (KW). New component technologies include, but are not limited to: lightweight nosecone, advanced kinetic warhead, 21-inch second stage rocket motor, and 21-inch third stage rocket motor. The effort includes risk reduction for key components and supports EPAA Phase III.												

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Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
0400: Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)		PE 0604881C / AEGIS SM-3 Block IIA Co-Development			
B. Program Change Summary (\$ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	9.739	0.000	0.000	-	0.000
Current President's Budget	9.531	0.000	0.000	-	0.000
Total Adjustments	-0.208	0.000	0.000	-	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.208	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.000	0.000	0.000	-	0.000
Change Summary Explanation					
N/A					

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Missile Defense Agency										Date: March 2019		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604881C / AEGIS SM-3 Block IIA Co-Development				Project (Number/Name) MD09 / SM-3 Block IIA Co-Development			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
MD09: SM-3 Block IIA Co-Development	2,195.799	8.608	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	2,204.407
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Aegis SM-3 Block IIA Co-Development RDT&E completed in FY 2018.

A. Mission Description and Budget Item Justification

The Scope of Work of the SCD project is defined in three phases:

Phase I took the program through System Design Review (SDR) in FY 2009. Aegis BMD executed risk reduction efforts for the Propulsion, Nosecone, Seeker, Divert Attitude Control System (DACS) development efforts, and test plans. Phase I Included requirements definition for the SM-3 Block IIA.

Phase II encompassed the work from SDR through the Critical Design Review (CDR) in FY 2014. Aegis BMD refined requirements and defined the performance allocation and component configuration for the development of the SM-3 Block IIA. The U.S. and Japan designed, fabricated, tested, and evaluated the SM-3 Block IIA sections per the agreed work-share agreement.

Phase III extends from CDR to the completion of the SCD flight test program as defined in the Agreement. This phase defines developmental cost share agreements between the United States and the Government of Japan, completes component engineering and integration, executes cooperative flight tests, and continues discussions on production and maintenance options. Phase III is planned to complete in FY 2018.

The SCD project will:

- Develop and integrate components for the SM-3 Block IIA into an All Up Round (AUR). Japan's work share includes 21 inch 2nd and 3rd stage components and the 21 inch nosecone. The U.S. work share includes the advanced kinetic warhead, advanced seeker, large diameter divert and attitude control system, and lightweight Vertical Launch System (VLS) canister.
- Integrate the SM-3 Block IIA VLS with Aegis Ship Systems.

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

	FY 2018	FY 2019	FY 2020
Title: SM-3 Block IIA Cooperative Development (SCD)	8.608	0.000	0.000
Articles:	-	-	-
Description: This activity develops the SM-3 Block IIA which will increase the area that can be defended by Aegis Ballistic Missile Defense (BMD) and increase the probability of kill against a larger threat set. It will leverage enhanced capability provided by Ballistic Missile Defense System (BMDS) sensor upgrades. Recurring Accomplishments: - Prepare for and support BMDS Flight Test events as reflected in the IMTP and the Exhibit R-4 schedule			

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Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0604881C / AEGIS SM-3 Block IIA Co-Development				Project (Number/Name) MD09 / SM-3 Block IIA Co-Development				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)										FY 2018	FY 2019	FY 2020
- Develop and deliver lightweight VLS canisters in support of SCD testing events												
FY 2019 Plans: N/A												
FY 2020 Plans: N/A												
FY 2019 to FY 2020 Increase/Decrease Statement: Decrease in funding from FY 2018 to FY 2019 due to completion of the Aegis SM-3 Block IIA Co-Development Program.												
Accomplishments/Planned Programs Subtotals										8.608	0.000	0.000
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost	
• 0603884C: Ballistic Missile Defense Sensors	290.289	385.375	283.487	-	283.487	296.098	263.681	276.092	351.607	Continuing	Continuing	
• 0603890C: BMD Enabling Programs	533.993	620.831	571.507	-	571.507	603.672	541.667	574.553	553.969	Continuing	Continuing	
• 0603892C: AEGIS BMD	798.395	741.076	727.479	-	727.479	718.949	703.473	505.529	527.720	Continuing	Continuing	
• 0603896C: Ballistic Missile Defense Command and Control, Battle Management & Communication	449.985	507.817	564.206	-	564.206	534.988	502.581	525.742	535.636	Continuing	Continuing	
Remarks												
D. Acquisition Strategy The SM-3 Cooperative Development program for the SM-3 Block IIA missile utilizes a performance-based approach that ties program decision milestones to the performance of development prototypes, as well as Propulsion Test Vehicle and Controlled Test Vehicle flight test article performance. Acquisition of hardware, software modifications and required services will occur in conjunction with contractual and tasking efforts to U.S. Navy work and events, and as defined by signed agreements between the Governments of the United States and Japan.												
E. Performance Metrics SM-3 Block IIA Program Office is utilizing Incentive-based contracts to ensure project completes on time.												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Missile Defense Agency												Date: March 2019			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604881C / AEGIS SM-3 Block IIA Co-Development				Project (Number/Name) MD09 / SM-3 Block IIA Co-Development					
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SM-3 Block IIA Cooperative Development (SCD) - SM-3 Block IIA Cooperative Development (SCD) - SM-3 Blk IIA Development - MD09	SS/CPAF	RAYTHEON : AZ	1,901.793	4.265	Nov 2017	0.000		0.000		-		0.000	0.000	1,906.058	0.000
SM-3 Block IIA Cooperative Development (SCD) - SM-3 Block IIA Cooperative Development (SCD) - SM-3 Blk IIA Development and Canister - MD09. No longer funding in the FYDP	Various	Various : MD, VA, MA, CA, IN	294.006	0.000		0.000		0.000		-		0.000	0.000	294.006	0.000
SM-3 Block IIA Cooperative Development (SCD) - SM-3 Block IIA Cooperative Development (SCD) - SM-3 IIA Cooperative Development (SCD) - SM-3 Blk IIA Development - MD09	SS/CPAF	JHU APL : Laurel, MD	0.000	4.343	Nov 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			2,195.799	8.608		0.000		0.000		-		0.000	Continuing	Continuing	N/A
Remarks N/A															
Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A
Remarks N/A															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Missile Defense Agency													Date: March 2019		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604881C / AEGIS SM-3 Block IIA Co-Development						Project (Number/Name) MD09 / SM-3 Block IIA Co-Development			

Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A

Remarks
N/A

Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	N/A

Remarks
N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	2,195.799	8.608		0.000		0.000		-		0.000	Continuing	Continuing	N/A

Remarks
Funding in the All Prior Years column represents a summary of Prior Years Total Costs for all contracts.
Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Missile Defense Agency							Date: March 2019										
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0604881C / AEGIS SM-3 Block IIA Co-Development				Project (Number/Name) MD09 / SM-3 Block IIA Co-Development									
Significant Event Complete ▲		Milestone Decision Complete ★		Element Test Complete ◆		System Level Test Complete ●		Complete Activity ◆									
Significant Event Planned △		Milestone Decision Planned ☆		Element Test Planned ◇		System Level Test Planned ○		Planned Activity ◇									
				FY 2018		FY 2019		FY 2020		FY 2021		FY 2022		FY 2023		FY 2024	
MD09 SM-3 Block IIA Co-Development				◆◆◆◆													

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Missile Defense Agency			Date: March 2019
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604881C / <i>AEGIS SM-3 Block IIA Co-Development</i>	Project (Number/Name) MD09 / <i>SM-3 Block IIA Co-Development</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD09 SM-3 Block IIA Co-Development	1	2018	4	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Missile Defense Agency										Date: March 2019		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604881C / AEGIS SM-3 Block IIA Co-Development				Project (Number/Name) MD40 / Program-Wide Support			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
MD40: Program-Wide Support	75.923	0.923	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	76.846
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note FY 2017 and FY 2018, Program Wide Support (PWS) reflects proportional changes as a result of a budget decrease and a FY 2019 elimination of the SM-3 Block IIA Co-Development program element.												
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 personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations. Other MDA wide costs include: 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, 0603891C Special Programs, 0603913C Israeli Cooperative Program and 0901598C Management Headquarters).												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2018	FY 2019	FY 2020	
Title: Program Wide Support Articles:									0.923	0.000	0.000	
									-	-	-	
Description: 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 personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations. Other MDA wide costs include: 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 across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.												
FY 2019 Plans:												

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Missile Defense Agency		Date: March 2019	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604881C / AEGIS SM-3 Block IIA Co-Development	Project (Number/Name) MD40 / Program-Wide Support	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2018	FY 2019
N/A			
FY 2020 Plans: N/A			
FY 2019 to FY 2020 Increase/Decrease Statement: N/A			
Accomplishments/Planned Programs Subtotals		0.923	0.000
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Missile Defense Agency												Date: March 2019			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604881C / AEGIS SM-3 Block IIA Co-Development				Project (Number/Name) MD40 / Program-Wide Support					
Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Operations Management	Allot	Various: Multi : ALless than CAless than COless than VA	6.594	0.018	Jul 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services	MIPR	Defense Manpower Data Center : AL,CA, CO, VA	0.009	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Service	C/CPFF	Various : Multi: AL, CA, CO, VA	13.931	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/Various	Various; Multi : AL, CO, VA	51.716	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services (FFP)	C/FFP	Various : Multi: AL, CA, CO, VA	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services (Reqn)	Reqn	Various : Multi: AL, CA, CO, VA	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Facilities and Maintenance	MIPR	Various: Multi : AK, AL, CA, VA	3.673	0.905	Aug 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			75.923	0.923		0.000		0.000		-		0.000	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			75.923	0.923		0.000		0.000		-		0.000	Continuing	Continuing	N/A
Remarks Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Missile Defense Agency										Date: March 2019																			
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0604881C / AEGIS SM-3 Block IIA Co-Development										Project (Number/Name) MD40 / Program-Wide Support									
Significant Event Complete ▲		Significant Event Planned △		Milestone Decision Complete ★		Milestone Decision Planned ☆		Element Test Complete ◆		Element Test Planned ◇		System Level Test Complete ●		System Level Test Planned ○		Complete Activity ◆		Planned Activity ◇											
										FY 2018		FY 2019		FY 2020		FY 2021		FY 2022		FY 2023		FY 2024							
MD40 Program-Wide Support										◇◇◇◇																			

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Missile Defense Agency			Date: March 2019
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604881C / <i>AEGIS SM-3 Block IIA Co-Development</i>	Project (Number/Name) MD40 / <i>Program-Wide Support</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2018	4	2018