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

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401318F / CV-22
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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	125.948	17.355	18.385	17.189	0.000	17.189	-	-	-	-	-	-
676033: <i>CV-22 RDT&E POST PRODUCTION</i>	125.948	17.355	18.385	17.189	0.000	17.189	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Program MDAP/MAIS Code: 212
Project MDAP/MAIS Code(s): N42

A. Mission Description and Budget Item Justification

The CV-22 is the Air Force Special Operations Forces (SOF) variant of the joint multi-mission V-22 tilt rotor aircraft. The CV-22 provides long-range, high-speed infiltration, exfiltration, and resupply to Special Forces teams in hostile, denied, and politically sensitive areas. The Navy is the lead service for the Joint V-22 program. The Joint Program Manager is responsible for managing all variants of the V-22. Department of the Navy (DoN) funds the development of the MV-22 and CMV-22. The Air Force funds the service common portion of the CV-22 while United States Special Operations Command (USSOCOM) funds the development and procurement of SOF peculiar systems. CV-22 RDT&E funding provides for the development, integration, and testing of service-common, mission critical aircraft modifications to improve operational effectiveness, platform survivability, and aircraft availability.

Nacelle Modifications : Funds the design and development of the CV-22 nacelle and its components to increase engine time on wing by reducing ingestion of sand/dust and other particulate matter into the engine, improving reliability and maintainability and reducing operations and support costs. This is Air Force Special Operations Command's #1 priority for the CV-22 weapon system.

Enhanced Self-Deployment: RDT&E funding provides for the design, development, and testing of aircraft modifications to improve aircraft self-deployment capabilities (e.g., operating range, global response time) to mitigate emerging threats to the aircraft and mission accomplishment, and to identify and assess emerging air vehicle, propulsion system, avionics architecture, electronic warfare, situational awareness, and other weapon system solutions in meeting CV-22 Block C/20 capability requirements.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver the CV-22 weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY 2020 \$0.000 million was expended for civilian pay expenses in this program element, and in FY 2021 \$0.000 million is forecasted for civilian pay expenses in this program element.

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.

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B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	
Previous President's Budget	17.906	18.419	17.447	0.000	17.447	
Current President's Budget	17.355	18.385	17.189	0.000	17.189	
Total Adjustments	-0.551	-0.034	-0.258	0.000	-0.258	
• Congressional General Reductions	0.000	0.000				
• Congressional Directed Reductions	0.000	-0.034				
• 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	-0.551	0.000				
• Other Adjustments	0.000	0.000	-0.258	0.000	-0.258	
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2020	FY 2021	FY 2022
Title: Nacelle Modifications				10.238	10.441	10.133
Description: Funds design, development, and testing of V-22 Nacelle components- Infrared Suppressor (IRS), Generator Control Unit (GCU) upgrade, heat exchanger improvements, engine health monitoring, and upgrade other nacelle systems and components. Common nacelle modifications for both the CV-22 and MV-22 fleets will increase overall aircraft readiness/availability, reduce platform operating life cycle costs, and mitigate impacts to aircraft performance and survivability. These improvements will be integrated, tested, and fielded as block modifications to minimize cost and impact on fleet operations and readiness.						
FY 2021 Plans: Continue design, development, and testing of Nacelle Modifications: IRS redesign, IIS (EAPS 2.0), GCU, and engine health monitoring.						
FY 2022 Plans: Continue design, development, and testing of Nacelle Modifications; IIS (EAPS 2.0) & Flight Control Systems.						
FY 2021 to FY 2022 Increase/Decrease Statement: Funding decreased due to re-prioritizing resources						
Title: Enhanced Self-Deployment Capabilities				7.117	7.944	7.056
Description: Develops capabilities to enhance self-deployment, such as improved ice protection, engine performance, performance buyback, navigation, communications, and battle space awareness/networking capabilities/multi domain command and control (MDC2); situational awareness; electronic warfare; weapons systems; defensive avionics systems and architecture;						

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
weight reduction initiatives; modular avionics/cyber security implementation and other changes to the underlying aircraft systems necessary to enable these capabilities.			
FY 2021 Plans: Continue design and development activities to enhance situational awareness, MAA/cyber security, and integration and develop Flight Control Computer (FCC) obsolescence effort.			
FY 2022 Plans: Continue design and development activities to enhance situational awareness, MAA/cyber security, and integration and develop FCC obsolescence effort.			
FY 2021 to FY 2022 Increase/Decrease Statement: Funding decreased due to re-prioritizing resources			
Accomplishments/Planned Programs Subtotals	17.355	18.385	17.189

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2022</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u>	<u>Total Cost</u>
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	
• RDTE 07 PE 1160403BB: <i>Special Operations, Aviation Systems</i>	28.081	16.773	4.851	-	4.851	-	-	-	-	-	-
• APAF 02 Line Item <i>Special Operation: CV-22 Modification</i>	17.256	54.109	38.770	-	38.770	-	-	-	-	-	-
• APAF 04 0401318F: <i>CV-22</i>	0.000	206.220	0.000	-	0.000	-	-	-	-	-	-
• APAF 05 Line Item <i>V02200: CV-22 Mods</i>	65.348	119.396	158.162	-	158.162	-	-	-	-	-	-
• APAF 06 Line Item 000999: <i>CV-22 Initial Spares/Repair Parts</i>	0.000	6.574	10.525	-	10.525	-	-	-	-	-	-
• APAF 07 Line Item C0V220: <i>CV-22 Post-Production Support</i>	0.000	0.000	0.000	-	0.000	-	-	-	-	-	-
• RDTE 05 PE <i>0604262N: V-22A Navy</i>	184.443	132.427	107.984	-	107.984	-	-	-	-	-	-

Remarks
In addition to the funding identified in the table above, prior year funding includes \$547.755M in RDT&E, DW, BA07, PE 1160421BB: Special Operations, CV-22 Development, and \$429.216M in RDT&E, AF, BA05, PE 0401318F: CV-22

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E. Acquisition Strategy

The V-22 Joint Program Office (Naval Air Systems Command (NAVAIRSYSCOM), PMA-275) is developing new capabilities for the V-22 in block increments.

--Nacelle Modifications: Improved Inlet Solution (EAPS 2.0), Infrared Suppressor, and Generator Control Unit will utilize a combination of sole source and competitive contracts.

--Enhanced Self-Deployment Capabilities: Modular Avionics, Flight Control Computer, and performance buyback will utilize a combination of sole source and competitive contracts.

Development activities for the V-22 program to date have been primarily performed by the prime contractor, Bell-Boeing, on a sole-source basis. Bell-Boeing is a strategic partnership between Bell Helicopter and Boeing Integrated Defense Systems. Efforts are underway to continue increasing competition where feasible, depending primarily on the level of platform integration required and Government rights to needed technical data.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force **Date:** May 2021

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401318F / CV-22	Project (Number/Name) 676033 / CV-22 RDT&E POST PRODUCTION
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Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			
V-22 Nacelle Improvements	Various	Various : Various	68.890	8.703	Mar 2020	8.906	Mar 2021	5.750	Mar 2022	-		5.750	-	-	-
CV-22 Osprey Enhanced Self-deployment Capability	Various	Various : Various	39.717	5.582	Jun 2020	6.409	Jun 2021	6.691	Jun 2022	-		6.691	-	-	0.000
Subtotal			108.607	14.285		15.315		12.441		-		12.441	-	-	N/A

Remarks
 Block 20 Development Target Value of Contract differs from total cost because most of the Block 20 development cost was funded in PE 0401318F, BA05. In addition, the SOF peculiar development efforts were funded by USSOCOM MFP-11 funding.

 Nacelle Improvements Development Target Value of Contract differs from total cost because this is a joint development funded by Navy and Air Force.

Support (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			
CV-22 Osprey Engineering Technical Support and Studies	Various	Various : Various	6.599	1.370	Mar 2020	1.370	Mar 2021	2.373	Mar 2022	-		2.373	-	-	0.000
Subtotal			6.599	1.370		1.370		2.373		-		2.373	-	-	N/A

Test and Evaluation (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			
CV-22 Osprey Test & Evaluation Technical Support	Various	Various : Various	9.709	1.500	Dec 2019	1.500	Dec 2020	2.175	Dec 2021	-		2.175	-	-	0.000
Subtotal			9.709	1.500		1.500		2.175		-		2.175	-	-	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force		Date: 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

CV-22																												
Nacelle Modifications																												
-- IIS Development and Test (EAPS 2.0)																												
--- Generator Control Unit (GCU)																												
-- Infrared Suppressor (IRS) Redesign																												
-- Engine Health Monitoring																												
Enhanced Self-Deployment																												
-- Modular Avionics Architecture (MAA)																												
-- Flight Control Computer (FCC)																												
-- Multi Domain Command and Control (MDC2)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Air Force		Date: May 2021
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
CV-22				
Nacelle Modifications	1	2020	4	2023
-- IIS Development and Test (EAPS 2.0)	1	2020	4	2023
--- Generator Control Unit (GCU)	2	2020	4	2021
-- Infrared Suppressor (IRS) Redesign	2	2020	4	2021
-- Engine Health Monitoring	2	2020	4	2021
Enhanced Self-Deployment	1	2020	4	2026
-- Modular Avionics Architecture (MAA)	1	2020	4	2024
-- Flight Control Computer (FCC)	2	2020	4	2026
-- Multi Domain Command and Control (MDC2)	2	2022	4	2026