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

Appropriation/Budget Activity 3620F: <i>Research, Development, Test & Evaluation, Space Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 1206425SF / <i>Space Situation Awareness Systems</i>
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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	-	101.755	221.421	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	323.176
640290: <i>Deep Space Advanced Radar Concept</i>	-	101.755	221.421	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	323.176
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Note

In FY 2024, Project 640290, Deep Space Advanced Radar Concept, efforts were transferred to PE 1206425SF, Space Situation Awareness Systems, Project 656565, Ground Based SDA, in order to properly align the budget activity to current efforts.

A. Mission Description and Budget Item Justification

Space Domain Awareness (SDA) is one of five core competencies of the Space Force and is the effective identification, characterization, and understanding of any factor, passive or active, associated with the space domain that could affect space operations and thereby impact the security, safety, economy, or environment of our nation. As the foundation for space control, SDA encompasses surveillance of all space objects and activities; detailed surveillance of specific space assets; monitoring space environmental conditions; monitoring cooperative space assets; gathering indications and warning on adversary space operations; and conducting integrated command, control, communications, processing, analysis, dissemination, and archiving activities.

This program element develops new network sensors and improved information integration capabilities across the space surveillance network (SSN) while companion program element 1203940SF fields, upgrades, operationalizes, operates, and maintains Space Force sensors and information integration capabilities within the SSN. Activities funded in this program element (1206425SF) also support efforts such as engineering studies and analyses, architectural engineering studies, trade studies, technology needs forecasting, modernization initiatives, systems engineering, system development, and test & evaluation, and may include prototyping and technology demonstration.

Deep Space Advanced Radar Capability (DARC) is a ground-based, SDA radar system to detect, track, and maintain custody of deep space objects 24/7, through the solar exclusion gap. DARC will augment the SSN as an additional sensor with increased capacity and capability for deep space object custody, providing full global coverage.

Space acquisition must respond with speed and agility to emerging adversary threats. Space Systems Command (SSC) has transformed the organization and implementation of space acquisition to an enterprise approach, to increase innovation and resiliency, leveraging international, commercial, and mission partnerships, and managing program/project priorities according to an integrated unclassified/classified enterprise space architecture. Expanding the appropriate acquisition authorities and contract mechanisms to deliver capability sooner, SSC will strategically execute experimentation, prototyping, risk reduction, and other efforts to develop new or repurpose existing capabilities.

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This program element may include necessary civilian pay expenses required to manage, execute, and deliver DARC weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392SF and 1206398SF.

The total cost of the DARC Rapid Prototype Middle Tier of Acquisition (MTA) effort is \$844.6 million. DARC Site 1 is not fully funded across the Future Years Defense Program. The Department of the Air Force is assessing all options to address the funding shortfalls for MTA programs including additional funding in a future budget request, performance trades based on technical maturity, or transition to alternative pathways.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

B. Program Change Summary (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	105.062	230.621	215.192	0.000	215.192
Current President's Budget	101.755	221.421	0.000	0.000	0.000
Total Adjustments	-3.307	-9.200	-215.192	0.000	-215.192
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-9.200			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-3.307	0.000			
• Other Adjustments	0.000	0.000	-215.192	0.000	-215.192

Change Summary Explanation

FY 2024: -1.414M to realign funding to APPN 3410, PE 1207804SF (SAG 13C), for fiscal policy compliance as Space Systems Command (SSC) establishes Headquarters functions and a Chief Information Office (CIO) for integrated cybersecurity.

FY 2024: -213.778 Project 640290, Deep Space Advanced Radar Concept, BA 04 efforts were transferred to PE 1206425SF, Space Situation Awareness Systems, Project 656565, Ground Based SDA, BA 05 in order to properly align the budget activity to current efforts.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Title: DARC Site 1 Operational Capability	101.755	221.421	0.000
Description: The DARC MTA activity will develop, test, and deliver one DARC site with a current estimated completion date of CY 2025. It will also provide a foundation for up to two more future sites located strategically around the world to provide global deep space radar capability to support SDA. The system will be responsive to regularly scheduled and un-scheduled tasks to locate, identify, characterize deep space objects and report the results to Battle Management Command and Control locations and SSN.			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p><i>FY 2023 Plans:</i> Continue Site 1 design and development activities including design reviews, hardware purchases, software development and integration, and construction. Complete Site 1 EA. Complete final Facility Design Review (90%) and Critical Design Review. Purchase, install and check out hardware including, but not limited to, the antennas, transmitters, receiver hardware, and associated processing, cabling, communications subsystems. Begin construction of Site 1 including roads, buildings, utilities, foundations, and installation of all antenna structures. Perform additional site development efforts such as the construction of facility-support and site infrastructure to include backup generator buildings, fuel storage (tank farms), electrical substations for power site distribution, wastewater treatment/septic & leach, non-potable water storage / fire protection distribution (site & buildings), water treatment (potable) and physical security equipment to meet protection level 3 (PL3) requirements. Finalize plans for and begin implementing physical security for Site 1, to include any required equipment such as site perimeter fencing, and standalone fencing for both antenna arrays and site main power station to meet site safety requirements. Begin preparation for and install of fiber optics (COMM) as well as connection to existing and/or new infrastructure such as power grid, backup generators, and main water line. Complete purchases for all long-lead facility equipment for Site 1 as rapidly as possible in order to minimize schedule, these will have been initiated in parallel with completing required EAs.</p> <p>Additionally, FY 2023 funding will allow the program to continue implementing system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to: studies, technical analysis, risk reduction experiments and prototyping, integration and test of command and control (C2), resiliency measures and mission partner interfaces, space test/combat range events, and office support etc.</p> <p><i>FY 2024 Plans:</i> N/A</p> <p><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i> FY 2024 decreased due to transfer of DARC effort to PE 1206425SF, Space Situation Awareness Systems, Project 656565, Ground Based SDA.</p>			
Accomplishments/Planned Programs Subtotals	101.755	221.421	0.000

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

Remarks

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E. Acquisition Strategy

Project utilizes existing DoD engineering and study contracts and activities to conduct science and technology development and data analysis activities. Preliminary/critical design effort for the technology maturation and prototype commenced in FY 2017. A Broad Agency Announcement (BAA) was used to award seven Integrated System Engineering Team (ISET) contracts which allow for organizations to participate, advise the government, and gain insight into the prototype design and build. In May of 2019, DARC was designated as an MTA under Section 804 of the 2016 National Defense Authorization Act (NDAA). In 2020, DARC was directed to pursue a Rapid Prototyping Middle Tier Acquisition program for Site 1. The DARC Site effort will be executed through two separate contract elements: The Prime System Integrator (PSI) was awarded to Northrop Grunman Inc. via a single, competitive award through the Space Enterprise Consortium (SpEC) Other Transaction Authority (OTA) agreement and third-party software development through multiple SpEC OTA agreements. The Space Force intends to develop and field two additional DARC sites in the future to culminate in a final operational system of three global sites to ensure SDA coverage. A follow-on acquisition pathway strategy based on the success of the Site 1 rapid prototype and an MTA transition plan are being developed for Sites 2 and 3 in accordance with DoDI 5000.80.

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

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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			
DARC Non-Recurring Engineering (NRE)/ Advanced Hardware Purchase	Various	Various : Various	-	47.714	Jan 2022	-		0.000		-		0.000	0.000	47.714	-
DARC Technical Mission Analysis	RO	Various : Various	-	-		7.304	Jan 2023	0.000		-		0.000	0.000	7.304	-
DARC System Development	C/CPIF	Northrop Grumman : Colorado Springs, CO	-	43.990	Oct 2023	197.261	Jan 2023	0.000		-		0.000	0.000	241.251	-
Subtotal			-	91.704		204.565		0.000		-		0.000	0.000	296.269	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			
DARC Prototype System and Sustainment Analyses	Various	Various : Various	-	0.150	May 2022	1.005	May 2023	-		-		-	0.000	1.155	-
Subtotal			-	0.150		1.005		-		-		-	0.000	1.155	N/A

Management Services (\$ 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			
A&AS	Various	Various : Various	-	5.031	Nov 2021	10.791	Nov 2022	-		-		-	0.000	15.822	-
FFRDC	RO	MITRE Corp. : Colorado Springs, CO	-	4.670	Nov 2021	4.860	Nov 2022	-		-		-	0.000	9.530	-
Other Support	Various	Various : Colorado Springs, CO	-	0.200	Nov 2021	0.200	Nov 2022	-		-		-	0.000	0.400	-
Subtotal			-	9.901		15.851		-		-		-	0.000	25.752	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force		Date: March 2023
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	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>Prototype Risk Reduction Build and Test</i>																												
Site 1 MTA Source Selection	█																											
Site 1 Environmental Assessment	█	█	█	█																								
Site 1 MTA Contract Award		█																										
Software Development		█	█	█	█																							
Preliminary Design Review		█																										
Site 1 MTA Development		█	█	█	█																							
Site 1 Construction							█	█	█																			

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force		Date: March 2023
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Prototype Risk Reduction Build and Test</i>				
Site 1 MTA Source Selection	1	2022	2	2022
Site 1 Environmental Assessment	1	2022	1	2023
Site 1 MTA Contract Award	2	2022	2	2022
Software Development	2	2022	4	2023
Preliminary Design Review	2	2022	2	2022
Site 1 MTA Development	2	2022	4	2023
Site 1 Construction	3	2023	1	2024