Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Navy

**DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY

R-1 ITEM NOMENCLATURE

1319: Research, Development, Test & Evaluation, Navy

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

BA 5: Development & Demonstration (SDD)

· ·	• •										
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	33.654	20.799	22.867	0.000	22.867	21.446	14.486	13.434	13.779	Continuing	Continuing
0652: AV-8B	29.677	17.287	22.867	0.000	22.867	21.446	14.486	13.434	13.779	Continuing	Continuing
2634: OPEN SYSTEMS CORE AVIONICS REQUIREMENT	3.977	3.512	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	105.374

#### A. Mission Description and Budget Item Justification

The program provides 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 communications system, navigation equipment, weapons carriage and countermeasures, and Aircraft Handling/Readiness Management Plan (RMP). The JMPS is required as part of the DON directed migration to a common Navy and Marine Corps mission planning system. A/C Handling and performance represents all engineering activities for development and design to support aircraft safety flight clearance and concept exploration to support POM objectives. The program's Evolutionary Acquisition Strategy includes Design, Development, Integration and Test activities under the consolidated effort of Block Developments: H5.0, H6.0, H7.0 and follow-on block upgrades. H5.0 provides weapons carriage capability of the Litening pod on centerline/station 4 and also delivers Dual Mode Laser Guided Bomb capability. H6.0 block upgrade will provide weapons carriage expansion through the Digital ITER program and will also deliver critical improvements to aircraft survivability equipment. H7.0 Block upgrade will integrate GPS Navigation and approach capabilities as well as providing improvements to the navigation and interrogation suite. The ELMP is a comprehensive plan to increase 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 (EPD) investigations and performing a series of planned Accelerated Simulated Mission Endurance Test (ASMET) to derive engineering improvements to the engine. The Escape System qualifies an improved ejection seat to reduce the risk of injury to aircrew. The 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 and diagnosis of problems and the development, testing and flight clearance of engineering solutions in the areas of flight and crew safety, 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 obsolescence analyses including development of display computer and air data computer replacement, alternatives explorations for aging equipment, reliability improvement analyses and design developments.

FY2009 and FY2010 funding was realigned from P.E. 0205633N, PU 3189, for Digital Improved Triple Ejector Rack (D-ITER).

#### UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Navy

### APPROPRIATION/BUDGET ACTIVITY

R-1 ITEM NOMENCLATURE

1319: Research, Development, Test & Evaluation, Navy

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

BA 5: Development & Demonstration (SDD)

### **B. Program Change Summary (\$ in Millions)**

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	29.703	20.886	0.000	0.000	0.000
Current President's Budget	33.654	20.799	22.867	0.000	22.867
Total Adjustments	3.951	-0.087	22.867	0.000	22.867
<ul> <li>Congressional General Reductions</li> </ul>		-0.087			
<ul> <li>Congressional Directed Reductions</li> </ul>		0.000			
<ul> <li>Congressional Rescissions</li> </ul>	0.000	0.000			
<ul> <li>Congressional Adds</li> </ul>		0.000			
<ul> <li>Congressional Directed Transfers</li> </ul>		0.000			
<ul> <li>Reprogrammings</li> </ul>	4.545	0.000			
<ul> <li>SBIR/STTR Transfer</li> </ul>	-0.594	0.000			
<ul> <li>Program Adjustments</li> </ul>	0.000	0.000	22.867	0.000	22.867
<ul> <li>Rate/Misc Adjustments</li> </ul>	0.000	0.000	0.000	0.000	0.000

# **Change Summary Explanation**

Technical: Not applicable.

Schedule: Not applicable.

FY11 from previous President's Budget is shown as zero because no FY11-15 data was presented in President's Budget 2010.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy **DATE:** February 2010

**PROJECT** APPROPRIATION/BUDGET ACTIVITY **R-1 ITEM NOMENCLATURE** 1319: Research, Development, Test & Evaluation, Navy PE 0604214N: AV-8B Aircraft - Engine Dev 0652: AV-8B

BA 5: Development & Demonstration	n (SDD)										
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
0652: AV-8B	29.677	17.287	22.867	0.000	22.867	21.446	14.486	13.434	13.779	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

#### A. Mission Description and Budget Item Justification

This program provides AV-8B Design, Development, Integration and Test of the following improvements: The Engine Life Management Program (ELMP), Escape System and Aircraft Handling/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 (GTS). The Program Office will accomplish this mission through the Component Improvement Program, by conducting Engineering Project Description investigations and performing a series of planned Accelerated Simulated Mission Endurance Tests (ASMET) to derive engineering improvements to the engine. The Escape System qualifies an improved ejection seat to reduce the risk of injury to aircrew. The Joint Mission Planning System (JMPS) is required as part of the DON directed migration to a common Navy and Marine Corps mission planning system. H5.0 Block Upgrade provides Dual Mode Laser Guided Bombs (DMLGB) and Litening Pod carriage on STA4 (Centerline). H6.0 includes weapons carriage expansion efforts and provides the first step toward Battle Space Networking interoperability within the Netcentric OP-area. The program is working closely with the Common Avionics program and the Allies (Spain, Italy and the United Kingdom) on these efforts. A/C Handling and performance represents all engineering activities for development and design to support aircraft safety flight clearance and concept exploration for resolution of emergent service life and readiness issues.

## B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Development of RMP ECPs	12.234	3.852	8.580	0.000	8.580
FY 2009 Accomplishments: Accomplishments included the Program Initiation Review, System Requirements Review, and Preliminary Design Review for the Radar Display Computer project, which will replace the currently obsolete Display Processor Generator (DPG). Also conducted system analyses, identification and diagnoses of problems and the development and testing of engineering solutions in the areas of flight and crew safety, structural integrity, obsolesecence, systems reliability, and other material					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy

APPROPRIATION/BUDGET ACTIVITY
1319: Research, Development, Test & Evaluation, Navy
BA 5: Development & Demonstration (SDD)

PROJECT
0652: AV-8B
0652: AV-8B

## B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
and equipment conditions affecting AV-8B systems readiness. Addressed studies concerning improvements and correction of deficiencies and issues including obsolescence and structural fatigue.					
FY 2010 Plans: Continuing to conduct system analyses, identification, and diagnoses of problems and the development and testing of engineering solutions in the areas of flight and crew safety, structural integrity, obsolescence, and systems reliability, and other material and equipment conditions affecting AV-8B systems readiness. Conducting studies concerning improvements and correction of deficiencies and issues including obsolescence and structural fatigue. Conducting component obsolescence analyses including alternatives explorations and development for obsolete aging equipment, to include flight control computer, crew ejection system, and other safety deficiency corrections. Continuing development and Critical Design Review of Radar Display Computer.					
Plan to continue to conduct system analyses, identification, and diagnosis of problems and the development and testing of engineering solutions in the areas of flight and crew safety, structural integrity, obsolescence, and systems reliability, and other material and equipment conditions affecting AV-8B systems readiness. Conduct studies concerning improvements and correction of deficiencies and issues including obsolescence and structural fatigue. Conduct component obsolescence analyses including alternatives explorations and development for obsolete aging equipment, to include flight control computer, crew ejection system, and other safety deficiency corrections. Begin engineering development of aft structure improvements, including improvements to bushings in Frame 43 of the aircraft, as well as designing the incorporation of a tailplane guide to reduce loads on Frame 43, to prevent fatigue cracks in this area of the aircraft. Plan to continue development and testing of Radar Display Computer, with first flight readiness review and test readiness review scheduled for FY11.					
Completion of ASMET IV Testing	9.197	12.102	6.931	0.000	6.931

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy

APPROPRIATION/BUDGET ACTIVITY
1319: Research, Development, Test & Evaluation, Navy
BA 5: Development & Demonstration (SDD)

PROJECT
0652: AV-8B
0652: AV-8B

## B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: Provided testing, analysis and integration to improve safety of flight and operational readinees of the F402-RR-408 engine. Researched, analyzed, and developed design changes and improvements for engine accessories. Addressed Digital Control Unit (DCU) obsolescence and reliability issues. Conducted flight tests in response to the Low Pressure Compressor (LPC1) blade failures to mitigate blade stress. Addressed performance, obsolescence, and reliability of F402 Engine components.					
FY 2010 Plans: Incorporating engineering changes and addressing obsolescence issues in the Enhanced Variable Inlet Guide Vane Control System (EVICS), Fuel Metering Unit (FMU), and DCU for the F402-RR-408 engine. Researching, analyzing, and developing design changes and improvements for engine accessories. Addressing obsolescence issues with the Generator Control and Test Set (GCUTS) and Air Turbine Starter Set, both of which are critical for testing of the F402-RR-408 engine. Continuing to address F402 EMS performance, obsolescence, and reliability. Performing ASMET IV testing to ensure engine capabilities and performance.					
FY 2011 Base Plans: Funds will provide for research, analysis, and development of design changes and improvements for the engine and engine accessories. Continue ASMET IV testing to ensure engine capabilities and performance.					
Completion of Litening POD Dev and Integ	8.246	1.333	7.356	0.000	7.35
FY 2009 Accomplishments:  Efforts included H5.0 Block Upgrade (Dual Mode Laser Guided Bomb), carriage of Litening Pod on Centerline/Station 4 and Early Variable Message Format (Strikelink) Communication Development. Funds provided also continued integration of evolving Litening Pod capabilities including upgrade to plug and play capability, which is a prerequisite for video downlink. Fleet release of H5.0 OFP block upgrade was accomplished.					

## **UNCLASSIFIED**

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy **DATE:** February 2010

#### APPROPRIATION/BUDGET ACTIVITY

**PROJECT** R-1 ITEM NOMENCLATURE 1319: Research, Development, Test & Evaluation, Navy

PE 0604214N: AV-8B Aircraft - Engine Dev 0652: AV-8B

BA 5: Development & Demonstration (SDD)

#### B. Accomplishments/Planned Program (\$ in Millions)

FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2010 Plans: Efforts include developmental and integration testing in support of H6.0 block upgrade (D-ITER) weapons carriage expansion. Continuing StrikeLink A development and Litening Pod software updates.				
FY 2011 Base Plans: Funds will provide for block upgrade/Litening Pod software updates through the H7.0 block upgrade.				
Accomplishments/Planned Programs Subtotals 29.67	7 17.287	22.867	0.000	22.867

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

			FY 2011	FY 2011	FY 2011					Cost To	
<u>Line Item</u>	FY 2009	FY 2010	<b>Base</b>	OCO	<u>Total</u>	FY 2012	FY 2013	FY 2014	FY 2015	Complete	Total Cost
• APN/0514: AV-8B Series	87.924	51.166	19.386	72.100	91.486	18.417	24.317	21.424	11.012	81.249	1,122.537
Modification											

# D. Acquisition Strategy

All efforts under Aircraft Handling/RMP provide investigations and analysis of testing and flight clearance authorization necessary to assess overall system capability and integration of projects. Funding for the Engine Life Management Program (ELMP) 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. 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, H7.0, H8.0 and following systems. The development and integration of Joint Mission Planning System (JMPS) occured concurrently with H2.0. Additional improvements are included in H.40 TAMMAC was incorporated into Block H4.0. H5.0 Block Upgrade provides Dual Mode Laser Guided Bombs (DMLGB), Litening Centerline/Station 4 (improvement of current weapons carriage capability). The program is working closely with the Allies (Spain, Italy, United Kingdom) and the Common Avionics program on these efforts for H6.0, H7.0 and H8.0. H6.0 provides weapons carriage expansion efforts and the first step toward Battle Space Networking interoperability within the Netcentric OP-area. H7.0 provides the follow-on step toward an integrated air picture within the Battle Space Network via MIDS/RS-Link-16 particiption within the Global Information Grid (GIG).

#### **UNCLASSIFIED**

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		<b>DATE:</b> February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 5: Development & Demonstration (SDD)	R-1 ITEM NOMENCLATURE PE 0604214N: AV-8B Aircraft - Engine Dev	<b>PROJECT</b> 0652: <i>AV-8B</i>
E. Performance Metrics  Achieve ELMP contract award in 1Q FY2011, deliver H6.0 sof CDR in 3Q 2011. Continue systems development for the Rad Computer Developmental Test and initiate H7.0 Development	ar Display Computer (RDC), as well as H7.0 RNP/RNA\	

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy

**DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY

**R-1 ITEM NOMENCLATURE** 

**PROJECT** 

1319: Research, Development, Test & Evaluation, Navy BA 5: Development & Demonstration (SDD)

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

0652: AV-8B

**Product Development (\$ in Millions)** 

				FY 2	2010		FY 2011 FY 2011 Base OCO			FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	C/CPFF	Mgmt Sciences Albuquerque, NM	0.464	0.000		0.000		0.000		0.000	0.000	0.464	0.464
Primary Hardware Development	C/CPFF	Rolls-Royce PLC Bristol, GB	17.097	6.795	Dec 2009	1.916	Dec 2010	0.000		1.916	11.108	36.916	36.916
Primary Hardware Development	C/CPFF	McDonnell Douglas St. Louis, MO	1.465	0.000		0.000		0.000		0.000	0.000	1.465	1.465
Primary Hardware Development	C/FFP	Goodrich PS Pitstone, GB	4.450	0.000		0.000		0.000		0.000	0.000	4.450	4.450
Primary Hardware Development	WR	NAWCWD China Lake, CA	38.762	0.364	Dec 2009	0.658	Dec 2010	0.000		0.658	Continuing	Continuing	Continuing
Primary Hardware Development	C/Various	Various Various	9.671	0.000		0.000		0.000		0.000	0.000	9.671	9.671
Primary Hardware Development	C/CPFF	GE Aviation DS Grand Rapids, IL	11.312	0.609	Feb 2010	2.089	Feb 2011	0.000		2.089	3.371	17.381	17.381
Primary Hardware Development	C/CPFF	Stauder MI	3.000	0.000		2.484	Jan 2011	0.000		2.484	7.580	13.064	13.064
Systems Engineering	C/Various	McDonnell Douglas St. Louis, MO	6.963	0.550	Dec 2009	1.123	Dec 2010	0.000		1.123	0.177	8.813	8.813
Systems Engineering	C/Various	Various Various	0.520	0.000		0.000		0.000		0.000	0.000	0.520	0.520
Systems Engineering	WR	NAWCWD China Lake, CA	1.073	0.000		0.800	Dec 2010	0.000		0.800	Continuing	Continuing	Continuing
Systems Engineering	MIPR	Wright Patterson AFB	0.278	0.000		0.000		0.000		0.000	0.000	0.278	0.278

## **UNCLASSIFIED**

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy

**DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY

1319: Research, Development, Test & Evaluation, Navy

BA 5: Development & Demonstration (SDD)

R-1 ITEM NOMENCLATURE

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

**PROJECT** 0652: *AV-8B* 

#### **Product Development (\$ in Millions)**

				FY 2	010	FY 2 Ba	-	FY 2 OC		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		Dayton, OH											
	•	Subtotal	95.055	8.318		9.070		0.000		9.070			

#### **Remarks**

## **Support (\$ in Millions)**

				FY 2	2010	FY 2 Ba	-	FY 2		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Configuration Management	C/Various	Various Various	0.397	0.000		0.200	Feb 2011	0.000		0.200	Continuing	Continuing	Continuing
Engineering Technical Services (CSS)	C/CPFF	EDO Professional Services, Inc. Arlington, VA	1.737	0.093	Feb 2010	0.000		0.000		0.000	0.000	1.830	1.830
Integrated Logistics Support	WR	NAWCAD Patuxent River, MD	1.436	0.000		0.000		0.000		0.000	0.000	1.436	1.436
Software Development	C/Various	DCMA Boeing St. Louis, MO	1.148	0.000		0.000		0.000		0.000	0.000	1.148	1.148
Software Development	WR	NAWCWD China Lake, CA	7.712	0.000		0.450	Jan 2011	0.000		0.450	Continuing	Continuing	Continuing
Software Development	C/Various	Various Various	19.967	0.000		0.000		0.000		0.000	0.000	19.967	19.967

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy

**DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY

1319: Research, Development, Test & Evaluation, Navy

BA 5: Development & Demonstration (SDD)

R-1 ITEM NOMENCLATURE

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

**PROJECT** 0652: *AV-8B* 

## **Support (\$ in Millions)**

				FY 2	010	FY 2 Ba		FY 2		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development	C/CPFF	Northrup Grumman IL	2.000	0.000		0.000		0.000		0.000	0.000	2.000	2.000
Studies and Analysis	C/Various	Various Various	2.159	0.400	Jun 2010	0.336	Jun 2011	0.000		0.336	Continuing	Continuing	Continuing
Support	C/Various	DCMA Boeing St. Louis, MO	5.490	0.000		0.000		0.000		0.000	0.000	5.490	5.490
Technical Data	C/CPFF	Various Various	1.786	0.000		0.200	Nov 2010	0.000		0.200	0.320	2.306	2.306
		Subtotal	43.832	0.493		1.186		0.000		1.186			

#### Remarks

### **Test and Evaluation (\$ in Millions)**

				FY 20	)10	FY 2 Ba		FY 2		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	C/CPFF	McDonnell Douglas St. Louis, MO	0.000	0.000		0.000		0.000		0.000	5.689	5.689	5.689
Developmental Test & Evaluation	WR	NAWCWD China Lake, CA	37.820	0.000		2.069	Jan 2011	0.000		2.069	Continuing	Continuing	Continuing
	WR		22.521	0.000		0.000		0.000		0.000	0.000	22.521	22.251

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy

**DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY

R-1 ITEM NOMENCLATURE

**PROJECT** 

1319: Research, Development, Test & Evaluation, Navy

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

0652: AV-8B

BA 5: Development & Demonstration (SDD)

### **Test and Evaluation (\$ in Millions)**

				FY 2	010	FY 2 Ba	2011 se	FY 2	2011 CO	FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Operational Test & Evaluation		OPER T&E for CD 30 Norfolk, VA											
Operational Test & Evaluation	WR	NAWCWD China Lake, CA	2.824	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Developmental Test & Evaluation	C/CPFF	GE Aviation DS Grand Rapids, MI	0.000	1.335	Feb 2010	2.366	Feb 2011	0.000		2.366	0.000	3.701	3.701
Test Assets	C/CPFF	GE Aviation DS Grand Rapids, MI	0.972	0.000		0.000		0.000		0.000	0.000	0.972	0.972
		Subtotal	64.137	1.335		4.435		0.000		4.435			

#### Remarks

## **Management Services (\$ in Millions)**

				FY 2	2010	FY 2 Ba	2011 se	FY 2		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering & Tec SRVC (Non-FFRDC)	C/CPFF	Various Various	1.874	1.493	Jan 2010	1.350	Jan 2011	0.000		1.350	7.432	12.149	12.149
Government Engineering Support	WR	Various Various	5.537	2.534	Nov 2009	1.715	Nov 2010	0.000		1.715	Continuing	Continuing	Continuing
MGT & PROF SUPPT SRVC (NON-FFRDC)	C/CPFF	Various Various	4.511	0.814	Nov 2009	2.690	Nov 2010	0.000		2.690	12.542	20.557	20.557

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy

**DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY

1319: Research, Development, Test & Evaluation, Navy

BA 5: Development & Demonstration (SDD)

R-1 ITEM NOMENCLATURE

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

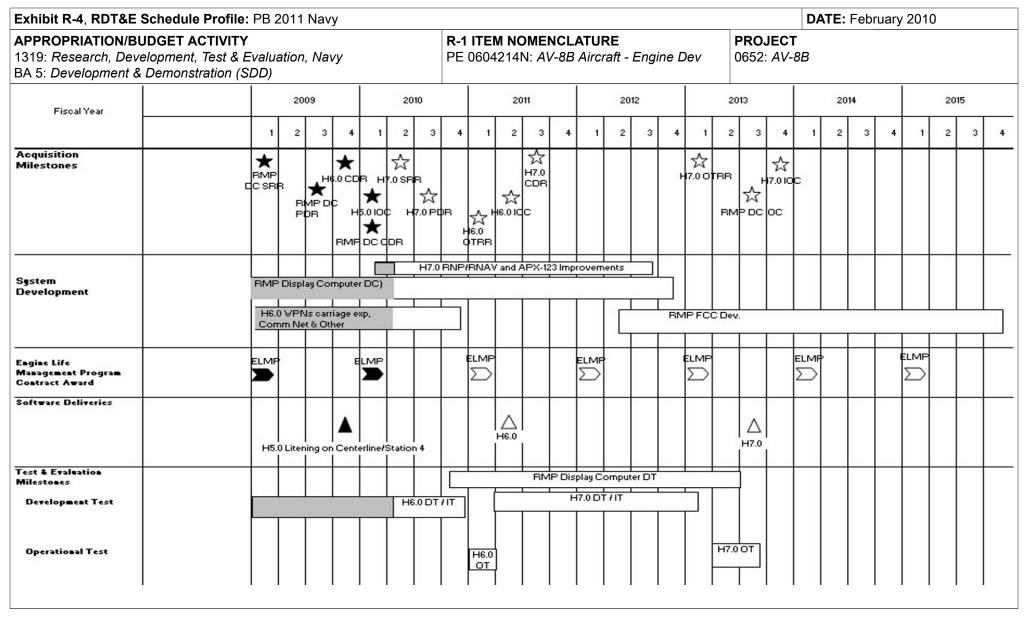
**PROJECT** 0652: *AV-8B* 

**Management Services (\$ in Millions)** 

				FY 2	010	FY 2 Ba	2011 se	FY 2		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	WR	Various Various	3.716	2.150	Nov 2009	2.266	Nov 2010	0.000		2.266	Continuing	Continuing	Continuing
Travel	WR	Various Various	0.682	0.150	Jun 2010	0.155	Jun 2011	0.000		0.155	Continuing	Continuing	Continuing
		Subtotal	16.320	7.141		8.176		0.000		8.176			

#### Remarks

	Total Prior Years Cost	FY 2010	FY 2	2011 ise	FY 2	-	FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	219.344	17.287	22.867		0.000		22.867			



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Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy

APPROPRIATION/BUDGET ACTIVITY

1319: Research, Development, Test & Evaluation, Navy

BA 5: Development & Demonstration (SDD)

R-1 ITEM NOMENCLATURE

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

PROJECT

0652: AV-8B

## Schedule Details

	Sta	art	E	nd
Event	Quarter	Year	Quarter	Year
ELMP Contract Award FY09	1	2009	1	2009
ELMP Contract Award FY10	1	2010	1	2010
ELMP Contract Award FY11	1	2011	1	2011
ELMP Contract Award FY12	1	2012	1	2012
ELMP Contract Award FY13	1	2013	1	2013
ELMP Contract Award FY14	1	2014	1	2014
ELMP Contract Award FY15	1	2015	1	2015
H5.0 S/W Delivery	4	2009	4	2009
H5.0 IOC	1	2010	1	2010
H6.0 WPNS Carriage Exp COMM Network Sys Dev	1	2009	4	2010
H6.0 CDR	4	2009	4	2009
H6.0 DT/IT	1	2009	4	2010
H6.0 OTRR	1	2011	1	2011
H6.0 OT	1	2011	1	2011
H6.0 S/W Delivery	2	2011	2	2011
H6.0 IOC	2	2011	2	2011
H7.0 RNP/RNAV and APX-123 Improvements	1	2010	3	2012
H7.0 SRR	2	2010	2	2010

## **UNCLASSIFIED**

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Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy

**DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY

1319: Research, Development, Test & Evaluation, Navy

BA 5: Development & Demonstration (SDD)

R-1 ITEM NOMENCLATURE

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

**PROJECT** 0652: *AV-8B* 

	Sta	art	E	nd
Event	Quarter	Year	Quarter	Year
H7.0 PDR	3	2010	3	2010
H7.0 CDR	3	2011	3	2011
H7.0 DT/IT	2	2011	1	2013
H7.0 OTRR	1	2013	1	2013
H7.0 OT	2	2013	3	2013
H7.0 IOC	4	2013	4	2013
H7.0 S/W Delivery	3	2013	3	2013
RMP Display Computer System Development	1	2009	4	2012
RMP Display Computer SRR	1	2009	1	2009
RMP Display Computer PDR	3	2009	3	2009
RMP Display Computer CDR	1	2010	1	2010
RMP Display Computer DT	4	2010	2	2013
RMP Display Computer IOC	3	2013	3	2013
RMP Flight Control Computer System Development	2	2012	4	2015

**DATE:** February 2010

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APPROPRIATION/BUDGET ACTI 1319: Research, Development, Tes BA 5: Development & Demonstration	t & Evaluatio	n, Navy			IOMENCLA 4N: <i>AV-8B A</i>		ine Dev	PROJECT 2634: OPE REQUIREM		CORE AVI	ONICS
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To	Total Cost
2634: OPEN SYSTEMS CORE AVIONICS REQUIREMENT	3.977	3.512	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	105.374
Quantity of RDT&F Articles	0	0	0	0	0	0	0	0	0		

### A. Mission Description and Budget Item Justification

Exhibit R-2A. RDT&E Project Justification: PB 2011 Navv

The Open Systems Core Avionics Requirements (OSCAR) initiative is replacing the Mission Computer and Store Management System with commercial components and continued development of the common integrated Night Attack/Radar software to include integration of the 1000lb Joint Direct Attack Munitions (JDAM) weapon. The Digital Improved Triple Ejector Rack (I-TER) provides for the increased capability to the existing BRU-42 I-TER for the AV-8B platform. This provides for multiple carriage capability for smart weapons such as the JDAM.

# B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
OPEN SYSTEMS CORE AVIONICS REQUIREMENT	3.977	3.512	0.000	0.000	0.000
FY 2009 Accomplishments: Initiated D- ITER development/integration testing on the AV-8B platform.  FY 2010 Plans: Continuing D-ITER development/integration/operational testing with H6.0 OFP block upgrade and fleet introduction of capabilities.					
Accomplishments/Planned Programs Subtotals	3.977	3.512	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy

APPROPRIATION/BUDGET ACTIVITY

BA 5: Development & Demonstration (SDD)

R-1 ITEM NOMENCLATURE

PROJECT

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2634: OPEN SYSTEMS CORE AVIONICS

REQUIREMENT

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

			<u>FY 2011</u>	<u>FY 2011</u>	FY 2011					Cost 10	
<u>Line Item</u>	FY 2009	FY 2010	<u>Base</u>	OCO	<u>Total</u>	FY 2012	FY 2013	FY 2014	FY 2015	Complete	Total Cost
• RDT&E,N/ 0205633N: Aviation	95.112	134.612	133.611	0.000	133.611	135.621	112.325	115.038	114.051	Continuing	Continuing
Improvements											

#### D. Acquisition Strategy

PEO(A) ADM Ser DPEO(A)-ACQ2/015-97 dated 6 March 1997 approved the MSII acquisition strategy for OSCAR as an ACAT IVT program. OSCAR avionics CDR was held in January 1998 and completed first flight 29 May 1998. Using the NAWC-WD CPAF contract, funds will be used for basic design definition, drawing development, and OFP development and test. Twelve Mission System Computers and fourteen Warfare Management Computer engineering models have been procured for laboratory and flight test. The NAWC-WD/Boeing follow-on CPAF Contract was awarded on 16 December 1998. The period of performance will be for five years based on the need to complete Open System Core Avionics Requirement (OSCAR) and begin follow-on software block upgrade H2.0. As directed during 4 September 1998 program restructuring, an ACAT redesignation letter was approved changing the OSCAR program from an ACAT IVT program to an ACAT II program. Acquisition documentation will be updated accordingly to include the funding in FY2009 and FY2010 for the incorporation of Dig I-TER within OSCAR.

#### **E. Performance Metrics**

Complete H6.0 Digital ITER OTRR in 1Q 2011. Accept delivery of H6.0 Digital ITER software in 2Q 2011. Complete Digital ITER Operational Test in 1Q 2011.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy

**DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY

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2634: OPEN SYSTEMS CORE AVIONICS

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### **Product Development (\$ in Millions)**

				FY 2	2010	FY 2 Ba	-	FY 2	-	FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NAWCWD China Lake, Ca	0.000	0.200	Nov 2009	0.000		0.000		0.000	0.000	0.200	Continuing
		Subtotal	0.000	0.200		0.000		0.000		0.000	0.000	0.200	

#### Remarks

## Support (\$ in Millions)

• • • •	,												
				FY 2010		FY 2 Bas		FY 2 OC		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development	C/Various	Various Various	0.883	1.000	Jun 2010	0.000		0.000		0.000	0.000	1.883	1.883
Software Development	WR	NAWCWD China Lake	1.275	0.000		0.000		0.000		0.000	0.000	1.275	Continuing
Integrated Logistics Support	C/Various	Various Various	0.673	0.000		0.000		0.000		0.000	0.000	0.673	0.673
		Subtotal	2.831	1.000		0.000		0.000		0.000	0.000	3.831	2.556

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy

**DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY

1319: Research, Development, Test & Evaluation, Navy

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REQUIREMENT

### **Test and Evaluation (\$ in Millions)**

				FY 2010		FY 2 Ba	-	FY 2		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	OPER Test & Eval Norfolk, VA	0.000	0.480	Jan 2010	0.000		0.000		0.000	0.000	0.480	Continuing
Developmental Test & Evaluation	WR	NAWCWD China Lake, CA	0.000	1.400	Jan 2010	0.000		0.000		0.000	0.000	1.400	Continuing
		Subtotal	0.000	1.880		0.000		0.000		0.000	0.000	1.880	

#### Remarks

**Management Services (\$ in Millions)** 

_	•	•											
				FY 2010		FY 2 Ba		FY 2		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Engineering Support	WR	Various Various	1.146	0.000		0.000		0.000		0.000	0.000	1.146	Continuing
Program Management Support	C/Various	Various Various	0.000	0.432	Jun 2010	0.000		0.000		0.000	0.000	0.432	0.432
		Subtotal	1.146	0.432		0.000		0.000		0.000	0.000	1.578	0.432

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy

APPROPRIATION/BUDGET ACTIVITY

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PROJECT

1319: Research, Development, Test & Evaluation, Navy PE 0604214

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	Total Prior Years Cost	FY 2010		2011 ise	FY 2	-	FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	3.977	3.512	0.000		0.000		0.000	0.000	7.489	2.988

Exhibit R-4, RDT&E Schedule Profile	e: PB	2011	Nav	у																	DA	ATE:	Febr	uary	201	0		
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 5: Development & Demonstration (SDD)								R-1 ITEM NOMENCLATURE PE 0604214N: AV-8B Aircraft - Engine Dev 2634: OF REQUIRE											PEN SYSTEMS CORE AVIONICS									
Fiscal Year		20	09			20	)10		2011				2012				2013			2014				2015				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones			*					H6	☆ OTF	ITER R																		
		Diq I-	TER	DR						, ,																		
System Development						D-	ITER		]																			
Software Development									н	△ 6.0 Dig	II-TER																	
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Test & Evaluation Milestones  Development Test						Dig DT	g I-TEF	3	Dig																			
Operational Test									OT																			

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Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy		<b>DATE</b> : February 2010
APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT
1319: Research, Development, Test & Evaluation, Navy	PE 0604214N: AV-8B Aircraft - Engine Dev	2634: OPEN SYSTEMS CORE AVIONICS
BA 5: Development & Demonstration (SDD)		REQUIREMENT

## Schedule Details

	St	art	E	nd
Event	Quarter	Year	Quarter	Year
Dig I-TER WPNS Carriage EXP COMM Network SYS DEV	1	2009	4	2010
Dig I-TER CDR	3	2009	3	2009
Dig I-TER DT / IT	3	2009	4	2010
H6.0 Dig I-TER OTRR	1	2011	1	2011
Dig I-TER OT	1	2011	1	2011
H6.0 Dig I-TER S/W Delivery	2	2011	2	2011