Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604214N *I AV-8B Aircraft - Engine Dev*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	352.672	26.939	34.902	48.780	-	48.780	46.695	38.034	19.115	17.355	Continuing	Continuing
0652: *AV-8B*	352.672	26.939	34.902	48.780	-	48.780	46.695	38.034	19.115	17.355	Continuing	Continuing

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, communications systems, navigation equipment, weapons carriage and countermeasures, 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. The Link 16 full integration effort, which will require an H7.0 OFP upgrade beyond H6.2, 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 of weapons such as AIM-9X. Unique Weapons and Countermeasures 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. 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, 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, 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 2018 continues development efforts and associated obsolescence and readiness requirements for ELMP, RMP, Link 16, weapons carriage/integration, peculiar flight test and OFP updates.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	27.668	33.664	39.078	-	39.078
Current President's Budget	26.939	34.902	48.780	-	48.780
Total Adjustments	-0.729	1.238	9.702	-	9.702
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.728	0.000			
• Program Adjustments	0.000	1.238	10.000	-	10.000
• Rate/Misc Adjustments	-0.001	0.000	-0.298	-	-0.298

Change Summary Explanation

Cost:

FY 2017 and 2018 Adjustments to Operational Flight Program (OFP) and Avionics Weapons Systems Development and Integration for AIM-9X integration/ development and AIM-120 adjacent stores testing.

Schedule:

AIM-9X Systems Development added in 1Q/18 through 1Q/20 to capture AIM-9X development as part of H7.0 OFP.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0652: *AV-8B*	352.672	26.939	34.902	48.780	-	48.780	46.695	38.034	19.115	17.355	Continuing	Continuing
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. H6.1 provided enhancements and software corrections, and H6.2 provides Global Positioning System navigation capabilities, a Litening common OFP 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 Link 16 capability and provide software updates. H7.0 will also integrate AIM-9X, provide Advanced Precision Kill Weapon System integration improvements, and common avionics ADS-B (out), Mode 5, and Mode S Identification Friend or Foe capabilities. 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 and countermeasures integration and stores expansion to include Advanced Precision Kill Weapons System, AIM-9X, ALE-43, standoff weapons such as Joint Standoff Weapons (JSOW) and unique flight test of other avionics or weapons systems 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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Development of RMP Engineering Change Proposals	6.246	9.772	10.294	0.000	10.294
Articles:	-	-	-	-	-
Description: Develop obsolescence solutions to improve safety, structural integrity, and systems reliability of the AV-8B aircraft.					
FY 2016 Accomplishments: Extension to AV-8B End of Service date requires continued obsolescence mitigation efforts to preclude aircraft on ground. The program continued to address known, predicted, and emergent obsolescence equipment issues. Systems engineering supported ongoing and emergent analysis and design/development efforts required to identify Engineering Change Proposal requirements to correct systems safety, structural integrity, compatibility, and readiness issues. Continued fatigue life tracking analyses and algorithm update					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
development. Continued design of Brake Temperature monitoring system to prevent brake fires and improve safety. Continued the development of Improved Gun Shutoff Valve, Hand Operated Strut, Brake Temperature and Main Landing Gear Strut Servicing Indication Systems and Environmental Control System capacity (Turbine) improvements. Continued system engineering analyses and design for GR-9 component compatibility. ***FY 2017 Plans:*** Extension to AV-8B End of Service date requires continued obsolescence mitigation efforts to preclude aircraft on ground. The program will continue to address known, predicted, and emergent obsolescence equipment issues, continuing efforts from prior years and develop replacements for the Pitot Static Probe, obsolete canopy transparency and composite materials components including landing gear doors. Continue fatigue life tracking analyses and algorithm update development. Continue system engineering analyses and design for GR-9 component compatibility. Continue the development of Brake Fire Mitigation, Main Landing Gear Strut Servicing Indication Systems, Hand Operated Strut, Outboard Pylon Stations 1&7 Attachment Fittings, Gun Shutoff Valve, and Outrigger Landing Gear. Begin Nose Landing Gear Door Redesign. 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 2018 Base Plans:*** Extension to AV-8B End of Service date requires continued obsolescence mitigation efforts to preclude aircraft on ground. 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 the development of Brake Fire Mitigation, Main Landing Gear Strut Servicing Indication Systems, Hand Operated Strut, Outrigger Landing Gear, and Nose Landing Gear Door Redesign. Conduct flight tests for Pitot Static Probe replacements and canopy transparency replacement material. Begin Fuselage Fatigue Life Assessment to assure continued safe operation of the aircraft through the end of service date. 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					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
systems, navigation equipment, weapons carriage and countermeasures, structural, hydraulic, electrical, environmental, and mechanical systems. ***FY 2018 OCO Plans:*** N/A					
Title: Operational Flight Program (OFP) and Avionics Weapons Systems Development and Integration	14.519	19.311	32.674	0.000	32.674
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 and countermeasures such as AIM-120C, AIM-9X, Advanced Precision Kill Weapon System, ALE-43, standoff weapons such as Joint Standoff Weapons (JSOW) and other weapons/avionics systems 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 2016 Accomplishments:*** Funds provided for future capability expansion studies and analyses, peculiar flight test requirements to include weapons/countermeasures/stores expansion integration and testing, and aircraft Operational Flight Program (OFP)/Litening Pod software updates and developmental test as part of the H6.2 upgrade. Continued developmental testing of second Mission Systems Computer processor card. Began H7.0 OFP/Link 16 integration efforts. ***FY 2017 Plans:*** Funds will provide 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/ countermeasures/stores expansion integration and testing such as AIM-120, AIM-9X, ALE-43, Advanced Precision Kill Weapon System, and other weapons/avionics systems as they arise, aircraft Operational Flight Program/Litening Pod software updates, initial Link 16 capability integration and developmental/integrated test as part of the H6.2 upgrade. Continue Link 16 hardware and software integration and test efforts in conjunction with H6.2 OFP. Continue H7.0 OFP/Link 16 software integration efforts. ***FY 2018 Base Plans:*** Funds will provide 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/ countermeasures/stores expansion integration and testing such as AIM-120, AIM-9X, ALE-43, JSOW, Advanced Precision Kill Weapon System, and other weapons/avionics systems as they arise, aircraft Operational Flight					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Program/Litening Pod software updates, initial Link 16 capability integration and developmental/integrated test as part of the H6.2 upgrade. Continue Link 16 hardware and software integration and test efforts in conjunction with H6.2 OFP, and field H6.2 OFP. Continue H7.0 OFP/Link 16/AIM-9X software integration and test efforts. ***FY 2018 OCO Plans:*** N/A					
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 2016 Accomplishments:*** The engineering Component Improvement Program (CIP) conducted investigations that developed improvements and design solutions for correction of deficiencies and issues resulting from safety, obsolescence, and structural fatigue for the engine and engine accessories. ***FY 2017 Plans:*** The engineering CIP will conduct investigations to develop Engineering Change Proposals (ECPs) for improvements and develop design solutions for correction of deficiencies and issues resulting from safety, obsolescence, and structural fatigue for the engine and engine accessories. ***FY 2018 Base Plans:*** The engineering CIP will conduct engineering investigations to develop ECPs for improvements and design solutions to correct deficiencies resulting from safety, obsolescence, and structural fatigue for the engine and engine accessories, to maintain readiness and to meet mission requirements. ***FY 2018 OCO Plans:*** N/A	6.174 -	5.819 -	5.812 -	0.000 -	5.812 -
Accomplishments/Planned Programs Subtotals	26.939	34.902	48.780	0.000	48.780

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/0514: *AV-8 Series*	78.065	62.302	43.555	-	43.555	58.464	43.447	35.119	39.158	189.955	1,811.980

Remarks

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604214N / *AV-8B Aircraft - Engine Dev*	**Project (Number/Name)** 0652 / *AV-8B*

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 (OEM's). 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, initial Link 16 capability to include the use of APX-123 and initial Mode 5 functionality. Full Link 16 integration will require an H7.0 Operational Flight Program subsequent to H6.2 and will provide the AV-8B and 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 integration improvements. Peculiar flight test efforts to include weapons integration such as AIM-120, AIM-9X, Advanced Precision Kill Weapons Systems, ALE-43, standoff weapons such as Joint Standoff Weapons (JSOW), other avionics/weapons systems as they arise, and stores expansion effort will be conducted by NAWCWD and AV-8B flight test squadrons.

E. Performance Metrics

Achieve Engine Life Management Program Rolls-Royce Component Improvement Program cost plus fixed fee contract award 1st Quarter FY 2018.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
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)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development - ELMP	C/CPFF	Rolls-Royce PLC : Bristol, GB	30.462	1.802	Dec 2015	1.684	Dec 2016	1.429	Dec 2017	-		1.429	7.874	43.251	43.251
Primary Hardware Development - ELMP	C/FFP	ONTIC (Goodrich) PS : Pitstone, GB	5.861	0.200	Mar 2016	0.220	Mar 2017	0.600	Mar 2018	-		0.600	1.380	8.261	8.261
Primary Hardware Development - OFP	WR	NAWCWD : China Lake, CA	46.229	3.357	Jan 2016	7.574	Dec 2016	16.389	Dec 2017	-		16.389	Continuing	Continuing	Continuing
Primary Hardware Development - OFP	C/FFP	Boeing : St. Louis, MO	0.000	5.437	Jan 2016	2.740	Dec 2016	1.023	Dec 2017	-		1.023	3.319	12.519	12.519
Primary Hardware Development - OFP	C/CPFF	Raytheon : Waltham, MA	0.000	0.000		0.550	Apr 2017	3.750	Dec 2017	-		3.750	4.596	8.896	8.896
Systems Engineering - RMP	C/FFP	Boeing : St. Louis, MO	25.272	3.361	Jan 2016	7.106	Jan 2017	6.109	Jan 2018	-		6.109	19.062	60.910	60.910
Systems Engineering - RMP	WR	NAWCWD : China Lake, CA	3.433	0.136	Nov 2015	0.505	Nov 2016	0.594	Nov 2017	-		0.594	Continuing	Continuing	Continuing
Systems Engineering - RMP	WR	NAWCAD : Patuxent River, MD	5.794	1.353	Nov 2015	1.423	Nov 2016	1.858	Nov 2017	-		1.858	Continuing	Continuing	Continuing
Systems Engineering - OFP	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.050	Nov 2016	0.025	Nov 2017	-		0.025	Continuing	Continuing	Continuing
Systems Engineering - RMP	WR	TBD : Other Gov	0.000	0.000		0.111	Jan 2017	0.113	Jan 2018	-		0.113	Continuing	Continuing	Continuing
Systems Engineering - OFP	TBD	TBD : TBD	0.000	0.000		0.050	Dec 2016	0.051	Dec 2017	-		0.051	Continuing	Continuing	Continuing
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	161.016	15.646		22.013		31.941		-		31.941	-	-	-

Remarks

1. FY18 increase to Primary Hardware Development (PHD) ELMP at ONTIC due to obsolescence efforts related to the engine accessories component improvement program.
2. FY17 increase to PHD OFP at NAWCWD China Lake due to ramp up of Link 16 integration efforts.
3. FY18 increase to PHD OFP at NAWCWD China Lake due to the start of Link 16 full integration capability development, as well as AIM-9X development as part of H7.0 OFP, while H6.2 Link 16 initial capability development is ongoing during FY18. As these two projects are in different stages of development during FY18, both efforts can be in work simultaneously. AIM-9X was not part of the H6.2 OFP.
4. FY17 PHD OFP at Raytheon necessary to begin development efforts for the integration and carriage of the AIM-9X aboard the AV-8B. FY18 increase to PHD OFP necessary to continue development efforts and begin certification efforts for the integration and carriage of the AIM-9X aboard the AV-8B.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
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)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

5. FY17 increase to Systems Engineering RMP due to FY17 efforts to develop pitot static probe, replacement canopy transparency and composite materials components. FY16 Systems Engineering RMP efforts were reprioritized to fund required AV-8B Flight Test Fixed costs at NAWCWD China Lake resulting in the requirement of increased engineering support to provide timely mitigation of these efforts in FY17.
6. FY18 increase to Systems Engineering RMP due to FY18 efforts to develop TAV-8B canopy replacement and Brake Fire Mitigation design development.
7. FY17 increase to Systems Engineering OFP due to ramp up of Link 16 integration efforts.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support - OFP	WR	FST Cherry Pt : Cherry Point, NC	0.000	0.000		0.000		0.080	Nov 2017	-		0.080	Continuing	Continuing	Continuing
Software Development - RMP	C/CPFF	Boeing : St. Louis, MO	0.277	0.548	Jan 2016	0.318	Jan 2017	0.342	Jan 2018	-		0.342	2.146	3.631	3.631
Studies and Analysis - OFP	WR	NAWCWD : China Lake, CA	0.420	0.000		0.229	Nov 2016	0.232	Nov 2017	-		0.232	Continuing	Continuing	Continuing
Studies and Analysis - RMP	C/FFP	Boeing : St. Louis, MO	0.850	0.000		0.000		0.500	Dec 2017	-		0.500	3.590	4.940	4.940
Studies and Analysis - OFP	C/FFP	Boeing : St. Louis, MO	1.865	1.654	Jan 2016	0.000		1.000	Jan 2018	-		1.000	0.000	4.519	4.519
Studies and Analysis - OFP	MIPR	Eglin AFB : Valparaiso, FL	0.000	0.410	Oct 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Prior year cost no longer funded in the FYDP	Various	Various : Various	55.036	0.000		0.000		0.000		-		0.000	0.000	55.036	-
		Subtotal	58.448	2.612		0.547		2.154		-		2.154	-	-	-

Remarks

8. FY18 Development Support OFP at FST Cherry Point necessary to support AIM-9X development as part of H7.0 OFP.
9. Software Development RMP effort reflects continuing fatigue life tracking analyses and algorithm development.
10. FY17 increase to Studies and Analysis OFP at NAWCWD China Lake is for future capability expansion studies and analyses.
11. FY18 increase to Studies and Analysis RMP at Boeing is for the Fuselage Fatigue Life Assessment effort.
12. FY18 increase to Studies and Analysis OFP at Boeing is for future capability expansion studies and analyses to include integration of weapons such as Joint Standoff Weapons (JSOW).

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
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)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation - RMP	WR	NAWCWD : China Lake, CA	39.851	0.391	Jan 2016	0.051	Jan 2017	0.592	Jan 2018	-		0.592	Continuing	Continuing	Continuing
Developmental Test & Evaluation - OFP	WR	NAWCWD : China Lake, CA	13.362	2.867	Apr 2016	3.670	Jan 2017	5.744	Jan 2018	-		5.744	Continuing	Continuing	Continuing
Developmental Test & Evaluation - OFP	C/CPFF	Boeing : St. Louis, MO	0.000	0.000		1.439	Apr 2017	1.830	Apr 2018	-		1.830	0.000	3.269	3.269
Developmental Test & Evaluation - OFP	C/CPFF	Raytheon : Waltham, MA	0.000	0.000		1.266	Apr 2017	0.375	Apr 2018	-		0.375	0.000	1.641	1.641
Developmental Test & Evaluation - RMP	WR	FRC-E : Cherry Point, NC	0.170	0.023	Dec 2015	0.000		0.100	Dec 2017	-		0.100	Continuing	Continuing	Continuing
Developmental Test & Evaluation - RMP/OFP	Various	Various : Various	0.000	0.000		0.000		0.100	Jan 2018	-		0.100	Continuing	Continuing	Continuing
Operational Test & Evaluation - OFP	WR	COMOPTEVFOR : Norfolk, VA	23.258	0.237	Jan 2016	0.755	Jan 2017	0.762	Jan 2018	-		0.762	Continuing	Continuing	Continuing
Operational Test & Evaluation - OFP	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.000		0.130	Dec 2017	-		0.130	Continuing	Continuing	Continuing
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	87.570	3.518		7.181		9.633		-		9.633	-	-	-

Remarks

13. FY17 Developmental Test & Evaluation (DT&E) OFP at Boeing necessary for AIM-9X Ground Vibration Test efforts.
14. FY17 DT&E OFP at Raytheon for AIM-9X test efforts.
15. FY18 increase to DT&E RMP due to anticipated testing of hand operated strut, replacement canopy transparency and composite materials components.
16. FY17 increase to DT&E OFP efforts is to fund required AV-8B Flight Test Fixed costs at NAWCWD China Lake. FY18 increase to DT&E OFP efforts due to beginning of H7.0 DT that will now include AIM-9X testing starting in FY18.
17. FY17 increase to Operational Test & Evaluation (OT&E) OFP in FY17 for H7.0 OFP/Link 16 integration efforts to support unique flight testing and Link 16/H6.2/H7.0 efforts.
18. FY18 OT&E OFP at NAWCAD Patuxent River necessary to conduct testing on AIM-9X as part of H7.0 OFP.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
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)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering & Tec SRVC (Non-FFRDC) - RMP	C/CPFF	Engility : Chantilly, VA	0.517	0.249	Dec 2015	0.098	Dec 2016	0.100	Dec 2017	-		0.100	0.867	1.831	1.831
Engineering & Tec SRVC (Non-FFRDC) - ELMP	C/CPFF	Zenetex : Herndon, VA	1.856	0.995	Jun 2016	1.218	Jun 2017	1.162	Jun 2018	-		1.162	10.030	15.261	15.261
Engineering & Tec SRVC (Non-FFRDC)	C/CPFF	Various : Various	7.451	1.163	Dec 2015	1.074	Dec 2016	1.041	Dec 2017	-		1.041	8.987	19.716	19.716
Government Engineering Support - ELMP	WR	NAWCAD : Patuxent River, MD	6.507	1.462	Nov 2015	1.470	Nov 2016	1.425	Nov 2017	-		1.425	Continuing	Continuing	Continuing
Government Engineering Support - OFP	WR	NAWCAD : Patuxent River, MD	1.785	0.467	Nov 2015	0.697	Nov 2016	0.711	Nov 2017	-		0.711	Continuing	Continuing	Continuing
Government Engineering Support - ELMP	WR	NAWCWD : China Lake, CA	0.821	0.500	Dec 2015	0.027	Dec 2016	0.027	Dec 2017	-		0.027	Continuing	Continuing	Continuing
Government Engineering Support - OFP	Various	Various : Various	0.000	0.000		0.198	Jan 2017	0.202	Jan 2018	-		0.202	Continuing	Continuing	Continuing
MGT & PROF SUPPT SRVC (NON-FFRDC)	C/CPFF	Various : Various	8.663	0.171	Dec 2015	0.233	Dec 2016	0.237	Dec 2017	-		0.237	12.305	21.609	21.609
Travel	WR	Various : Various	1.269	0.156	Oct 2015	0.146	Oct 2016	0.147	Oct 2017	-		0.147	Continuing	Continuing	Continuing
Prior year cost no longer funded in the FYDP	Various	Various : Various	16.769	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	45.638	5.163		5.161		5.052		-		5.052	-	-	-

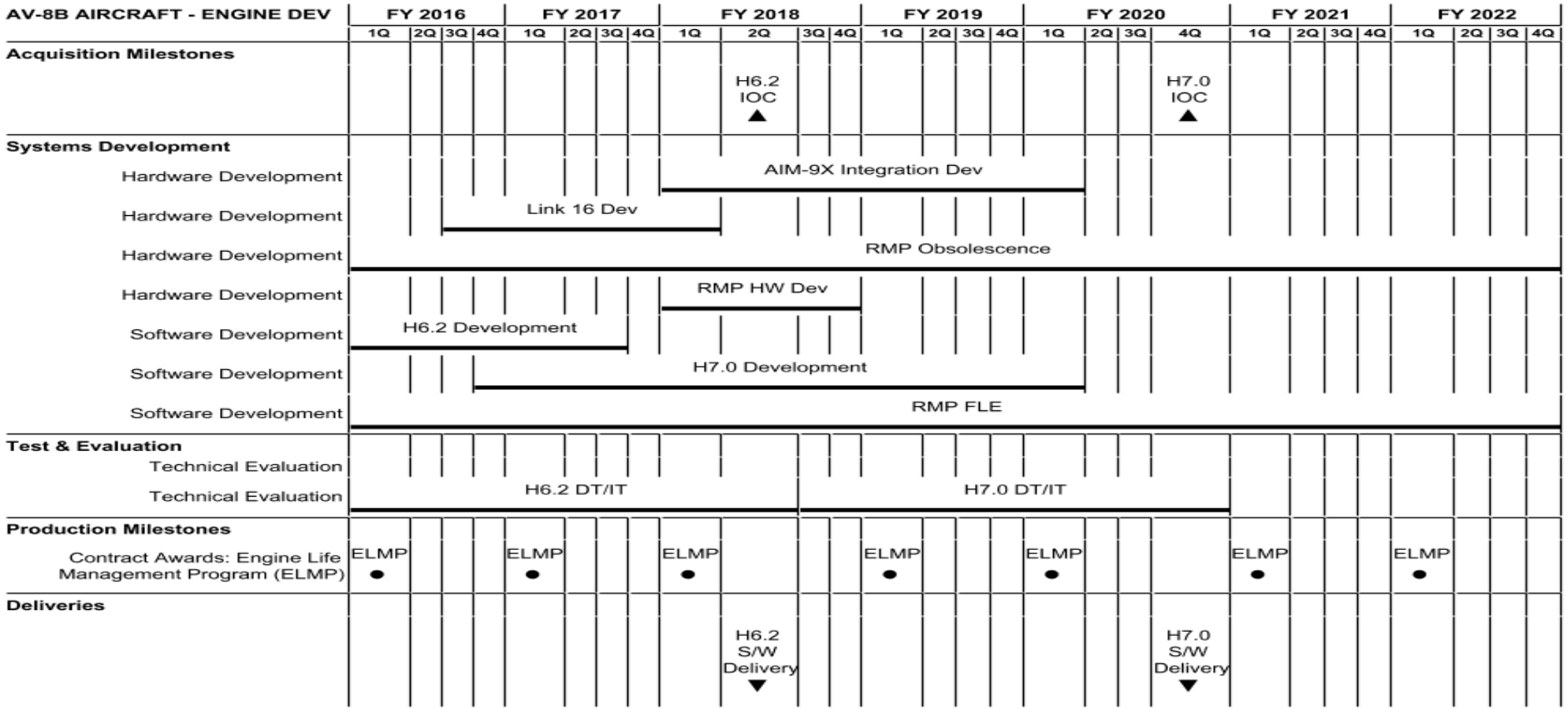
Remarks

19. FY17 increase to Government Engineering Support OFP at NAWCAD Patuxent River and Various due to ramp up of Link 16 integration efforts.

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	352.672	26.939		34.902		48.780		-		48.780	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604214N / *AV-8B Aircraft - Engine Dev*	**Project (Number/Name)** 0652 / *AV-8B*



2018DON - 0604214N - 0652

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
AV-8B AIRCRAFT - ENGINE DEV				
Acquisition Milestones: H6.2 IOC	2	2018	2	2018
Acquisition Milestones: H7.0 IOC	4	2020	4	2020
Systems Development: Hardware Development: AIM-9X Integration Development	1	2018	1	2020
Systems Development: Hardware Development: Link 16 Development	3	2016	1	2018
Systems Development: Hardware Development: RMP Obsolescence Development	1	2016	4	2022
Systems Development: Hardware Development: RMP Hardware Dev	1	2018	4	2018
Systems Development: Software Development: H6.2 Development	1	2016	3	2017
Systems Development: Software Development: H7.0 Development	4	2016	1	2020
Systems Development: Software Development: RMP Fatigue Life Expended Development	1	2016	4	2022
Test & Evaluation: Technical Evaluation: H7.0 Link 16 DT/IT	3	2018	4	2020
Test & Evaluation: Technical Evaluation: H6.2 DT/IT	1	2016	2	2018
Production Milestones: Contract Awards: Engine Life Management Program (ELMP): ELMP Contract Award FY16	1	2016	1	2016
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
Production Milestones: Contract Awards: Engine Life Management Program (ELMP): ELMP Contract Award FY19	1	2019	1	2019
Production Milestones: Contract Awards: Engine Life Management Program (ELMP): ELMP Contract Award FY20	1	2020	1	2020
Production Milestones: Contract Awards: Engine Life Management Program (ELMP): ELMP Contract Award FY21	1	2021	1	2021

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604214N / *AV-8B Aircraft - Engine Dev*	**Project (Number/Name)** 0652 / *AV-8B*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Production Milestones: Contract Awards: Engine Life Management Program (ELMP): ELMP Contract Award FY22	1	2022	1	2022
Deliveries: H6.2 S/W Delivery	2	2018	2	2018
Deliveries: H7.0 S/W Delivery	4	2020	4	2020