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

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604262N / V-22A
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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	9,037.414	42.205	57.749	87.918	-	87.918	138.217	126.239	88.584	56.037	253.671	9,888.034
1425: V-22	9,037.414	42.205	57.749	87.918	-	87.918	138.217	126.239	88.584	56.037	253.671	9,888.034

MDAP/MAIS Code: 212

A. Mission Description and Budget Item Justification

The V-22 Osprey is an Acquisition Category IC Joint Program led by the Department of the Navy for the purpose of developing, testing, evaluating, procuring and fielding a tilt rotor, vertical takeoff and landing aircraft for Joint Service application. The V-22 program is designed to provide an aircraft to meet the amphibious/vertical assault needs of the Marine Corps, the utility/rescue needs of the Navy, and the special operations needs of the Air Force and the United States Special Operations Command (USSOCOM). The V-22 is replacing the CH-46E and CH53A/D in the Marine Corps with the MV-22; will supplement the H-60 in the Navy with the MV-22; and replace the MH-53J and MH-53M as well as augment the C-130 in the Air Force and USSOCOM with the CV-22. The V-22 is capable of flying over 2,100 nautical miles, with a single refueling, giving the services the advantage of a Vertical/Short Take-off and Landing aircraft that can rapidly self-deploy to any location in the world. This program is funded under Engineering Manufacturing and Development for correction of deficiencies and includes Block A and Block B upgrades which encompassed engineering and manufacturing development of new end-items prior to the production incorporation decision as well as Block C suitability and effectiveness development upgrades. Capability Development Document interoperability requirements were addressed through a spiral upgrade acquisition strategy. It was the first spiral providing Key Enabling Department of Defense mandated open systems architecture upgrades for the mission computer hardware and software while simultaneously addressing required interoperability common avionics upgrades and current avionics obsolescence issues. Future development efforts will include Pre-Planned-Product-Improvements (P3I) in the Capability Development Document as prioritized by the United States Marine Corps (USMC) or a Urgent Universal Needs Statement (UUNS). Development efforts include Block C Upgrade, Mission System Upgrade, Electrical System Upgrades Mid-Wing Process Unit, ARC 210 Generation 5 Radio, Mission Computer Obsolescence Initiative, Weapon Systems Development, AAR-47 Hostile Fire Indicator, Time on Wing, Digital Interoperability, and Blue Force Tracker/Netted Weather. FY16 will provide for additional Aircraft Mission Maneuvering Envelope Expansion, Velocity Not to Exceed Expansion, Digital Interoperability, and Time on Wing efforts such as Improved Inlet Solution (IIS).

The New V-22 Instrumented Aircraft continues to be funded and delivery of aircraft is expected in 2nd Quarter of FY15. In FY16 aircraft will perform structural fatigue, envelope expansion, software airframe loads, structures and bonded blade tab developmental testing.

The MV-22 Hardware Development Airframe continues to fund development efforts by Bell-Boeing. Continue development in support of MV-22 Block upgrades and Time on Wing efforts such as IIS. Continued engineering, logistics, flight test, flight test support and address the correction of deficiencies and obsolescence. Continue MV-22 software development/sustainment efforts. Continue V-22 Integrated Aircraft Survivability Equipment to include correcting deficiencies of the current radar warning system, integration with an upgraded missile warning and active infrared countermeasure system, and providing integrated threat warning information on the aircraft main flight displays.

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MV-22 Hardware Development Propulsion will continue to fund the flight/engine hours necessary for developmental testing at the Patuxent River squadron. Rolls-Royce will continue to provide engine support and development of MV-22 flight testing.

MV-22 Digital Interoperability is the United States Marine Corps Aviation wide implementation of software defined radios, such as Software Reprogrammable Payload (SRP), capable of migration to advanced waveforms and payloads, providing enhanced digital connectivity between forces using dissimilar waveforms and/or protocols. Digital Interoperability will enable fleet integration of new capability through the use of tablets with custom applications. Digital Interoperability is also envisioned to include logistics tracking (cargo and personnel) with the use of Radio Frequency Identification technology, advanced Electronic Warfare/Cyber capability, and threat data capturing/off-boarding.

FY16 starts MV-22 SRP, is a single common payload module that is open architecture, government owned, flexible, and reconfigurable to support simultaneous missions and applications making maximum use of available bandwidth and ensuring interoperability. Provides a bridge and translator to allow various systems/waveforms to collaborate and provides the V-22 operator and passenger with a common operating picture. MV-22 is the lead platform for integration of SRP Spiral II.

FY16 starts Navy Variant Hardware Development which consists of an Engineering Change Proposal (ECP) to modify MV-22 into the Navy Variant configuration to perform the Carrier Onboard Delivery (COD) mission. The ECP will add such things as (1) the capability to meet the range requirements that the COD mission demands (2) an high frequency radio to transmit/receive beyond line of sight over water and (3) a public address (PA) system for use while transporting passengers.

FY16 starts the V-22 Aerial Refueling System (VARs) capability. VARs will provide V-22 tanker capability to the Marine Air Ground Task Force, enabling safe and efficient execution of all missions, tactical or humanitarian. The system will allow the V-22 to provide fuel to other Air Combat Element (ACE) aircraft, such as F-35B and CH-53E/K, while en-route, in the objective area, or during recovery, extending the operational reach/duration. With the V-22 deployed onboard, amphibious assault ships would gain an organic aerial refueling capability, maximizing response time and agility.

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	43.084	61.249	58.893	-	58.893
Current President's Budget	42.205	57.749	87.918	-	87.918
Total Adjustments	-0.879	-3.500	29.025	-	29.025
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-3.500			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.879	-			
• Program Adjustments	-	-	29.720	-	29.720
• Rate/Misc Adjustments	-	-	-0.695	-	-0.695

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Appropriation/Budget Activity
1319: *Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)*

R-1 Program Element (Number/Name)
PE 0604262N / V-22A

Change Summary Explanation

Technical: Not applicable

Schedule: Not applicable

Cost: Not applicable.

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy										Date: February 2015		
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604262N / V-22A				Project (Number/Name) 1425 / V-22			
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
1425: V-22	9,037.414	42.205	57.749	87.918	-	87.918	138.217	126.239	88.584	56.037	253.671	9,888.034
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The V-22 Osprey is an Acquisition Category IC Joint Program led by the Department of the Navy for the purpose of developing, testing, evaluating, procuring and fielding a tilt rotor, vertical takeoff and landing aircraft for Joint Service application. The V-22 program is designed to provide an aircraft to meet the amphibious/vertical assault needs of the Marine Corps, the utility/rescue needs of the Navy, and the special operations needs of the Air Force and the United States Special Operations Command (USSOCOM). The V-22 is replacing the CH-46E and CH53A/D in the Marine Corps with the MV-22; will supplement the H-60 in the Navy with the MV-22; and replace the MH-53J and MH-53M as well as augment the C-130 in the Air Force and USSOCOM with the CV-22. The V-22 is capable of flying over 2,100 nautical miles, with a single refueling, giving the services the advantage of a Vertical/Short Take-off and Landing aircraft that can rapidly self-deploy to any location in the world. This program is funded under Engineering Manufacturing and Development for correction of deficiencies and includes Block A and Block B upgrades which encompassed engineering and manufacturing development of new end-items prior to the production incorporation decision as well as Block C suitability and effectiveness development upgrades. Capability Development Document interoperability requirements were addressed through a spiral upgrade acquisition strategy. It was the first spiral providing Key Enabling Department of Defense mandated open systems architecture upgrades for the mission computer hardware and software while simultaneously addressing required interoperability common avionics upgrades and current avionics obsolescence issues. Future development efforts will include Pre-Planned-Product-Improvements (P3I) in the Capability Development Document as prioritized by the United States Marine Corps (USMC) or a Urgent Universal Needs Statement (UUNS). Development efforts include Block C Upgrade, Mission System Upgrade, Electrical System Upgrades Mid-Wing Process Unit, ARC 210 Generation 5 Radio, Mission Computer Obsolescence Initiative, Weapon Systems Development, AAR-47 Hostile Fire Indicator, Time on Wing, Digital Interoperability, and Blue Force Tracker/Netted Weather. FY16 will provide for additional Aircraft Mission Maneuvering Envelope Expansion, Velocity Not to Exceed Expansion, Digital Interoperability, and Time on Wing efforts such as Improved Inlet Solution (IIS).

The New V-22 Instrumented Aircraft (NVIA) continues to be funded and delivery of aircraft is expected in 2nd Quarter of FY15. In FY16 aircraft will perform structural fatigue, envelope expansion, software airframe loads, structures and bonded blade tab developmental testing.

The MV-22 Hardware Development Airframe continues to fund development efforts by Bell-Boeing. Continue development in support of MV-22 Block upgrades and Time on Wing efforts such as IIS. Continued engineering, logistics, flight test, flight test support and address the correction of deficiencies and obsolescence. Continue MV-22 software development/sustainment efforts. Continue V-22 Integrated Aircraft Survivability Equipment to include correcting deficiencies of the current radar warning system, integration with an upgraded missile warning and active infrared countermeasure system, and providing integrated threat warning information on the aircraft main flight displays.

MV-22 Hardware Development Propulsion will continue to fund the flight/engine hours necessary for developmental testing at the Patuxent River squadron. Rolls-Royce will continue to provide engine support and development of MV-22 flight testing.

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Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604262N / V-22A	Project (Number/Name) 1425 / V-22
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MV-22 Digital Interoperability is the United States Marine Corps Aviation wide implementation of software defined radios, such as Software Reprogrammable Payload (SRP), capable of migration to advanced waveforms and payloads, providing enhanced digital connectivity between forces using dissimilar waveforms and/or protocols. Digital Interoperability will enable fleet integration of new capability through the use of tablets with custom applications. Digital Interoperability is also envisioned to include logistics tracking (cargo and personnel) with the use of Radio Frequency Identification technology, advanced Electronic Warfare/Cyber capability, and threat data capturing/off-boarding.

FY16 starts MV-22 SRP, is a single common payload module that is open architecture, government owned, flexible, and reconfigurable to support simultaneous missions and applications making maximum use of available bandwidth and ensuring interoperability. Provides a bridge and translator to allow various systems/ waveforms to collaborate and provides the V-22 operator and passenger with a common operating picture. MV-22 is the lead platform for integration of SRP Spiral II.

FY16 starts Navy Variant Hardware Development which consists of an Engineering Change Proposal (ECP) to modify MV-22 into the Navy Variant configuration to perform the Carrier Onboard Delivery (COD) mission. The ECP will add such things as (1) the capability to meet the range requirements that the COD mission demands (2) an high frequency radio to transmit/receive beyond line of sight over water and (3) a public address (PA) system for use while transporting passengers.

FY16 starts the V-22 Aerial Refueling System (VARS) capability. VARS will provide V-22 tanker capability to the Marine Air Ground Task Force, enabling safe and efficient execution of all missions, tactical or humanitarian. The system will allow the V-22 to provide fuel to other Air Combat Element (ACE) aircraft, such as F-35B and CH-53E/K, while en-route, in the objective area, or during recovery, extending the operational reach/duration. With the V-22 deployed onboard, amphibious assault ships would gain an organic aerial refueling capability, maximizing response time and agility.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: MV-22 New Instrumented Aircraft (NVIA)	-	4.029	-	-	-
Articles:	-	-	-	-	-
<p>Description: The purpose of the NVIA is to (a) augment existing V-22 structural test capability by supplementing and eventually replacing Aircraft 90008; and (b) provide improved, comprehensive flight test data with increased reliability/maintainability over existing Aircraft 90008 to support the V-22 development roadmap. The NVIA continues to be funded and delivery of aircraft is expected in 2nd Quarter of FY15. In FY16 aircraft will perform structural fatigue, envelope expansion, software airframe loads, structures and bonded blade tab developmental testing.</p> <p>FY 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: FY15: Final incremental funding for the NVIA, expected to deliver in 3rd quarter of FY15.</p> <p>FY 2016 Base Plans:</p>					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
N/A					
FY 2016 OCO Plans: N/A					
Title: MV-22 Hardware Development Airframe	23.297	30.259	19.143	-	19.143
Articles:	-	-	-	-	-
Description: The MV-22 Hardware Development Airframe continues to fund development efforts by Bell-Boeing. Continue development in support of MV-22 Block upgrades and Time on Wing efforts such as Improved Inlet Solution. Continued engineering, logistics, flight test, flight test support and address the correction of deficiencies and obsolescence. Continue MV-22 software development/sustainment efforts. Continue V-22 Integrated Aircraft Survivability Equipment to include correcting deficiencies and obsolescence issues, to include the current radar warning system, integration with an upgraded missile warning and active infrared countermeasure system, cockpit interface units, electrical power system, and providing integrated threat warning information on the aircraft main flight displays. Continue electrical system capacity and reliability improvement efforts.					
FY 2014 Accomplishments: Continue MV-22 development efforts by Bell-Boeing. Rolls-Royce will continue to provide engine support and development of MV-22 flight testing. Continue MV-22 software development/sustainment efforts. Continue development in support of MV-22 Block upgrades and Time on Wing efforts such as Improved Inlet Solution. Continue engineering, logistics, flight test, flight test support and address correction of deficiencies. Continue contracted development efforts on test aircraft.					
FY 2015 Plans: Continue MV-22 development efforts by Bell-Boeing. Rolls-Royce will continue to provide engine support and development of MV-22 flight testing. Continue MV-22 software development/sustainment efforts. Continue development in support of MV-22 Block upgrades and Time on Wing efforts such as Improved Inlet Solution (IIS). Continue engineering, logistics, flight test and flight test support. Conduct Modular Software Study. FY15 funds used to address correction of deficiencies and obsolescence issues in cockpit interface units and electrical power system, as well as address other obsolescence issues as part of additive manufacturing process development for V-22 components.					
FY 2016 Base Plans: Continue MV-22 development efforts by Bell-Boeing. Rolls-Royce will continue to provide engine support and development of MV-22 flight testing. Continue MV-22 software development/sustainment efforts. Continue development in support of MV-22 Block upgrades and Time on Wing efforts such as IIS. Continue engineering,					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
logistics, flight test, flight test support and address correction of deficiencies. Continue contracted development efforts on test aircraft. Continue electrical system capacity and reliability improvement efforts. FY 2016 OCO Plans: N/A					
Title: MV-22 Hardware Development Propulsion/Mission Care Description: The funding of Mission Care relates to our RDTE program as it funds the flight/engine hours necessary for developmental testing at the Patuxent River squadron. In addition, it pays for Rolls Royce engine support at Patuxent River. FY 2014 Accomplishments: Funds are provided for Mission Care flight & engine hours for developmental testing at Patuxent River squadron. FY 2015 Plans: Funds are provided for continued Mission Care flight & engine hours for developmental testing at Patuxent River squadron. FY 2016 Base Plans: Funds continued for Mission Care flight & engine hours for developmental testing at Patuxent River squadron. FY 2016 OCO Plans: N/A	0.300 -	0.306 -	0.312 -	- -	0.312 -
Title: MV-22 Digital Interoperability Description: Digital Interoperability is the United States Marine Corps Aviation wide implementation of software defined radios, such as Software Reprogrammable Payload (SRP), capable of migration to advanced waveforms and payloads, providing enhanced digital connectivity between forces using dissimilar waveforms and/or protocols. Digital Interoperability will enable fleet integration of new capability through the use of tablets with custom applications. Digital Interoperability is also envisioned to include logistics tracking (cargo and personnel) with the use of Radio Frequency Identification technology, advanced Electronic Warfare/Cyber capability, and threat data capturing/off-boarding. FY 2014 Accomplishments:	- -	4.700 -	4.700 -	- -	4.700 -

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
N/A					
<p>FY 2015 Plans: Funds begin for MV-22 Digital Interoperability providing MV-22 Gateway functionality to provide digital connectivity between Air and Ground forces using dissimilar protocols. Begin development of SRP Spiral II Critical Design Review, including Interface Control Document.</p> <p>FY 2016 Base Plans: Funds continue for development and demonstration of Digital Interoperability, including spiral development of Software Reprogrammable Payload (SRP), tablets and the custom applications, Radio Frequency Identification technology, Electronic Warfare/Cyber capability and threat data capturing/off-boarding.</p> <p>FY 2016 OCO Plans: N/A</p>					
<p>Title: MV-22 Software Reprogrammable Payload (SRP)</p> <p align="right">Articles:</p> <p>Description: SRP is a single common payload module that is open architecture, government owned, flexible, and reconfigurable to support simultaneous missions and applications making maximum use of available bandwidth and ensuring interoperability. Provides a bridge and translator to allow various systems/waveforms to collaborate and provides the V-22 operator and passenger with a common operating picture. MV-22 is the lead platform for integration of SRP Spiral II.</p> <p>FY 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: N/A</p> <p>FY 2016 Base Plans: Funds start for MV-22 SRP Spiral II integration.</p> <p>FY 2016 OCO Plans: N/A</p>	-	-	11.200	-	11.200
	-	-	-	-	-
<p>Title: V-22 Aerial Refueling System Development</p> <p align="right">Articles:</p>	-	-	15.000	-	15.000
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy **Date:** February 2015

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
<p>Description: V-22 Aerial Refueling System will provide V-22 tanker capability to the Marine Air Ground Task Force, enabling safe and efficient execution of all missions, tactical or humanitarian. The system will allow the V-22 to provide fuel to other Air Combat Element aircraft, such as F-35B and CH-53E/K, while en-route, in the objective area, or during recovery, extending the operational reach/duration. With the V-22 deployed onboard, amphibious assault ships would gain an organic aerial refueling capability, maximizing response time and agility.</p> <p>FY 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: N/A</p> <p>FY 2016 Base Plans: Begin funding the V-22 Aerial Refueling System Development Capability. V-22 Aerial Refueling System will provide V-22 tanker capability to the Marine Air Ground Task Force, enabling safe and efficient execution of all missions, tactical or humanitarian.</p> <p>FY 2016 OCO Plans: N/A</p>					
<p>Title: MV-22 Navy Variant Development</p> <p align="right">Articles:</p> <p>Description: Funding supports the development of an Engineering Change Proposal (ECP) to modify a MV-22 into the Navy Variant configuration to perform the Carrier On-board Delivery (COD) mission. The ECP will add such things as (1) the capability to meet the range requirements that the COD mission demands (2) an HF radio to transmit/receive beyond line of sight over water and (3) a Public Address system for use while transporting passengers.</p> <p>FY 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: N/A</p> <p>FY 2016 Base Plans:</p>	-	-	17.170	-	17.170
	-	-	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Funds provided for the MV-22 Navy Variant to perform the COD mission. Begin development of ECP to meet External Fuel Tank, High Frequency radio and Public Address system requirements. Begin engineering and logistics support needed to develop ECP. FY 2016 OCO Plans: N/A					
Title: V-22 Development Support, Test and Evaluation Description: Fund Government Engineering, Contractor Engineering, including Follow-On Test Evaluation (FOT&E) and Developmental Test & Engineering (DT&E) for the MV-22 flight events. Perform Government oversight. Execute test program risk reduction efforts. FY 2014 Accomplishments: Funds provided for continued support of FOT&E and DT&E includes flight control software, vehicle system operating software, inlet distortion, APR-39D(V)2, structural fatigue, envelope expansion, software airframe loads, flight and ground tests for avionics demonstrations. FY 2015 Plans: Funds provided for continued support of FOT&E, to include OT-IIK. DT&E includes flight control software, vehicle system operating software, inlet distortion, APR-39D(V)2, structural fatigue, envelope expansion, software airframe loads, structures and bonded blade tab, GAU-21, Nacelle Sail testing, MV Traffic Collision Avoidance System. FY 2016 Base Plans: Funds provided for continued support of FOT&E as well as DT&E to include flight control software, vehicle system operating software, inlet distortion, APR-39D(V)2, structural fatigue, envelope expansion, software airframe loads, structures and bonded blade tab testing. FY 2016 OCO Plans: N/A	18.608	18.455	20.393	-	20.393
Articles:	-	-	-	-	-
Accomplishments/Planned Programs Subtotals	42.205	57.749	87.918	-	87.918

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C. 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
• APN 0164: V-22	1,410.262	1,527.020	1,480.208	-	1,480.208	1,545.944	893.312	811.173	888.857	4,856.097	36,289.341
• APN 0590: V-22 Series	148.448	135.584	122.152	-	122.152	143.048	157.167	153.434	156.557	738.176	2,534.885
• APN 0605: V-22 Initial Spares	0.677	-	0.479	-	0.479	0.033	-	-	-	88.488	879.996
• RDTE BA04 0401318F: CV-22 USAF BA05	46.705	-	-	-	-	-	-	-	-	-	415.035
• RDTE 1160403BB: CV-22 Special Operations, Aviation Systems	2.817	0.182	-	-	-	0.707	14.372	21.806	-	-	39.884
• RDTE BA07 0401318F: CV-22 USAF BA07	-	38.719	36.576	-	36.576	17.369	14.324	14.595	14.856	-	136.439

Remarks

D. Acquisition Strategy

The MV-22 is a post Milestone III ACAT-IC program. As a result of mishaps during and subsequent to MV-22 Operational Evaluation (Apr and Dec 00), the program was restructured employing a phased approach to return to flight and tactical introduction. The Contractor and Government defined deficient areas within the program/ aircraft requiring correction prior to return to flight. A Block Upgrade approach was planned, with required efforts identified in Block "A", "B", and "C". Block "A" included those efforts necessary to return the V-22 to safe and operational fleet operations. Block "B" included those efforts necessary to improve the effectiveness and suitability of the aircraft. Block "C" includes mission enhancements like weather radar, cabin effectiveness suitability improvements, i.e., Environmental Control System, and Forward Firing ALE-47. Non-recurring development activities are to be initiated and completed for all efforts identified in Block "A", "B", and "C". The Contractor will develop specific Statements of Work and Preliminary Specification Change Notices required to integrate the Block Upgrade efforts into the baseline Program. A Systems Requirements Review, Initial Design Review, and Final Design Review was held for each of the Block efforts so the design maturity could be reviewed and the Government could redirect activities as appropriate. The CV-22 Engineering Manufacturing and Development program is also structured in Blocks to define an evolutionary approach to achieving full operational capability. Block "0" is the initial baseline CV-22 variant. Block "10" enhances mission capability with the addition of terrain following radar, additional fuel tanks, additional radios, and Block "20" includes capabilities such as radio frequency and infrared countermeasures improvements. Additional Blocks are in the planning stages to continue the growth process throughout the operational life of the weapon system. The Government will issue an RFP to the Contractor and upon award, an Integrated Baseline Review, Preliminary Design Review, Integrated Logistics Assessment and a Critical Design Review will be held to assess the design maturity of the MV-22 Navy Variant.

E. Performance Metrics

Milestone Reviews.

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

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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			
MV-22 Instrumented A/C	SS/FPIF	Bell Boeing : Ridley Park, PA	25.784	-		4.029	Nov 2014	-		-		-	-	29.813	29.813
MV-22 Hardware Dev Airframe	SS/CPIF	Bell Boeing : Ridley Park, PA	23.444	23.297	Jan 2014	30.259	Jan 2015	19.143	Jan 2016	-		19.143	209.335	305.478	191.015
MV-22 Hardware Dev Propulsion	SS/CPIF	Rolls-Royce Corp. : Indianapolis, IN	196.300	0.300	Jan 2014	0.306	Jan 2015	0.312	Jan 2016	-		0.312	6.650	203.868	198.524
MV-22 Digital Interoperability	WR	NAWCWD : China Lake, CA	0.000	-		4.700	Jan 2015	4.700	Jan 2016	-		4.700	37.600	47.000	-
MV-22 Software Reprogrammable Payload (SRP)	WR	NAWCWD : China Lake, CA	0.000	-		-		11.200	Jan 2016	-		11.200	6.000	17.200	-
MV-22 Navy Variant Development	C/CPIF	Bell Boeing : Ridley Park, PA	0.000	-		-		17.170	Jan 2016	-		17.170	182.153	199.323	199.323
V-22 Aerial Refueling System (VARs) Development	SS/CPIF	Bell Boeing : Ridley Park, PA	0.000	-		-		15.000	Jan 2016	-		15.000	27.800	42.800	42.800
Prior year Prod Dev no longer funded in the FYDP	Various	Various : Various	5,078.483	-		-		-		-		-	-	5,078.483	-
Subtotal			5,324.011	23.597		39.294		67.525		-		67.525	469.538	5,923.965	-

Remarks
 Begin MV-22 Digital Interoperability efforts in FY15.
 Begin MV-22 Navy Variant and V-22 Aerial Refueling System (VARs) Development efforts in FY16.

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			
MV-22 Govt Engineering Sppt	WR	NAWCAD : Pax River, MD	1,102.631	1.686	Nov 2013	1.710	Nov 2014	1.733	Nov 2015	-		1.733	19.235	1,126.995	-
MV-22 Navy Variant Govt Engineering Sppt	WR	NAWCAD : Pax River, MD	0.000	-		-		1.350	Nov 2015	-		1.350	7.543	8.893	-
Prior Year Support no longer funded in the FYDP	Various	Various : Various	189.718	-		-		-		-		-	-	189.718	-

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

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604262N / V-22A	Project (Number/Name) 1425 / V-22
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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			
Subtotal			1,292.349	1.686		1.710		3.083		-		3.083	26.778	1,325.606	-

Remarks
Begin Govt Engineering Support for MV-22 Navy Variant efforts in FY16.

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			
MV-22 Dev Test & Evaluation	WR	NAWCAD : Pax River, MD	1,007.366	8.931	Nov 2013	9.055	Nov 2014	9.531	Nov 2015	-		9.531	91.405	1,126.288	-
MV-22 Operational Test & Evaluation	WR	OT&E Force : Norfolk, VA	48.500	4.709	Dec 2013	4.774	Dec 2014	4.841	Dec 2015	-		4.841	42.609	105.433	-
Prior Year T & E no longer funde in the FYDP	Various	Various : Various	48.200	-		-		-		-		-	-	48.200	-
Subtotal			1,104.066	13.640		13.829		14.372		-		14.372	134.014	1,279.921	-

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			
MV-22 Engineering Tech Sppt	Various	Various : Various	1,046.434	0.484	Nov 2013	0.309	Nov 2014	0.360	Nov 2015	-		0.360	6.609	1,054.196	-
MV-22 Management Sppt Svc	Various	Various : Various	155.543	0.641	Nov 2013	0.575	Nov 2014	0.550	Nov 2015	-		0.550	7.542	164.851	-
MV-22 Program Mgmt Support	WR	NAWCAD : Pax River, MD	57.930	1.865	Nov 2013	1.764	Nov 2014	1.787	Nov 2015	-		1.787	15.967	79.313	-
MV-22 Travel	WR	NAWCAD : Pax River, MD	15.994	0.292	Jan 2014	0.268	Jan 2015	0.241	Jan 2016	-		0.241	2.300	19.095	-
Prior Year Mgmt Svcs no longer funded in the FYDP	Various	Various : Various	41.087	-		-		-		-		-	-	41.087	-
Subtotal			1,316.988	3.282		2.916		2.938		-		2.938	32.418	1,358.542	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy

Date: February 2015

Appropriation/Budget Activity
1319 / 5

R-1 Program Element (Number/Name)
PE 0604262N / V-22A

Project (Number/Name)
1425 / V-22

V-22 Hardware Development	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Acquisition Milestones																												
Engineering Milestones																												
Reviews				IIS PDR ■									PDR ■															
Systems Development																												
Acquisition Documentation																												
Test & Evaluation																												
Test & Evaluation																												
Development Test																												
Operational Evaluation																												
Production Milestones																												
Kit Deliveries & Installs																												
Production Milestones																												
Deliveries																												

2016PB - 0604262N - 1425

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

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604262N / V-22A	Project (Number/Name) 1425 / V-22
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MV-22 Navy Variant Contract Award	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	
	HV-22 ECP																												
Reviews																													
Acquisiton Documentation										■	■	■																	
Test & Evaluation													▼																
Reviews																▼													
Production Milestones																													
Contract Awards																													
Production Deliveries																													

2016PB - 0604262N - 1425

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

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604262N / V-22A	Project (Number/Name) 1425 / V-22
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Digital Interoperability (DI)	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020							
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q				
									Design & Demonstration																							
									SRP Dev.																							

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

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604262N / V-22A	Project (Number/Name) 1425 / V-22
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V-22 Aerial Refueling system (VARS)	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020											
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q								
Reviews								CA ●							PDR ■	CDR ■																				
Acquisition Documentation																																				
Test & Evaluation																	Flight Test																			
Production Milestones																					DT				OT											
Kit Deliveries & Installs																									Kits & Installs Qty 30											

2016PB - 0604262N - 1425

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

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604262N / V-22A	Project (Number/Name) 1425 / V-22
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>V-22 Hardware Development</i>				
Engineering Milestones: Reviews: IIS PDR	4	2014	4	2014
Engineering Milestones: Reviews: Preliminary Design Review	4	2016	4	2016
Systems Development: Critical Design Review	1	2017	1	2017
Systems Development: IIS Contract Award/Development effort	4	2014	4	2017
Test & Evaluation: Test & Evaluation: IIS Flight Test	1	2017	3	2017
Test & Evaluation: Development Test: Developmental Testing	1	2018	4	2018
Test & Evaluation: Development Test: Development Flight Test / Integrated Test (IT-IIIID) & Continuous software sustainment developmental testing	1	2014	4	2020
Test & Evaluation: Development Test: Operational Testing	1	2019	2	2019
Production Milestones: Operational Testing (OT-C1)	3	2014	3	2014
Production Milestones: Kit Deliveries & Installs: Operational Testing (OT-IIIK)	2	2015	2	2015
Production Milestones: Kit Deliveries & Installs: Operational Testing (OT-IIIL)	1	2016	1	2016
Production Milestones: Deliveries: Instrumented Test Aircraft Delivery	2	2015	2	2015
<i>MV-22 Navy Variant Contract Award</i>				
Engineering Change Proposal	2	2016	4	2020
Reviews: Integrated Baseline Review	2	2016	2	2016
Reviews: Preliminary Design Review	3	2016	3	2016
Reviews: Critical Design Review	4	2016	4	2016
Reviews: Test & Evaluation: Integrated Logistics assessment	1	2017	1	2017
Reviews: Reviews: Functional Configuration Audit	4	2017	4	2017
Production Milestones: Contract Awards: Lot 23 APN MV22 Navy Variant Qty 8	1	2018	1	2018
Production Milestones: Contract Awards: Lot 24 APN MV22 Navy Variant Qty 8	1	2019	1	2019

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

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604262N / V-22A	Project (Number/Name) 1425 / V-22
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Production Milestones: Contract Awards: Lot 25 APN MV22 Navy Variant Qty 8	1	2020	1	2020
Production Milestones: Production Deliveries: Lot 23 APN HV22 Qty 8	1	2020	1	2020
Digital Interoperability (DI)				
System Design & Demonstration	2	2015	4	2019
Software Reprogrammable Payload (SRP)	2	2016	4	2017
SRP Contract Award	2	2016	2	2016
V-22 Aerial Refueling system (VARS)				
Contract Award	1	2016	1	2016
Reviews: Preliminary Design Review	4	2016	4	2016
Reviews: Critical Design Review	1	2017	1	2017
Test & Evaluation: Prototype Test	3	2017	1	2018
Test & Evaluation: Developmental Testing	1	2018	4	2018
Test & Evaluation: Operational Testing	1	2019	2	2019
Production Milestones: Kit Deliveries & Installs: Kits & Installs Qty 30	1	2019	4	2020