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 1206895C *I Ballistic Missile Defense System Space Programs*							
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	-	45.123	94.484	27.565	-	27.565	21.236	20.483	20.872	21.497	Continuing	Continuing
MD33: *MD Space Exp Center (MDSEC)*	-	43.905	15.745	26.013	-	26.013	19.851	19.131	19.433	20.026	Continuing	Continuing
MD37: *Space Sensor Layer*	-	0.000	73.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	73.000
MC33: *MD Space Exp Center (MDSEC)*	-	0.469	5.000	0.380	-	0.380	0.390	0.400	0.410	0.420	Continuing	Continuing
MD40: *Program-Wide Support*	-	0.749	0.739	1.172	-	1.172	0.995	0.952	1.029	1.051	Continuing	Continuing
Program MDAP/MAIS Code: 362												

Note

FY 2019 includes $73.000 million congressional plus up for development of the Space Sensor Layer (SSL), formerly named Missile Defense Tracking System.

The SSL program is a collaborative effort between the Missile Defense Agency (MDA), Defense Advanced Research Projects Agency (DARPA), Space Development Agency (SDA) and the USAF to develop the capability to detect and track evolving threats. Beginning in FY20, funds for continuing SSL efforts are included in the SDA and DARPA budget.

A. Mission Description and Budget Item Justification

This program element primarily funds the Spacebased Kill Assessment (SKA) project, a Missile Defense Agency (MDA) experiment, demonstrating kill assessment from space. MDA Aegis BMD (Ballistic Missile Defense) program intercept testing experience provided a solid understanding of kill assessment physics.

Several events set the stage for the kill assessment experiment that later became known as SKA:
- Section 237 in the FY 2014 National Defense Authorization Act directed MDA to improve kill assessment for the GMD program with an initial kill assessment capability by December 31, 2019
- An MDA study called the Space Layer Option Study found that disaggregated systems could provide sensor capabilities at lower costs
- A once in a decade opportunity became available when the commercial sector offered hosted payload services at costs far below what MDA could expect if it used traditional DOD space acquisition models

SKA incorporates Government Accountability Office (GAO) recommendations to examine the operational feasibility of disaggregating large satellites (report number GAO-15-7) and to provide data for the business case for shared or dedicated satellite control, including the ground antenna networks (report number GAO-13-315). The favorable cost and schedule performance on SKA is also consistent with the GAO's assessment of commercially hosted payload programs (report number GAO-18-493). The SKA experiment will utilize a network of small IR sensors integrated onto commercial host satellites which, while on orbit, will observe missile defense

intercepts and deliver a kill assessment declaration to the BMDS. SKA has the opportunity to change the economics of the defense of the American homeland from enemy missiles.

Space Sensor Layer: In FY 2019 the MDA, in collaboration with U.S. Air Force, Defense Advanced Research Projects Agency (DARPA), and the Space Development Agency (SDA) is defining a capabilities-based spiral acquisition space program, referred to as the Space Sensor Layer (SSL). SSL is an integral part of a resilient, multi-tiered Overhead Persistent Infrared (OPIR) Enterprise Architecture. This multi-tiered architecture will consist of systems in different orbits that provide and integrated capability to meet critical warfighter requirements in a contested space environment.

This program element also funds Cyber Security efforts necessary to support BMDS Space Programs.

B. Program Change Summary ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	30.994	16.484	19.555	-	19.555
Current President's Budget	45.123	94.484	27.565	-	27.565
Total Adjustments	14.129	78.000	8.010	-	8.010
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	78.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	13.500	0.000			
• SBIR/STTR Transfer	-0.533	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	1.162	0.000	8.010	-	8.010

Change Summary Explanation

Increase in FY 2018 from PB19 to PB20 reflects the Omnibus Above Threshold Reprogramming which provided funding to support the Space Sensor Layer (SSL).

Increase in FY 2019 from PB19 to PB20 reflects congressional plus ups for SSL development ($73.000 million) and funding Cyber Security Initiatives ($5.000 million) as outlined in Public Law 115-245.

Increase in FY 2020 from PB19 to PB20 provides the conversion of an experimental SKA to an operational SKA by replacing the administrative quality communications lines with ruggedized, BMDS-quality communications lines, BMDS integration for operationalization, and adds a training capability necessary for the new operators in the Missile Defense Integration and Operations Center (MDIOC) Payload Analysis Center.

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 1206895C / *Ballistic Missile Defense System Space Programs*	Project (Number/Name) MD33 / *MD Space Exp Center (MDSEC)*	

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
MD33: *MD Space Exp Center (MDSEC)*	-	43.905	15.745	26.013	-	26.013	19.851	19.131	19.433	20.026	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The increase from FY 2019 to FY 2020 provides the conversion of an experimental SKA to an operational SKA by replacing the administrative quality communications lines with ruggedized, BMDS-quality communications lines, BMDS integration for operationalization, and adds a training capability necessary for the new operators in the Missile Defense Integration and Operations Center (MDIOC) Payload Analysis Center.

A. Mission Description and Budget Item Justification

The SKA system is composed of two segments: a space segment and a ground segment.
- The space segment is composed of a network of small infrared (IR) sensors (sensors, processor cards and cabling), each mated to a different satellite. The total number of sensors and their network placement are specifically tailored for the kill assessment mission. The space segment includes key design features to improve its resiliency.
- The ground segment is a small network of desktop computers, servers and routers that monitor the health of the on-orbit sensors, command the sensors to perform the kill assessment mission and analyze the data to make a kill assessment determination for the Ballistic Missile Defense System (BMDS). The ground segment also includes the equipment necessary for communications security and information assurance. The Missile Defense Space Center (MDSC) is the communications hub for SKA data, routing SKA data between the commercial payload integrator and the SKA Payload Analysis Center.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020
Title: Spacebased Kill Assessment	16.405	15.745	26.013
Articles:	-	-	-
Description: The SKA project is an experimental system designed to demonstrate kill assessment for Homeland Defense. It includes: - SKA sensor-host satellite integration and testing - On-orbit operations by experimenting and participating in BMDS flight tests - Analysis of operations and test data to inform future decision to add SKA to BMDS operational baseline - Development of kill assessment algorithms required to add SKA to the operational BMDS - Supporting engineering trade studies and concept evaluations for current and future space based sensors Specific and/or unique accomplishments to each FY are as follows:			

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 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD33 / *MD Space Exp Center (MDSEC)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020
FY 2019 Plans: - Complete on-orbit checkout, calibration and commissioning of the sensor network - Begin development of capability for ground test participation required to add SKA to the operational BMDS - Begin integration support required to add SKA to the operational BMDS - Build out SKA Payload Analysis Center at the MDIOC ***FY 2020 Plans:*** - Continue on-orbit operations by experimenting and participating in BMDS flight tests - Continue development of kill assessment algorithms required to add SKA to the operational BMDS - Continue development of capability for ground test participation required to add SKA to the operational BMDS - Begin network upgrades and an operational training program - Complete build out of SKA Payload Analysis Center at the MDIOC ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase from FY 2019 to FY 2020 provides the conversion of an experimental SKA to an operational SKA by replacing the administrative quality communication lines with ruggedized, BMDS-quality communication lines, BMDS integration for operationalization, and a training capability necessary for the new operators at the MDIOC Payload Analysis Center.			
Title: Space Sensor Layer (SSL) ***Articles:*** ***Description:*** Space Sensor Layer (SSL) is a future space-based missile tracking sensor/system concept to address warfighter requirements. The goal of this effort is to develop prototype space sensor concepts to: -Detect and track traditional and emerging threats -Support Missile Warning (MW)/Missile Defense (MD) mission -Leverage inherent multi-domain capabilities to provide as capable support to the Overhead Persistent Infrared (OPIR) Enterprise Specific and/or unique accomplishments to each FY are as follows: ***FY 2019 Plans:*** FY 2019 Space Sensor Layer effort is funded in Budget Project MD37 ***FY 2020 Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:***	27.500 -	0.000 -	0.000 -

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 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD33 / *MD Space Exp Center (MDSEC)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020
The SSL program is a collaborative effort between the Missile Defense Agency (MDA), Defense Advanced Research Projects Agency (DARPA), Space Development Agency (SDA) and the USAF to develop the capability to detect and track evolving threats. Beginning in FY20, funds for continuing SSL efforts are in the SDA and DARPA budget.			
Accomplishments/Planned Programs Subtotals	43.905	15.745	26.013

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
• 0603882C: *Ballistic Missile Defense Midcourse Defense Segment*	1,153.263	803.359	1,156.506	-	1,156.506	829.451	766.237	834.533	776.671	Continuing	Continuing
• 0603884C: *Ballistic Missile Defense Sensors*	290.289	385.375	283.487	-	283.487	296.098	263.681	276.092	351.607	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
• 0603904C: *Missile Defense Integration and Operations Center (MDIOC)*	51.905	58.125	56.161	-	56.161	57.446	58.574	61.144	62.339	Continuing	Continuing
• 0603914C: *Ballistic Missile Defense Test*	406.806	515.897	395.924	-	395.924	417.946	335.481	451.723	405.136	Continuing	Continuing
• 0603915C: *Ballistic Missile Defense Targets*	512.838	561.352	554.171	-	554.171	513.964	439.826	358.018	276.108	Continuing	Continuing

Remarks

D. Acquisition Strategy

SKA leverages experience that the Johns Hopkins University Applied Physics Laboratory (JHU/APL) has with its extensive history of performing kill assessment activities and conducting experiments associated with the Aegis BMD program. JHU/APL is the developer of the SKA experiment and its primary subcontractor will be responsible for payload integration and hosting accommodation using a firm fixed price contract to contain costs. The SKA experiment uses a commercial satellite program as the platform host for a DOD payload, taking full advantage of a multi-billion dollar space and ground system that already exists.

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 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD33 / *MD Space Exp Center (MDSEC)*

E. Performance Metrics

N/A

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 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD33 / *MD Space Exp Center (MDSEC)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Spacebased Kill Assessment - Development and Experimentation	C/CPFF	JHU/APL : Laurel, MD	0.000	14.729	Nov 2017	9.447	Nov 2018	9.814	Nov 2019	-		9.814	Continuing	Continuing	Continuing
Spacebased Kill Assessment - Experimental Ops Team	C/CPFF	JHU/APL : Laurel, MD	0.000	0.000		1.056	Nov 2018	1.082	Nov 2019	-		1.082	Continuing	Continuing	Continuing
Spacebased Kill Assessment - Integrate SKA into BMDS Comms Network	C/TBD	TBD : Various	0.000	0.000		0.000		4.353	Dec 2019	-		4.353	Continuing	Continuing	Continuing
Spacebased Kill Assessment - MDSC Support	C/CPFF	Northrop Grumman : Schriever AFB, CO	0.000	0.185	Apr 2018	0.744	Nov 2018	0.284	Nov 2019	-		0.284	Continuing	Continuing	Continuing
Spacebased Kill Assessment - Post Intercept Assessment	C/CPFF	JHU/APL : Laurel, MD	0.000	0.000		0.000		2.273	Nov 2019	-		2.273	Continuing	Continuing	Continuing
Spacebased Kill Assessment - Transition To Ops	C/Various	Various : MDA CO, AL	0.000	0.000		0.634	Nov 2018	2.056	Nov 2019	-		2.056	Continuing	Continuing	Continuing
Spacebased Kill Assessment - Transition to Ops (PRIME)	C/CPFF	JHU/APL : Laurel, MD	0.000	0.000		2.573	Nov 2018	4.223	Nov 2019	-		4.223	Continuing	Continuing	Continuing
Space Sensor Layer (SSL) - Ground Segment	TBD	Jacobs : CO	0.000	3.798	Apr 2018	0.000		0.000		-		0.000	0.000	3.798	3.800
Space Sensor Layer (SSL) - Space Prototype Concept Activity	MIPR	SMC SpEC OTA : Various	0.000	7.207	Mar 2018	0.000		0.000		-		0.000	0.000	7.207	0.400
		Subtotal	0.000	25.919		14.454		24.085		-		24.085	Continuing	Continuing	N/A

Remarks

N/A

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 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD33 / *MD Space Exp Center (MDSEC)*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Spacebased Kill Assessment - Contract Support Services (CSS)	C/Various	Various : CO, VA	0.000	0.355	Nov 2017	0.193	Nov 2018	0.499	Nov 2019	-		0.499	Continuing	Continuing	Continuing
Spacebased Kill Assessment - FFRDC	FFRDC	Various : CO, AL, MD, VA, CA	0.000	0.786	Nov 2017	0.791	Nov 2018	0.739	Nov 2019	-		0.739	Continuing	Continuing	Continuing
Spacebased Kill Assessment - IT User Services	C/CPAF	Northrop Grumman : AK, CA, CO, HI, NM, VA	0.000	0.046	Nov 2017	0.053	Nov 2018	0.054	Nov 2019	-		0.054	Continuing	Continuing	Continuing
Spacebased Kill Assessment - MDA Civilian	Allot	MDA : VA	0.000	0.222	Oct 2017	0.217	Oct 2018	0.217	Oct 2019	-		0.217	Continuing	Continuing	Continuing
Spacebased Kill Assessment - Program Mission Support	C/Various	Various : CO, AL, MD, VA	0.000	0.082	Nov 2017	0.037	Oct 2018	0.419	Oct 2019	-		0.419	Continuing	Continuing	Continuing
Space Sensor Layer (SSL) - Contract Support Services (CSS)	C/CPFF	Various : CO, AL, VA	0.000	4.805	Feb 2018	0.000		0.000		-		0.000	0.000	4.805	3.600
Space Sensor Layer (SSL) - FFRDC	MIPR	Various : CA, CO, NM, VA	0.000	6.766	Mar 2018	0.000		0.000		-		0.000	0.000	6.766	3.500
Space Sensor Layer (SSL) - MDA Civilian	Allot	MDA : CO, AL, VA	0.000	0.744	Feb 2018	0.000		0.000		-		0.000	0.000	0.744	1.150
Space Sensor Layer (SSL) - Program Mission Support	C/Various	Various : CO, AL, VA	0.000	0.978	Feb 2018	0.000		0.000		-		0.000	0.000	0.978	0.500
Space Sensor Layer (SSL) - UARC	C/CPFF	Various : UT, MD	0.000	3.202	Feb 2018	0.000		0.000		-		0.000	0.000	3.202	1.050
		Subtotal	0.000	17.986		1.291		1.928		-		1.928	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	0.000	43.905		15.745		26.013		-		26.013	Continuing	Continuing	N/A

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 1206895C / *Ballistic Missile Defense System Space Programs*	Project (Number/Name) MD33 / *MD Space Exp Center (MDSEC)*	

	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.

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 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD33 / *MD Space Exp Center (MDSEC)*

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			
SKA Experimentation - 1Q2018-4Q2018	✦	✦	✦	✦																								
SKA Launch Campaign		✦	✦	✦																								
Future System Prototype Design Activity		✦	✦	✦																								
SKA On-Orbit Check-out		✧	✧	✧	✧	✧																						
JFTM-05 E1 (JAPAN, DT Intercept Flight Test)				▲																								
JFTM-05 E2 (JAPAN, DT Intercept Flight Test)				▲																								
SKA Experimentation - 1Q2019-4Q2019					✧	✧	✧	✧																				
SKA Experimentation - 1Q2020-4Q2020									✧	✧	✧	✧																
BMDS Integration									✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧				
FTM-44 (AEGIS 5.1, DT Intercept Flight Test)										△																		
FTM-30 (AEGIS 5.1, DT/OT Intercept Flight Test)												△																
FTO-03 (OTA, OT Intercept Flight Test)												△																
SKA Experimentation - 1Q2021-4Q2021													✧	✧	✧	✧												
JFTM-07 E1 (JAPAN, DT Intercept Flight Test)														△														
JFTM-07 E2 (JAPAN, DT Intercept Flight Test)														△														
FTT-21 (TH, DT Intercept Flight Test)														△														
FTX-26 (OT) (SN, OT Target Only Flight Test)															△													
SKA Experimentation - 1Q2022-4Q2022																	✧	✧	✧	✧								
GM CTV-03+ (GM, DT Interceptor Only Flight Test)																		△										
FTM-38 (AEGIS 5.0, DT/OT Intercept Flight Test)																				△								
FTG-17 (GM, DT Intercept Flight Test)																					△							
FTM-37 (OT) (AEGIS 5.1, OT Intercept Flight Test)																					△							
SKA Experimentation - 1Q2023-4Q2023																					✧	✧	✧	✧				
FTG-18 (GM, DT/OT Intercept Flight Test)																									△			

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 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD33 / *MD Space Exp Center (MDSEC)*

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			
FTX-38 (AEGIS 5.1, DT Target Only Flight Test)																									△			
SKA Experimentation - 1Q2024-4Q2024																									✧	✧	✧	✧
FTG-19 (GM, DT/OT Intercept Flight Test)																												

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 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD33 / *MD Space Exp Center (MDSEC)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
SKA Experimentation - 1Q2018-4Q2018	1	2018	4	2018
SKA Launch Campaign	2	2018	4	2018
Future System Prototype Design Activity	2	2018	4	2018
SKA On-Orbit Check-out	2	2018	2	2019
JFTM-05 E1 (JAPAN, DT Intercept Flight Test)	4	2018	4	2018
JFTM-05 E2 (JAPAN, DT Intercept Flight Test)	4	2018	4	2018
SKA Experimentation - 1Q2019-4Q2019	1	2019	4	2019
SKA Experimentation - 1Q2020-4Q2020	1	2020	4	2020
BMDS Integration	1	2020	4	2023
FTM-44 (AEGIS 5.1, DT Intercept Flight Test)	2	2020	2	2020
FTM-30 (AEGIS 5.1, DT/OT Intercept Flight Test)	4	2020	4	2020
FTO-03 (OTA, OT Intercept Flight Test)	4	2020	4	2020
SKA Experimentation - 1Q2021-4Q2021	1	2021	4	2021
JFTM-07 E1 (JAPAN, DT Intercept Flight Test)	2	2021	2	2021
JFTM-07 E2 (JAPAN, DT Intercept Flight Test)	2	2021	2	2021
FTT-21 (TH, DT Intercept Flight Test)	2	2021	2	2021
FTX-26 (OT) (SN, OT Target Only Flight Test)	3	2021	3	2021
SKA Experimentation - 1Q2022-4Q2022	1	2022	4	2022
GM CTV-03+ (GM, DT Interceptor Only Flight Test)	2	2022	2	2022
FTM-38 (AEGIS 5.0, DT/OT Intercept Flight Test)	4	2022	4	2022
FTG-17 (GM, DT Intercept Flight Test)	1	2023	1	2023
FTM-37 (OT) (AEGIS 5.1, OT Intercept Flight Test)	1	2023	1	2023

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 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD33 / *MD Space Exp Center (MDSEC)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
SKA Experimentation - 1Q2023-4Q2023	1	2023	4	2023
FTG-18 (GM, DT/OT Intercept Flight Test)	1	2024	1	2024
FTX-38 (AEGIS 5.1, DT Target Only Flight Test)	1	2024	1	2024
SKA Experimentation - 1Q2024-4Q2024	1	2024	4	2024
FTG-19 (GM, DT/OT Intercept Flight Test)	1	2025	1	2025

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 1206895C / *Ballistic Missile Defense System Space Programs*	Project (Number/Name) MD37 / *Space Sensor Layer*	

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
MD37: *Space Sensor Layer*	-	0.000	73.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	73.000
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2019, this program element received a $73.000 million congressional plus up for development of the Space Sensor Layer (SSL), formerly named Missile Defense Tracking System.

The SSL program is a collaborative effort between the Missile Defense Agency (MDA), Defense Advanced Research Projects Agency (DARPA), Space Development Agency (SDA) and the USAF to develop the capability to detect and track evolving threats. Beginning in FY20, funds for continuing SSL efforts are in the SDA and DARPA budget.

A. Mission Description and Budget Item Justification

The Space Sensor Layers (SSL) priority is to maintain the pace of the development schedule to meet the urgent warfighter need to address rapidly developing threats. To meet this priority, SSL must use high technology readiness level components, take advantage of existing government capabilities to minimize development, use a management culture that does not slow down the pace of development and use Other Transaction Agreements (OTA) to minimize contracting cycle times. OTAs allow the Government to work with traditional, non-traditional, and New Space businesses to identify innovative solutions.

The SSL requirements are derived from Unites States Strategic Command (USSTRATCOM) Prioritized Capabilities List (PCL), the National Defense Authorization Act for Fiscal Year 2019, and DoD requirements from the Joint Requirements Oversight Council (JROC).

The current SSL objectives are as follows:
-Complete multiple, competing Preliminary Concept Reviews (PCR) for prototype constellations at Low-Earth Orbit altitude
-Estimate the costs and schedules for developing the competing prototype systems
-Complete risk reduction activities that will enable the MDA to initiate development of the SSL prototype, if authorized and appropriated.

The primary technical activity in this phase is developing the target signal-to-clutter algorithms. These algorithms will be evaluated in a Signal Chain Processing (SCP) demonstration in which prototype data processing subsystems will process, and distribute the mission data. This activity also includes development of prototype infrared sensor payloads and provides insight into the constellation architecture, communications approach, and preliminary command and control design aspects.

MDA is working concurrently and collaboratively with the Defense Advanced Research Projects Agency (DARPA), the U.S. Air Force, and the Space Development Agency (SDA). DARPA's and SMC's research focuses on spacecraft design, constellation management, and improving industrial production capacity. MDA's research focuses on developing payloads and signal chain processing to detect and track missile targets of interest.

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 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD37 / *Space Sensor Layer*

Like other MDA space sensors, SSL is planned to integrate with the existing Joint OPIR Ground (JOG) architecture for mission tasking and data distribution. This OPIR enterprise architecture will be integrated with the terrestrial Ballistic Missile Defense System (BMDS) sensors to improve missile defense architecture capabilities.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020
Title: Space Sensor Layer	0.000	73.000	0.000
Articles:	-	-	-
Description: Space Sensor Layer (SSL) is a future space-based missile tracking sensor/system concept to address warfighter requirements. The goal of this effort is to develop prototype space sensor concepts to: -Detect and track traditional and emerging threats -Support Missile Warning (MW)/Missile Defense (MD) mission -Leverage inherent multi-domain capabilities to provide as capable support to the Overhead Persistent Infrared (OPIR) Enterprise Specific and/or unique accomplishments to each FY are as follows: ***FY 2019 Plans:*** -Complete the concept design and systems engineering for a space-based network of Infrared (IR) sensors capable of detecting and tracking traditional and emerging targets of interest. -Develop prototype payload concepts and conduct a signal-chain processing demonstration to reduce risk -Implement an extensible and modular prototype concept that supports technology insertion capabilities ***FY 2020 Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** The SSL program is a collaborative effort between the Missile Defense Agency (MDA), Defense Advanced Research Projects Agency (DARPA), Space Development Agency (SDA) and the USAF to develop the capability to detect and track evolving threats. Beginning in FY20, funds for continuing SSL efforts are included in the SDA and DARPA budget.			
Accomplishments/Planned Programs Subtotals	0.000	73.000	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
• 0603890C: *BMD Enabling Programs*	533.993	620.831	571.507	-	571.507	603.672	541.667	574.553	553.969	Continuing	Continuing
• 0604181C: *Hypersonic Defense*	63.032	130.944	157.425	-	157.425	142.391	116.931	119.780	122.078	0.000	852.581

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 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD37 / *Space Sensor Layer*

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
• 1206893C: *Space Tracking and Surveillance System (STSS)*	35.008	36.955	35.849	-	35.849	35.623	36.334	37.235	37.966	Continuing	Continuing

Remarks

D. Acquisition Strategy

The SSL acquisition approach delivers a warfighting capability in stages called spirals. Each spiral is of limited duration, capability focused, and allows the first SSL spiral to maintain schedule and allows future spirals to add new technology and capabilities when ready.

E. Performance Metrics

N/A

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 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD37 / *Space Sensor Layer*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Space Sensor Layer - Space Prototype Concept Activity	MIPR	SMC SpEC OTA : Various	0.000	0.000		60.160	Jun 2019	0.000		-		0.000	0.000	60.160	60.160
		Subtotal	0.000	0.000		60.160		0.000		-		0.000	0.000	60.160	N/A

Remarks

The SSL program is a collaborative effort between the Missile Defense Agency (MDA), Defense Advanced Research Projects Agency (DARPA), Space Development Agency (SDA) and the USAF to develop the capability to detect and track evolving threats. Beginning in FY20, funds for continuing SSL efforts are included in the SDA and DARPA budget

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Space Sensor Layer - Contract Support Services (CSS)	C/Various	Various : CO, AL	0.000	0.000		2.640	Jun 2019	0.000		-		0.000	0.000	2.640	2.640
Space Sensor Layer - FFRDC	MIPR	Various : CO, CA, NM	0.000	0.000		4.472	Jun 2019	0.000		-		0.000	0.000	4.472	4.472
Space Sensor Layer - MDA Civilian	Allot	MDA : CO	0.000	0.000		1.376	Nov 2018	0.000		-		0.000	0.000	1.376	1.376
Space Sensor Layer - Program Mission Support	Various	Various : CO	0.000	0.000		0.289	Dec 2018	0.000		-		0.000	0.000	0.289	0.289
Space Sensor Layer - Threat Modeling	C/TBD	TBD : CO, AL	0.000	0.000		3.000	Mar 2019	0.000		-		0.000	0.000	3.000	3.000
Space Sensor Layer - UARC	C/CPFF	Space Dynamics Lab : CO, UT	0.000	0.000		1.063	Jun 2019	0.000		-		0.000	0.000	1.063	1.063
		Subtotal	0.000	0.000		12.840		0.000		-		0.000	0.000	12.840	N/A

Remarks

The SSL program is a collaborative effort between the Missile Defense Agency (MDA), Defense Advanced Research Projects Agency (DARPA), Space Development Agency (SDA) and the USAF to develop the capability to detect and track evolving threats. Beginning in FY20, funds for continuing SSL efforts are included in the SDA and DARPA budget

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 1206895C / *Ballistic Missile Defense System Space Programs*	Project (Number/Name) MD37 / *Space Sensor Layer*	

	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	0.000	0.000		73.000		0.000		-		0.000	0.000	73.000	N/A

Remarks

Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.

The SSL program is a collaborative effort between the Missile Defense Agency (MDA), Defense Advanced Research Projects Agency (DARPA), Space Development Agency (SDA) and the USAF to develop the capability to detect and track evolving threats. Beginning in FY20, funds for continuing SSL efforts are included in the SDA and DARPA budget

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 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD37 / *Space Sensor Layer*

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			
Prototype Concept Development					✧	✧	✧	✧	✧	✧	✧																	
Other Transaction Award							△																					
Signal Chain Processing Demonstration											△																	
Preliminary Concept Review											△																	

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 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD37 / *Space Sensor Layer*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Prototype Concept Development	1	2019	3	2020
Other Transaction Award	3	2019	3	2019
Signal Chain Processing Demonstration	3	2020	3	2020
Preliminary Concept Review	3	2020	3	2020

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 1206895C / *Ballistic Missile Defense System Space Programs*	Project (Number/Name) MC33 / *MD Space Exp Center (MDSEC)*	

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
MC33: *MD Space Exp Center (MDSEC)*	-	0.469	5.000	0.380	-	0.380	0.390	0.400	0.410	0.420	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Decrease from FY 2019 to FY 2020 reflects completion of cyber security projects and executing steady-state support to meet cyber security requirements

A. Mission Description and Budget Item Justification

Ballistic Missile Defense System (BMDS) Space Programs Cyber Operations sustain the Missile Defense Agency (MDA) Risk Management Framework (RMF) and Security Controls Assessments (SCA)/Controls Validation Testing (CVT) activities, analysis of validation results, risk assessments and reviews of proposed Program Manager/Information System Security Manager (PM/ISSM) Plans of Action and Milestones (POA&Ms) for BMDS Space Program mission systems. Activities in this Project are necessary to comply with the Federal Information Security Management Act (FISMA).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020
Title: Network/System Certification and Accreditation (C&A)	0.469	5.000	0.380
Articles:	-	-	-
Description: This activity maintains the Assessment and Authorization (A&A) and C&A data repository, capturing the RMF documentation (artifacts, validation results, and Information Assurance Risk Assessment results, and Designated Approving Authority (DAA) accreditation decisions) and POA&Ms on all MDA information systems. This activity prepares and submits C&A documentation and accreditation recommendations to the MDA Chief Information Officer (CIO) /Certification Authority and the DAA. Independent Verification and Validation team actions ensure the availability, integrity, authentication, confidentiality, and non-repudiation of the MDA mission, test, and administrative systems. Recurring accomplishments include the following: - Monitor and track cybersecurity and mitigations detailed in Information Technology security POA&Ms - Conduct cybersecurity design, engineering, and architecture planning for information technology systems - Plan and test the cybersecurity controls for space systems - Conduct SCA testing continuous monitoring of mission systems and provide POA&Ms to mitigate cybersecurity vulnerabilities Specific and/or unique accomplishments to each FY are as follows:			
FY 2019 Plans: In addition to the above activities, the FY 2019 Congressional Plus-Up will also provide the following activities -Further strengthening of BMDS Space systems Risk Management Framework posture -Study and design of cloud-based cyber solutions -Improving compliance with DoD Cyber Scorecard			

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 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MC33 / *MD Space Exp Center (MDSEC)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020
-Expanding PKI implementation ***FY 2020 Plans:*** See above ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease from FY 2019 to FY 2020 reflects completion of cyber security projects and executing steady-state support to meet cyber security requirements.			
Accomplishments/Planned Programs Subtotals	0.469	5.000	0.380

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Missile Defense Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MC33 / *MD Space Exp Center (MDSEC)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Network/System Certification and Accreditation (C&A) - CORE Upgrade	C/CPFF	Northrop Grumman : Schriever AFB, CO	0.000	0.000		0.900	Jan 2019	0.000		-		0.000	0.000	0.900	0.000
Network/System Certification and Accreditation (C&A) - Contractor Support Services (CSS)	C/Various	Various : AL, CO, MD	0.000	0.469	Apr 2018	0.808	Dec 2018	0.380	Nov 2019	-		0.380	Continuing	Continuing	Continuing
Network/System Certification and Accreditation (C&A) - MDSEA Solutions	C/CPFF	Jacobs : Schriever AFB, CO	0.000	0.000		1.751	Feb 2019	0.000		-		0.000	0.000	1.751	0.000
Network/System Certification and Accreditation (C&A) - Network/Comm Assurance	Various	Various : Various	0.000	0.000		0.796	Apr 2019	0.000		-		0.000	0.000	0.796	0.000
Network/System Certification and Accreditation (C&A) - SKA Communications	C/CPFF	JHU/APL : MD	0.000	0.000		0.745	Feb 2019	0.000		-		0.000	0.000	0.745	0.000
		Subtotal	0.000	0.469		5.000		0.380		-		0.380	Continuing	Continuing	N/A

Remarks

MC33 budget project added to account for emerging Cyber requirements

	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	0.000	0.469		5.000		0.380		-		0.380	Continuing	Continuing	N/A

Remarks

Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.

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 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MC33 / *MD Space Exp Center (MDSEC)*

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			
MC33 Cyber Operations	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧

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 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MC33 / *MD Space Exp Center (MDSEC)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
MC33 Cyber Operations	1	2018	4	2024

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 1206895C / *Ballistic Missile Defense System Space Programs*	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*	-	0.749	0.739	1.172	-	1.172	0.995	0.952	1.029	1.051	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Wide Support (PWS) is allocated on a pro-rata basis across multiple Agency PE's each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.

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; Facilities Sustainment, Restoration and Modernization (SRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; 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.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020
Title: Program Wide Support	0.749	0.739	1.172
Articles:	-	-	-
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; Facilities Sustainment, Restoration and Modernization (SRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; 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.			

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 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD40 / *Program-Wide Support*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020
FY 2019 Plans: - SEE ABOVE. ***FY 2020 Plans:*** - SEE ABOVE. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase from FY 2019 to FY 2020 reflects the PWS allocation on a pro-rata basis across multiple Agency PE's each fiscal year based on the total Agency budget, and therefore fluctuates per PE by fiscal year.			
Accomplishments/Planned Programs Subtotals	0.749	0.739	1.172

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Missile Defense Agency			Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD40 / *Program-Wide Support*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Operations Management	C/CPAF	Various Multi: AL, CA, : CO, VA	0.000	0.050	Dec 2017	0.011	Jul 2019	0.018	Jul 2020	-		0.018	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various; Multi AL, CO, : VA	0.000	0.699	Dec 2017	0.728	Apr 2019	1.154	Jul 2020	-		1.154	Continuing	Continuing	Continuing
		Subtotal	0.000	0.749		0.739		1.172		-		1.172	Continuing	Continuing	N/A

Remarks

N/A

	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.749		0.739		1.172		-		1.172	Continuing	Continuing	N/A

Remarks

Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.

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 1206895C / *Ballistic Missile Defense System Space Programs*	**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	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧

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 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD40 / *Program-Wide Support*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
MD40 Program-Wide Support	1	2018	4	2024