UNCLASSIFIED

EXHIBIT R-2, RDT&E Budget Item Justification						DATE:	
-						Februa	ry 2004
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMEN			
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY /	BA-5			0604215N, Standa	rds Development	1	
COST (\$ in Millions)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	42.007	49.867	57.675	71.422	44.662	32.383	28.590
2311/Stores Planning and Weaponeering Module	5.567	4.960	9.448	7.423	7.863	8.276	8.770
2312/Common Helicopters	1.157	0.949	0.772	0.795	0.981	1.000	1.020
S1857/Calibration Standards	4.115	4.219	1.359	1.366	1.652	1.675	1.704
W0572/Joint Services/Navy Standard Avionics	31.168	39.739	46.096	61.838	34.166	21.432	17.096

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Project E2311, Stores Planning and Weaponeering Module: The Naval Aircraft Weaponeering Components (NAWC) project, now referred to as the Weaponeering and Stores Planning (WASP) components, are integrated software products that allow pilots to determine the best combinations of weapons and delivery conditions to achieve the desired level of target damage, eliminate weapon delivery solutions that violate aircraft T/M/S specific safety-of-flight envelopes, and perform detailed weapons employment planning. WASP is approved by N78 as a permanent flight clearance system for the F/A-18 A, A+, B, C, D and D(RC) aircraft, and for all future aircraft T/M/S in the Joint Mission Planning System (JMPS). As a flight clearance system, WASP components will alert pilots if their planned weapon release conditions will result in bomb-to-bomb collisions, bomb-to-aircraft collisions, aircraft overstress, or excessive risk of aircraft loss/damage in the event of fuze early bursts. Weaponeering capabilities are fundamental requirements for Interdiction, Armed RECCE and Close Air Support mission planning, therefore WASP product availability is critical to successful Post-Joint Mission Planning System (JMPS) Combat 1 OT&E. The WASP product encompasses a multitude of GOTS/COTS software components and tools (aircraft target maneuver simulations, weapon flyout models, target probability of damage calculators, etc.), which are delivered as new targets are identified, emergent requirements for new aircraft T/M/S, stores and weapons are approved by N78, and new flight clearances and flight restrictions issued by NAVAIRSYSCOM. WASP components will be delivered on an annual basis starting with v1.0 in September CY03.

Project E2312, Common Helicopters: Automated mission planning systems to date have been developing targeting planning requirements for fixed-wing aircraft, while the unique planning requirements for helicopters have not been addressed. The unique and enhanced automated mission planning requirements that must be developed and implemented for helicopters include: data loading, an enhanced route editor (serpentine routing, hover, etc.) manipulation of higher fidelity (smaller scale) maps and imagery, enhanced performance tools (performance in and out of ground effect, performance degradation due to atmospheric conditions & elevation), and enhanced fidelity of landing zone, target zone, and threat analyses. The following type/model/series aircraft are supported by this PE: AH-1W, UH-1N, H-46D/E, H-53D/E, H-60B/F/H/R/S, and V-22. The developed common helicopter functionality will initially be implemented in Naval Portable Flight Planning Software (N-PFPS) then migrated to JMPS. Subsequent common helicopter functionality will be developed for implementation in the Joint Mission Planning Segment (JMPS) after JMPS initial fielding.

R-1 SHOPPING LIST - Item No.

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Exhibit R-2, RDTEN Budget Item Justification (Exhibit R-2, page 1 of 46)

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification		DATE:	
		February	2004
APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE		
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-5	0604215N, Standards Devel	pment	

Project S1857, Calibration Standards: This project is a Navy-wide program to develop required calibration standards (hardware in all major measurement technology areas). It funds Navy lead-service responsibilities in the DOD and Joint Services Metrology RDT&E program.

Project W0572, Joint Services/Navy Standard Avionics Components and Subsystems: This project provides for the identification, design, development, test, evaluation and qualification of standard avionics for Navy use, and wherever practicable, use across all Services and Foreign Military Sales. Such air combat electronics developments include communications, navigation, flight avionics, safety systems, and flight mission information systems for both forward fit and retrofit aircraft. These efforts continue to maintain federated systems while encouraging transition of procurements to support a modular system for enhanced performance and affordability. Consideration is given up front to reduce acquisition costs through larger procurement quantities that satisfy multi-aircraft customer requirements and that reduce life cycle costs in the areas of reliability, maintainability, and training. Several examples of past successful tasks under this project include the Standard Central Air Data Computer, Solid State Barometric Altimeter, and Downed Aircraft Location System, jointly developed with the Air Force and Army and currently installed on numerous Navy, Air Force and Army aircraft. This project also funds Navy chairmanship and participation in the Joint Services Review Committee (JSRC) for Avionics Standardization. The RDT&E Articles include Communication Navigation Surveillance/Air Traffic Management (CNS/ATM) Engineering Manufacturing Development (EMD) units, AMC&D EMD units which include Display Processors and Mission Processors, Display Heads, 8 x 10 displays, and Fiber Channel Switches, Joint Tactical Radio Systems (JTRS) EMD units, Aircraft Wireless Internal Communication Systems (AWICS) EMD units, Vector Product Format (VPF) software units and Terrain Awareness Warning Systems (TAWS) units. JTRS is a New Start for FY04.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justific	ation						DATE:	
							Februa	ry 2004
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEME	NT NUMBER AND	NAME		PROJECT NUMBE	R AND NAME		
RDT&E, N / BA-5	0604215N Standar	d Development			2311 Navy Stores	s Planning and We	eaponeering Mod	ule
COST (\$ in Millions)		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		5.567	4.960	9.448	7.423	7.863	8.276	8.770
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Project E2311, Stores Planning and Weaponeering Module: The Naval Aircraft Weaponeering Components (NAWC) project, now referred to as the Weaponeering and Stores Planning (WASP) components, are integrated software products that allow pilots to determine the best combinations of weapons and delivery conditions to achieve the desired level of target damage, eliminate weapon delivery solutions that violate aircraft T/M/S specific safety-of-flight envelopes, and perform detailed weapons employment planning. WASP is approved by N78 as a permanent flight clearance system for the F/A-18 A, A+, B, C, D and D(RC) aircraft, and for all future aircraft T/M/S in the Joint Mission Planning System (JMPS). As a flight clearance system, WASP components will alert pilots if their planned weapon release conditions will result in bomb-to-bomb collisions, bomb-to-aircraft collisions, aircraft overstress, or excessive risk of aircraft loss/damage in the event of fuze early bursts. Weaponeering capabilities are fundamental requirements for Interdiction, Armed RECCE and Close Air Support mission planning, therefore WASP product availability is critical to successful Post-Joint Mission Planning System (JMPS) Combat 1 OT&E. The WASP product encompasses a multitude of GOTS/COTS software components and tools (aircraft target maneuver simulations, weapon flyout models, target probability of damage calculators, etc.), which are delivered as new targets are identified, emergent requirements for new aircraft T/M/S, stores and weapons are approved by N78, and new flight clearances and flight restrictions issued by NAVAIRSYSCOM. WASP components will be delivered on an annual basis starting with v1.0 in September CY03.

CLASSIFICATION:

Accomplishments/Effort/Subtotal Cost

RDT&E Articles Quantity

EXHIBIT R-2a, RDT&E Project Justific	DATE:		
			February 2004
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND I	NAME
RDT&E, N / BA 5	0604215N Standards Development	2311 Navy Stores Plannii	ng and Weaponeering Module
B. Accomplishments/Planned Program			
	FY 03	FY 04	FY 05

0.255

Continued Construction phase. Begin functional qualification test and certification. Continued Software Requirements Definition, Analysis, and Tracking for WASP versions (WASP V1.1 and WASP V2.0).

	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.157	1.110	1.165
RDT&E Articles Quantity			

Initiate development of the JMPS integrated version of WASP. Software Architecture and Design to support WASP versions (WASP V1.1 and WASP V2.0).

	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	3.653	2.021	3.708
RDT&E Articles Quantity			

Provide essential updates to ATACs until WASP is released. Develop and certify common components for TACMAN. Software Development, Integration and Correction of Defects for WASP versions (ATACS V 2.3, WASP V1.0, WASP V1.1 and WASP V2.0).

R-1 SHOPPING LIST - Item No.

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0.409

0.681

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE:	
			February 2004	
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME		
RDT&E, N / BA 5	0604215N Standards Development	lopment 2311 Navy Stores Planning and Weaponeering Module		
		·		

B. Accomplishments/Planned Program (Cont.)

	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.113	0.118	0.286
RDT&E Articles Quantity			

Domain engineering support for weapons separation, aircraft loads, flutter, fuzing, safe escape for application to WASP.

	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.124	1.030	1.743
RDT&E Articles Quantity			

Test and Evaluation for unit and system level testing; functional qualification testing; safety of flight certification testing; integration and standards compliance testing for WASP versions (WASP V1.0, WASP V1.1 and WASP V2.0).

	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.265	0.272	1.865
RDT&E Articles Quantity			

Software Configuration Management, Systems Administration, Quality Assurance, documentation, metrics and Risk Management for WASP versions (WASP V1.0, WASP V1.1 and WASP V2.0). Support external Information Technology standards (NMCI, DII COE, IT21, DITSCAP, FAM, D-30).

R-1 SHOPPING LIST - Item No.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification					DATE:	
						February 2004
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NA	ME	PF	ROJECT NUMBER	AND NAME	
RDT&E, N / BA-5	0604215N Standard Development		23	311 Navy Stores F	Planning and Weapor	eering Module
C. PROGRAM CHANGE SUMMARY:						
Funding:	FY 2	003	FY 2004	FY 2005		
Previous President's Budget:	1.	742	5.016	6.297		
Current BES/President's Budget	5.	567	4.960	9.448		
Total Adjustments	3.	825	-0.056	3.151		
Summary of Adjustments						
Congressional program reductions						
Congressional undistributed reductions			-0.056			
Congressional rescissions						
SBIR/STTR Transfer						
Economic Assumptions				0.008		
Reprogrammings	3.	825				
Other Adjustments				3.143		
Congressional increases						
Subtotal	3.	825	-0.056	3.151		

As a CNO approved alternative permanent flight clearance system for the F/A-18 A-D, the WASP application mirrors the release and update cycle of Volume IV of the F/A-18A_D TACMAN. Signature and release of Urgent Interim Change 2 (UIC 2) to Vol IV of the TACMAN was expected to happen such that WASP would be able to implement changes in the software prior to release of Version 1.0. The OPNAV sponsor concurred that WASP should implement UIC 2 if possible. However, delays in the release of UIC 2 resulted in a corresponding delay of the release of WASP V1.0 from 2Q 2003 to 4Q 2003 with only minimal incorporation of UIC 2.

Insertion of V1.1 into schedule with delivery in 1Q 2005:

WASP V1.1 was inserted in the schedule to implement full Change 5 functionality in addition to requirements that were deferred from WASP V1.0. Release of WASP V2 moved ahead from 3Q 06 to 4Q 05:

Technical: No applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE:		
								Februar	y 2004
APPROPRIATION/BUDGET ACTIVITY	PROGRAM EL	EMENT NUME	BER AND NAM	E	PROJECT NUM	IBER AND NA	ME		
RDT&E, N / BA-5	0604215N Sta	ındards Develo	pment		2311 Navy Sto	ores Plannino	g and Weapor	neering Module	
D. OTHER PROGRAM FUNDING SUMMARY:								т.	Total
Line Item No. & Name	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To <u>Complete</u>	Total <u>Cost</u>
BLI 287600 TAC A/C Mission Planning System (OPN) PE2806F Air Force Mission Support System	6.807 17	8.551 73.8	9.098 146.7	7.525 159.6	8.113 265.8	8.241	8.578	Continuing Continuing	

P.E. 0604231N (Mission Planning)

E. ACQUISITION STRATEGY: *

Related RDT&E:

Weaponeering and Stores Planning (WASP) products, delivered annually, are developed in-house by NAVAIR (NAWCAD and NAWCWD) engineers. NAWCAD provides expertise in areas of management, sytems engineering, software engineering and aircraft safety-of-flight (air-vehicle stores compatibility, weapons separation, aircraft aerodynamic flutter, ground/flight loads, authorized fuze arm times, aircraft safe escape). NAWCAD also provides weapons separation test pilots as WASP operational advisors. NAWCWD provides expertise in areas of guided weapons employment and weapons effects against targets. The various government teams (software development, functional qualification testing and certification/accreditation test) are supplemented with contract labor procured predominately through fixed-price GSA or BPA contracts.

F. MAJOR PERFORMERS: **

R-1 SHOPPING LIST - Item No.

								DATE:				
Exhibit R-3 Cost Analysis (pa	ge 1)									February 200	04	
APPROPRIATION/BUDGET ACTIV	VITY	PROGRAM E	LEMENT				JMBER AND N					
RDT&E, N / BA-5		0604215N St		pment		2311 Navy S		ng and Weapo		dule		
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 Software Development	WR	NAWCAD, PAX RIVER, MD	11.541		+	0.991		1.470		Continuing	+	1
Primary Software Development	GSA/FP	Various	11.747			1.813		4.117	11//04	Continuing		
Aircraft Integration	00/1/1	Various		10	01700	1.010	11/00		11//01	Continuing	0.000	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering	wx	NAWCAD, PAX RIVER, MD	5.163	0.18	1 01/03	0.140	11/03	0.286	11/04	Continuing	1	1
Training Development		, , , , , , , , , , , , , , , , , , , ,							.,,,,,		0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			28.451	2.87	9	2.944	1	5.873		Continuing	Continuing	
Development Support											0.000	
Software Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
Studies & Analyses											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.00	0	0.000)	0.000			0.000	
Remarks:												
			D_1 SHOE	DDINIC LIST	- Itam No. 8	25						

CLASSIFICATION:

								DATE:				
Exhibit R-3 Cost Analysis (pag	e 2)									February 200)4	
APPROPRIATION/BUDGET ACTIV		PROGRAM EI	EMENT			PROJECT NU	JMBER AND N	NAME				
RDT&E, N / BA-5		0604215N Sta	andard Develop	oment		2311 Navy S		ng and Weapo		lule		
Cost Categories	Contract Method & Type		Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	NAWCAD, PAX RIVER, MD	4.639	1.650	01/03	0.745	11/03	1.743	11/04	Continuing	Continuing	
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			4.639	1.65	D	0.745		1.743		Continuing	Continuing	
Government Engineering Support	lwx	NAWCWD, CHLKE, CA		0.29	01/03	0.331	11/03	0.473	11/03	Continuing	Continuing	
Government Engineering Support	WR	NAWCAD, PAX RIVER, MD		0.58	1 01/03	0.586	11/03	0.975	11/04	Continuing	Continuing	
Program Management Support	WX	NAWCAD, PAX RIVER, MD	2.084	0.14	3 01/03	0.334	11/03	0.364	11/04	Continuing	Continuing	
Travel	WR	NAWCAD, PAX RIVER, MD	0.990	0.01	01/03	0.020	11/03	0.020	11/04	Continuing	Continuing	
Transportation											0.000	
SBIR Assessment											0.000	
Subtotal Management			3.074	1.03	3	1.271		1.832		Continuing	Continuing	
Remarks:												
Total Cost			36.164	5.56	7	4.960		9.448		Continuing	Continuing	
Remarks:												

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EXHIBIT R4, Schedule P																									DATE		Fe	ebru a	ıry 20	04		
APPROPRIATION/BUDGET A RDT&E, N /	CTIVI BA-5								PROG 06042						NAMI	=					PROJ 2311						/eapor	neerin	g Mod	ule		
Fiscal Year		20	02			20	03			200)4			200	05			200	06			200	07			20	08			200	9	
	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																																
ATACS 2.3 Final Release WASP V.1 Release (F/A-18A/B/C	/D)				Δ			Δ																								
WASP V.1.1 Release (F/A-18A/B/ WASP V.2 Release (F/A-18A/B/C	/C/D))/JMPS	S Integr	ation]				Δ				Δ																-
Test & Evaluation Milestones WASP V.1 Cert Test (F/A-18A/B/WASP V.1.1 Cert Test (F/A-18A/B/WAS																																
WASP V.2 FQT & Cert Test (F/A-	18A/B	l /C/D/E	 /F) 																													
Production Milestones WASP V.1 Dev (F/A-18A/B/C/D) WASP V.1.1 Cert Test (F/A-18A/B/C/D) WASP V.2 Development (F/A-18A/B/C/D)		D/E/F)]																					
Deliveries																																

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE:		
							February 2	2004
APPROPRIATION/BUDGET ACTIVITY	PROGRAM E	LEMENT			PROJECT NU	MBER AND NA	AME	
RDT&BA-5	0604215N St	andard Develop	oment		2311 Navy S	tores Planning	g and Weapon	eering Module
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Acquisition Milestones								
ATACS 2.3 Final Version		1Q						
WASP V.1 Release (F/A-18A/B/C/D)		4Q						
WASP V.1.1 Release (F/A-18A/B/C/D)			4Q					
WASP V.2 Release (F/A-18A/B/C/D/E/F)JMPS Integ	ration			4Q				
Technical Evaluation (TECHEVAL)					+			
WASP V.1 Cert Test (F/A-18A/B/C/D)		3Q-4Q						
WASP V.1 Cert Test (F/A-18A/B/C/D) WASP V.1.1 Cert Test (F/A-18A/B/C/D)		JW-4W	3Q-4Q					
WASP V.1.1 Cert Test (F/A-16A/B/C/D) WASP V.2 FQT & Cert Test(F/A-18A/B/C/D/E/F)			3Q-4Q	2Q-4Q				
WASE V.2 FQT & Cert Test(F/A-10A/b/C/D/E/F)				2Q-4Q				
Production Milestones								
WASP V.1 Dev (F/A-18A/B/C/D)	1Q-4Q	1Q-3Q						
WASP V.1.1 Cert Test (F/A-18A/B/C/D)		2Q-4Q	1Q-3Q					
WASP V.2 FQT & Cert Test(F/A-18A/B/C/D/E/F)		2Q-4Q	1Q-4Q	1Q-2Q				
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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	1						DATE:	
							Februa	ry 2004
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	NUMBER AND	NAME		PROJECT NUMBE	R AND NAME		
RDT&E, N / BA-5	0604215N Standard D	Development			2312 Common He	elicopters		
COST (\$ in Millions)		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		1.157	0.949	0.772	0.795	0.981	1.000	1.020
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Project E2312, Common Helicopters: Automated mission planning systems to date have been developing targeting planning requirements for fixed-wing aircraft, while the unique planning requirements for helicopters have not been addressed. The unique and enhanced automated mission planning requirements that must be developed and implemented for helicopters include: data loading, an enhanced route editor (serpentine routing, hover, etc.) manipulation of higher fidelity (smaller scale) maps and imagery, enhanced performance tools (performance in and out of ground effect, performance degradation due to atmospheric conditions & elevation), and enhanced fidelity of landing zone, and threat analyses. The following type/model/series aircraft are supported by PE: AH-1W, UH-1N, H-46D/E, H-53D/E, H-60B/F/H/R/S, and V-22. The developed common helicopter functionally will initially be implemented in Naval Portable Flight Planning Software (N-PFPS) then migrated to JMPS. Subsequent common helicopter functionality will be developed for implementation in the Joint Mission Planning Segment (JMPS) after JMPS initital fielding.

	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND N	AME
DT&E, N / BA-5	0604215N Standard Development	2312 Common Helicopter	S
Accomplishments/Effort/Subtotal Cost	FY 03 1.157	FY 04 0.949	FY 05 0.772
. Accomplishments/Planned Program			
· .	1.15/	0.949	0.772
RDT&E Articles Quantity	1.157	0.949	0.772

	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost			
RDT&E Articles Quantity			

	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost			
RDT&E Articles Quantity			

EXHIBIT R-2a, RDT&E Project Justification					DATE:	
ADDROOD ATION OF A OTHER	IDDOOD AM ELEMENT AUMADED			DDO ISOT NI IMBED AND A	1445	February 2004
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER			PROJECT NUMBER AND N		
RDT&E, N / BA-5	0604215N Standard Developmen	<u> </u>		2312 Common Helicopter	rs	
C. PROGRAM CHANGE SUMMARY:						
Funding:	FY 2003	FY 2004	FY 2005			
Previous President's Budget:	1.175	0.960	0.891			
Current BES/President's Budget	1.157	0.949	0.772			
Total Adjustments	-0.018	-0.011	-0.119			
Summary of Adjustments						
Reprogramming	-0.006					
Economic Assumptions			-0.002			
Congressional undistributed reductions	•	-0.011				
Other Adjustments			-0.117			
Subtotal	-0.006	-0.011	-0.119			
Schedule: Not Applicable						
Technical: Not Applicable						

,	E Project Justification							DATE:	Februar	v 2004
ROPRIATION/BUDGE	ET ACTIVITY	PROGRAM E	LEMENT NUM	BER AND NAM	ИΕ	PROJECT NU	MBER AND N	AME	. 001 441	,
T&E, N /	BA-5	0604215N St				2312 Commo				
	RAM FUNDING SUMMARY:	•				-1	•			
Line Item No. & N	lame_	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To <u>Complete</u>	Total <u>Cost</u>
BLI 287600 TA	C A/C Mission Planning System (OPN)	6.807	8.551	9.098	7.525	8.113	8.241	8.578	Continuing	Continuing
E. ACQUISITION ST	RATEGY:									

									DATE:				
Exhibit R-3 Cost Analysis (pag	je 1)										February 200)4	
APPROPRIATION/BUDGET ACTIVI	TY		PROGRAM				PROJECT NU						
RDT&E, N / BA-5		T	0604215N	Standard De	/elopment		2312 Commo		S				
Cost Categories	Contract Method	Performing Activity &		Total PY s	FY 03	FY 03 Award	FY 04	FY 04 Award	FY 05	FY 05 Award	Cost to	Total	Target Value
		Location		Cost	Cost	Date	Cost	Date	Cost	Date	Cost to	Cost	of Contract
Primary Software Development		Eglin AFB,Florida		3.08		_	0.727		0.662		Continuing	Continuing	0. 00
Primary Software Development		,										0.000	
Aircraft Integration												0.000	
Ship Integration												0.000	
Ship Suitability												0.000	
Systems Engineering												0.000	
Training Development												0.000	
Licenses												0.000	
Tooling												0.000	
GFE												0.000	
Award Fees												0.000	
Subtotal Product Development				3.0	33 0.95	66	0.727	•	0.662	2	Continuing	Continuing	
Development Support												0.000	
Software Development												0.000	
Integrated Logistics Support												0.000	
Configuration Management												0.000	
Technical Data												0.000	
Studies & Analyses												0.000	
GFE												0.000	
Award Fees												0.000	
Subtotal Support				0.0	0.00	00	0.000)	0.000)	0.000	0.000	
Remarks:													
				D 4 CU C	DDING LIST	Itama Na O	<u> </u>						

Exhibit D.2 Coot Analysis (n	aga (1)								DATE:		Fahruam, 20	24	
Exhibit R-3 Cost Analysis (p			IDDOODAME	LEMENT			PROJECT N	IMPED AND	NAME		February 20)4	
APPROPRIATION/BUDGET ACT RDT&E, N / BA-5	IVIIY		PROGRAM E	:LEMENT tandard Develo	nment		2312 Comm						
Cost Categories	Contract	Performing	000421311 31	Total	Pinent	FY 03	2312 0011111	FY 04	13	FY 05			
Cost Categories	Method	Activity &		PY s	FY 03	Award	FY 04	Award	FY 05	Award	Cost to	Total	Target Value
	& Type	Location		Cost	Cost	Date	Cost	Date	Cost	Date	Complete	Cost	of Contract
Developmental Test & Evaluation												0.000)
Operational Test & Evaluation												0.000)
Live Fire Test & Evaluation												0.000)
Test Assets												0.000	
Tooling												0.000)
GFE												0.000	
Award Fees												0.000)
Subtotal T&E				0.000	0.000		0.000	o	0.00	0	0.000	0.000)
Contractor Engineering Support												0.000	
Government Engineering Support	WX	NAWCAD, PA	X RIVER, MD	2.138	0.171	11/02	0.192	11/03	0.08	0 11/04	Continuing	Continuing	
Program Management Support	Various	Various		0.918	3							0.918	3
Travel	WX	NAWCAD, PA	X RIVER, MD	0.215	0.030	11/02	0.030	11/03	0.03	0 11/04	Continuing	Continuing	
Transportation												0.000	
SBIR Assessment												0.000	
Subtotal Management				3.271	0.201		0.222	2	0.11	0	Continuing	Continuing	
Remarks:													
Total Cost				6.354	1.157		0.949	Э	0.77	2	Continuing	Continuing	
Remarks:													

EXHIBIT R4, Schedule	Profile	•																							DATE	:	Fe	ebrua	ry 20	04		
APPROPRIATION/BUDGE														R AND	NAM	E					PROJ					ΙE						
RDT&E, N /	BA-	5							06042	15N S	Standa	rd Dev	elopm	ent			l				2312	Comr	mon H	elicop	oters							
Fiscal Year 2002 2003			2004			2005 2006				20	07		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																																
Prototype Phase																																
PFPS v3.3 PFPS v4.0 PFPS v4.1 CMDL v2.0]																									
CMDL v2.01 CMDL v2.1 CMDL UPC																																
Test & Evaluation Milestones																														ı		
PFPS v3.3					DT	1																								1		ĺ
PFPS v4.0								DT																								
N-PFPS v4.1											DT																					
CMDL v2.0		DT																														
CMDL v2.01						IO	 C																									
CMDL v2.1								DT]																						
Production Milestones																																
CMDL UPC								DT]																					
Deliveries																																

R-1 SHOPPING LIST - Item No. 85

^{*} Not required for Budget Activities 1, 2, 3, and 6

Exhibit R-4a, Schedule Detail						DATE:	February 2	2004
APPROPRIATION/BUDGET ACTIVITY	PROGRAM E	EMENT			PROJECT NU	MBER AND NA		
RDT&BA-5	0604215N St	andard Develop	ment		2312 Commo	n Helicopters	;	
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Prototype Phase								
Prototype Phase PFPS V3.3	4Q	1Q						
PFPS V4.0	4Q	1Q-3Q						
PFPS V4.1		4Q	1Q-3Q					
CMDL V2.0	1Q-2Q							
CMDL V2.01		1Q-3Q						
CMDL V2.1	4Q	1Q-3Q						
CMDL UPC	4Q	1Q-3Q						
Technical Evaluation (TECHEVAL)								
PFPS V3.3	1Q-4Q	1Q		<u> </u>				
PFPS V4.0	14-44	4Q	1Q-2Q					
N-PFPS V4.1	+	40	3Q-4Q	1Q				
CMDL V2.0	2Q-4Q	1Q-3Q	3Q-4Q	ΙQ				
CMDL V2.01	2Q-4Q 2Q-4Q	1Q-4Q						
CMDL V2.01	2Q-4Q	3Q-4Q	1Q-2Q					
CIVIDL V2.1		3Q-4Q	TQ-2Q					
Production Milestones								
CMDL UPC		4Q	1Q-3Q					

EXHIBIT R-2a, RDT&E Project Justification	on						DATE:	
							FEBRUA	RY 2004
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEME	ENT NUMBER AND	NAME		PROJECT NUMBE	R AND NAME		
RDT&E, N / BA-5	Program Element (PE) No. 0604215N	; Title: Standards D	evelopment	Project Unit (PU) N	lo. S1857, Calibrati	on Standards	
COST (\$ in Millions)		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		4.115	4.219	1.359	1.366	1.652	1.675	1.704
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This project is a Navy-wide program to develop required calibration standards (hardware) in all major measurement technology areas. It funds Navy lead-service responsibilities in the DOD and Joint Services Metrology RDT&E program. This project supports the military requirement to verify the performance of all test systems used to validate the operation of Navy systems with calibration standards traceable to the National Institute of Standards and Technology.

EXHIBIT R-2a, RDT&E Project Justification			DATE:
			FEBRUARY 2004
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND N	AME
RDT&E, N / BA-5	Program Element (PE) 0604215N Standards Developme	Project Unit (PU) No. S1857	, Calibration Standards

B. Accomplishments/Planned Program

	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	4.115	4.219	1.359
RDT&E Articles Quantity			

FY 2003 Accomplishments:

- (U) (\$67,000) Reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.
- (U) (\$ 2.398) Completed 18 calibration standards (hardware) in support of chemical biological detection systems, fuel measurement systems, shipboard gage temperature calibrations, laser target designators and rangefinders (1.5 um), fiber optic systems, electro-optical measurement systems, laser power measurements, missile guidance systems, infrared imaging systems (850 1300 nm), electromagnetic interference measurement, aircraft/shipboard IFF systems, Watt Meter calibrators, multifunction electrical test equipment, fiber optic hydrophones, and electronic internet systems.
- (U) (\$ 1.717) Continued development of 6 calibration standards (hardware) in support of reduced crew size initiatives, missile guidance systems, radar cross section measurements, 3 modeling and simulation projects.
 - (U) (\$ 0) Began no new standards development .

FY 2004 Plan:

- (U) (\$ 2.245) Complete 9 calibration standards (hardware) in support of missile guidance systems, radar cross section measurements, modeling and simulation projects, new technology for reduced crew size, and chemical biological sensors.
 - (U) (\$.810) Continue development of 2 standards to reduce crew size initiatives on board ships and a modeling simulation project.
- (U) (\$ 1.164) Begin development of 9 new standards to reduce cumbersome work practices on board ships, chemical biological detectors, laser target designators and rangefinders (1.5 um), reduce shipboard crew size, and reduce calibration costs.

FY 2005 Plan:

- (U) (\$.279) Complete 1 calibration standard (hardware) in support of reduce crew size initiatives.
- (U) (\$1.080) Continue development of 5 standards to reduce cumbersome work practices on board ships, eye safe laser target designators and rangefinders (1.5 um), modeling and simulation projects, and reduce crew size.
 - (U) (\$ 0) Begin no new standards development.

CLASSIFICATION:

HIBIT R-2a, RDT&E Project Justification					DATE:	FEBRUARY 2004
PROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMEN	Γ NUMBER AND NAME		PROJECT NUMBER	AND NAME	FEBRUARI 2004
T&E, N / BA-5	Program Element (PE) 0604215N Standards De	velopment	Project Unit (PU) No.	S1857, Calibration	Standards
C. PROGRAM CHANGE SUMMARY:						
Funding:		FY 2003	FY 2004	FY 2005		
Previous President's Budget: (FY 04 Pres Co	ontrols)	4,203.000	1,266.000	1,388.000		
Current BES/President's Budget: (FY05 Pres		4,115.000	4,219.000	1,359.000		
Total Adjustments	·	-88.000	2,953.000	-29.000		
Summary of Adjustments						
FY03 SBIR		-67.000	0.000	0.000		
Other Adjustments		-21.000	-47.000	-29.000		
Congressional increases		0.000	3,000.000	0.000		
Subtotal		-88.000	2953.000	-29.000		
Schedule:						
Not applicable						
Technical:						
Not applicable						

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE:			
								FEBRUA	ARY 2004	
APPROPRIATION/BUDGET ACTIVITY	PROGRAM E	LEMENT NUM	BER AND NAN	ΛE	PROJECT NU	MBER AND N	AME			
RDT&E, N / BA-5	Program Elem	nent (PE) 0604	215N Standard	s Developmer	Project Unit (F	PU) No. S1857,	Calibration St	andards		
D. OTHER PROGRAM FUNDING SUMMARY:								То	Total	
Line Item No. & Name	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	<u>Complete</u>	Cost	
Not Applicable										
E. ACQUISITION STRATEGY: *										
Not Applicable										
F. MAJOR PERFORMERS: **										
Not Applicable										
* Not required for Budget Activities 1,2,3, and 6 ** Required for DON and OSD submit only.										

								DATE:				
Exhibit R-3 Cost Analysis (pa	ge 1)									FEBRUARY 2	004	
APPROPRIATION/BUDGET ACTIV	VITY	PROGR	AM ELEMENT			PROJECT N	UMBER AND I	NAME				
RDT&E, N / BA-5			n Element (PE) 0604	1215N Standard		nt Project Unit (7, Calibration St				
Cost Categories	Contract	Performing	Total		FY 03		FY 04		FY 05			
	Method & Type	Activity & Location	PY s Cost	FY 03 Cost	Award Date	FY 04 Cost	Award Date	FY 05 Cost	Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WX	NSWC, Corona Divisio		3.431		3.499		1.001	1	Complete	7.931	
Ancillary Hardware Development	WX	140WO, Colona Divisio	711	0.401	'	0.430	,	1.001			0.000	
Component Development											0.000	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering											0.000	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000)
GFE											0.000)
Award Fees											0.000	
Subtotal Product Development			0.00	0 3.431	1	3.499	9	1.001		0.000	7.931	
Development Support											0.000)
Software Development											0.000)
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000)
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.00	0.000)	0.000	0	0.000)	0.000	0.000)
Remarks:												
			R-1 SHO	PPING LIST	- Item No	85						

CLASSIFICATION:

									DATE:				
Exhibit R-3 Cost Analysis (pag	e 2)										FEBRUARY 20	004	
APPROPRIATION/BUDGET ACTIV	ITY		PROGRAM ELEMENT				PROJECT N	IUMBER AND	NAME				
RDT&E, N / BA-5			Program Element (PE) 0	604215N			ent Program Ele		04215N Standa		ent		
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	3	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date		Total Cost	Target Value of Contract
Developmental Test & Evaluation												0.000	
Operational Test & Evaluation												0.000	
Live Fire Test & Evaluation												0.000	
Test Assets												0.000	
Tooling												0.000	
GFE												0.000	
Award Fees												0.000	
Subtotal T&E			(.000	0.000		0.0	00	0.00	00	0.000	0.000	
Contractor Engineering Support					0.181		0.20	00	0.12	20		0.501	
Government Engineering Support					0.433		0.4	35	0.20)8		1.106	
Program Management Support												0.000	
Travel					0.070		0.0	55	0.00	30		0.155	
Labor (Research Personnel)												0.000	
SBIR Assessment												0.000	
Subtotal Management			0	.000	0.684		0.73	20	0.35	58	0.000	1.762	
Remarks:													
Total Cost			C	.000	4.115		4.2	9	1.35	59	0.000	9.693	
Remarks:													

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	ation						DATE:	
,							Februa	ry 2004
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEME	NT NUMBER AND	NAME		PROJECT NUMBE	R AND NAME		
RDT&E, N / BA-5	0604215N, Standar	ds Development			W0572, Joint Service	s/Navy Standard Avid	onics Components and	d Subsystems
COST (\$ in Millions)		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		31.168	39.739	46.096	61.838	34.166	21.432	17.096
RDT&E Articles Qty		3	18	5	1			

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Joint Services/Navy Standard Avionics Components and Subsystems project provides for the identification, design, development, test, evaluation and qualification of standard avionics and mandatory safety improvements for Navy use, and wherever practicable, use across all services. Standard avionics systems under development include the Terrain Awareness Warning System (TAWS), Tactical Aircraft Moving Map Capability (TAMMAC), Midair Collision Avoidance System (MCAS), Communication Navigation Surveillance Air Traffic Management (CNS/ATM), Advanced Mission Computer & Displays (AMC&D), Vector Product Format (VPF), Aircrew Wireless Internal Communication Systems (AWICS), and Joint Tactical Radio System (JTRS). Participation in Human Factors Quality Management Board (HFQMB) ensures Navy safety upgrades and mandatory safety improvements for naval aircraft.

The RDT&E Articles include Communication Navigation Surveillance/Air Traffic Management (CNS/ATM) Engineering Manufacturing Development (EMD) units, AMC&D EMD units which include Display Processors and Mission Processors, Display Heads, 8 x 10 displays, and Fiber Channel Switches, Joint Tactical Radio Systems (JTRS) EMD units, Aircrew Wireless Internal Communication Systems (AWICS) EMD units, Vector Product Format (VPF) software units, and Terrain Awareness Warning Systems (TAWS) units.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE:
			February 2004
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND N	NAME
RDT&E, N / BA-5	0604215N, Standards Development	W0572, Joint Services/Navy	Standard Avionics Components and Subsystems

(U) B. Accomplishments/Planned Program

AMC&D	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	22.778	12.222	8.749
RDT&E Articles Quantity			

Conducted PDR and CDR for 8 X10 display. Continued development and obtain production approval for Advanced Multi-Purpose Color Display (AMPCD) for AV-8B and F/A-18C/D. For F/A-18E/F system: completed DT-IIA-2; conducted OT-IIA-1 (OA); continued development of 8X10 display, Fibre Channel Network Switch (FCNS) and AMC; completed DT-IIA-3; conduct TECHEVAL and DT-IIA-4; conduct OPEVAL and Operational Test of Type 2 AMC; and achieve MS III. For AV-8B: completed DT-IIB-1 and DT-IIB-2 (TECHEVAL); continued development of AMC; began and completed OT-IIB (OPEVAL) and achieve MS III. Complete development of 8X10 display, FCNS and AMC.

JSRC	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.117	1.005	0.795
RDT&E Articles Quantity			

Continue to provide leadership in support of the Navy interest to the JSRC tri-service committee promoting commonality and joint programs with focus on interoperability, communications, CNS/ATM, Joint Services obsolescence Management Plan and the update of the Core Avionics Master Plan (CAMP). Support and participate in Avionics Operational Advisory Group (OAG) panels and HFQMB.

TAWS	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.549	0.000	0.000
RDT&E Articles Quantity			

Safety: Completed DT and commenced OT of the Terrain Awareness Warning System (TAWS) for F/A-18 OFP 17C/18E. Evaluated data and test results from simulator and flight testing of industry based TAWS and sensors which supplement TAWS performance. Support fleet release of the TAWS for F/A-18 OFP 18E with fleet briefs and training. Monitor initial fleet acceptance of the TAWS for F/A-18 OFP 18E. Began development of program plans based on research of commercial based TAWS and sensors and applicability to other Navy platforms.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE:		
			February 2004
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND N	NAME
RDT&E, N / BA-5	0604215N, Standards Development	W0572, Joint Services/Navy	Standard Avionics Components and Subsystems

(U) B. Accomplishments/Planned Program

JMPS	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.853	1.125	0.000
RDT&E Articles Quantity			

Second software release of ARC-210 AFP as partially JMPS-integrated package utilizing JMPS common database input (and correcting Software Trouble Reports (STRs) from first release). Third software release for ARC-210 AFP as fully integrated JMPS software segment (with corrected STRs from previous release). Completed software coding and unit testing. Conducted SRR and developed software build of the TAMMAC Joint Mission Planning Systems (JMPS) Unique Planning component (UPC). Conducted functional, developmental and operational testing efforts for TAMMAC/JMPS Map planning capability. Resolved deficiencies from testing. Incorporated common requirements from the TAMMAC integration of the MH-60S and AV-8B platforms.

CNS/ATM	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	4.346	11.938	13.435
RDT&E Articles Quantity	3		

Continued CNS/ATM integration of Mode S and Required Navigation Performance (RNP)-4 functional integration and certification efforts into naval aircraft. Achieved MS III decision for Mode S. Perform naval aircraft platform functional integration for F/A-18E/F, KC-130J, MH-60S, MH-60R and E-2C in the areas of communications, navigation, surveillance, processing and displays. (Mode S, 8.33khz, FM Immunity, RNP/RNAV). Continue CNS/ATM requirements definition. RDT&E articles in FY03 required for Mode S integration and test.

VPF	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.846	3.432	2.362
RDT&E Articles Quantity		1	

Conducted Vector Product Format (VPF) integration study for TAMMAC. Perform VPF software and hardware integration into TAMMAC. Completed VPF Integration Systems Design Review (SDR). Award VPF development contract. Conducted SRR, PDR and CDR review on VPF. Conduct VPF Developmental Testing (DT). Conduct VPF Systems Qualification Testing (SQT). Conduct VPF Operational Test. One DMC TAMMAC unit will be procured to conduct T&E of the VPF software in TAMMAC.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE:			
·				February 2004	
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUM	IBER AND NAME	PROJECT NUMBER AND N	IAME	
RDT&E, N / BA-5	0604215N, Standards Deve	opment	W0572, Joint Services/Navy	Standard Avionics Components and Subsystems	
U) B. Accomplishments/Planned Program					
o, zi /iccompilaimomo/i laimoa i regiam					
AWICS		FY 03	FY 04	FY 05	
Accomplishments/Effort/Subtotal Cost		0.679	2.137	0.750	
RDT&E Articles Quantity			15		
Safety: Produced Phase III SBIR Sole Source contra RDT&E articles are used for environmental, integration			,	, , , , , , , , , , , , , , , , , , , ,	
JTRS		FY 03	FY 04	FY 05	
Accomplishments/Effort/Subtotal Cost		0.000	7.880	20.005	
RDT&E Articles Quantity			2	5	
Awarded integration contracts for the Joint Tactical F planning, and message processing software for JTR: JTRS is an Air Force lead program. The Navy is utili	S. RDT&E articles are Engine	eering Development Units fo	r integration lab install and tes	st aircraft installs.	
			1		

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification				DATE:
				February 2004
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME		PROJECT NUMBER AND	NAME
RDT&E, N / BA-5	0604215N, Standards Development		W0572, Joint Services/Nav	vy Standard Avionics Components and Subsystems
(U) C. PROGRAM CHANGE SUMMARY:				
(U) Funding:	FY 2003	FY 2004	FY 2005	
Previous President's Budget:	32.323	42.821	46.855	
Current BES/President's Budget	31.168	39.739	46.096	
Total Adjustments	-1.155	-3.082	-0.759	
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reduction	s	-0.082		
Congressional rescissions				
SBIR/STTR Transfer	-0.496			
Reprogrammings	-0.659	-5.600	-5.200	
Other Adjustments		2.600	4.441	
Congressional increases				
Subtotal	-1.155	-3.082	-0.759	

LPIA Milestone III decision changed from 2Q/03 to 4Q/03 due to required corrections of minor deficiencies identified in operational test.

AMC&D MS III (AV-8B) changed from 3Q/03 to 3Q/04 as a result of OSCAR schedule changes. AMC&D AV-8B OPEVAL changed from 4Q/02 to 2Q/03 due to new OSCAR Test Plan.

F/A-18E/F MS III changed from 2Q/04 to 3Q/04 due to the availability of the F/A-18E/F mission software. AMC&D F/A-18E/F overarching test plan. CNS/ATM Mode S Milestone III decision changed from 2Q/03 to 4Q/03 due to additional test required by COMOPTEVFOR. JMPS corrected to reflect SRR in 2Q/03. JMPS DT changed from 2Q/03 to 4Q/03 due to delay in contract award at NAWC Pt. Mugu. JMPS OT changed from 1Q/04 to 3Q/04 due to slip in DT. VPF Contract award changed from 2Q/03 to 4Q/03 due to delay in defining SOW requirements, which slips all following development milestones. AWICS schedule reflects new acquision strategy to utilize SBIR Phase III contract as approved May 03. AWICS scheduled changed due to the delay in receipt of Rapid Deployment Capability (RDC). JTRS schedule reflects the new Navy Migration Plan approved Summer 03.

(U) Technical:

Not Applicable.

CLASSIFICATION:

		1 col daily 2004				
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME				
RDT&E, N / BA-5	0604215N, Standards Development	W0572, Joint Services/Navy Standard Avionics Components and Subsystems				
(U) D. OTHER PROGRAM FUNDING SUMMARY:		To Total				
Line Item No. & Name	<u>FY 2003</u> <u>FY 2004</u> <u>FY 2005</u> <u>FY 2006</u>	FY 2007 FY 2008 FY 2009 Complete Cost				

167.504

225.641

201.192

68.696

147.524

(U) E. ACQUISITION STRATEGY: *

Common Avionics, APN

EXHIBIT R-2a, RDT&E Project Justification

Advanced Mission Computer & Display (AMC&D) is utilizing a Sole source to McDonnell Douglas Corp. (MDC), a wholly owned subsidiary of the Boeing Company, for prototype design using an 845 Other Transaction Agreement (OTA) and Cost Plus Contract for EMD and Fixed Price Incentive contract for LRIP. MDC conducted a competition to potential suppliers and selected General Dynamics Information Systems for the AMC, Honeywell for Displays, and Harris for Fibre Channel Network Switch. The Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM) program is a systems of systems. The program will encompass the integration of various systems that are currently post-MS III. Systems will be procured utilizing existing Navy contracts for integration on forward-fit and retrofit platforms to provide CNS/ATM functionality. Joint Tactical Radio System (JTRS) is an Air Force lead program. The Navy is utilizing an Air Force contract vehicle for navy unique requirements and a Navy vehicle for integration efforts on the lead platforms. TAMMAC Vector Product Format (VPF) is utilizing a sole source to Harris Corporation, to incorporate the NIMA VPF data into the the existing TAMMAC FRP Hardware. Aircrew Wireless Internal Communication System (AWICS) is employing a sole source Phase III SBIR contract to procure a common system for use aboard multiple assault, logistics, Rotary Wing and Fixed Wing aircraft.

R-1 SHOPPING LIST - Item No. 85

DATE:

173.647

182.277

February 2004

Continuing

Continuing

CLASSIFICATION:

								DATE:				
Exhibit R-3 Cost Analysis (page 1)						February 2004					
APPROPRIATION/BUDGET ACTIVITY		PROGRAM EL	EMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-5		0604215N, ST	ANDARD DEV	ELOPMENT		W0572, Joint	Services/Nav	y Standard Avior	nics Compone	ents and Subsystems	•	
Cost Categories	Contract Method & Type		-	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
Prime Hdw Develop, AMC&D OTA845	SS/845	Boeing, St. Louis, MO	54.516								54.516	54.51
Prime Hdw Develop, AMC&D EMD	SS/CP	Boeing, St. Louis, MO	113.571	16.614	11/02	8.890	11/03	7.398	11/04		146.473	146.47
Prime Hdw Develop, LPIA EMD	C/CS	BAE Systems, Wayne, NJ	7.264								7.264	7.26
Prime Hdw Develop, TAMMAC EMD	SS/CPIF	Boeing, St. Louis, MO	26.332								26.332	26.332
Prime Hdw Develop, CNS/ATM EMD	SS/BOA	Litton, Woodland Hills, CA	2.032								2.032	2.032
Prime Hdw Develop, CNS/ATM EMD	SS/CPIF	Rockwell, Cedar Rapids, IA	3.064								3.064	3.064
Prime Hdw Develop, CNS/ATM EMD	C/FPIF	BAE Systems, Greenlawn, NY	2.157								2.157	2.15
Prime Hdw Develop, MCAS EMD	SS/CPFF	BAE Systems, Greenlawn, NY	1.969								1.969	1.96
Prime Hdw Develop, VPF	SS/TBD	Harris, Melbourne, FL		0.413	12/02	2.837	12/03	0.671	12/04		3.921	3.92
Prime Hdw Develop, JTRS	TBD	TBD				3.596	12/03				3.596	j
Primary Hardware Development	TBD	TBD		0.170	12/02	0.250	03/04	0.000	11/04		0.420	,
Ancillary Hardware Development												
Training Development												
Aircraft/Ship Integration	WX	NAWCs		0.150	03/03	0.320	03/04	0.200	03/05	Continuing	Continuing	,
Aircraft/Ship Integration, CNS/ATM	WX	NAWCs				9.278	04/04	9.647	04/05	Continuing	Continuing	<u></u>
Aircraft/Ship Integration, JTRS	WX	NAWCs				3.276	03/04	19.059	11/04	Continuing	Continuing	<u></u>
Ship Suitability												
Systems Engineering	WX	NAWCs		1.865	12/02	3.097	12/03	2.646	12/04	Continuing	Continuing	
Licenses												
Tooling												
GFE												
Award Fees												
Misc			62.527								62.527	
Subtotal Product Development			273.432	19.212		31.544		39.621		Continuing	Continuing	ıl

Remarks:

CLASSIFICATION:

										DATE:				
Exhibit R-3 Cost Ana	alysis (pag	e 1)										February 200	04	
APPROPRIATION/BUD		ITY		PROGRAM E	LEMENT			PROJECT NUMBER AND NAME						
RDT&E, N /	BA-5			0604215N, S	TANDARD DE\	/ELOPMENT		W0572, Joint Services/Navy Standard Avionics Components and Subsystems						
Cost Categories		Contract	Performing		Total		FY 03		FY 04		FY 05			
		Method & Type	Activity & Location		PY s Cost	FY 03 Cost	Award Date	FY 04 Cost	Award Date	FY 05 Cost	Award Date		Total Cost	Target Value of Contract
Development Support		WX	NAWCs		COST	0.338	1	0.625		0.259		Continuing		
Software Development		WX	NAWCs			0.557		0.364		0.200	12/01	Johnmanig	0.921	0.921
Integrated Logistics Suppo	rt	WX	NAWCs			0.333		0.610		0.298	12/04	Continuing		1
Configuration Management														
Technical Data														
Studies & Analysis		WX	NAWCs			2.623	11/02	0.266	11/03	0.266	11/04	Continuing	Continuing	
GFE														
Award Fees														
Misc					21.486								21.486	
								-						-
Subtotal Support					21.486	3.851		1.865		0.823		Continuing	Continuing	
Custotal Cupport		ļ	·		200	0.00	ļ		1	0.020	!			
Remarks:														

CLASSIFICATION:

									DATE:				
Exhibit R-3 Cost Analysis (page 2)											February 200)4	
APPROPRIATION/BUDGET ACTIVITY			PROGRAM E	LEMENT			PROJECT NU	JMBER AND N	AME				
RDT&E, N / BA-5			0604215N, ST	ANDARD DEV			W0572, Joint		Standard Avior		nts and Subsystems		
Cost Categories	Contract	Performing		Total		FY 03	E)/ 0.4	FY 04	E) / 05	FY 05	0	T	T
	Method & Type	Activity & Location		PY s Cost	FY 03 Cost	Award Date	FY 04 Cost	Award Date	FY 05 Cost	Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation, AMC&D	WX	NAWCs		1.733	1.953	11/02	1.569	01/04	0.326	1	Continuing	Continuina	or contract
Developmental Test & Evaluation, VPF	wx	NAWCs					0.299	l	1.216	 		1.515	
Developmental Test & Evaluation, AWICS	wx	NAWCs			0.045	06/03	0.887	1	0.050	1		0.982	
Operational Test & Evaluation	wx	NAWCs			1.695	11/02	0.086		0.450		Continuing	Continuing	
Live Fire Test & Evaluation												<u> </u>	
Test Assets													
Tooling													
GFE													
Award Fees													
Misc				22.162								22.162	
Subtotal T&E				23.895	3.693		2.841		2.042		Continuing	Continuing	
Contractor Engineering Support	WX	NAWCs			1.738	02/03	2.099	02/04	2.083	02/05	Continuing	Continuing	
Government Engineering Support	WX	NAWCs			1.332	12/02	0.764	12/03	0.583	12/04	Continuing	Continuing	
Program Management Support	WX	NAWCs			1.246	11/02	0.576	11/03	0.894	11/04	Continuing	Continuing	
Travel	WX	NAWCs			0.096	11/02	0.050	11/03	0.050	11/04	Continuing	Continuing	
Transportation													
SBIR Assessment												0.000	
Subtotal Management				0.000	4.412		3.489		3.610		Continuing	Continuing	
Remarks:													
Total Cost				318.813	31.168		39.739		46.096		Continuing	Continuing	
Remarks:	•				DING LIGT		•						

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APPROPRIATION/BUDGET ACTIVIT RDT&E, N / BA-5 Fiscal Year 1 Acquisition Milestones		3	4	1	200	3		1 :	, Stan 2004		velopm	ent 200				2006	6				Servi		NAME avy Sta		Avionio		mponen			systems
Fiscal Year 1 Acquisition	20		4	1				1 :	2004			200)5			2006	6	\	W0572			ces/Na	avy Sta			cs Cor	nponer			ystems
1 Acquisition			4	1			4	1 :		3 4	1)5			2006	6			200	7	l		200)8			200	19	
Acquisition	2	3	4	1	2	3	4		2	3 4	1	_													$\overline{}$					
												2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
								N	AS III (F/A-18)	& AV-8	3																		
	1																													
Test & Evaluation Milestones DT-II	IIA-2		Dī	Г-IIА-3			DT-I	IA-4																						
Development Test Operational Test	DT-IIE		OT-IIA	-1			18 OPE			 	Operation	onal Tes	st																	
						4V-8B	OPEVA	AL.														<u> </u>								
Production Milestones LRIP I FY02 (39)	,																													
LRIP II FY02 (48) LRIP III FY03 (45)																														
FRP FY04						Ĭ				\supset																				
Deliveries	LRI	IP 1 Q	ΓY - 39	LRIP	2 QT	Y - 48	LRIP 3	3 QTY - 4	15																			二		

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE:		
AMC&D							February 20	04
APPROPRIATION/BUDGET ACTIVITY	PROGRAM EI	LEMENT			PROJECT NU	MBER AND NA		
RDT&E, N / BA-5	0604215N. St	andards Develo	pment		W0572. Joint	Services/Navv	Standard Avior	nics Components
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Operational Testing (OT-IIA-1) F/A-18E/F	3Q				1 1 1 1 1 1 1			
Developmental Testing (DT-IIA-3) F/A-18E/F	3Q-4Q	1Q-2Q						
Operational Evaluation (OPEVAL) AV-8B		2Q-4Q	1Q					
MSIII (AV-8B)			3Q					
Operational Évaluation (OPEVAL) F/A-18E/F		3Q-4Q	1Q					
Developmental Testing (DT-IIA-4) F/A-18E/F		3Q-4Q	1Q-2Q					
MSIII (F/A-18E/F)			3Q					
Operational Testing F/A-18E/F			3Q-4Q					
LRIP I	1Q							
LRIP II	4Q							
LRIP III		3Q						
FRP			3Q					
				-				
				-				

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EXHIBIT R4, Schedul										JMP															DATE F (ebrua	ary 20	004				
APPROPRIATION/BUDGE									PROG						NAM C	E									ID NAN							
RDT&E, N /	BA-	5			1				06042	215N, S	Standa	ards De	evelopi	nent			ı				W0572	2, Joint	Service	es/Nav	y Stand	lard Av	ionics (Compon	ents ar	nd Subs	system	S
Fiscal Year		20	002			20	03			20	04			20	05			20	06			20	07	_		20	800			20	09	
	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																																
TAMMAC JUMPS UPC Development		SDR I	DR C	DR		SRR																										
Test & Evaluation Milestones									DT																							
Development Test									1			ОТ																				
Operational Test																																
Production Milestones																																

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE:	Tahruam, 20	04
JMPS	I======						February 20	04
APPROPRIATION/BUDGET ACTIVITY	PROGRAM EI					MBER AND NA		
RDT&E, N / BA-5	0604215N, Sta	andards Develo	pment		W0572, Joint	Services/Navy	Standard Avior	ics Components
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
System Design Review (SDR)	2Q							
Preliminary Design Review (PDR)	3Q							
Critical Design Review (CDR)	3Q							
Systems Requirements Review (SRR)		2Q						
Developmental Testing (DT)		4Q	1Q-2Q					
Operational Testing (OT)			3Q-4Q					
<u> </u>								
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EXHIBIT R4, Schedule											NS/A																ebrua	ary 20	04				
APPROPRIATION/BUDGET															R AND	NAM	E									ID NAN							
RDT&E, N /	BA-5				T					06042	15N, S	Standa	ards De	evelopi	ment							W0572	2, Joint	Service	es/Nav	y Stand	dard Av	ionics (Compor	nents ar	d Subs	ystem	S
Fiscal Year		20	002				2003	3			20	04			20	05	ı		20	06	1		20	07			20	800			20	09	
	1	2	3	4	. 1	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				P	Produc	ction																											
Mode S				&	Insta	7		١	MS III																								
F/A-18E/F Integration											Syste	em In	tegatio		abTest			Δ ^v	& V														
MH-60S Integration											Sys	stem I	ntegat	ion	_Lab	Fest			\v & \	,													
MH-60R Integration											Sys	stem I	Integat	ion																			
															\\Lab	Test			\ 	ł													
KC-130J Integration														:	System	Integ	ation																
																			△Lal	b Test			V										
E-2C Integration															Syster	n Inte	gation																
																			\[\rangle \L	abTes	t	V 8	V										
Production Milestones																																	
Platform Procurements																																	
Deliveries																																	

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE:		
CNS/ATM							February 20	04
APPROPRIATION/BUDGET ACTIVITY	PROGRAM EI	LEMENT			PROJECT NU	MBER AND NA	AME	
RDT&E, N / BA-5	0604215N, Sta	andards Develo	pment		W0572, Joint	Services/Navy	Standard Avior	nics Components
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Milestone III (For Mode S)		4Q						
F18 System Integration			1Q-4Q	1Q-4Q	1Q			
MH-60S System Integration			1Q-4Q	1Q-4Q	1Q			
MH-60R System Integration			1Q-4Q	1Q-4Q	1Q			
F18 Lab Integration Test				1Q				
KC-130J System Integration				1Q-4Q	1Q-4Q	1Q		
E2C System Integration				1Q-4Q	1Q-4Q	1Q		
MH-60S Lab Integration Test				2Q				
MH-60R Lab Integration Test				2Q				
KC-130J Lab Integraion Test					2Q			
E-2C Lab Integration Test					2Q			
Platform Procurements					2Q-4Q	1Q -4Q	1Q-4Q	1Q - 4Q

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EXHIBIT R4, Schedule	Profile						.,	FOT	ND D1	2001	ICT 5	ODM													DATE			10.4				
APPROPRIATION/BUDGET	'ACTIV	ITY					V	EUIC	DR PF	RAM	FL FMI	FNT N	UMBE	R AND	NAM (F					PROJ	FCT N	LIMRE	R AN	D NAN	ebrua	iry 20	104				
RDT&E, N /	BA-												velopn		7 1 47 (17)	_					W0572						ionics (Compor	ents an	d Subs	vstems	:
10102,117	T.,								00012	. 1011, 0	Janaa	ii do Do	Volopii	110111							110012			30/1441	Jotano	aranti	1011100 (Joinpoi	Crito ar	u Oubo	yotorric	,
Fiscal Year		20	02	ı		20	03			200	04	ı		200	05			200	06			200	07	ı		20	800			200)9	
	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																	Fleet	Introdu	ıction													
VPF Integration Study																																
Contract Award Vector Product Development								\triangle	SDR	/SRR	PDR	CDR																				
Software VPF S/W to H/W Integration]																		
Test & Evaluation Milestones														DT.	/SQT																	
Development Test																ОТ																
Operational Test																																
Production Milestones																																
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Exhibit R-4a, Schedule Detail						DATE:	Fabruary 20	0.4
VECTOR PRODUCT FORMAT APPROPRIATION/BUDGET ACTIVITY	PROGRAM EI	EMENIT			IDDO IECT NILI	MBER AND NA	February 20	04
								· 0
RDT&E, N / BA-5		andards Develo	·		-			ics Components
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
VPF Integration Study		3Q- 4Q	1Q					
VPF Development Contract Award		4Q						
System Design Review (SDR)			2Q					
System Requirements Review (SRR)			2Q					
Preliminary Design Review (PDR)			3Q					
VPF S/W to H/W Integration Starts			3Q					
Critical Design Review (CDR)			4Q					
Developmental Testing (DT)				2Q-3Q				
System Qualification Testing (SQT)				2Q-3Q				
Operational Testing (OT)				3Q-4Q				
Fleet Introduction					2Q			
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EXHIBIT R4, Schedule	Profile											AW	ics												DATE F e		ary 20	04				
APPROPRIATION/BUDGET	ACTIVI	ΓY							PROG	SRAM	ELEM	ENT N	UMBE	R AND	NAM	=					PROJ	ECT N	IUMBE	R AN								
RDT&E, N /	BA-5				,				06042	215N, S	Standa	ards De	velopr	nent							W0572	2, Joint	Service	s/Nav	y Stand	lard Av	ionics C	ompon	ents an	d Subs	ystems	s
Fiscal Year		200	02			20	003			20	04			200	05			200	06			20	07			20	800			200	9	
	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							ADR					MSC																				
Contract Award								SBI	R PHA	SE III	,	RIP I																				
Test & Evaluation Milestones Developmental Test OT Readiness Review																																
H53 Operational Test																																
Production Milestones											EMD																					
DT-B1 DT-B2 LRIP 1 FY04														LRIP	FRP																	
Procurements														$ \downarrow $																		
Deliveries											15			15																		

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Exhibit R-4a, Schedule Detail						DATE:	Tah	0.4
AWICS APPROPRIATION/BUDGET ACTIVITY	PROGRAM E	EMENIT			IDDO IDOT NILI		February 20	04
					PROJECT NU			
RDT&E, N / BA-5		andards Develo	·	Т	+	ervices/Navy Sta		
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
ADR		3Q						
Contract Award - SBIR Phase III			2Q					
Developmental Testing (DT-IIA)			3Q-4Q	1Q				
Milestone C (MS C)			4Q					
Operational Test Readiness Review (OTRR)				1Q				
Low-Rate Initial Production (LRIP 1)			4Q					
LRIP 1 Deliveries				2Q				
FRP				3Q				
					<u> </u>			
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EXHIBIT R4, Schedule											JTR															DATE F	ebrua	ary 20	04				
APPROPRIATION/BUDGE										PROC	SRAM	ELEM	ENT N	UMBE	R AND	NAME						PRO	JECT N	IUMBE	R AND	NAN	1E						
RDT&E, N /	BA-	5								06042	215N, S	Standa	rds De	velopr	nent							W057	2, Joint	Service	es/Navy	Stand	lard Avi	ionics C	ompon	ents an	d Subs	/stems	
Fiscal Year		2	2002				20	03			20	04			20	05			200	06			20	07			20	800			20	09	
	1	2	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
Navy Unique JTRS Sys Design & Dev										Req 8	& Desig	n Ana	lysis																				
Navy Milestone - Leads E-2 AHE																																	
Req Definition/Integration														Req D	efinitio	n/ Integ	gration	Analys	sis						Ai	rcraft I	ntegra	tion			l		
Hardware																							E	DM Z					PRO	od 🛆	7		
Test & Evaluation																										LA	B/SIL	Test	l		l		1
AV-8B																																	
Req Definition/Integration										F	Req De	f/ Integ	gration	Analys	sis	I				Air	craft In	tegrat	ion			l.							•
Hardware																		ED	м 🛆	7	PRO	DD /	$\sqrt{}$										Ю
Test & Evaluation																					LAB	SIL T	est						D1	Г/ОТ			
MH-60																																	
Req Definition/Integration													F	en De	f/ Integ	ration	Analys	is							Δ	ircraft	Integr	ation		<u> </u>			
Hardware														04 20	i, intog	lation	widiyo						EDM	\triangle		liroran	Integri	PRO	Þ 🛆	\$			
Test & Evaluation																									LA	B/SIL	Test		l		DT/C)T	}
Production Milestones																																	

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RDT&E, N	Exhibit R-4a, Schedule Detail JTRS						DATE: F	ebruary 200)4
FY 2002 FY 2003 FY 2004 FY 2005 FY 2006 FY 2007 FY 2008 FY 2009	APPROPRIATION/BUDGET ACTIVITY	PROGRAM E	LEMENT			PROJECT NU			
Schedule Profile - Navy Unique/Lead Platforms	RDT&E, N / BA-5	0604215N, St	andards Develo	pment		W0572, Joint Se	ervices/Navy Sta	ndard Avionics C	Components
Schedule Profile - Navy Unique/Lead Platforms		FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Design Analysis 10-4Q 10-4Q 10 10 10 10 10 10 10 1	Schedule Profile - Navy Unique/Lead Platforms								
Aircraft Integration	Design Analysis								
Eng Dev Model (EDM) - Lab Eng Dev Model (EDM) - Fit Test Combined DT/OT 2Q-4Q 1Q-4Q	Integration Analysis - Navy Lead Platforms			3Q-4Q	1Q-4Q		1Q		
Eng Dev Model (EDM) - Fit Test 1Q-4Q	Aircraft Integration				2Q-4Q			1Q-4Q	1Q-4Q
Combined DT/OT 30-4Q 10-4Q	Eng Dev Model (EDM) - Lab					2Q-4Q			
	Eng Dev Model (EDM) - Flt Test						1Q-4Q		
	Combined DT/OT							3Q-4Q	1Q-4Q
						+			
						1			
						-			
R-1 SHOPPING LIST - Item No. 85						<u> </u>			

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Exhibit R-4, Schedule Profile (Exhibit R-4, page 46 of 46)