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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0102417F / <i>Over-the-Horizon Backscatter Radar</i>
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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	-	0.000	0.000	42.300	0.000	42.300	-	-	-	-	-	-
674865: <i>TACMOR Development</i>	-	0.000	0.000	42.300	0.000	42.300	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

**Note**

This program, BA 7, PE 0102417F, project 674865, TACMOR Development, is a new start.

**A. Mission Description and Budget Item Justification**

The Tactical Multi-Mission Over the Horizon Radar (TACMOR) is a compact Over the Horizon Radar (OTHR) in the Republic of Palau to provide enhanced Air Domain Awareness in the INDOPACOM area of responsibility. TACMOR will be operated by the United States and located in the Republic of Palau, with the agreement of the government of Palau. Development, test and evaluation, and acquisition of the system and associated components will provide warfighters with the capability to close gaps in surveillance coverage in key regions of the Pacific area of interest to the United States and our Allies.

TACMOR will transition to a production ready system after the successful completion of a Military Utility Assessment (MUA) and system-level Production Readiness Review (PRR). The initial prototype system is executing with oversight from the Office of the Secretary of Defense Research and & Engineering Advanced Concepts Prototyping and Experimentation Joint Capability Technology Demonstration (JCTD) office. At the completion of the MUA, the USAF will assume responsibility for the production, shipment, installation, operational test and evaluation, and initial operational capability at its theater operating locations.

TACMOR efforts funded in this Program Element include but are not limited to:

A remote, unattended Transmit site consisting of ten elements and high power amplifiers transmitting High Frequency (HF) Skywave Over-The-Horizon Radar (OTHR) waveforms. The transmit site will also consists of a HF vertical sounder antenna and a HF backscatter sounder providing ionogram information for optimizing frequency selection.

A remote, unattended Receive site consisting of 128 dual-monopole antenna elements receiving the over-the-horizon reflected energy from the transmit site. The receive site also contains the secure facilities for signal processing of the received data and real-time target extraction information.

This effort will also fund the communications infrastructure necessary to enable the data flow from the Transmit and Receive sites to an off-site operations control center. The operations control center plans and executes missions in support of the Combatant Command (CCMD) and provides real-time, target tracking information to all-source information fusion and dissemination systems. TACMOR data will also be accessible to and exploited by the National Air and Space Intelligence Center (NASIC) for detailed, post-event analysis.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY19 0.0M and in FY20 0.0M was expended for civilian pay expenses in this program element.

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This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	0.000	0.000	42.935	0.000	42.935
Current President's Budget	0.000	0.000	42.300	0.000	42.300
Total Adjustments	0.000	0.000	-0.635	0.000	-0.635
• 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	-0.635	0.000	-0.635

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> TACMOR Development	-	0.000	42.300
<b>Description:</b> Will establish initial TACMOR prototype transition and development activities necessary to accept post production readiness system components and sub-components.			
<b>FY 2021 Plans:</b> - None, funding begins in FY22			
<b>FY 2022 Plans:</b> - Will develop and implement full-scale production and factory acceptance test (FAT) capabilities for major sub-system components such as digital receivers and receiver optical control (ROC) units  - Will procure long-lead items for full-scale production such as secure containers, transmit and receive elements, high-density multilayered printed circuit boards (PCBs), high power amplifiers, servers, and network switches  - Will begin the assembly of major subsystem components such as the digital receivers, ROCs, transmit optical control (TOC) units, and direct digital drive chain			

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p>- Will assemble and integrate the major subsystems: receive subsystem, transmit subsystem, operations control center subsystems that include integration of the major subsystems within their appropriate containers and establishment of network connections necessary to enable Factory Acceptance Testing (FAT).</p> <p>- Will execute test plans, procedures, and procure FAT-unique test equipment necessary to collect data at multiple points within the TACMOR system to confirm subsystem components meet performance specifications</p> <p>- Will execute FAT according to test plan, collect and analyze test data, and report on subsystem and component level successes and failures based on specifications and overall TACMOR system requirements flow down</p> <p>- Will begin development and installation of communication infrastructure in support of offsite data transmission and dissemination. This includes associated authority to operate and cyber hardening</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding increase due to the fact TACMOR is a New Start.</p>				
<b>Accomplishments/Planned Programs Subtotals</b>		-	0.000	42.300
<b>D. Other Program Funding Summary (\$ in Millions)</b>				
N/A				
<b>Remarks</b>				
<b>E. Acquisition Strategy</b>				
TACMOR will be executed out of the PEO Digital portfolio and Air Force Life Cycle Management Center Command and Control, Intelligence, Surveillance and Reconnaissance Division. For contracting efforts, a Single Award IDIQ contract with multiple task orders will be competitively awarded.				

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force												Date: May 2021			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 7				PE 0102417F / Over-the-Horizon Backscatterer Radar				674865 / TACMOR Development							
<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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
Long Lead Items; Prototype Production Readiness Review and Component Integration activities	C/FFP	AFLCMC/HBG : Warner-Robins, AFB, GA	-	-		-		39.960	Feb 2022	-		39.960	-	-	-
<b>Subtotal</b>			-	-		-		39.960		-		39.960	-	-	N/A
<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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
Travel	MIPR	DIA & HAF/A2 : Patrick/AFB, FL	-	-		-		1.000	Nov 2021	-		1.000	-	-	-
<b>Subtotal</b>			-	-		-		1.000		-		1.000	-	-	N/A
<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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
Integration Validation and Verification	Various	AFLCMC/HBG : Warner-Robins, AFB, GA	-	-		-		0.150	Mar 2022	-		0.150	-	-	-
<b>Subtotal</b>			-	-		-		0.150		-		0.150	-	-	N/A
<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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
Systems Engineering and Program Office Management	Various	AFLCMC/HBG : Warner-Robins, AFB, GA	-	-		-		1.190	Nov 2021	-		1.190	-	-	-



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
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FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
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

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
<b><i>TACMOR Development</i></b>																												
Full-scale production and FAT capability development																												
Long lead item procurement																												
Assembly and integration activities for major components and subsystems																												
Test plan and test procedure development and data collection																												
FAT test plan execution																												
Communication infrastructure development																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0102417F / <i>Over-the-Horizon Backscatter Radar</i>	<b>Project (Number/Name)</b> 674865 / <i>TACMOR Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>TACMOR Development</i></b>				
Full-scale production and FAT capability development	2	2022	4	2022
Long lead item procurement	2	2022	2	2022
Assembly and integration activities for major components and subsystems	2	2022	4	2022
Test plan and test procedure development and data collection	2	2022	3	2022
FAT test plan execution	4	2022	4	2022
Communication infrastructure development	1	2022	4	2022