

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy										Date: February 2018		
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604214N / AV-8B Aircraft - Engine Dev							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	379.411	32.179	48.780	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	460.370
0652: AV-8B	379.411	32.179	48.780	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	460.370

A. Mission Description and Budget Item Justification

The program provides for AV-8B Design, Development, Integration, and Test of various platform improvements such as: Engine Life Management Program (ELMP), Escape Systems, Joint Mission Planning System (JMPS), and Block upgrades to various mission systems and software, avionics and communications systems, navigation equipment, weapons carriage and countermeasures, and unique flight testing, and the Obsolescence Replacement (OR)/Readiness Management Plan (RMP) including structural, hydraulic, electrical, environmental, and mechanical systems. The JMPS is required as part of the Department of the Navy directed migration to a common Navy and Marine Corps mission planning system. OR/RMP represents all engineering activities for development and design to support aircraft safety flight clearances, concept explorations, responses to evolving threats, and developments to support Program Objective Memorandum. The program's Evolutionary Acquisition Strategy includes Design, Development, Integration, and Test activities under the consolidated effort of Block Developments: H6.1, H6.2 and follow-on block upgrades, to include a H7.0 block upgrade that will be required to implement full Link 16 capability and integrate AIM-9X. An H6.2 update, including the Common Avionics Program, provides AV-8B a self-contained Global Positioning System navigation capability that is required to access preferred airspaces, and will include a Litening Operational Flight Program (OFP) V3, and initial Link 16 Precise Participant Location and Identification capability, which will provide interoperability, digital combat identification and increase situational awareness on the battlefield. Link 16 is a Top 10 item in the Operational Advisory and Systems Safety Groups. AV-8B funding supports peculiar flight test requirements to include weapons integration/carriage and avionics and software/firmware upgrades. The H7.0 OFP will fully implement the Harrier Link 16 integration, which will provide information sharing capabilities and integration of an increased number of Link 16 messages and the ability to act on shared target track information. Connection to the Link 16 network is vital to the AV-8B's ability to operate within some Command and Control situations and Operational Plans, as designed today, as well as provide a tactical capability for the more effective and safe prosecution of both airborne and ground targets. Continued AV-8B combat relevance and ability to respond to evolving and emergent threats through end of service is critical to the Marine Air-Ground Task Force's ability to generate aviation combat power throughout the transition to F-35B. J-series, K-series, Tactical Targeting Network Technology, and other emerging datalink technology messages are required to support current and future mission threads. Linked performance on par with current tactical platforms as well as design to communicate with F-35 is required for the AV-8B to remain tactically relevant to transition. H7.0 will also include the integration and test of weapons and sensors such as AIM-9X and Litening OFP V4, and will integrate required Radar Display Computer processing improvements to enable H7.0 functionality. Additionally a Helmet Mounted Cueing System (HMCS), Unique Weapons and Countermeasures software integration and stores expansion testing will be required, to include Advanced Precision Kill Weapons System, AIM-9X, ALE-43, standoff weapons such as Joint Standoff Weapons (JSOW) and AIM-120 unique platform flight test which will be required to utilize updated AIM-120C variants on the AV-8B and utilize the AIM-120 in mixed stores loadouts, as well as test of emergent tactical requirements. The ELMP is a comprehensive plan to increase and maintain safety of flight and operational readiness of the AV-8B F402-RR-408 Engine and accessories. PMA-257 will accomplish this mission by conducting Engineering Project Description investigations to develop engineering solutions that address emergent safety, obsolescence, foreign object debris detection and prevention, fatigue life and maintenance issues. The OR/RMP is required to ensure the AV-8B air vehicle's sustained mission availability, and safe and reliable operational readiness until end of service. Air vehicle sustainment requires component and system analyses, technical planning, identification, prioritization, and diagnosis of emergent problems and the allocation of resources for the development, testing and flight clearance of engineering solutions in the areas of flight, crew safety, and escape systems and structural integrity, obsolescence, systems reliability and maintainability, inventory preservation, alternative mission development,

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy				Date: February 2018	
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0604214N / AV-8B Aircraft - Engine Dev			
or other emergent material or equipment conditions affecting AV-8B systems readiness. Activities include research/analysis for system safety deficiency corrections, fuel system safety improvements, structural analyses, monitoring and integrity analysis, component compatibility, component and materials obsolescence analyses and mitigation development, explorations for aging equipment, reliability improvement analyses and design developments. FY 2019 continues development efforts and associated obsolescence and readiness requirements for ELMP, RMP, Link 16, weapons and sensors carriage/integration, peculiar flight test and OFP updates.					
B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	34.902	48.780	46.695	-	46.695
Current President's Budget	32.179	48.780	0.000	-	0.000
Total Adjustments	-2.723	0.000	-46.695	-	-46.695
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.485	0.000			
• Program Adjustments	-1.238	0.000	-48.468	-	-48.468
• Rate/Misc Adjustments	0.000	0.000	1.773	-	1.773
• Congressional Directed Reductions Adjustments	-1.000	-	-	-	-
Change Summary Explanation					
Funds decrease from FY 2018 to FY 2019 due to transfer of effort to new PE 0604214M beginning in FY 2019.					
Schedule:					
H7.0 IOC, H7.0 DT/IT, H7.0 Software Delivery completion and AIM-9X Integration and H7.0 Development adjusted two quarters due to completion of H7.0 system requirement review and gaining greater understanding of software coding and test requirements.					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy										Date: February 2018		
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604214N / AV-8B Aircraft - Engine Dev				Project (Number/Name) 0652 / AV-8B			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
0652: AV-8B	379.411	32.179	48.780	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	460.370
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program provides for AV-8B Design, Development, Integration and Test of the following improvements: The Engine Life Management Program (ELMP), Operational Flight Program (OFP) and Avionics/Weapons Integration, Escape System, and Readiness Management Plan (RMP). The ELMP is a comprehensive plan to increase safety of flight and operational readiness of the AV-8B F402-RR-408 Engine and Gas Turbine Starter, as well as other critical engine components. The Program Office will accomplish this mission through the Component Improvement Program, which entails Engineering Project Description investigations to derive safety and reliability improvements to the engine and engine components. The Joint Mission Planning System is required as part of the Department of Navy directed migration to a common Navy and Marine Corps mission planning system. H6.2 provides Global Positioning System navigation capabilities, a Litening common OFP update and initial Link 16 capability to include use of the APX-123, initial Mode 5 capability, as well as software updates. H7.0 OFP will integrate full Harrier Link 16 capability and provide software updates. H7.0 will also integrate AIM-9X, a Litening Common OFP update, provide Advanced Precision Kill Weapon System (APKWS) integration improvements, Joint Standoff Weapons (JSOW), and common avionics ADS-B (out), Mode 5, and Mode S Identification Friend or Foe capabilities as well as integrate required Radar Display Computer processing improvements to enable H7.0 functionality. Other specific efforts include peculiar integration and flight test requirements such as AIM-120C flight test, as AIM-120A/B will become obsolete, as well as AIM-120 mixed stores flight test, unique weapons, sensors, and countermeasures integration and stores expansion to include APKWS, Helmet Mounted Cueing System (HMCS), AIM-9X, ALE-43, standoff weapons such as Joint Standoff Weapons (JSOW) and unique flight test of other avionics, sensors, or weapons systems, or emergent tactical requirements, as they arise. The program is working closely with the Common Avionics Program and the Allies (Spain and Italy) on all efforts. RMP represents all engineering activities for development, design and test to support aircraft safety, flight clearance and concept exploration for resolution of emergent safety, service life, escape systems, compatibility, obsolescence, and readiness issues as well as response to fleet urgent operational requirements.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Development of RMP Engineering Change Proposals	7.270	10.294	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Develop obsolescence solutions to improve safety, structural integrity, and systems reliability of the AV-8B aircraft.					
FY 2018 Plans: Extension to AV-8B End of Service date requires continued obsolescence mitigation efforts to maintain aircraft readiness. The program will continue to address known, predicted, and emergent obsolescence equipment issues, continuing efforts from prior years. Continue fatigue life tracking analyses and algorithm update development. Continue system engineering analyses and design for GR-9 component compatibility. Continue					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy				Date: February 2018		
Appropriation/Budget Activity 1319 / 5		R-1 Program Element (Number/Name) PE 0604214N / AV-8B Aircraft - Engine Dev		Project (Number/Name) 0652 / AV-8B		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
the development of Nose Landing Gear Door Redesign, Environmental Control System improvements, Outrigger Strut Positive Position Indication, and Oil Caution Light Redesign. Continue Fuselage Fatigue Life Assessment to assure continued safe operation of the aircraft through the end of service date. Begin Nose Landing Gear Taxi Light Improvement required for increased safety of flight and aviation related ground mishap avoidance. Systems engineering will support ongoing and emergent analysis and design/development/test efforts required to identify Engineering Change Proposal requirements to correct systems safety, structural integrity, compatibility, and readiness issues including efforts required to respond to evolving and emergent threats, mission systems, communications systems, navigation equipment, weapons carriage and countermeasures, structural, hydraulic, electrical, environmental, and mechanical systems. FY 2019 Base Plans: N/A FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: Decrease of \$10.294M from FY 2018 to FY 2019 a result of the realignment of 100% Blue In Support of Green (BISOG) accounts to "M" coded Program Elements.						
Title: Operational Flight Program (OFP) and Avionics Weapons Systems Development and Integration Articles: Description: Develop, integrate, and test aircraft OFP updates, mission planning updates, Litening Pod software updates/capability expansions, support aircraft avionics development efforts, integrate and test unique weapons systems, sensors, and countermeasures such as AIM-120C, AIM-9X, Helmet Mounted Cueing System (HMCS), Advanced Precision Kill Weapon System, ALE-43, standoff weapons such as Joint Standoff Weapons (JSOW) and other weapons/avionics and sensor systems and emergent tactical requirements as they arise, perform stores expansion testing, and conduct Digital Interoperability (to include Link 16) development, integration, and test efforts. Evaluate future capability expansions via studies and analyses. FY 2018 Plans: Funds provided for future capability expansion studies and analyses efforts, efforts required to respond to evolving and emerging threats, peculiar flight test requirements to include various required weapons/sensors/countermeasures/stores expansion integration and testing such as AIM-120, AIM-9X, ALE-43, JSOW, APKWS, and other weapons/avionics systems as they arise. Perform stores expansion testing. Complete H6.2		19.090 -	32.674 -	0.000 -	0.000 -	0.000 -

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy			Date: February 2018			
Appropriation/Budget Activity 1319 / 5		R-1 Program Element (Number/Name) PE 0604214N / AV-8B Aircraft - Engine Dev	Project (Number/Name) 0652 / AV-8B			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
OFP software integration and integrated test period. Field H6.2 OFP. Continue H7.0 OFP/Link 16/AIM-9X requirements development and begin software integration effort. FY 2019 Base Plans: N/A FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: Decrease of \$32.674M from FY 2018 to FY 2019 a result of the realignment of 100% Blue In Support of Green (BISOG) accounts to "M" coded Program Elements.						
Title: F402-RR-408 Engine Safety and Reliability Enhancements Articles: Description: Improve Safety and Reliability of the F402-RR-408 Engine for the AV-8B Harrier. FY 2018 Plans: The engineering CIP will conduct engineering investigations to develop ECPs for improvements and design solutions to correct deficiencies resulting from safety, obsolescence, foreign object debris (FOD) detection and prevention and structural fatigue for the engine and engine accessories, to maintain readiness and to meet mission requirements. FY 2019 Base Plans: N/A FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: Decrease of \$5.812M from FY 2018 to FY 2019 a result of the realignment of 100% Blue In Support of Green (BISOG) accounts to "M" coded Program Elements.		5.819 -	5.812 -	0.000 -	0.000 -	0.000 -
Accomplishments/Planned Programs Subtotals		32.179	48.780	0.000	0.000	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy							Date: February 2018	
Appropriation/Budget Activity 1319 / 5				R-1 Program Element (Number/Name) PE 0604214N / AV-8B Aircraft - Engine Dev			Project (Number/Name) 0652 / AV-8B	

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

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APN/0514: AV-8 Series	56.275	43.555	58.577	-	58.577	42.082	33.948	37.866	38.647	91.978	1,721.898

Remarks

D. Acquisition Strategy

The Obsolescence Replacement (OR)/Readiness Management Plan (RMP) ensures the maximum readiness levels for the AV-8B Type/Model/Series by maintaining post production engineering and logistic support with the two Original Equipment Manufacturers (OEMs). RMP tracks readiness degraders, identifies and addresses obsolescence for non avionics systems, and identifies and addresses emerging in-service material developments related to ease of maintenance, safety, airframe life management and improved performance. The multi-disciplined team of program management, engineering, logistics, and financial personnel develop ECPs, Rapid Action Minor Engineering Changes, Interim Rapid Action Changes to publications, trainer and support equipment modifications necessary to maintain aircraft reliability and safety. The RMP additionally supports the constant improvement and analysis of fleet Fatigue Life Expended data to maximize aircraft structural life and to support the NAVAIR annual Structural Appraisal of Fatigue Effects report required by OPNAV. Funding for the Engine Life Management Program will be placed on a cost-type contract to Rolls-Royce to address safety of flight issues, top readiness degraders, engine removal and mission failure drivers in order to improve Fleet readiness and reduce cost of ownership of the F402-RR-408 and accessories. It is also developed to assess life management program issues and design fixes for any service revealed deficiencies. The program's Evolutionary Acquisition Strategy includes Design, Development, Integration and Test activity under the consolidated effort of Block Developments: H2.0, H4.0, H5.0, H6.0, H6.1, H6.2, H7.0 and following Operational Flight Programs. The development and integration of Joint Mission Planning System occurred concurrently with H2.0. H4.0 Block improvements included the Tactical Aircraft Moving Map Capability. H5.0 Block Upgrade provided Dual Mode Laser Guided Bomb, Litening Centerline/Station 4 (improvement of current weapons carriage capability). The H6.2 update is being accomplished in conjunction with the Common Avionics Program and provides a Global Positioning System Navigation capability for AV-8B, a Litening Common Operational Flight Program update, initial Link 16 capability to include the use of APX-123 and initial Mode 5 functionality. Full Harrier Link 16 integration will require an H7.0 Operational Flight Program subsequent to H6.2 and will provide the AV-8B the Link 16 capability. H7.0 will also be accomplished in conjunction with Common Avionics Program and will integrate AIM-9X, ADS-B (out), Mode 5, Mode S and Advanced Precision Kill Weapon System (APKWS) integration improvements. Peculiar flight test efforts to include weapons, avionics, and sensors integration such as AIM-120, AIM-9X, APKWS, ALE-43, HMCS, standoff weapons such as Joint Standoff Weapons (JSOW), other avionics/weapons and sensors systems and emergent tactical requirements as they arise. Stores expansion efforts will be conducted by NAWCWD and AV-8B flight test squadrons in FY18.

E. Performance Metrics

Achieve Engine Life Management Program Rolls-Royce Component Improvement Program cost plus fixed fee contract award 1st Quarter FY 2019.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy												Date: February 2018			
Appropriation/Budget Activity 1319 / 5						R-1 Program Element (Number/Name) PE 0604214N / AV-8B Aircraft - Engine Dev				Project (Number/Name) 0652 / AV-8B					
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development - ELMP	C/CPFF	Rolls-Royce PLC : Bristol, GB	32.264	2.121	Dec 2016	1.802	Dec 2017	0.000		-		0.000	7.874	44.061	44.061
Primary Hardware Development - ELMP	C/FFP	ONTIC (Goodrich) PS : Pitstone, GB	6.061	0.220	Mar 2017	0.600	Mar 2018	0.000		-		0.000	1.980	8.861	8.861
Primary Hardware Development - OFP	WR	NAWCWD : China Lake, CA	49.586	7.423	Dec 2016	14.052	Dec 2017	0.000		-		0.000	0.000	71.061	-
Primary Hardware Development - OFP	C/FFP	Boeing : St. Louis, MO	5.437	2.340	Dec 2016	3.000	Dec 2017	0.000		-		0.000	6.419	17.196	17.196
Primary Hardware Development - OFP	C/CPFF	Raytheon : Waltham, MA	0.000	0.700	Apr 2017	3.750	Dec 2017	0.000		-		0.000	7.398	11.848	11.848
Systems Engineering - RMP	C/FFP	Boeing : St. Louis, MO	28.633	2.765	Jan 2017	5.172	Jan 2018	0.000		-		0.000	19.062	55.632	55.632
Systems Engineering - RMP	WR	NAWCWD : China Lake, CA	3.569	0.092	Nov 2016	0.094	Nov 2017	0.000		-		0.000	0.000	3.755	-
Systems Engineering - RMP	WR	NAWCAD : Patuxent River, MD	7.147	0.641	Nov 2016	1.450	Nov 2017	0.000		-		0.000	0.000	9.238	-
Systems Engineering - OFP	WR	NAWCWD : China Lake, CA	0.000	0.099	Aug 2017	0.738	Nov 2017	0.000		-		0.000	0.000	0.837	-
Systems Engineering - OFP	TBD	TBD : TBD	0.000	0.000		0.051	Dec 2017	0.000		-		0.000	0.000	0.051	-
Prior year cost no longer funded in the FYDP	Various	Various : Various	43.965	0.000		0.000		0.000		-		0.000	0.000	43.965	-
Subtotal			176.662	16.401		30.709		0.000		-		0.000	42.733	266.505	N/A
Remarks															
1. FY18 increase from PB18 to Primary Hardware Development OFP at Boeing due to AIM-9X integration. This effort began in 4Q/FY17 and continues for the full fiscal year in FY18.															

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy **Date:** February 2018

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604214N / AV-8B Aircraft - Engine Dev	Project (Number/Name) 0652 / AV-8B
--	---	--

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support - OFP	WR	FST Cherry Pt : Cherry Point, NC	0.000	0.000		0.080	Nov 2017	0.000		-		0.000	0.000	0.080	-
Software Development - RMP	C/CPFF	Boeing : St. Louis, MO	0.825	0.825	Jun 2017	0.605	Jun 2018	0.000		-		0.000	2.762	5.017	5.017
Studies and Analysis - OFP	WR	NAWCWD : China Lake, CA	0.420	0.229	Nov 2016	0.232	Nov 2017	0.000		-		0.000	0.000	0.881	-
Studies and Analysis - RMP	WR	NAWCAD : Patuxent River, MD	0.000	0.126	Mar 2017	0.000		0.000		-		0.000	0.000	0.126	-
Studies and Analysis - RMP	C/FFP	Boeing : St. Louis, MO	0.850	2.372	Jul 2017	1.740	Jul 2018	0.000		-		0.000	3.590	8.552	8.552
Studies and Analysis - OFP	C/FFP	Boeing : St. Louis, MO	3.519	0.000		1.000	Jan 2018	0.000		-		0.000	1.020	5.539	5.539
Prior year cost no longer funded in the FYDP	Various	Various : Various	55.246	0.000		0.000		0.000		-		0.000	0.000	55.246	-
Subtotal			60.860	3.552		3.657		0.000		-		0.000	7.372	75.441	N/A

Remarks

2. FY18 increase from PB18 to Studies and Analysis RMP at Boeing due to continuation of the Fuselage Fatigue Life Assessment effort necessary to assure continued safe operation of the aircraft through the end of service date.

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation - RMP	WR	NAWCWD : China Lake, CA	40.242	0.000		0.592	Jan 2018	0.000		-		0.000	0.000	40.834	-
Developmental Test & Evaluation - OFP	WR	NAWCWD : China Lake, CA	16.229	3.670	Jan 2017	6.545	Jan 2018	0.000		-		0.000	0.000	26.444	-
Developmental Test & Evaluation - OFP	C/CPFF	Boeing : St. Louis, MO	0.000	1.439	Apr 2017	0.360	Apr 2018	0.000		-		0.000	0.000	1.799	1.799
Developmental Test & Evaluation - OFP	C/CPFF	Raytheon : Waltham, MA	0.000	1.266	Apr 2017	0.705	Apr 2018	0.000		-		0.000	1.537	3.508	3.508

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy												Date: February 2018			
Appropriation/Budget Activity 1319 / 5						R-1 Program Element (Number/Name) PE 0604214N / AV-8B Aircraft - Engine Dev				Project (Number/Name) 0652 / AV-8B					
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation - RMP	WR	FRC-E : Cherry Point, NC	0.193	0.000		0.100	Dec 2017	0.000		-		0.000	0.000	0.293	-
Developmental Test & Evaluation - RMP/OFP	Various	Various : Various	0.000	0.000		0.100	Jan 2018	0.000		-		0.000	0.000	0.100	-
Operational Test & Evaluation - OFP	WR	COMOPTEVFOR : Norfolk, VA	23.495	0.755	Jan 2017	0.762	Jan 2018	0.000		-		0.000	0.000	25.012	-
Operational Test & Evaluation - OFP	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.130	Dec 2017	0.000		-		0.000	0.000	0.130	-
Prior year cost no longer funded in the FYDP	Various	Various : Various	10.929	0.000		0.000		0.000		-		0.000	0.000	10.929	-
Subtotal			91.088	7.130		9.294		0.000		-		0.000	1.537	109.049	N/A
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering & Tec SRVC (Non-FFRDC) - RMP	C/CPFF	TDA : Falls Church, VA	0.766	0.265	Dec 2016	0.270	Dec 2017	0.000		-		0.000	1.142	2.443	2.443
Engineering & Tec SRVC (Non-FFRDC) - ELMP	C/CPFF	Zenetex : Herndon, VA	2.851	1.218	Jun 2017	1.162	Jun 2018	0.000		-		0.000	10.030	15.261	15.261
Engineering & Tec SRVC (Non-FFRDC)	C/CPFF	Various : Various	8.614	1.074	Dec 2016	1.041	Dec 2017	0.000		-		0.000	8.987	19.716	19.716
Government Engineering Support - ELMP	WR	NAWCAD : Patuxent River, MD	7.969	1.034	Nov 2016	1.052	Nov 2017	0.000		-		0.000	0.000	10.055	-
Government Engineering Support - OFP	WR	NAWCAD : Patuxent River, MD	2.252	0.878	Nov 2016	0.974	Nov 2017	0.000		-		0.000	0.000	4.104	-
Government Engineering Support - ELMP	WR	NAWCWD : China Lake, CA	1.321	0.027	Dec 2016	0.028	Dec 2017	0.000		-		0.000	0.000	1.376	-
Government Engineering Support - OFP	Various	Various : Various	0.000	0.200	Jan 2017	0.204	Jan 2018	0.000		-		0.000	0.000	0.404	-
MGT & PROF SUPPT SRVC (NON-FFRDC)	C/CPFF	Various : Various	8.834	0.205	Dec 2016	0.209	Dec 2017	0.000		-		0.000	12.278	21.526	21.526
Travel	WR	Various : Various	1.425	0.195	Oct 2016	0.180	Oct 2017	0.000		-		0.000	0.000	1.800	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy												Date: February 2018			
Appropriation/Budget Activity 1319 / 5						R-1 Program Element (Number/Name) PE 0604214N / AV-8B Aircraft - Engine Dev				Project (Number/Name) 0652 / AV-8B					

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior year cost no longer funded in the FYDP	Various	Various : Various	16.769	0.000		0.000		0.000		-		0.000	0.000	16.769	-
Subtotal			50.801	5.096		5.120		0.000		-		0.000	32.437	93.454	N/A

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	379.411	32.179	48.780	0.000	-	0.000	84.079	544.449	N/A

Remarks

UNCLASSIFIED

PE 0604214N: AV-8B Aircraft - Engine Dev
Navy

R-1 Line #106

[illegible]

PE 0604214N / AV-8B Aircraft - Engine Dev

0652 / AV-8B

2019PB - 0604214N - 0652

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604214N / AV-8B Aircraft - Engine Dev	Project (Number/Name) 0652 / AV-8B	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
AV-8B AIRCRAFT - ENGINE DEV				
Acquisition Milestones: H6.2 IOC	2	2018	2	2018
Systems Development: Hardware Development: AIM-9X Integration Development	1	2018	4	2018
Systems Development: Hardware Development: Link 16 Development	1	2017	1	2018
Systems Development: Hardware Development: RMP Obsolescence Development	1	2017	4	2018
Systems Development: Software Development: H6.2 Development	1	2017	3	2017
Systems Development: Software Development: H7.0 Development	1	2017	4	2018
Systems Development: Software Development: RMP Fatigue Life Expended Development	1	2017	4	2018
Test & Evaluation: Technical Evaluation: H6.2 DT/IT	1	2017	2	2018
Test & Evaluation: Technical Evaluation: H7.0 Link 16 DT/IT	3	2018	4	2018
Production Milestones: Contract Awards: Engine Life Management Program (ELMP): ELMP Contract Award FY17	1	2017	1	2017
Production Milestones: Contract Awards: Engine Life Management Program (ELMP): ELMP Contract Award FY18	1	2018	1	2018
Deliveries: H6.2 S/W Delivery	2	2018	2	2018