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Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0401318F / CV-22
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COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	368.330	46.705	-	-	-	-	-	-	-	-	-	415.035
654103: CV-22	368.330	46.705	-	-	-	-	-	-	-	-	-	415.035
Quantity of RDT&E Articles	2	-	-	-	-	-	-	-	-	-		

MDAP/MAIS Code: 212

Note

In FY2015, PE 0401318F CV-22, Project 654103 CV-22 efforts were transferred to PE 0401318F, Project 676033 CV-22 RDT&E Post Production in order to align efforts in Budget Activity 07, Operational System Development.

A. Mission Description and Budget Item Justification

The CV-22 is a Special Operations Forces (SOF) variant of the 1st generation V-22 tilt-rotor, multi-mission aircraft. CV-22 RDT&E provides development, integration, testing and enhancement of critical capability to insert, extract, and re-supply special operations forces into politically or militarily denied areas. The CV-22 Block 10 configuration added terrain following radar, additional fuel tanks, additional radios, flare/chaff dispensers, radio frequency/infrared and defensive countermeasures, weapons, situational awareness improvements, and Communications, Navigation, Surveillance/Air Traffic Management (CNS/ATM) to the V-22 Block B aircraft. Block 20 development includes, but is not limited to, improved communications, situational awareness, software, and other requirements specified in the V-22 Block C/20 Capabilities Production Document. A future capabilities increment is following Block 20 to enhance defensive systems and self-deployment capabilities such as improved engine performance, additional CNS/ATM, and improved communications and networking capabilities. CV-22 RDT&E also provides for a baseline CV-22 flight test aircraft for validation/verification of Block 20 and various software and reliability and maintainability mods. The V-22 Joint Program Office is developing improved operational safety, suitability, and effectiveness capabilities in incremental modifications. Ongoing planning and associated activities will take place to prevent Diminishing Manufacturing Sources (DMS) and obsolescence issues, as required.

US Special Operations Command (USSOCOM) and USAF jointly fund development projects to meet operational safety, suitability, and effectiveness mission needs. This includes designing, prototyping, integrating, testing and fielding proposed solutions to emerging warfighter issues. USSOCOM funds the development, integration and testing of Special Operations Forces (SOF) unique mission capability, while USAF funds interoperability, basic air vehicle enhancements, integration of Air Force and Navy maintenance and information systems used with the V-22, support for operational testing, and CV-22 implementation and testing of MV-22 Block B and Block C changes. USSOCOM and USAF jointly fund correction of deficiencies and Block 20 development. Block 20 increments 1 and 3 are developed with USAF funds and increment 2 is developed with USSOCOM funds.

This program was in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	46.705	-	-	-	-
Current President's Budget	46.705	-	-	-	-
Total Adjustments	-	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-	-	-

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
<p>Title: CV-22 Block 20 RDT&E</p> <p>Description: Develop, test, and evaluate additional capabilities for the CV-22 aircraft. The V-22 Joint Program Office is developing improved operational safety, suitability, and effectiveness. Block 20 development includes, but is not limited to, improved communications, software, and other requirements specified in the V-22 Block C/20 Capabilities Production Document.</p> <p>FY 2014 Accomplishments: Conducted long-range communications Critical Design Review (CDR).</p> <p>FY 2015 Plans: See BA07 Program Element 0401318F CV-22 for FY15 activities and funding.</p> <p>FY 2016 Plans: See BA07 Program Element 0401318F CV-22 for FY15 activities and funding.</p>	18.078	-	-
<p>Title: Enhanced Self-Deployment Capabilities</p> <p>Description: Future capabilities increment to enhance self-deployment capabilities such as Engine Time-On-Wing Improvement and Area Navigation (Global Positioning System) (RNAV(GPS)).</p> <p>FY 2014 Accomplishments:</p>	4.630	-	-

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
RDT&E activities continued for Enhanced Self-deployment Capabilities. Initiated RDT&E activities for RNAV(GPS). Prepared plan to implement Required Navigation Performance Area Navigation (RNP/RNAV) in CV-22 Integrated Avionics Processor (IAP) configured aircraft. FY 2015 Plans: See BA07 Program Element 0401318F CV-22 for FY15 activities and funding. FY 2016 Plans: See BA07 Program Element 0401318F CV-22 for FY15 activities and funding.			
Title: Improved Inlet Solution Description: Initiate Improved Inlet Solution (IIS) development to increase engine time on wing, resolve Air Force Special Operations Command #1 priority deficiency, and reduce Operations & Support cost. Improved Inlet Solution is a joint V-22 effort being developed in conjunction with the Department of the Navy. FY 2014 Accomplishments: Conducted System Readiness Review (SRR) FY 2015 Plans: See BA07 Program Element 0401318F CV-22 for FY15 activities and funding. FY 2016 Plans: See BA07 Program Element 0401318F CV-22 for FY15 activities and funding.	23.997	-	-
Accomplishments/Planned Programs Subtotals			
	46.705	-	-

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDT&E: BA07: PE 0401318F: CV-22	-	38.719	36.576	-	36.576	17.369	14.324	14.595	14.856	64.821	201.260
• RDT&E: BA07: PE 1160421BB: <i>Special Operations, CV-22 Development</i>	-	-	-	-	-	-	-	-	-	-	520.411

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D. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• RDT&E: BA07: PE 1160403BB: <i>Special Operations, Aviation Systems</i>	2.817	0.182	-	-	-	0.707	14.372	21.806	-	-	39.884
• APAF: BA02: Line Item #1000CV2200: <i>CV-22 Modification</i>	104.199	21.578	18.832	-	18.832	20.158	18.522	23.307	21.505	-	1,713.822
• APAF: BA04: Line Item #V022A0: <i>CV-22 (MYP)</i>	285.998	15.000	-	-	-	-	-	-	-	-	4,244.528
• APAF: BA05: Line Item #V02200: <i>CV-22 Mods</i>	19.555	74.874	58.828	-	58.828	63.960	66.420	69.400	71.367	138.529	692.634
• APAF: BA07: Line Item #B00100: <i>CV-22 Post Production Support</i>	-	16.931	3.353	-	3.353	-	-	-	-	-	20.284
• RDT&E: BA05: PE 0604262N: <i>V-22A</i>	42.205	57.749	87.918	-	87.918	138.217	126.239	88.584	56.037	245.000	9,879.554

Remarks

E. Acquisition Strategy

The V-22 Joint Program Office (NAVAIRSYSCOM PMA-275) ensures that CV-22 changes are incorporated into the ongoing V-22 production line with minimal impact. The Joint Program Office (JPO) is developing new capabilities for the V-22 in blocks. Block 0 and Block 10 have completed development, and Block 20 is currently underway. NAVAIRSYSCOM awarded a cost plus fixed fee contract with the prime contractor in Dec 2007 for Block 20 development and test. After Block 20 development and test, future development efforts beyond Block 20 will be conducted as pre-planned product improvements. Development activities for the V-22 program are performed by the prime contractor selected on a sole-source basis. Bell-Boeing is a strategic partnership between Bell Helicopter and Boeing Integrated Defense Systems. OSD re-designated the V-22 program from ACAT 1D to ACAT 1C on 24 Jul 2012.

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0401318F / CV-22	Project (Number/Name) 654103 / CV-22
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Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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			
2 Production Representative Test Vehicles	SS/CPAF	Bell Boeing : Amarillo, TX	161.859	-		-		-		-		-	-	161.859	-
Block 10 Development	SS/CPAF	Bell Boeing : Amarillo, TX	44.025	-		-		-		-		-	-	44.025	-
Block 10 Development Tech Support	Various	Various : Various,	11.886	-		-		-		-		-	-	11.886	-
Situational Awareness Hazard Avoidance Federated Terminal	C/CPAF	Manufacturing Technology Inc : Fort Walton Beach, FL	5.000	-		-		-		-		-	-	5.000	-
Block 20 Development	SS/CPFF	Bell Boeing : Amarillo, TX	57.608	10.112	Dec 2013	-		-		-		-	-	67.720	161.014
Enhanced Self-deployment Capability	Various	Various : Various,	5.000	4.630	Apr 2014	-		-		-		-	-	9.630	-
Improved Inlet Solution	SS/CPFF	Bell Boeing : Amarillo, TX	0.000	23.997	Jun 2014	-		-		-		-	-	23.997	69.660
Subtotal			285.378	38.739		-		-		-		-	-	324.117	-

Remarks
 The Block 20 Development effort target value of contract differs from the total cost because the target contract value includes some test related funding and USSOCOM MFP-11 funding for Special Operations Forces (SOF) peculiar development efforts.

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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			
Interim Contractor Support	SS/CPAF	Bell Boeing : Amarillo, TX	26.889	-		-		-		-		-	-	26.889	-
Contractor Logistics Support for Test Aircraft	Various	Various : Various,	11.980	1.585	Nov 2013	-		-		-		-	-	13.565	-
Subtotal			38.869	1.585		-		-		-		-	-	40.454	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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			
Test & Evaluation	SS/CPFF	Bell Boeing : Amarillo, TX	32.343	3.758	Dec 2013	-		-		-		-	-	36.101	-
Test & Evaluation Technical Support	MIPR	Various : Various,	9.595	1.068	Nov 2013	-		-		-		-	-	10.663	-
Subtotal			41.938	4.826		-		-		-		-	-	46.764	-

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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			
Management Services (Support)	MIPR	Various : Various,	2.119	1.455	Dec 2013	-		-		-		-	-	3.574	-
Travel	Allot	AFLCMC/WIV : Patuxent River, MD	0.026	0.100		-		-		-		-	-	0.126	-
Subtotal			2.145	1.555		-		-		-		-	-	3.700	-

	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	368.330	46.705	-	-	-	-	-	415.035	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0401318F / CV-22	Project (Number/Name) 654103 / CV-22
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	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	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
Block 20 Increment 3 Development, Testing and Evaluation																												
-- Long range comm upgrades ground and flight tests																												
Enhanced Self Deployment																												
Improved Inlet Solution (IIS)																												
-- IIS development and design reviews																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0401318F / CV-22	Project (Number/Name) 654103 / CV-22
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Block 20 Increment 3 Development, Testing and Evaluation	1	2014	2	2015
-- Long range comm upgrades ground and flight tests	1	2014	2	2015
Enhanced Self Deployment	1	2014	4	2015
Improved Inlet Solution (IIS)	3	2014	2	2015
-- IIS development and design reviews	3	2014	2	2015