

UNCLASSIFIED

EXHIBIT R-2, RDT&E Budget Item Justification							DATE:	
							February 2003	
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE			
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-5					0604214N / AV-8B Aircraft			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	34.251	18.154	10.527	12.365	15.231	11.317	10.470	10.897
H0652 AV-8B	23.380	16.063	10.527	12.365	15.231	11.317	10.470	10.897
H2634 AV-8B (OSCAR)	10.871	2.091						
A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:								
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: (H0652) The program provides AV-8B Design, Development, Integration and Test of the following improvements: The Engine Life Management Program (ELMP), Self Contained Approach (SCA), Zero Retention Force (ZRF), Escape System, Joint Mission Planning System (JMPS), Tactical Aircraft Moving Map Capability (TAMMAC) and Aircraft Handling . The ELMP is a comprehensive plan to increase safety of flight and operational readiness of the AV-8B F402-RR-408 Engine. PMA-257 will accomplish this mission by conducting Engineering Project Description (EPD) investigations and performing a series of planned Accelerated Simulated Mission Tests (ASMET) to derive engineering improvements to the engine. The SCA will provide pilot situational awareness to aid in conducting vertical landings at sea. The ZRF solenoid will be interchangeable with the SA-122 on all AV-8B models to provide reliable and dependable operation for in-flight selectability safe ordinance jettison. The Escape System will qualify an improved ejection seat to reduce the risk of injury to aircrew. The JMPS is required as part of the DON directed migration to a common Navy and Marine Corps mission planning system. The TAMMAC is the avionics system that will replace the aging/obsolete AN/ASQ-196 digital map set and the AN/ASQ-194 data storage set presently installed. A/C Handling and performance is all engineering activities for development and design to support aircraft safety flight clearance and concept exploration to support POM objectives. Beginning FY02 ZRF and SCA were combined into one software build, Harrier 2.0 (H20) as a follow on to Open System Core Avionics Requirement.</p> <p>(U) (H2634) The program provides AV-8B Integration and Test of the following improvements, including: Open System Core Avionics Requirement (OSCAR), Joint Direct Attack Munition (JDAM), HAVEQUICK SINGARS, and Advanced Mission Computer (AMC). OSCAR is a form-fit-function replacement of the existing AV-8B mission and stores management computers that would capitalize on commercial-off-the-shelf hardware components and modular high order software language which will provide the necessary computer memory and throughput to integrate current modifications such as JDAM and HAVEQUICK/SINGARS. On 7 Oct 96 ASN (RD&amp;A) directed the Program Manager to proceed immediately with the OSCAR initiative. On 4 Sep 98, Special Assistant to ASN(RDA) approved OSCAR program restructuring with capitalization on the Advanced Mission Computer (AMC). The title of the Operational Flight Program (OFP) software development effort which integrates the JDAM and HAVEQUICK/SINGARS into the AV-8B was changed from C2.0 to OC 1.2 to reflect the change of effort in accordance with the ASN (RDA) approved AV-8B OSCAR initiative. OSCAR completed first flight 29 May 1998. Successfully completed Iteration 4 and 5 flight testing and commenced Iteration 6 in first quarter FY01 for OC1.1. LRIP approval 2nd quarter of FY2002. Completed developmental testing of OC1.2 fourth quarter FY2002. OTRR approval fourth quarter FY2002.</p>								

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EXHIBIT R-2a, RDT&E Project Justification							DATE: <b>February 2003</b>	
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>		PROGRAM ELEMENT NUMBER AND NAME 0604214N / AV-8B AIRCRAFT			PROJECT NUMBER AND NAME H0652 / AV-8B			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	23.380	16.063	10.527	12.365	15.231	11.317	10.470	10.897
RDT&E Articles Qty								

### A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

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<b>B. Accomplishments/Planned Program</b>																			
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APPROPRIATION/BUDGET ACTIVITY <b>RDTE&amp;E, N / BA-5</b>			PROGRAM ELEMENT NUMBER AND NAME 0604214N / AV-8B AIRCRAFT			PROJECT NUMBER AND NAME H0652 / AV-8B				

  

**D. OTHER PROGRAM FUNDING SUMMARY:**

<u>Line Item No. &amp; Name</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>To Complete</u>	<u>Total Cost</u>
APN BLI 051400, AV-8B Series Modifications	73.934	58.848	20.866	18.806	28.655	16.553	16.242	16.500	46.700	297.104

  

**E. ACQUISITION STRATEGY:**

All efforts under Aircraft Handling provide investigations and analysis of testing and flight clearance authorization necessary to assess overall system capability and integration of projects. Funding for the Escape System will qualify an improved ejection seat design and will be placed on a cost type fee contract awarded to UPCO and HARCO. 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 cost of ownership. It is also developed to assess life management program issues and design fixes for any service revealed deficiencies. NAWCWD, China Lake began integration of the AVJMPS program in FY01. Both SCA and ZRF were combined into one Software build, Harrier 2.0 (H20) in FY02 as a follow on to the OSCAR Operational Flight Program (OFP).

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2003				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-5			0604214N / AIRCRAFT			H0652 / AV-8B						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	Various	Various	9.606								9.606	9.609
Primary Hdw Dev. - Ejection Seat	C/CPFF	Various	2.639								2.639	2.639
Primary Hdw Dev. - ELMP	C/CPFF	Rolls Royce	4.993	6.384	03/03	2.294	10/03	4.626	10/04	29.293	47.590	47.590
Primary Hdw Dev. - H20	C/CPFF	Ratheon / Boeing	5.603								5.603	5.603
Primary Hdw Dev. - Other	Various	Various	1,360.849								1,360.849	1,360.849
Systems Engineering	WX	NAWC-WD China Lake	27.084	1.852	02/03	6.235	10/03	4.755	10/04	8.682	48.608	
Systems Engineering	WX	NAWC-AD Pax	2.673	3.338	02/03	1.400	10/03	2.436	10/04	30.453	40.300	
Systems Engineering	WX	NAWC-AD NADEP	11.104								11.104	
Award Fees	C/CPAF	Various	0.838	0.043	10/02						0.881	
Subtotal Product Development			1,425.389	11.617		9.929		11.817		68.428	1,527.180	
Remarks:												
Software Development - JMPS	WX	NAWC-WD China Lake	2.085	2.590	02/03						4.675	
Development Support												
Integrated Logistics Support												
Configuration Management												
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			2.085	2.590		0.000		0.000		0.000	4.675	
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)								DATE: <b>February 2003</b>				
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<b>RDTE, N / BA-5</b>			0604214N / AV-8B AIRCRAFT			H0652 / AV-8B						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	NAWC-WD China Lake	33.950	1.050	01/03						35.000	
Operational Test & Evaluation		NAWC-WD China Lake	19.458								19.458	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal T&E			53.408	1.050		0.000		0.000		0.000	54.458	
Remarks:												
Contractor Engineering Support	C/FFP	NAWC-AD PAX	47.262	0.658	02/03	0.457	10/03	0.434	10/04	2.459	51.270	
Travel	WX	NAWC-AD PAX	0.146	0.148	11/02	0.141	10/03	0.114	10/04	0.442	0.991	
SBIR Assessment			0.402								0.402	
											0.000	
											0.000	
											0.000	
Subtotal Management			47.810	0.806		0.598		0.548		2.901	52.663	
Remarks:												
Total Cost			1,528.692	16.063		10.527		12.365		71.329	1,638.976	
Remarks:												



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## CLASSIFICATION:

EXHIBIT R4, Schedule Profile																								DATE:											
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RDT&E, N / BA-5												0604214N / AV-8B AIRCRAFT												H0652 / AV-8B											
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009						
	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									AVJMP OTRR		AVJMP IOC			TAMMAC OTRR																					
System Development				H2.0 PDR		H2.0 CDR																													
Engine Life Management Program		ELMP				ELMP				ELMP				ELMP																					
Software AVJMP Delivery																																			
H20 Delivery																																			
TAMMAC S/W Delivery																																			
Test & Evaluation Milestones																																			
Development Test																																			
Operational Test																																			

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\* Not required for Budget Activities 1, 2, 3, and 6

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Exhibit R-4, Schedule Profile  
(Exhibit R-4, page 9 of 18)

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RDT&E Articles Qty								

### A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

H2634) The program provides AV-8B Integration and Test of the following improvements, including: Open System Core Avionics Requirement (OSCAR), Joint Direct Attack Munition (JDAM), HAVEQUICK SINGARS, and Advanced Mission Computer (AMC). OSCAR is a form-fit-function replacement of the existing AV-8B mission and stores management computers that would capitalize on commercial-off-the-shelf hardware components and modular high order software language which will provide the necessary computer memory and throughput to integrate current modifications such as JDAM and HAVEQUICK/SINGARS. On 7 Oct 96 ASN (RD&A) directed the Program Manager to proceed immediately with the OSCAR initiative. On 4 Sep 98, Special Assistant to ASN(RDA) approved OSCAR program restructuring with capitalization on the Advanced Mission Computer (AMC). The title of the Operational Flight Program (OFP) software development effort which integrates the JDAM and HAVEQUICK/SINGARS into the AV-8B was changed from C2.0 to OC 1.2 to reflect the change of effort in accordance with the ASN (RDA) approved AV-8B OSCAR initiative. OSCAR completed first flight 29 May 1998. Successfully completed Iteration 4 and 5 flight testing and commenced Iteration 6 in first quarter FY01 for OC1.1. LRIP approval 2nd quarter of FY2002. Completed developmental testing of OC1.2 fourth quarter FY2002. OTRR approval fourth quarter FY2002. OPEVAL commenced fourth quarter FY2002 and will continue through fourth quarter FY2003.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: <b>February 2003</b>	
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>	PROGRAM ELEMENT NUMBER AND NAME 0604214N / AV-8B AIRCRAFT	PROJECT NUMBER AND NAME H2634 / OSCAR		
<b>B. Accomplishments/Planned Program</b>				
	FY 02	FY 03	FY 04	FY 05
OSCAR	10.871	2.091		
RDT&E Articles Quantity				
<div>The Open Systems Core Avionics Requirements (OSCAR) initiative replacing the Mission Computer and Store Management System with Commerical components and continued devlopment of the common integrated Night Attack/Radar software to include integration of the 1000lb Joint Direct Attack Munitions (JDAM) weapon.</div>				

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## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: <b>February 2003</b>	
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>	PROGRAM ELEMENT NUMBER AND NAME 0604214N / AV-8B AIRCRAFT	PROJECT NUMBER AND NAME H2634 / OSCAR		

**C. PROGRAM CHANGE SUMMARY:**

	FY 2002	FY 2003	FY 2004	FY 2005
Funding:				
Previous President's Budget:	5.969	2.139	0.000	0.000
Current BES/President's Budget	10.871	2.091	0.000	0.000
Total Adjustments	4.902	-0.048	0.000	0.000
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions		-0.013		
Congressional rescissions	-0.013			
SBIR/STTR Transfer	-0.047			
Economic Assumptions	-0.030	-0.035		
Reprogrammings	4.992			
Other Adjustments				
Congressional increases				
Subtotal	4.902	-0.048	0.000	0.000

Schedule:

OTTR moved to FY02 4th QTR to address software technical issues discovered during DTIIB. OT completion moved to FY03 4th QTR to allow incorporation of software fixes.

Technical:

N/A

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## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: <b>February 2003</b>		
APPROPRIATION/BUDGET ACTIVITY <b>RDTE, N / BA-5</b>			PROGRAM ELEMENT NUMBER AND NAME 0604214N / AV-8B AIRCRAFT			PROJECT NUMBER AND NAME H2634 / OSCAR				

  

**D. OTHER PROGRAM FUNDING SUMMARY:**

<u>Line Item No. &amp; Name</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>To Complete</u>	<u>Total Cost</u>
APN BLI 051400, AV-8B Series Modifications	73.934	58.848	20.866	18.806	28.655	16.553	16.242	16.5	46.7	297.104

  

**E. 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. The schedule was revised due to impact of AV-8B F402-RR-408 engine red stripe which resulted in a 5-month developmental test impact delay. Revised schedule has been approved and is currently being executed.

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## CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: <b>February 2003</b>				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
<b>RDT&amp;E, N / BA-5</b>			0604214N / AV-8B AIRCRAFT			H2634 / OSCAR						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	C/CPAF	Boeing St Louis	62.373								62.373	62.373
Primary Hardware Development	CPFF	DCMC, Draper Laboratory	0.285								0.285	0.285
Primary Hardware Development	FFP	DSC.KMX Norfolk	0.406								0.406	0.406
Systems Engineering	WX	NAWC-WD China Lake	38.879								38.879	
Systems Engineering	WX	NAWC-AD Pax River	3.015	0.391	10/02						3.406	
Systems Engineering	Various	PMA-209	3.518								3.518	
Award Fees	C/CPAF	Boeing St Louis	8.967								8.967	8.967
Subtotal Product Development			117.443	0.391		0.000		0.000		0.000	117.834	
Remarks:												
Development Support Equipment	Various	Various	0.284								0.284	
Integrated Logistics Support	Various	Various	0.323								0.323	
Configuration Management	Various	Various	0.143								0.143	
Subtotal Support			0.750	0.000		0.000		0.000		0.000	0.750	
Remarks:												

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## CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: <b>February 2003</b>				
APPROPRIATION/BUDGET ACTIVITY <b>RDTE, N / BA-5</b>			PROGRAM ELEMENT 0604214N / AV-8B AIRCRAFT			PROJECT NUMBER AND NAME H2634 / OSCAR						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	NAWC-WD China Lake	14.789								14.789	
Operational Test & Evaluation	WX	NAWC-WD China Lake	3.001								3.001	
Operational Test & Evaluation	WX	COMOPTEVFOR, Norfolk	1.000	1.700	02/03						2.700	
Subtotal T&E			18.790	1.700		0.000		0.000		0.000	20.490	
Remarks:												
Contractor Engineering Support	C/FFP	NAWC-AD Patuxent River	0.402								0.402	0.402
Travel	WX	NAWC-AD Patuxent River	0.019								0.019	
SBIR Assessment			0.047								0.047	
Subtotal Management			0.468	0.000		0.000		0.000		0.000	0.468	
Remarks:												
Total Cost			137.451	2.091		0.000		0.000		0.000	139.542	
Remarks:												



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## CLASSIFICATION:

EXHIBIT R4, Schedule Profile																								DATE:								
APPROPRIATION/BUDGET ACTIVITY										PROGRAM ELEMENT NUMBER AND NAME										PROJECT NUMBER AND NAME												
RDT&E, N / BA-5										0604214N / AV-8B AIRCRAFT										H2634 / OSCAR												
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	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	1	2	3	4
Acquisition Milestones							LRIP2 or MS △																									
Software OC1.2 Integration																																
Test & Evaluation Milestones																																
Development Test																																
Operational Test																																
Production Milestones																																
LRIP																																
FRP START																																
DELIVERIES																																

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\* Not required for Budget Activities 1, 2, 3, and 6

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Exhibit R-4, Schedule Profile  
(Exhibit R-4, page 17 of 18)

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**Exhibit R-4a, Schedule Detail**  
(Exhibit R-4a, page 18 of 18)