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Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Air Force **Date:** February 2020

Appropriation/Budget Activity 3620F: <i>Research, Development, Test & Evaluation, Space Force / 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 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	33.359	0.000	33.359	141.296	256.602	295.338	200.423	Continuing	Continuing
640290: <i>Deep Space Advanced Radar Concept</i>	-	0.000	0.000	33.359	0.000	33.359	141.296	256.602	295.338	200.423	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In FY 2021, PE 1206425F, Space Situation Awareness Systems, Project 640290, Deep Space Advanced Radar Concept efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1206425SF Space Situation Awareness Systems, Project 640290, Deep Space Advanced Radar Concept from Appropriation 3600, Budget Activity 04 due to the creation of a new Appropriation for Space Force.

Deep Space Advanced Radar Concept (DARC) will leverage ongoing defense science and technology efforts to mature radar concepts and technologies to develop and evaluate prototypes that demonstrate increased sensitivity, capacity, search rates, and scalability to detect, track and maintain custody of objects in deep space orbit. This effort will analyze and select the most promising technologies to move forward into system development and operations and a program of record (PoR). DARC will augment the Space Surveillance Network (SSN) as an additional sensor with increased capacity and capability for deep space object custody at Geosynchronous Earth Orbit (GEO).

Space acquisition must respond with speed and agility to emerging adversary threats. Space & Missile Systems Center (SMC) is transforming the organization and implementation of space acquisition to an enterprise approach, maximizing 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, SMC will strategically execute experimentation, prototyping, risk reduction, and other efforts to develop new or repurpose capabilities.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver the weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 120639S2F and 1206398SF.

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.

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B. Program Change Summary (\$ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	33.359	0.000	33.359
Total Adjustments	0.000	0.000	33.359	0.000	33.359
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	33.359	0.000	33.359

Change Summary Explanation

FY 2021: +\$33.359M; funds starting in FY 2021 were transferred from RDT&E, Air Force to RDT&E, Space Force.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2019	FY 2020	FY 2021
<p>Title: DARC Site 1 Operational Capability</p> <p>Description: The Deep Space Advance Radar Capability Middle Tier Acquisition (MTA) activity will use knowledge gained through the Deep Space Advanced Radar Concept technology demonstration to identify system specifications and a Government Reference Architecture (GRA). The specification and GRA will then support a competition for a global Deep Space Capability system. This MTA activity will use market research and a Government Reference Architecture developed previously to provide the knowledge to determine the acquisition approach through further prototyping and/or rapid acquisition.</p> <p>The MTA activity will develop, test, and deliver three radar sites located strategically around the world to provide a global Deep Space Radar Capability to support Space Situational Awareness (SSA). The system will be responsive to regularly scheduled and un-scheduled tasks to locate, identify, characterize deep space objects and report the results to the SSN and Battle Management Command and Control locations.</p> <p>Leverage ongoing DARC Technology Maturation and Prototype Development efforts and defense science and technology efforts to initiate PoR for the DARC global radar capability. Supports standup of the DARC program office, award of contract for the DARC global radar capability, and completion of the engineering, manufacturing, and development of the first site through Critical Design Review (CDR).</p> <p>FY 2020 Plans:</p>	0.000	0.000	33.359

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2019	FY 2020	FY 2021
N/A				
FY 2021 Plans: Finalize and release RFP for PoR and conduct source selection. Award contract for Site 1 to design, build, and prepare for Preliminary Design Review (PDR) & CDR to support the build of an operational system. Identify and order long lead hardware items. Rapidly respond and implement system resiliency and situational awareness necessary to operate in the contested space domain. RDT&E funding is required to support this transformation and enable Space Superiority end-to-end integration activities such as, but not limited to, program office support, studies, technical analysis, experimentation, prototyping, architectural development, systems engineering, demonstrations, testing, command and control integration, mission partner integration, and space test/combat range events.				
FY 2020 to FY 2021 Increase/Decrease Statement: N/A				
Accomplishments/Planned Programs Subtotals		0.000	0.000	33.359
D. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
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 Middle Tier Acquisition under Section 804 of the 2016 National Defense Authorization Act (NDAA). DARC PoR will be a full and open industry competition combining both University Affiliated Research Centers (UARC) and industry. The PoR will consist of three global, incrementally fielded, and simultaneously constructed sites during the years FY 2023 through FY 2025.				

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Air Force												Date: February 2020				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3620F / 4				PE 1206425SF / Space Situation Awareness Systems				640290 / Deep Space Advanced Radar Concept								
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
DARC Site 1 Capability	TBD	TBD : TBD	-	-		-		24.245	Jul 2021	-		24.245	Continuing	Continuing	-	
Subtotal			-	-		-		24.245		-		24.245	Continuing	Continuing	N/A	
Support (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Prototype System and Sustainment Analyses	PO	AFRL : Albuquerque, NM	-	-		-		0.150	Mar 2021	-		0.150	Continuing	Continuing	-	
Subtotal			-	-		-		0.150		-		0.150	Continuing	Continuing	N/A	
Management Services (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
A&AS	Various	Various : Various	-	-		-		5.134	Jun 2021	-		5.134	Continuing	Continuing	-	
FFRDC	SS/FP	MITRE Corp : Colorado Springs, CO	-	-		-		3.730	Nov 2020	-		3.730	Continuing	Continuing	-	
Other Support	Various	Various : Colorado Springs, CO	-	-		-		0.100	Nov 2020	-		0.100	Continuing	Continuing	-	
Subtotal			-	-		-		8.964		-		8.964	Continuing	Continuing	N/A	
Project Cost Totals			-	-		0.000		33.359		-		33.359	Continuing	Continuing	N/A	
Remarks																

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Air Force		Date: February 2020
Appropriation/Budget Activity 3620F / 4	R-1 Program Element (Number/Name) PE 1206425SF / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 640290 / <i>Deep Space Advanced Radar Concept</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
DARC				
Prototype Build and Test	1	2021	2	2021
Operational Demonstrations	1	2021	2	2021
Develop Documentation and Request for Proposal	1	2021	1	2021
Request for Proposal Release	2	2021	2	2021
Source Selection	2	2021	3	2021
Contract Award	4	2021	4	2021
Site 1 Development	1	2022	3	2024
Site 2 Development	1	2024	4	2025
Site 3 Development	1	2025	4	2025

Note

DARC Site 1 estimated completion date and Initial Operating Capability (IOC) is FY 2025.