Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Missile Defense Agency	Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	68.268	139.887	162.068	292.811	-	292.811	-	-	-	-	-	-
MD24: *Test Support*	-	0.239	0.000	0.000	-	0.000	-	-	-	-	-	-
MD33: *MD Space Exp Center (MDSEC)*	61.310	24.967	30.408	30.066	-	30.066	-	-	-	-	-	-
MD42: *Hypersonic & Ballistic Tracking Space Sensor (HBTSS) Prototyping*	-	108.139	130.000	256.222	-	256.222	-	-	-	-	-	-
MC33: *MD Space Exp Center (MDSEC)*	5.469	5.370	0.386	1.358	-	1.358	-	-	-	-	-	-
MD40: *Program-Wide Support*	1.489	1.172	1.274	5.165	-	5.165	-	-	-	-	-	-

Program MDAP/MAIS Code: 362

Note

In FY 2019, the Hypersonic and Ballistic Tracking Space Sensor (HBTSS), formerly called the Space Sensor Layer (SSL) effort was funded in Budget Project MD37. Beginning in FY 2020, HBTSS was funded in Budget Project MD42. FY 2019, FY 2020, and FY 2021 funding was provided via Congressional plus up.

Increase from FY 2021 to FY 2022 provides for HBTSS spacecraft bus procurement and associated Assembly, Integration and Test (AI&T) activities, initiates supporting on-orbit test and calibration support activities, acquiring launch services through Space Force Space Systems Command (SSC) for testing of HBTSS in an operationally representative orbit, and funding for cyber activities in support of HBTSS.

A. Mission Description and Budget Item Justification

Spacebased Kill Assessment (SKA): The SKA project will deliver hit and kill assessment from space. Missile Defense Agency (MDA) Missile Defense System (MDS) intercept testing experience provided a solid understanding of kill assessment physics to enable exploration of this critical capability. 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 utilizes a network of small Infrared (IR) sensors integrated onto commercial host satellites that while on orbit observe missile defense intercepts and deliver hit and kill assessment declarations to the MDS. After successful participation in MDS Flight Tests in FY 2019, the MDA Director made the decision to begin transition of SKA to an operational element of the MDS.

Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Missile Defense Agency	Date: May 2021
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*

HBTSS: HBTSS is a schedule-focused, cost-constrained capability that will detect and track hypersonic threats and boosting conventional ballistic missiles. The key characteristic of HBTSS that sets it apart from other Overhead Persistent Infrared (OPIR) sensors is the requirement to provide fire-control quality tracking data. This information will be handed off to the MDS hypersonic weapons systems to allow long range engagement of the threat and the enhanced tracking accuracy, through missile burn out, will provide the warfighter increased missile defense weapons systems engagement capability and higher accuracy impact predictions. The requirement for fire-control data necessitates that HBTSS be highly sensitive, low-latency, high quality of service system. MDA is collaborating with the U.S. Space Force, under the leadership of the Chief of Space Operations, and the Space Development Agency to deploy HBTSS as an element within the larger OPIR enterprise architecture.

This PE also funds Cybersecurity efforts necessary to support BMDS Space Programs.

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	140.565	32.068	28.591	-	28.591
Current President's Budget	139.887	162.068	292.811	-	292.811
Total Adjustments	-0.678	130.000	264.220	-	264.220
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	120.000			
• Congressional Directed Transfers	0.000	10.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.678	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.000	0.000	264.220	-	264.220

Change Summary Explanation

Increase in FY 2021 provides Congressional add for Hypersonic and Ballistic Tracking Space Sensor (HBTSS) and a transfer from Space Technology Development and Prototyping for HBTSS.

Increase in FY 2022 provides for HBTSS development, Spacebased Kill Assessment (SKA) integration and operationalization, and for MD Program Wide Support.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Missile Defense Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206895C / *Ballistic Missile Defense System Space Programs*	Project (Number/Name) MD24 / *Test Support*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
MD24: *Test Support*	-	0.239	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

N/A

A. Mission Description and Budget Item Justification

Provides funding for access, scheduling, and assessment support for heavy ion single event effects testing at a specialized federally funded research center facility; Testing series is non-recurring on a small sample lot.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022
Title: Spacebased Kill Assessment	0.239	0.000	0.000
Articles:	-	-	-
Description: Support for heavy ion single event effects testing at a specialized federally funded research center facility. ***FY 2021 Plans:*** N/A ***FY 2022 Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** N/A			
Accomplishments/Planned Programs Subtotals	0.239	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Missile Defense Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD24 / *Test Support*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Spacebased Kill Assessment - Test Support	MIPR	Lawrence Berkeley : Berkeley, California	0.000	0.239	Sep 2020	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	0.000	0.239		0.000		0.000		-		0.000	Continuing	Continuing	N/A

Remarks

N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.239		0.000		0.000		-		0.000	Continuing	Continuing	N/A

Remarks

N/A

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Missile Defense Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD24 / *Test 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 ✧

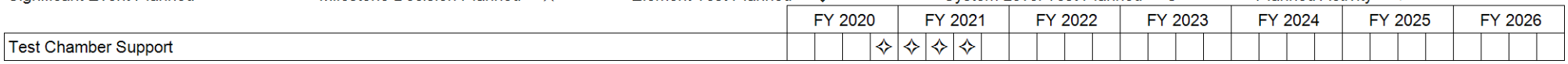

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Missile Defense Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD24 / *Test Support*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Test Chamber Support	4	2020	3	2021

Note

Based on the OUSD(C) FY 2022 President's Budget Submission Guidance, fiscal years covered in the justification material will include FY 2020 through FY 2022. Planned entries in the R4 may continue past FY 2022, out-years will be addressed in future budget submissions.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Missile Defense Agency			Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
MD33: *MD Space Exp Center (MDSEC)*	61.310	24.967	30.408	30.066	-	30.066	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

N/A

A. Mission Description and Budget Item Justification

The Spacebased Kill Assessment (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 hit and kill assessment missions. The space segment includes key design features to improve its resiliency.

The ground segment monitors the health and status of the on-orbit sensors, commands the sensors to perform the hit and kill assessment mission, and analyzes the data to make a hit/kill assessment determination for the Missile Defense System (MDS). The ground segment also includes the equipment necessary for communications security and information assurance. The Missile Defense Space Center (MDSC) provides the critical infrastructure for SKA data, routing SKA data between the commercial payload integrator and the SKA Payload Analysis Center. The operational command and control center for SKA, the Payload Operations Center (POC), will support MDS Post Intercept Assessment (PIA) capabilities.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022
Title: Spacebased Kill Assessment	24.967	30.408	30.066
Articles:	-	-	-
Description: The Spacebased Kill Assessment (SKA) project is designed to deliver hit and kill assessment for Homeland Defense. It includes: - SKA sensor-host satellite integration and testing - On-orbit operations by experimenting and participating in MDS ground and flight tests - Integration of SKA into the MDS operational baseline - Integration of SKA messages into Post Intercept Assessment (PIA) module for delivery to the Warfighter - Development of hit and kill assessment algorithms required to add SKA to the operational MDS			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Missile Defense Agency		Date: May 2021
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 2020	FY 2021	FY 2022
- Supporting engineering trade studies and concept evaluations for current and future space-based sensors Specific and/or unique accomplishments to each Fiscal Year (FY) are as follows: ***FY 2021 Plans:*** - Complete development of modeling and simulation capability for ground test participation required to add SKA to the operational MDS - Begin to participate in MDS ground testing to support operational declaration - Transition to POC for SKA operations - Complete operational network upgrades and training program ***FY 2022 Plans:*** - Complete development of the operational hit assessment software code - Continue developing kill assessment and ground test hit assessment algorithms and threat models - Continue to finalize integration of the SKA messages into the MDS operational interface in support of adding SKA capability to the operational all-domain MDS ***FY 2021 to FY 2022 Increase/Decrease Statement:*** N/A			
Accomplishments/Planned Programs Subtotals	24.967	30.408	30.066

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• 0603882C: *Ballistic Missile Defense Midcourse Defense Segment*	1,275.414	1,219.261	745.144	-	745.144	-	-	-	-	-	-
• 0603884C: *Ballistic Missile Defense Sensors*	348.356	265.803	224.750	-	224.750	-	-	-	-	-	-
• 0603892C: *AEGIS BMD*	722.582	877.336	732.512	-	732.512	-	-	-	-	-	-
• 0603896C: *Ballistic Missile Defense Command and Control, Battle Management & Communication*	550.513	645.741	603.448	-	603.448	-	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2022 Missile Defense Agency		Date: May 2021
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)*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• 0603904C: *Missile Defense Integration and Operations Center (MDIOC)*	54.783	55.356	52.403	-	52.403	-	-	-	-	-	-
• 0603914C: *Ballistic Missile Defense Test*	398.939	365.208	362.906	-	362.906	-	-	-	-	-	-
• 0603915C: *Ballistic Missile Defense Targets*	545.764	536.133	553.334	-	553.334	-	-	-	-	-	-

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-3, RDT&E Project Cost Analysis: PB 2022 Missile Defense Agency		Date: May 2021
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 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Spacebased Kill Assessment - Development and Experimentation	C/CPFF	JHU/APL : Laurel, MD	27.505	10.729	Nov 2019	13.179	Nov 2020	11.145	Nov 2021	-		11.145	Continuing	Continuing	Continuing
Spacebased Kill Assessment - Experimental Ops Team	C/CPFF	JHU/APL : Laurel, MD	1.056	1.082	Nov 2019	1.072	Nov 2020	0.000		-		0.000	0.000	3.210	3.210
Spacebased Kill Assessment - Incremental Capability Operations	C/CPFF	Various : Schriever AFB, CO	0.000	0.000		0.000		8.279	Nov 2021	-		8.279	Continuing	Continuing	Continuing
Spacebased Kill Assessment - Integrate SKA into MDS Comms Network	C/CPFF	Jacobs Engineering : Schriever AFB, CO	0.000	0.259	Aug 2020	0.000		0.000		-		0.000	0.000	0.259	0.259
Spacebased Kill Assessment - MDSC Support	C/CPFF	Northrop Grumman : Schriever AFB, CO	0.551	0.047	Nov 2019	0.000		0.000		-		0.000	0.000	0.598	0.598
Spacebased Kill Assessment - Software Assurance	MIPR	DEVCOM : AL	0.000	0.000		0.769	Apr 2021	0.788	Dec 2021	-		0.788	Continuing	Continuing	Continuing
Spacebased Kill Assessment - Transition To Ops (Mission Systems)	C/Various	Various : MDA CO, AL	0.250	7.356	Nov 2019	5.032	Nov 2020	0.000		-		0.000	0.000	12.638	12.638
Spacebased Kill Assessment - Transition to Ops (Developer)	C/CPFF	JHU/APL : Laurel, MD	1.660	3.257	Nov 2019	7.674	Nov 2020	7.135	Nov 2021	-		7.135	Continuing	Continuing	Continuing
Space Sensor Layer (SSL) - Space Sensor Layer (SSL) - Ground Segment	C/CPAF	Jacobs : Schriever AFB	3.798	0.000		0.000		0.000		-		0.000	0.000	3.798	3.798
Space Sensor Layer (SSL) - Space Sensor Layer (SSL) - Space Prototype Concept Activity	MIPR	SMC SpEC OTA : Various	7.207	0.000		0.000		0.000		-		0.000	0.000	7.207	7.207
		Subtotal	42.027	22.730		27.726		27.347		-		27.347	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Missile Defense Agency		Date: May 2021
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 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Spacebased Kill Assessment - Contract Support Services (CSS)	C/Various	Various : CO, VA	0.644	0.874	Nov 2019	1.254	Nov 2020	1.500	Nov 2021	-		1.500	Continuing	Continuing	Continuing
Spacebased Kill Assessment - FFRDC/ UARC	Various	Various : CO, AL, MD, VA, CA	1.539	0.902	Nov 2019	0.927	Nov 2020	0.867	Nov 2021	-		0.867	Continuing	Continuing	Continuing
Spacebased Kill Assessment - IT User Services	C/CPAF	Northrop Grumman : AK, CA, CO, HI, NM, VA	0.046	0.054	Nov 2019	0.054	Nov 2020	0.054	Dec 2021	-		0.054	Continuing	Continuing	Continuing
Spacebased Kill Assessment - MDA Civilian	Allot	MDA : VA	0.452	0.219	Oct 2019	0.220	Oct 2020	0.156	Oct 2021	-		0.156	Continuing	Continuing	Continuing
Spacebased Kill Assessment - Program Mission Support	C/Various	Various : CO, AL, MD, VA	0.107	0.188	Oct 2019	0.227	Oct 2020	0.142	Nov 2021	-		0.142	Continuing	Continuing	Continuing
Space Sensor Layer (SSL) - Space Sensor Layer (SSL) - Contract Support Services (CSS)	C/CPFF	Various : CO, AL	4.805	0.000		0.000		0.000		-		0.000	0.000	4.805	4.805
Space Sensor Layer (SSL) - Space Sensor Layer (SSL) - FFRDC	MIPR	Various : CA, CO, NM, VA	6.766	0.000		0.000		0.000		-		0.000	0.000	6.766	6.766
Space Sensor Layer (SSL) - Space Sensor Layer (SSL) - MDA Civilian	Allot	MDA : CO, AL	0.744	0.000		0.000		0.000		-		0.000	0.000	0.744	0.744
Space Sensor Layer (SSL) - Space Sensor Layer	C/Various	Various : CO, AL, VA	0.978	0.000		0.000		0.000		-		0.000	0.000	0.978	0.978

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Missile Defense Agency		Date: May 2021
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 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
(SSL) - Program Mission Support															
Space Sensor Layer (SSL) - Space Sensor Layer (SSL) - UARC	C/CPFF	Various : UT, MD	3.202	0.000		0.000		0.000		-		0.000	0.000	3.202	3.202
		Subtotal	19.283	2.237		2.682		2.719		-		2.719	Continuing	Continuing	N/A

Remarks

N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	61.310	24.967		30.408		30.066		-		30.066	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 2022 Missile Defense Agency		Date: May 2021
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 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
SKA Experimentation - 1Q2020-4Q2020	✦	✦	✦	✦																								
MDS Integration	✦	✦	✦	✦																								
FTM-44 (AEGIS 5.1, DT Intercept Flight Test)					▲																							
MDS Integration Planned					✧	✧	✧	✧	✧	✧	✧	✧																
SKA/PIA Experimentation - 1Q2021-4Q2021					✧	✧	✧	✧																				
FTT-21 (TH, DT Intercept Flight Test)								△																				
FTX-26 (OT) (SN, OT Target Only Flight Test)												△																
SKA/PIA Experimentation - 1Q2022-4Q2022									✧	✧	✧	✧																
GTI-08b Sprint 1 (N/I) (MDS Ground Test)											✧																	

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Missile Defense Agency		Date: May 2021
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 - 1Q2020-4Q2020	1	2020	4	2020
MDS Integration	1	2020	4	2020
FTM-44 (AEGIS 5.1, DT Intercept Flight Test)	1	2021	1	2021
MDS Integration Planned	1	2021	4	2022
SKA/PIA Experimentation - 1Q2021-4Q2021	1	2021	4	2021
FTT-21 (TH, DT Intercept Flight Test)	4	2021	4	2021
FTX-26 (OT) (SN, OT Target Only Flight Test)	4	2022	4	2022
SKA/PIA Experimentation - 1Q2022-4Q2022	1	2022	4	2022
GTI-08b Sprint 1 (N/I) (MDS Ground Test)	3	2022	3	2022

Note

Based on the OUSD(C) FY 2022 President's Budget Submission Guidance, fiscal years covered in the justification material will include FY 2020 through FY 2022. Planned entries in the R4 may continue past FY 2022, out-years will be addressed in future budget submissions.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Missile Defense Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206895C / *Ballistic Missile Defense System Space Programs*	Project (Number/Name) MD42 / *Hypersonic & Ballistic Tracking Space Sensor (HBTSS) Prototyping*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
MD42: *Hypersonic & Ballistic Tracking Space Sensor (HBTSS) Prototyping*	-	108.139	130.000	256.222	-	256.222	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2019 Hypersonic and Ballistic Tracking Space Sensor (HBTSS), formerly called the Space Sensor Layer (SSL), was funded in budget project MD37. Beginning in FY 2020, HBTSS is being funded in budget project MD42.

Increase from FY 2021 to FY 2022 provides for Spacecraft Bus procurement and associated Assembly, Integration and Test (AI&T) activities, initiates on-orbit test and calibration support activities, and acquiring launch services through Space Force Space Systems Command (SSC) for testing of HBTSS in an operationally representative orbit.

A. Mission Description and Budget Item Justification

HBTSS will provide a resilient, flexible, and global capability to detect and track hypersonic threats and boosting conventional ballistic missiles. The fire-control quality tracking data will be handed off to the hypersonic weapons systems to allow long range engagement of the threat while enhanced tracking accuracy through missile burn out will provide the warfighting community increased capability in missile defense weapons systems engagement and higher accuracy impact predictions.

The HBTSS 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, HBTSS 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 Authority (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 HBTSS requirements are derived from United States Strategic Command (USSTRATCOM) Prioritized Capabilities List (PCL), the National Defense Authorization Act for Fiscal Year 2019, and the Joint Requirements Oversight Council (JROC) Capability Development Document (CDD) for Missile Warning (MW)/Missile Defense (MD) Overhead Persistent Infrared (OPIR).

HBTSS developed target signal-to-clutter algorithms and evaluated them in a Signal-chain Processing Demonstration, (SCPD), providing insight into the constellation architecture, communications approach, and preliminary command and control design aspects. These results informed the development of the HBTSS prototype demonstration space vehicles and demonstrated the ability to detect and track dim targets in a cluttered background along with the sensitivity necessary to support the hypersonic kill chain.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Missile Defense Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD42 / *Hypersonic & Ballistic Tracking Space Sensor (HBTSS) Prototyping*

Like other MDA space sensors, HBTSS 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 Missile Defense System (MDS) sensors to improve missile defense architecture capabilities.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022
Title: Hypersonic and Ballistic Tracking Space Sensor (HBTSS)	108.139	130.000	256.222
Articles:	-	-	-

Description: HBTSS is a space-based missile tracking sensor/system program to address warfighter requirements. The goal of this effort is to develop prototype space sensors to:
-Detect and track hypersonic threats as well as boosting conventional ballistic missiles
-Support MW/MD mission
-Support other missions, as capable
-Leverage inherent multi-domain capabilities to provide as capable support to the OPIR Enterprise

Recurring activities include:
- Constellation analysis and mission management design
- Ground Segment Sustainment
- HBTSS program management, oversight, and mission support

Specific and/or unique accomplishments to each Fiscal Year (FY) are as follows:

FY 2021 Plans:
- Continue development of the missile defense HBTSS Phase IIb acquisition consisting of competitive prototyping of demonstration space vehicle designs leading to two Critical Design Reviews
- Continue tracking algorithm maturation
- Commence flight IR sensor payload assembly and integration
- Continue development and implementation of HBTSS ground system

FY 2022 Plans:
- Acquire launch services through SSC to support planned launch date and unique orbital requirements for the MDS mission
- Complete spacecraft bus procurement, assembly, integration, and testing
- Complete ground system implementation and continue integration and testing in support of Phase IIb
- Complete payload(s) development, assembly, integration and test (AI&T)
- Initiate Space Vehicle assembly, integration, and test activities
- Initiate on-orbit test and calibration support activities

FY 2021 to FY 2022 Increase/Decrease Statement:

Exhibit R-2A, RDT&E Project Justification: PB 2022 Missile Defense Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD42 / *Hypersonic & Ballistic Tracking Space Sensor (HBTSS) Prototyping*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022
Increase from FY 2021 to FY 2022 provides for spacecraft bus procurement and associated AI&T activities, initiates on-orbit test and calibration support activities, and acquiring launch services through SSC for testing of HBTSS in an operationally representative orbit.			
Accomplishments/Planned Programs Subtotals	108.139	130.000	256.222

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• 0603890C: *BMD Enabling Programs*	630.196	616.455	595.301	-	595.301	-	-	-	-	-	-
• 0603896C: *Ballistic Missile Defense Command and Control, Battle Management & Communication*	550.513	645.741	603.448	-	603.448	-	-	-	-	-	-
• 0604181C: *Hypersonic Defense*	386.528	272.632	247.931	-	247.931	-	-	-	-	-	-
• 1206893C: *Space Tracking and Surveillance System*	35.469	34.144	15.176	-	15.176	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

The HBTSS acquisition approach delivers a warfighting capability using a phased approach. Each phase has a limited duration, is capability focused, and allows HBTSS to maintain schedule, reduce risk, and add new technology and capabilities when ready.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Missile Defense Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD42 / *Hypersonic & Ballistic Tracking Space Sensor (HBTSS) Prototyping*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Component Testing	MIPR	Lawrence Berkley National Lab : Berkley, CA	0.000	0.139	Aug 2020	0.000		0.000		-		0.000	0.000	0.139	0.139
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Ground Segment	C/Various	Jacobs, Various : CO, MD	0.000	21.904	Feb 2020	20.185	Feb 2021	21.754	Nov 2021	-		21.754	Continuing	Continuing	Continuing
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Launch Services	MIPR	Space Systems Command : CA	0.000	0.000		0.000		110.000	Dec 2021	-		110.000	110.000	220.000	110.000
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Payload Risk Reduction	MIPR	Northrop Grumman : Huntsville, AL	0.000	6.269	Jun 2020	0.000		0.000		-		0.000	0.000	6.269	6.269
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Phase IIa Team 1	C/FFP	Harris Corporation : Various	0.000	3.995	Feb 2020	0.000		0.000		-		0.000	0.000	3.995	3.995
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Phase IIa Team 2	C/FFP	Leidos : San Diego, CA	0.000	3.995	Feb 2020	0.000		0.000		-		0.000	0.000	3.995	3.995
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Phase IIa Team 3	C/FFP	Northrop Grumman : Los Angeles, CA	0.000	4.000	Feb 2020	0.000		0.000		-		0.000	0.000	4.000	4.000
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Phase IIa Team 4	C/FFP	Raytheon : Los Angeles, CA	0.000	3.959	Feb 2020	0.000		0.000		-		0.000	0.000	3.959	3.959
Hypersonic and Ballistic Tracking Space Sensor	C/FFP	L3 Harris : Ft. Wayne, IN	0.000	25.000	Sep 2020	43.100	Jan 2021	42.870	Nov 2021	-		42.870	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Missile Defense Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD42 / *Hypersonic & Ballistic Tracking Space Sensor (HBTSS) Prototyping*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
(HBTSS) - Phase IIb Team 1															
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Phase IIb Team 2	C/FFP	Northrop Grumman : Los Angeles, CA	0.000	25.000	Sep 2020	61.490	Jan 2021	58.100	Nov 2021	-		58.100	Continuing	Continuing	Continuing
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Test Campaign Support	C/TBD	TBD : TBD	0.000	0.000		0.000		8.000	May 2022	-		8.000	Continuing	Continuing	Continuing
		Subtotal	0.000	94.261		124.775		240.724		-		240.724	Continuing	Continuing	N/A

Remarks

N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Contract Support Services (CSS)	C/Various	Various : CO, AL	0.000	4.644	Feb 2020	2.022	Feb 2021	4.955	Nov 2021	-		4.955	Continuing	Continuing	Continuing
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - FFRDC/UARC	Various	Various : CA, CO, AL, NM	0.000	8.205	Feb 2020	2.108	Jun 2021	8.594	Nov 2021	-		8.594	Continuing	Continuing	Continuing
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - MDA Civilian	Allot	MDA : CO, AL	0.000	0.231	Feb 2020	0.495	Feb 2021	1.316	Nov 2021	-		1.316	Continuing	Continuing	Continuing
Hypersonic and Ballistic Tracking Space Sensor (HBTSS) - Program Mission Support	C/Various	Various : CA, CO, AL	0.000	0.798	Feb 2020	0.600	Feb 2021	0.633	Nov 2021	-		0.633	Continuing	Continuing	Continuing
		Subtotal	0.000	13.878		5.225		15.498		-		15.498	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Missile Defense Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD42 / *Hypersonic & Ballistic Tracking Space Sensor (HBTSS) Prototyping*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	108.139		130.000		256.222		-		256.222	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 2022 Missile Defense Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD42 / *Hypersonic & Ballistic Tracking Space Sensor (HBTSS) Prototyping*

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 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
Ground System Development Q2 FY 2020 - Q4 FY 2020		✦	✦	✦																								
Preliminary Concept Review (PCR)				✦	✦																							
Ground System Development Q1 FY 2021 - Q4 FY 2021					✧	✧	✧	✧																				
Long Lead Procurement						✧	✧	✧	✧																			
Spacecraft Bus Procurement						✧	✧	✧	✧	✧																		
Payload Assembly/Integration/Test							✧	✧	✧	✧	✧																	
Critical Design Reviews									△																			
Ground System Development Q1 FY 2022 - Q4 FY 2022									✧	✧	✧	✧																
Payload Calibration Test Review (PCTR)											△																	
Space Vehicle Assembly/Integration/Test												✧																

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Missile Defense Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206895C / *Ballistic Missile Defense System Space Programs*	**Project (Number/Name)** MD42 / *Hypersonic & Ballistic Tracking Space Sensor (HBTSS) Prototyping*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Ground System Development Q2 FY 2020 - Q4 FY 2020	2	2020	4	2020
Preliminary Concept Review (PCR)	4	2020	1	2021
Ground System Development Q1 FY 2021 - Q4 FY 2021	1	2021	4	2021
Long Lead Procurement	2	2021	1	2022
Spacecraft Bus Procurement	2	2021	2	2022
Payload Assembly/Integration/Test	3	2021	3	2022
Critical Design Reviews	1	2022	1	2022
Ground System Development Q1 FY 2022 - Q4 FY 2022	1	2022	4	2022
Payload Calibration Test Review (PCTR)	3	2022	3	2022
Space Vehicle Assembly/Integration/Test	4	2022	4	2022

Note

Based on the OUSD(C) FY 2022 President's Budget Submission Guidance, fiscal years covered in the justification material will include FY 2020 through FY 2022. Planned entries in the R4 may continue past FY 2022, out-years will be addressed in future budget submissions.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Missile Defense Agency			Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
MC33: *MD Space Exp Center (MDSEC)*	5.469	5.370	0.386	1.358	-	1.358	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

N/A

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 2020	FY 2021	FY 2022
Title: Network / System Certification and Accreditation (C&A)	5.370	0.386	1.358
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 Fiscal Year (FY) are as follows:

FY 2021 Plans:
SEE ABOVE

FY 2022 Plans:

Exhibit R-2A, RDT&E Project Justification: PB 2022 Missile Defense Agency		Date: May 2021
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 2020	FY 2021	FY 2022
SEE ABOVE			
FY 2021 to FY 2022 Increase/Decrease Statement: Increase provides for allocation of funding for cyber activities in support of Hypersonic and Ballistic Tracking Space Sensor			
Accomplishments/Planned Programs Subtotals	5.370	0.386	1.358

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Missile Defense Agency		Date: May 2021
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 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 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	1.157	0.000		0.000		0.000		-		0.000	0.000	1.157	1.157
Network / System Certification and Accreditation (C&A) - Contractor Support Services (CSS)	C/Various	Various : AL, CO, MD	1.281	0.817	Nov 2019	0.386	Nov 2020	1.358	Nov 2021	-		1.358	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - MDSEA Solutions	C/CPFF	Jacobs : Schriever AFB, CO	1.106	2.365	Apr 2020	0.000		0.000		-		0.000	0.000	3.471	1.106
Network / System Certification and Accreditation (C&A) - Network/Comm Assurance	Various	Various : Various	0.148	1.665	Mar 2020	0.000		0.000		-		0.000	0.000	1.813	1.648
Network / System Certification and Accreditation (C&A) - SKA Communications	C/CPFF	JHU/APL : MD	0.360	0.000		0.000		0.000		-		0.000	0.000	0.360	0.360
Network / System Certification and Accreditation (C&A) - Strengthening Risk Management Framework	C/CPAF	Northrop Grumman, Various : Schriever AFB, CO	1.417	0.523	Mar 2020	0.000		0.000		-		0.000	0.000	1.940	3.917
		Subtotal	5.469	5.370		0.386		1.358		-		1.358	Continuing	Continuing	N/A

Remarks

N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	5.469	5.370		0.386		1.358		-		1.358	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Missile Defense Agency			Date: May 2021
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)*	

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 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 2022 Missile Defense Agency		Date: May 2021
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 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
MC33 Cyber Operations	✦	✦	✦	✦																								
MC33 Cyber Operations Planned					✧	✧	✧	✧	✧	✧	✧	✧																

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Missile Defense Agency		Date: May 2021
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	2020	4	2020
MC33 Cyber Operations Planned	1	2021	4	2022

Note

Based on the OUSD(C) FY 2022 President's Budget Submission Guidance, fiscal years covered in the justification material will include FY 2020 through FY 2022. Planned entries in the R4 may continue past FY 2022, out-years will be addressed in future budget submissions.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Missile Defense Agency			Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
MD40: *Program-Wide Support*	1.489	1.172	1.274	5.165	-	5.165	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Wide Support (PWS) is allocated on a pro-rata basis across multiple Agency Program Elements (PE) 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 MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS 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 worldwide. 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 across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) 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 2020	FY 2021	FY 2022
Title: Program Wide Support	1.172	1.274	5.165
Articles:	-	-	-
Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS 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 worldwide. 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 across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment,			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Missile Defense Agency		Date: May 2021
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 2020	FY 2021	FY 2022
Restoration and Modernization (FSRM) 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. ***FY 2021 Plans:*** - SEE ABOVE. ***FY 2022 Plans:*** - SEE ABOVE. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase from FY 2021 to FY 2022 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	1.172	1.274	5.165

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Missile Defense Agency			Date: May 2021
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 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Facilities and Maintenance	MIPR	Various : Multi: AL, CA, CO, VA	0.000	0.000		0.371	Nov 2020	0.023	Nov 2021	-		0.023	Continuing	Continuing	Continuing
Program Wide Support - Agency Facilities and Maintenance SRM	MIPR	Various : Multi: AK, AL, CA, CO, HI, NY, VA	0.000	0.000		0.000		0.029	Nov 2021	-		0.029	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations Management	C/CPAF	Various Multi: AL, CA, : CO, VA	0.062	0.018	Jul 2020	0.000		0.000		-		0.000	0.000	0.080	0.000
Program Wide Support - Agency Operations and Support Other Agency Services	MIPR	Various : Multi: AK, AL, CO, CA, HI, MD, VA	0.000	0.000		0.000		0.380	Nov 2021	-		0.380	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Multi: AL, CO, CA, VA	1.427	1.154	Jul 2020	0.903	Dec 2020	4.733	Nov 2021	-		4.733	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations, Sustainment and GPC	C/FFP	Various : Multi: AK, AL, CA, HI, NY, VA	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	0.000
		Subtotal	1.489	1.172		1.274		5.165		-		5.165	Continuing	Continuing	N/A

Remarks

N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1.489	1.172		1.274		5.165		-		5.165	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 2022 Missile Defense Agency		Date: May 2021
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 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
MD40 Program-Wide Support	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧																

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Missile Defense Agency		Date: May 2021
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	2020	4	2022

Note

Based on the OUSD(C) FY 2022 President's Budget Submission Guidance, fiscal years covered in the justification material will include FY 2020 through FY 2022. Planned entries in the R4 may continue past FY 2022, out-years will be addressed in future budget submissions.