

UNCLASSIFIED

EXHIBIT R-2, FY 2001 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604214N

PROGRAM ELEMENT TITLE: AV-8B AIRCRAFT

(U) COST: (Dollars in Thousands)

<u>Project Number & Title</u>	<u>FY 1999 Actual</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>	<u>Total Program</u>
H0652 AV-8B	1,884	759	13,371	20,219	1,747	8,730	8,620	-	1,551,863
H2634 AV-8B (OSCAR)	38,192	37,628	24,690	6,128	2,191	0	0	-	144,517
TOTAL	40,076	38,387	38,061	26,347	3,938	8,730	8,620	-	1,696,380

Quantity of RDT&E Articles

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The program provides AV-8B integration and testing of various aircraft weapons improvements including: incorporation of common integrated Night Attack/Radar software; redesigned Inlet Guide Vane Controller for the F402-RR-406A/406B/408A engines; airframe vulnerability, susceptibility and survivability improvements; counter measures integration; flight test modifications that improve aircraft flight performance; and limited evaluation of advance concepts and activities to coordinate with ongoing independent advance weapons development. The AN/APG-65 software and associated avionics will be upgraded to provide wiring, controllers and relays for advanced weapon interface. C1.0 software is a combined Operational Flight Program (OFP) for the Night Attack and Radar Aircraft, which establishes the baseline OFP for future weapons. The title of the Operational Flight Program software development effort which integrates the Joint Direct Attack Munitions (JDAM) and the counter measures effort into the AV-8B was changed from C2.0 to OC1.2 to reflect the change of effort in accordance with the ASN (RD&A) approved AV-8B Open System Core Avionics Requirements (OSCAR) initiative. On 7 Oct 96 ASN (RD&A) directed the Program Manager to proceed immediately with the OSCAR initiative. OSCAR utilizes commercial components and modular high order language software. OSCAR completed first flight 29 May 1998. On 4 Sep 98, Special Assistant to ASN(RDA) approved OSCAR program restructuring with capitalization on the Advanced Mission Computer and Displays Program (AMC&D). Advanced weapons coordination includes requirements and interface liaison with efforts such as Joint Stand-Off Weapon (JSOW), AIM-9X, Digital Multiple Carriage Bomb Rack (DMCDBR), Advanced Expendables and Electronic Warfare suite upgrades.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT to encompass engineering and manufacturing development of new end items prior to the production approval decision.

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EXHIBIT R-2a, FY 2001 RDT&E,N PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

**PROGRAM ELEMENT: 0604214N
PROGRAM ELEMENT TITLE: AV-8B AIRCRAFT**

**PROJECT NUMBER: H0652
PROJECT TITLE: AV-8B**

(U) COST: (Dollars in Thousands)

<u>Project Number & Title</u>	<u>FY 1999 Actual</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>	<u>Total Program</u>
H0652 AV-8B	1,884	759	13,371	20,219	1,747	8,730	8,620	-	1,551,863
TOTAL	1,884	759	13,371	20,219	1,747	8,730	8,620	-	1,551,863

Quantity of RDT&E Articles

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The program provides AV-8B integration and testing of various aircraft weapons improvements including: incorporation of common integrated Night Attack/Radar software; redesigned Inlet Guide Vane Controller for the F402-RR-406A/406B/408A engines; airframe vulnerability, susceptibility and survivability improvements; counter measures integration; flight test modifications that improve aircraft flight performance; and limited evaluation of advance concepts and activities to coordinate with ongoing independent advance weapons development. The AN/APG-65 software and associated avionics will be upgraded to provide wiring, controllers and relays for advanced weapon interface. C1.0 software is a combined Operational Flight Program (OFP) for the Night Attack and Radar Aircraft, which establishes the baseline OFP for future weapons. Advanced weapons coordination includes requirements and interface liaison with efforts such as Joint Stand-Off Weapon (JSOW), AIM-9X, Digital Multiple Carriage Bomb Rack (DMCBB), Advanced Expendables and Electronic Warfare suite upgrades. The Escape System will qualify a new ejection seat. The Laser Spot Tracker (LST) will provide the capability to deliver laser guided ordnance. The Zero Retention Force solenoid will be integrated to provide safe ordnance jettison. The Tactical Aircraft Moving Map Capability (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.

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**PROGRAM ELEMENT: 0604214N
PROGRAM ELEMENT TITLE: AV-8B AIRCRAFT**

**PROJECT NUMBER: H0652
PROJECT TITLE: AV-8B**

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1999 ACCOMPLISHMENTS:

- (U) (\$1,208) Continued aircraft handling and performance investigations to improve safety and increase operational performance.
- (U) (\$676) Commenced integration of closure algorithm to all Weather Landing Systems Signal (AN/SPN-41) into common operational flight program.

2. FY 2000 PLAN:

- (U) (\$89) Continue aircraft handling and performance investigations to improve safety and increase operational performance.
- (U) (\$670) Commence design and development of the AV-8B Escape system to qualify a new ejection seat design.

3. FY 2001 PLAN:

- (U) (\$310) Continue aircraft handling and performance investigations to improve safety and increase operational performance.
- (U) (\$13,061) Commence design, development, and integration of the AV-8B Laser Spot Tracker.

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
(U) FY 2000 President's Budget:	2,069	763	13,640
(U) Appropriated Value:	2,069	763	
(U) Adjustments from President's Budget:	-185	-4	-269
(U) FY 2001 President's Budget Submit:	1,884	759	13,371

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PROGRAM ELEMENT: 0604214N

PROJECT NUMBER: H0652

PROGRAM ELEMENT TITLE: AV-8B AIRCRAFT

PROJECT TITLE: AV-8B

CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY99 net decrease of \$185 thousand reflects a decrease of \$169 thousand for the Small Business Innovative Research adjustment and a decrease of \$16 thousand for minor pricing adjustments. The FY 2000 net decrease reflects a \$4 thousand reduction for an Across-the-Board Congressional rescission. The FY 2001 decrease of \$269 thousand is due to minor pricing and inflation adjustments.

(U) Schedule: N/A

(U) Technical: N/A

(U) C. OTHER PROGRAM FUNDING SUMMARY

<u>Appn.</u>	<u>FY 1999 Budget</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>
APN-1	331,716	300,428	226,646	0	0	0	0
APN-5	85,716	54,876	40,639	32,564	14,204	7,064	2,132

Related RDT&E: N/A

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PROJECT TITLE: AV-8B

(U) D. 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 is mainly provided on a reimbursable basis to NAWC-AD Patuxent River, MD. Funding for the Escape System will qualify a new ejection seat design and will be placed on a cost plus fixed fee contract awarded to BF Goodrich. Funding in FY00 and FY01 for the Laser Spot Tracker (LST) will be placed on a cost plus fixed fee contract awarded to GEC Marconi to integrate the LST into the AV-8B to provide the capability of delivering laser-guided ordnance. Funding in FY02 for the Zero Retention Force solenoid will be placed on a cost plus fixed fee contract awarded to Hughes to integrate the solenoid to provide safe ordnance jettison. Using the NAWC-WD cost plus award fee contract to Boeing, funds for the avionics system Tactical Aircraft Moving Map Capability (TAMMAC) will replace the aging/obsolete AN/ASQ-196 digital map set and the AN/ASQ-194 data storage set presently installed.

(U) E. SCHEDULE PROFILE:

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>To Complete</u>
(U) Program Milestones				
(U) Engineering Milestones				
(U) T&E Milestones		4Q/00 Begin Ejec. Seat DT-I	1Q/01 Begin Ejec.Seat DT-II	
(U) Contract Milestones		1Q/00 Award Ejec. Seat Contract	1Q/01 Award LST Contract	

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EXHIBIT R-3, FY 2001 RDT&E,N COST ANALYSIS

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604214N

PROJECT NUMBER: H0652

PROJECT TITLE: AV-8B

<u>Cost Categories:</u>	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior Yrs Cost</u>	<u>FY 1999 Cost</u>	<u>FY 1999 Award Date</u>	<u>FY 2000 Cost</u>	<u>FY 2000 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
Project Development	WX	NAWC-WD, CHLK, CA	19,189	50		0		15,247	34,486	
Project Development	Various	Miscellaneous	6,242	829	10/98	0		2,601	9,672	
Project Development	Various	In-house	3,738	285	10/98			1,153	5,176	
Contracts	Various	Miscellaneous	8,887	0		0			8,887	8,887
Contract- Ejection Seat		TBD				670			670	
Contracts- Laser Spot Tracker		GEC Marconi						8,379	8,379	
Contracts		TBD						4,740	4,740	
Logistics								2,986	2,986	
Contracts	Various	Boeing	5,690	0		0		13,051	18,741	18,741
Award Fee	Various	Boeing	563					1,370	1,933	
Other FY98 & Prior Costs	Various	Various	1,355,159						1,355,159	
Subtotal Project Development			1,399,468	1,164		670		49,527	1,450,829	
Remarks: Prior Years award fee earned was 96.6%										
Support and Management Misc./Contracts	RX	NAWC-AD, PATUXENT RIVER, MD	1,535	220	10/98	89	10//99	625	2,469	
S&M	WX	Various	43,538						43,538	
S&M Misc./In-house	Various	Various	1,000						1,000	
Subtotal Support			46,073	220		89		625	47,007	
Remarks										

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PROJECT NUMBER:

H0652

PROJECT TITLE:

AV-8B

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total Prior Yrs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	Cost to Complete	Total Cost	Target Value of Contract
T&E	WX	NAWC-WD, CHLK, CA	8,758	500		0		2,535	11,793	
	WX	Miscellaneous	42,234	0	10/98	0		0	42,234	
Subtotal Test & Evaluation			50,992	500		0		2,535	54,027	
Remarks										
Subtotal Management				0		0		0	0	
Remarks										
Total Cost			1,496,533	1,884		759		52,687	1,551,863	

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EXHIBIT R-2a, FY 2001 RDT&E,N PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

**PROGRAM ELEMENT: 0604214N
PROGRAM ELEMENT TITLE: AV-8B AIRCRAFT**

**PROJECT NUMBER: H2634
PROJECT TITLE: AV-8B (OSCAR)**

(U) COST: (Dollars in Thousands)

<u>Project Number & Title</u>	<u>FY 1999 Budget</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>	<u>Total Program</u>
H2634 AV-8B (OSCAR)	38,192	37,628	24,690	6,128	2,191	0	0	-	144,517
TOTAL	38,192	37,628	24,690	6,128	2,191	0	0	-	144,517

Quantity of RDT&E Articles

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The title of the Operational Flight Program (OFP) software development effort which integrates the Joint Direct Attack Munitions (JDAM) and the counter measures integration 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 Open System Core Avionics Requirements (OSCAR) initiative. On 7 Oct 96 ASN (RD&A) directed the Program Manager to proceed immediately with the Open System Core Avionics Requirement (OSCAR) initiative. OSCAR utilizes commercial components and modular high order language software. OSCAR completed first flight 29 May 1998. On 4 Sep 98, Special Assistant to ASN(RDA) approved OSCAR program restructuring with capitalization on the Advanced Mission Computer and Displays Program (AMC&D). Advanced weapons coordination includes requirements and interface liaison with efforts such as Joint Stand-Off Weapon (JSOW), AIM-9X, Digital Multiple Carriage Bomb Rack (DMCDBR), Advanced Expendables and Electronic Warfare suite upgrades.

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PROJECT NUMBER: H2634

PROGRAM ELEMENT TITLE: AV-8B AIRCRAFT

PROJECT TITLE: AV-8B (OSCAR)

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1999 ACCOMPLISHMENTS:

- (U) (\$2,000) Commence integration and test software to the ARC-210 HAVEQUICK and SINGARS waveform full functionality.
- (U) (\$36,192) Continue the Open Systems Core Avionics Requirements (OSCAR) initiative replacing the Mission Computer and Stores Management System with Commercial off the shelf processors and memory; and continue development of the common integrated Night Attack/Radar software to include integration of the 1000lb Joint Direct Attack Munitions (JDAM) weapon. Completed first flight of OSCAR initiative under replanned program.

2. FY 2000 PLAN:

- (U) (\$1,934) Continue integration and test software to the ARC-210 HAVEQUICK and SINGARS waveform full functionality.
- (U) (\$35,694) Continue the Open System Core Avionics Requirements (OSCAR) initiative replacing the Mission Computer and Stores Management System with Commercial components and continue development of the common integrated Night Attack/Radar software to include integration of the 1000lb Joint Direct Attack Munitions (JDAM) weapon.

3. FY 2001 PLAN:

- (U) (\$1,000) Continue integration and test software to the ARC-210 HAVEQUICK and SINGARS waveform full functionality.
- (U) (\$23,690) Continue the Open System Core Avionics Requirements (OSCAR) initiative replacing the Mission Computer and Stores Management System with Commercial components and continue development of the common integrated Night Attack/Radar software to include integration of the 1000lb Joint Direct Attack Munitions (JDAM) weapon.

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PROGRAM ELEMENT TITLE: AV-8B AIRCRAFT

PROJECT TITLE: AV-8B (OSCAR)

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
(U) FY 2000 President's Budget:	38,353	37,836	25,086
(U) Appropriated Value:	38,353	37,836	
(U) Adjustments from President's Budget:	-161	-208	-396
(U) FY 2001 President's Budget Submit:	38,192	37,628	24,690

CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY99 net decrease of \$161 thousand reflects an increase of \$1,000 thousand for OSCAR, offset by decreases for Small Business Innovative Research and minor pricing adjustments. The net reduction of \$208 thousand in FY 2000 reflects an Across-the-Board Congressional rescission. The FY 2001 decrease is due to minor pricing and inflation adjustments.

(U) Schedule: N/A

(U) Technical: N/A

(U) C. OTHER PROGRAM FUNDING SUMMARY

<u>Appn.</u>	<u>FY 1999 Budget</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>
APN-5	0	0	0	28,278	23,156	24,826	29,005

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Related RDT&E

(U) P.E. 0604805 D8Z, Commercial O&S Savings Initiative (COSSI).

(U) D. ACQUISITION STRATEGY: PEO(A) ADM Ser DPEO(A)-ACQ2/015-97 dated 6 March 1997 approves 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. Four Mission System Computers and four Warfare Management Computer engineering models have been procured for bench validation. 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 OC1.3. 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 ARC-210 will integrate a full electronic protection radio using the Army and Air Force developed waveform (UHF-AM HAVEQUICK/VHF-FM SINCGARS) using the NAWC-WD/Boeing FY98 contract.

(U) E. SCHEDULE PROFILE:

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>To Complete</u>
(U) Program Milestones				3Q/02OC1.1 MS III
(U) Engineering Milestones		1Q/00 OC1.1 Begin Integration Test		3Q/01OC1.2 Begin Integration Test
(U) T&E Milestones				3Q/02OC1.1OT Complete 2Q/03OC1.2FOT&E Complete
(U) Contract Milestones	1Q/99 Follow On For OC1.1/OC1.2			

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PROJECT NUMBER: H2634

PROJECT TITLE: AV-8B (OSCAR)

<u>Cost Categories:</u>	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior Yrs Cost</u>	<u>FY 1999 Cost</u>	<u>FY 1999 Award Date</u>	<u>FY 2000 Cost</u>	<u>FY 2000 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
Project Development	WX	NAWC-WD, CHLK, CA	13,146	8,205	10/98	8,952	10/99	9,415	39,718	
Project Development	WX	NAWC-AD, Patuxent, MD	0	330	12/98	1,123	10/99	400	1,853	
Project Development	Various	PMA-209				2,790	10/99	2,000	4,790	
Contracts	Various	Boeing, St Louis	15,395	23,391	12/98	16,600	12/98	15,362	70,748	70,748
Contracts	RX	Draper Lab.		285	6/99				285	285
Contracts	PID	DCS/KMS				179			179	
Award Fee	Various	Boeing	1,522	2,464		1,838		1,706	7,530	
Subtotal Project Development			30,063	34,675		31,482		28,883	125,103	
Remarks										
Support and Management Misc./Contracts			0	0		0		0	0	
S&M			0	0		0		0	0	
S&M Misc./In-house			0	0		0		0	0	
Subtotal Support			0	0		0		0	0	
Remarks										
T&E	WX	NAWC-WD, CHLK, CA	5,625	3,517		6,146		4,126	19,414	
Subtotal Test & Evaluation			5,625	3,517		6,146		4,126	19,414	
Remarks										
Subtotal Management				0		0		0	0	
Remarks										
Total Cost			35,688	38,192		37,628		33,009	144,517	

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