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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force **Date:** March 2023

Appropriation/Budget Activity 3620F: Research, Development, Test & Evaluation, Space Force I BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 1206446SF I Resilient Missile Warning Missile Tracking - Low Earth Orbit (LEO)
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	0.000	786.340	1,266.437	0.000	1,266.437	1,004.406	989.673	3,272.593	3,185.318	Continuing	Continuing
657LEO: Resilient MW/MT - LEO	-	0.000	786.340	1,266.437	0.000	1,266.437	1,004.406	989.673	3,272.593	3,185.318	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program element includes funds for the Tranche 1 Tracking Layer program, which is a Middle Tier of Acquisition effort. The total cost of the Tranche 1 Tracking Layer Middle Tier of Acquisition effort is \$2,612.0M. The Tranche 1 Tracking Layer program is fully funded across the Future Years Defense Program.

A. Mission Description and Budget Item Justification

The Space Development Agency (SDA) is developing and demonstrating next generation space capabilities for the joint warfighter enabled by proliferation of satellites in Low Earth Orbit (LEO) and a new acquisition model utilizing rapid spiral development. SDA is developing capabilities to address a wide range of Department of Defense (DoD) space needs as stated in the National Defense Strategy and DoD Space Vision, including advanced missile tracking and global surveillance enabling beyond-line-of-sight targeting. SDA will orchestrate the rapid development and fielding of the Proliferated Warfighter Space Architecture (PWSA), a resilient military sensing and data transport capability via a proliferated space architecture in LEO. This program element funds the development and demonstration of space technologies to deliver Missile Warning, Missile Tracking and Missile Defense (MW/MT/MD) capabilities including advanced missile tracking and fire control support to U.S. joint warfighting forces in bi-annual tranches, beginning in FY 2022.

This program element may include necessary civilian pay expenses and contractor support required to support delivery of the MW/MT/MD capability.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

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B. Program Change Summary (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	499.840	723.621	0.000	723.621
Current President's Budget	0.000	786.340	1,266.437	0.000	1,266.437
Total Adjustments	0.000	286.500	542.816	0.000	542.816
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	286.500			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	542.816	0.000	542.816

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: 657LEO: *Resilient MW/MT - LEO*

Congressional Add: *INDOPACOM Missile Tracking Demonstration Expansion*

Congressional Add: *Tranche 1 Space Resiliency Payloads*

Congressional Add Subtotals for Project: 657LEO

Congressional Add Totals for all Projects

	FY 2022	FY 2023
	0.000	250.000
	0.000	22.500
	0.000	272.500
	0.000	272.500

Change Summary Explanation

The worked performed in this PE is a continuation of efforts that in FY 2022 are funded under RDT&E, Defense-Wide, PE 1206410SDA.

FY 2023 Congressional marks resulted in a net gain of \$286.5M. Project 657LEO (Resilient MW/MT - LEO) was increased by \$250.0M to support an INDOPACOM missile tracking demonstration expansion and increased by \$22.5M to develop Tranche 1 space resiliency payloads. Project 657LEO was also increased by \$14.0M for the Congressional Directed Transfer from SDA's RDT&E PE 1206448SF for the Resilient Missile Warning Missile Tracking Ground Segment.

FY 2024 increases to support Tranche 1 activities for space vehicle development, delivery, and test, and Tranche 2 activities.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Title: Resilient Missile Warning Missile Tracking - Low Earth Orbit (LEO)	0.000	513.840	1,266.437

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>Description: Rapidly develop, deploy and demonstrate prototype architecture that enables resilient Missile Warning/Missile Tracking/Missile Defense enabled by a proliferated Low Earth Orbit (pLEO) architecture. This effort will define, demonstrate, and deliver the architectures and standards necessary to fully populate a Missile Warning/Missile Tracking/Missile Defense LEO layer as part of the PWSA.</p> <p>FY 2023 Plans: Tranche 1: <ul style="list-style-type: none"> - Finalize design through Critical Design Reviews (CDRs) for the Tracking Layer Tranche 1 space vehicles. - Hold space vehicle Production Readiness Reviews (PRRs) and begin assembly, integration, and testing (AI&T). - Begin ground systems Missile Warning/Missile Tracking/Missile Defense (MW/MT/MD) integration at Tranche 1 Mission Operations Centers and MW/MT/MD enterprise locations. - Continue MW/MT/MD force design analysis. - Continue prototype efforts to integrate Fire Control systems into PWSA for Missile Defense. Tranche 2: <ul style="list-style-type: none"> - Leverage lessons learned and accomplishments from Tranches 0 and 1 to inform space vehicle, ground, and interoperability design requirements for Tranche 2. - Draft government reference architecture and requirements for Tranche 2 Tracking in coordination with Warfighter Council. <p>FY 2024 Plans: Tranche 1 <ul style="list-style-type: none"> - Complete Optical Interoperability Testing (OIT) with Tranche 1 Transport Layer space vehicles to ensure optical connectivity. - Complete payload proto-qual assembly, integration and testing (AI&T). - Complete space bus proto-qual AI&T. - Produce payloads and space buses and conduct qualification testing. - Integrate payloads and buses and begin final space vehicle system AI&T. - Support ground activities to ensure integration with Operations Centers and prepare for Missile Warning/Missile Tracking integration. - Complete space vehicle flat sat development and begin operations testing. - Complete Tracking space vehicle component deliveries and vehicle assembly and integration. - Perform Tracking payload ground calibration and begin space vehicle environmental test campaigns. - Fire control prototype build. Tranche 2</p> </p>				

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
- Finalize design requirements for the Tracking Layer Tranche 2 space vehicles as informed by the Missile Warning/Missile Tracking force design analysis. - Draft acquisition plan and solicitation for Tracking Tranche 2. - Obtain Warfighter Council concurrence on Tracking Tranche 2 acquisition and MW/MT/MD enterprise integration plans. - Finalize Tracking Layer Tranche 2 performance requirements with the warfighter community. - Initiate Tranche 2 acquisition and source selection processes leading to space vehicle vendor procurement instruments. - Award Tranche 2 contracts for space vehicles. FY 2023 to FY 2024 Increase/Decrease Statement: The increase between the FY 2023 amount and the FY 2024 amount reflects significant increase in Tranche 1 activities for space vehicle development, delivery, and test, and Tranche 2 activities.			
Accomplishments/Planned Programs Subtotals	0.000	513.840	1,266.437

	FY 2022	FY 2023
Congressional Add: INDOPACOM Missile Tracking Demonstration Expansion FY 2022 Accomplishments: N/A FY 2023 Plans: Develop additional plane of Wide Field of View (WFOV) Space Vehicles (SVs) in the PWSA Tracking Tranche 1 to increase global Missile Warning and Missile Tracking coverage in support of combatant commands to include INDOPACOM.	0.000	250.000
Congressional Add: Tranche 1 Space Resiliency Payloads FY 2022 Accomplishments: N/A FY 2023 Plans: Host auxiliary resiliency payload on T1 Tracking Layer spacecraft to demonstrate threat detection capability in Low Earth Orbit (LEO). This will augment current spacecraft resiliency by detecting directed energy threats and passing data to ground for further processing and characterization.	0.000	22.500
Congressional Adds Subtotals	0.000	272.500

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE 04 1206410SDA: Space Technology Development and Prototyping	550.000	-	-	-	-	-	-	-	-	0.000	550.000

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D. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks
The work performed in this PE continues efforts that were previously funded in FY 2022 under RDT&E, Defense-Wide, PE 1206410SDA.

E. Acquisition Strategy

Partners for these activities may include Missile Defense Agency (MDA), Space Systems Command (SSC), DoD Combatant Commands, DoD research centers, small businesses, large defense contractors, commercial space providers, Federally Funded Research and Development Centers, and University Affiliated Research Centers. SDA's Tranche 1 Missile Warning/Missile Tracking/Missile Defense space systems are being acquired via Firm Fixed Price contracts conducted in accordance with Other Transaction Authority (OT) for prototyping processes.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force **Date:** March 2023

Appropriation/Budget Activity 3620F / 5	R-1 Program Element (Number/Name) PE 1206446SF / <i>Resilient Missile Warning Missile Tracking - Low Earth Orbit (LEO)</i>	Project (Number/Name) 657LEO / <i>Resilient MW/MT - LEO</i>
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Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Tracking Layer (Tranche 1 and 2)	Various	Various : Various	-	-		510.131	Jan 2023	1,263.164	Nov 2023	-		1,263.164	Continuing	Continuing	-
INDOPACOM Missile Tracking Demonstration Expansion - Additional Plane (Congressional Add)	Various	Various : Various	-	-		250.000	Feb 2023	-		-		-	Continuing	Continuing	-
Tranche 1 Space Resiliency Payloads (Congressional Add)	TBD	TBD : TBD	-	-		22.500	Apr 2023	-		-		-	Continuing	Continuing	-
Subtotal			-	-		782.631		1,263.164		-		1,263.164	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Temp Civilian Support	Allot	TBD : TBD	-	0.000		0.500	Jan 2023	0.000		0.000		0.000	Continuing	Continuing	-
FFRDC Support	RO	Aerospace Corp. : El Segundo, CA	-	0.000		3.209	Jan 2023	3.273	Dec 2023	0.000		3.273	Continuing	Continuing	-
Subtotal			-	0.000		3.709		3.273		0.000		3.273	Continuing	Continuing	N/A

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	0.000	786.340	1,266.437	0.000	1,266.437	Continuing	Continuing	N/A

Remarks
The worked performed in this PE continues efforts that were previously funded in FY 2022 under RDT&E, Defense-Wide, PE 1206410SDA.

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3620F / 5	R-1 Program Element (Number/Name) PE 1206446SF / <i>Resilient Missile Warning Missile Tracking - Low Earth Orbit (LEO)</i>	Project (Number/Name) 657LEO / <i>Resilient MW/MT - LEO</i>

FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<i>Resilient Missile Warning Missile Tracking - Low Earth Orbit (LEO)</i>	
Develop, test, and deliver Tranche 1 Tracking Satellites	
Ground integration activities	
<i>INDOPACOM Missile Tracking Demonstration Expansion</i>	
Develop, test, and deliver additional Tranche 1 Tracking WFOV Satellites	
<i>Tranche 1 Space Resiliency Payloads</i>	
Integrate, test, and deliver hosted payloads on Tranche 1 Tracking WFOV Satellites	

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3620F / 5	R-1 Program Element (Number/Name) PE 1206446SF / <i>Resilient Missile Warning Missile Tracking - Low Earth Orbit (LEO)</i>	Project (Number/Name) 657LEO / <i>Resilient MW/MT - LEO</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Resilient Missile Warning Missile Tracking - Low Earth Orbit (LEO)</i>				
Develop, test, and deliver Tranche 1 Tracking Satellites	4	2022	3	2026
Ground integration activities	4	2022	4	2025
<i>INDOPACOM Missile Tracking Demonstration Expansion</i>				
Develop, test, and deliver additional Tranche 1 Tracking WFOV Satellites	3	2023	1	2026
<i>Tranche 1 Space Resiliency Payloads</i>				
Integrate, test, and deliver hosted payloads on Tranche 1 Tracking WFOV Satellites	3	2023	1	2025