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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Air Force **Date:** April 2022

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0207522F / <i>Airbase Air Defense Systems (ABADS)</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	8.451	10.905	52.498	0.000	52.498	85.509	5.592	7.814	10.102	Continuing	Continuing
640410: <i>Tech Maturation & Risk Reduct</i>	-	8.451	10.905	52.498	0.000	52.498	85.509	5.592	7.814	10.102	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 4, PE 0207522F, project 640410, Battle Management Command and Control (BMC2), is a new start.

In FY 2021, PE 0604287F, Physical Security Equipment, Project 655120, Physical Security Equipment - SD ED efforts were transferred to PE 0207522F, Airbase Air Defense Systems (ABADS), Project 640410, Tech Maturation & Risk Reduction.

A. Mission Description and Budget Item Justification

The Airbase Air Defense Systems (ABADS) program is the principal USAF program to provide the ability to detect, track, identify, and defeat airborne threats to missions and assets including small-unmanned aircraft systems (sUAS), Rockets, Artillery and Mortars (RAM), and Missiles. The counter-sUAS (C-sUAS), counter-RAM (C-RAM), and BMC2 efforts to counter missiles seek to protect strategic assets vital to national security. ABADS efforts protects personnel and assets whether CONUS or deployed in theater. Regarding C-sUAS, to counter the threats posed by the rapid proliferation of inexpensive yet highly-capable systems, and the enemies who target US Service members, Allies, and Coalition partners, the ABADS program will continue to analyze evolving threats, evaluate new capabilities, and design an open-system architecture that reduces life cycle cost and enables fielding to all 180+ AF installations. The Air Force works closely with the DoD Joint C-sUAS Office to align annual efforts.

ABADS FY2023 funding will further develop Command, Control, Communication, Computers, and Intelligence (C4I) systems. The centerpiece of this effort is the Medusa Command and Control (C2) system, whose Modular Open-Systems Architecture enables rapid integration with the Advanced Battle Management System (ABMS), Link 16, and Universal Command & Control (UC2). The Medusa C2 system supports Joint All-Domain Command & Control (JADC2) development and employs electronic warfare capabilities, artificial intelligence for operator task automation, a closed-loop training system for operator certification and proficiency, and track fusion.

Battle Management Command and Control (BMC2) FY2023 funding will leverage Air Force and Joint command and control capabilities to develop a prototype BMC2 capability optimized for Air Force defense of air bases and other critical infrastructure against massed precision missile attacks, which represents a major challenge in a high-end fight. In response, the Air Force will integrate the prototype battle management system with existing sensors, and a classified non-kinetic defense capability at a U.S. location, and field production representative base defense prototypes at one base in the US Indo-Pacific Command (USINDOPACOM) Area of Responsibility (AOR) and one base in the US European Command (USEUCOM) AOR to support theater specific integration and assessments. This capability requires a system of systems approach and will be integrated into JADC2 and ABMS.

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This program element may include necessary civilian pay expenses required to manage, execute, and deliver Air Base Air Defense System capabilities for emergent or unanticipated weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605832F, 0605833F, 0605898F, 0606398F. In FY21 0.053M was expended for civilian pay expenses in this program element. In FY22 0.251M is forecasted for civilian pay expenses in this program element.

This requirement supports performance of a full financial audit as required by title 10 U.S.C. Chapter 9A, Sec 240-D.

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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	8.721	10.905	0.000	0.000	0.000
Current President's Budget	8.451	10.905	52.498	0.000	52.498
Total Adjustments	-0.270	0.000	52.498	0.000	52.498
• 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	-0.270	0.000			
• Other Adjustments	0.000	0.000	52.498	0.000	52.498

Change Summary Explanation

The FY 2022 President's Budget submittal did not reflect FY 2023 through FY 2026 funding. Therefore, an explanation of the change between the two budget positions for FY2023 cannot be made in a relevant manner.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Title: Airbase Air Defense Systems (ABADS)	8.451	10.905	5.330
Description: The ABADS program will continue to defend against the emerging and growing airborne threats. This program protects strategic assets vital to national security while bedded down and while on the move. This program will continue to counter emerging threats posed by advancements in enemy employment tactics and commercially available technology.			
FY 2022 Plans:			

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Update Medusa C2 software to support the ABMS architecture, enhance interoperability with the Air Force Integrated Base Defense Enterprise, improve operator task automation, further modularize system components, and resolve deficiencies. - Develop and test the Continuous Integration/Continuous Delivery (CI/CD) pipeline to accelerate response times to emerging threats. - Continue electronic warfare upgrades, to include but not limited to new sensor and effector components, and new Ninja skills which leverage full Ninja capability within Medusa C2. - Transition urgent need efforts to an AF Program of Record. - Continue efforts in alignment with the DoD's Joint C-sUAS Office. <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Update Medusa C2 software to further interoperability and incorporation within the ABMS architecture. - Implement the CI/CD pipeline to accelerate response times to emerging threats. - Continue electronic warfare upgrades, to include but not limited to new sensor and effector components, and new Ninja skills which leverage full Ninja capability within Medusa C2. - Continue efforts in alignment with the DoD's Joint C-sUAS Office. <p>FY 2022 to FY 2023 Increase/Decrease Statement: The funding decrease in FY23 aligns AF RDT&E efforts with DoD Joint C-sUAS Office direction.</p>				
<p>Title: Battle Management Command and Control (BMC2)</p> <p>Description: The initial phase of this effort will leverage Air Force and Joint command and control capabilities to develop a prototype BMC2 capability optimized for Air Force defense of air bases and other critical infrastructure. The Air Force will integrate the prototype battle management system with existing sensors, and a classified non-kinetic defense capability at a U.S. location, and field production representative base defense prototypes at one base in the USINDOPACOM AOR and one base in the USEUCOM AOR to support theater specific integration and assessments.</p> <p>FY 2022 Plans: BMC2 is a new start in FY23.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Define Battle Management Command and Control (BMC2) system requirements. - Develop BMC2 architecture. - Identify and assess candidate BMC2 solutions. <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>		-	0.000	47.168

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
The funding increase in FY23 supports a large number of contractual activities to develop a working prototype in a relevant operational timeline.			
Accomplishments/Planned Programs Subtotals	8.451	10.905	52.498

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• OPAF 03 0207522F: <i>Airbase Air Defense Systems (ABADS)</i>	9.108	27.186	23.911	-	23.911	5.029	9.529	12.052	12.289	Continuing	Continuing

Remarks

E. Acquisition Strategy
 Implement a "Government-as-the-Integrator" approach by procuring integration services independent of systems being developed through existing integration service contracts within the DoD. The services will establish processes and support tools to enable integration of planned projects. Example integration services include, but are not limited to, establishing a continuous integration/continuous deployment (CI/CD) software pipeline, implementing Agile DevSecOps processes and deploying model-based design. Leverage small business innovative research opportunities to generate new code to produce capabilities for detection and defeat of airborne threats. Leverage urgent need support contracts to develop innovative and incremental changes to systems fielded for C-sUAS and urgent operational needs, and expanding to other airborne threats. Accomplish system verification-fix-verification loops earlier in the lifecycle for planned projects by leveraging independent integration services from systems being developed. Integration services will be acquired from existing integration service contracts within the DoD.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Air Force **Date:** April 2022

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0207522F / Airbase Air Defense System s (ABADS)	Project (Number/Name) 640410 / Tech Maturation & Risk Reduct s
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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			
C-sUAS Joint Serv System Development	Various	Not specified. : TBD	-	-		1.704	Jul 2022	1.552	Nov 2022	-		1.552	Continuing	Continuing	-
C-sUAS New Platform Development	Various	Not specified. : TBD	-	-		0.500	Jan 2022	1.376	May 2023	-		1.376	Continuing	Continuing	-
C-sUAS Software Development	Various	Not specified. : TBD	-	6.629	Apr 2021	3.200	Jul 2022	1.852	May 2023	-		1.852	Continuing	Continuing	-
BMC2 Prototypes	Various	Not specified. : TBD	-	-		-		34.000	Feb 2023	-		34.000	Continuing	Continuing	-
Subtotal				-		6.629		5.404		38.780		38.780	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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			
Direct Cite Authority	TBD	Not specified. : TBD	-	0.085	Jun 2021	0.251	Apr 2022	-		-		-	Continuing	Continuing	-
Subtotal				-		0.085		0.251		-		-	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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			
C-sUAS Test	Various	Not specified. : TBD	-	1.737	Jun 2021	1.100	Jun 2022	-		-		-	Continuing	Continuing	-
Subtotal				-		1.737		1.100		-		-	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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			
C-sUAS Systems Engineer	C/Various	Various : Hanscom, MA	-	-		3.950	Jul 2022	-		-		-	Continuing	Continuing	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0207522F / Airbase Air Defense System (ABADS)	Project (Number/Name) 640410 / Tech Maturation & Risk Reduct s

FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
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

C-sUAS Events	
C-sUAS Joint Service Lead System Development	
C-sUAS Software Development	
C-sUAS Test	
C-sUAS New Platform Development	
C-sUAS Systems Engineering	
BMC2	
BMC2 Systems Engineering	
BMC2 Prototyping	
BMC2 Test	

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0207522F / Airbase Air Defense System (ABADS)	Project (Number/Name) 640410 / Tech Maturation & Risk Reduct s

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
C-sUAS Events				
C-sUAS Joint Service Lead System Development	2	2022	4	2027
C-sUAS Software Development	3	2021	4	2027
C-sUAS Test	3	2021	4	2027
C-sUAS New Platform Development	2	2022	4	2027
C-sUAS Systems Engineering	2	2021	4	2027
BMC2				
BMC2 Systems Engineering	2	2023	4	2025
BMC2 Prototyping	2	2023	4	2025
BMC2 Test	4	2024	3	2025