Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force												Date: March 2023
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 0401318F / *CV-22*							
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	161.126	16.663	10.121	18.127	0.000	18.127	16.444	16.878	17.197	17.819	Continuing	Continuing
676033: *CV-22 RDT&E POST PRODUCTION*	161.126	16.663	10.121	18.127	0.000	18.127	16.444	16.878	17.197	17.819	Continuing	Continuing
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.

Airframe Enhancements: RDT&E funds the design, development, and testing of improvements to airframe structures, aircraft electro-mechanical and hydraulic hardware, and dynamic components to counteract the effects of structural fatigue and improve the durability and readiness of V-22 aircraft. Refinement of aircraft system's components to improve longevity and/or maintainability while protecting their performance are meant to allow continued CV-22 operation as the aircraft age.

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 to meet CV-22 Block 20 operational requirements.

CV-22 funding also supports innovation activities to include studies, analyses, requirements definition, and quick-reaction capability prototypes/demonstrations to accelerate planning for technology transition, technology insertion and future acquisition programs.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver CV-22 weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2022 $0.000 million was expended for civilian pay expenses in this program element, and in FY 2023 $0.000 million is forecasted for civilian pay expenses in this program element.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force	Date: March 2023
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0401318F / *CV-22*

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. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	17.189	10.121	18.086	0.000	18.086
Current President's Budget	16.663	10.121	18.127	0.000	18.127
Total Adjustments	-0.526	0.000	0.041	0.000	0.041
• 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	-0.526	0.000			
• Other Adjustments	0.000	0.000	0.041	0.000	0.041

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Airframe Enhancement	10.235	7.021	4.551

Description: Airframe Enhancements funds the improvement of airframe structures, aircraft electro-mechanical hardware, and dynamic components to counteract the effects of structural fatigue and improve the durability and readiness of V-22 aircraft to include design, development, and testing of V-22 Nacelle components. This RDT&E funding provides for the design, development, and testing of redesign support or loadbearing airframe elements to provide structural reinforcement and improved longevity. Enhanced armor protective performance with reduced weight and space impacts are a possible area for development. Airframe Enhancement funds also provide for refinements of hydraulic, landing gear, or fuel system component to improve and protect their performance. Items such as pumps, lines, tanks/reservoirs/bladders and/or struts may receive enhancements to extend their life and improve their maintainability. Finally, Airframe Enhancements funds target exploring improvements to all V-22 dynamic components, from rotor blades and heads to gearboxes and flight control surfaces with the goals of protecting them from vibrational and frictional wear and enhancing their reliability and readiness.

FY 2023 Plans:
Continued design, development, and testing of Airframe Enhancements.

FY 2024 Plans:

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force	Date: March 2023
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0401318F / *CV-22*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Planned Projects to include but not limited to Aluminum T/E Fairing w/Gusset, Flaperon Actuator, Blade Improvements, Fuel Cell Obsolescence/Redesign, and Hard Clutch Engagement Input Quill/Clutch Redesign. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decreased due to reduced airframe testing and design activities and re-prioritizing resources.			
Title: Enhanced Self-Deployment Capabilities ***Description:*** Develops capabilities to enhance self-deployment, such as improved ice protection, engine performance, performance buyback, navigation, communications, and battle space awareness/networking capabilities/airborne mission networking (ABMN); situational awareness; electronic warfare; weapons systems; defensive avionics systems and architecture; weight reduction initiatives; modular avionics/cyber security implementation and other changes to the underlying aircraft systems necessary to enable these capabilities. ***FY 2023 Plans:*** Continue design and development activities to enhance situational awareness, cyber security, integration and develop FCC obsolescence effort and supports Airborne Mission Networking (ABMN). ***FY 2024 Plans:*** Planned Projects include, but not limited to the following: Support for ABMN Systems, JARVIS Mission Computer, Flight Computer Redesigns, PNT Modernizations, Platform Data Service (PDS) Development, and Control Display Unit (CDU). ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding increased due to ramp up of design and testing activities to include but not limited to PDS/Ethernet Expansion Device, CDU Keyboard Obsolescence, and JARVIS Mission Computer.	6.428	3.100	13.576
Accomplishments/Planned Programs Subtotals	16.663	10.121	18.127

D. Other Program Funding Summary ($ in Millions)

Line Item	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
• RDTE 07 PE 1160403BB: *Special Operations, Aviation Systems*	6.655	11.695	21.619	-	21.619	21.289	28.069	23.445	19.834	Continuing	Continuing
• PAAF 02 Line Item 1000CV2200: *Defense-Wide 0300D SOCOM*	49.242	79.215	75.981	-	75.981	77.313	33.740	39.370	88.670	Continuing	Continuing
• APAF 05 Line Item V02200: *CV-22 Mods*	226.962	153.026	153.006	-	153.006	164.495	165.656	158.238	161.531	Continuing	Continuing

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force	Date: March 2023
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0401318F / *CV-22*

D. Other Program Funding Summary ($ in Millions)

Line Item	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
• APAF 06 Line Item 000999: *CV-22 Initial Spares/Repair Parts*	10.525	2.254	3.989	-	3.989	0.000	0.000	0.000	-	0.000	16.768
• RDTE 05 PE 0604262N: *V-22A Navy*	105.729	125.233	136.158	-	136.158	106.511	122.453	105.024	-	Continuing	Continuing

Remarks

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.

Airframe Enhancements: Fuel Cell Obsolescence Redesign, Proprotor Gear Box Input Quill/Clutch Redesign, Flaperon Actuator, and Proprotor Blades will utilize a combination of sole source and competitive contracts.

Enhanced Self-Deployment Capabilities: Flight Control System Redesign, Platform Data Service Development, Control Display Unit Redesign, and support for Airborne Mission Networking Systems 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 technical data.

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

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
V-22 Airframe Enhancements	Various	Various : TBD	85.893	5.716	Mar 2022	2.821	Mar 2023	1.400	Mar 2024	-		1.400	10.300	106.130	-
CV-22 Osprey Enhanced Self-Deployment Capability	Various	Various : TBD	51.708	6.600	Jun 2022	3.100	Jun 2023	11.901	Jun 2024	-		11.901	47.060	120.369	-
		Subtotal	137.601	12.316		5.921		13.301		-		13.301	57.360	226.499	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CV-22 Osprey Engineering Technical Support and Studies	Various	Various : TBD	9.369	2.198	Mar 2022	1.900	Mar 2023	2.345	Mar 2024	-		2.345	5.948	21.760	-
		Subtotal	9.369	2.198		1.900		2.345		-		2.345	5.948	21.760	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CV-22 Osprey Test & Evaluation Technical Support	Various	Various : TBD	12.723	2.000	Dec 2021	2.100	Dec 2022	2.240	Dec 2023	-		2.240	3.634	22.697	-
		Subtotal	12.723	2.000		2.100		2.240		-		2.240	3.634	22.697	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CV-22 Osprey Program Support Costs	Various	Various : TBD	1.433	0.149	Nov 2021	0.200	Dec 2022	0.241	Dec 2023	-		0.241	1.496	3.519	-
		Subtotal	1.433	0.149		0.200		0.241		-		0.241	1.496	3.519	N/A

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

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	161.126	16.663		10.121		18.127		-		18.127	68.438	274.475	N/A

Remarks

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

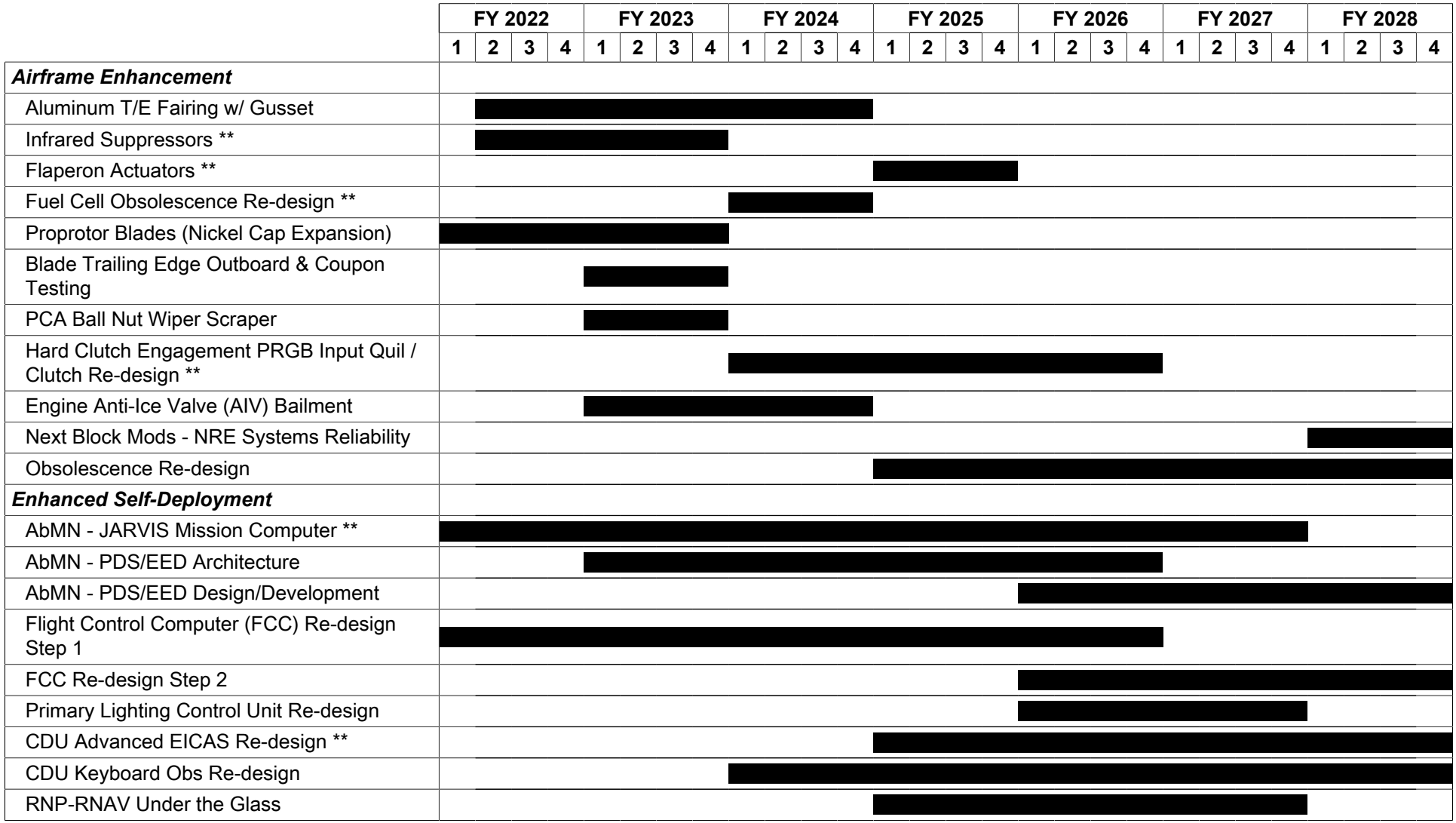

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0401318F / *CV-22*	**Project (Number/Name)** 676033 / *CV-22 RDT&E POST PRODUCTION*

	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
Cockpit Engine Health Indicator (Phase II)					[redacted]																							

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

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Airframe Enhancement				
Aluminum T/E Fairing w/ Gusset	2	2022	4	2024
Infrared Suppressors **	2	2022	4	2023
Flaperon Actuators **	1	2025	4	2025
Fuel Cell Obsolescence Re-design **	1	2024	4	2024
Proprotor Blades (Nickel Cap Expansion)	1	2022	4	2023
Blade Trailing Edge Outboard & Coupon Testing	1	2023	4	2023
PCA Ball Nut Wiper Scraper	1	2023	4	2023
Hard Clutch Engagement PRGB Input Quil / Clutch Re-design **	1	2024	4	2026
Engine Anti-Ice Valve (AIV) Bailment	1	2023	4	2024
Next Block Mods - NRE Systems Reliability	1	2028	4	2028
Obsolescence Re-design	1	2025	4	2028
Enhanced Self-Deployment				
AbMN - JARVIS Mission Computer **	1	2022	4	2027
AbMN - PDS/EED Architecture	1	2023	4	2026
AbMN - PDS/EED Design/Development	1	2026	4	2028
Flight Control Computer (FCC) Re-design Step 1	1	2022	4	2026
FCC Re-design Step 2	1	2026	4	2028
Primary Lighting Control Unit Re-design	1	2026	4	2027
CDU Advanced EICAS Re-design **	1	2025	4	2028
CDU Keyboard Obs Re-design	1	2024	4	2028
RNP-RNAV Under the Glass	1	2025	4	2027

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

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Cockpit Engine Health Indicator (Phase II)	1	2023	4	2023