CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification									DATE: **February 2002**		
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-5**						R-1 ITEM NOMENCLATURE 0604215N, Standards Development					
COST ($ in Millions)	Prior Year Cost		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Total PE Cost			**99.515**	**69.016**	**37.757**	**23.610**	**13.025**	**13.504**	**13.767**	**Continuing**	**Continuing**
E2310/Flight Polynomials	**0.278**		**0.323**								**0.601**
E2311/Stores Planning and Weaponeering Module			**8.156**	**7.498**	**1.781**	**1.680**	**0.572**	**0.818**	**0.820**	**Continuing**	**Continuing**
E2312/Common Helicopters			**1.874**	**2.715**	**1.202**	**1.249**	**1.086**	**1.108**	**1.129**	**Continuing**	**Continuing**
S1857/Calibration Standards			**7.499**	**4.860**	**1.698**	**1.720**	**1.765**	**1.775**	**1.803**	**Continuing**	**Continuing**
W0572/Joint Services/Navy Standard Avionics Components and Subsystems			**81.663**	**53.943**	**33.076**	**18.961**	**9.602**	**9.803**	**10.015**	**Continuing**	**Continuing**
Quantity of RDT&E Articles	**140**		**43**	**44**	**34**						**261**

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Project E2310, Flight Polynomials: The Navy - Portable Flight Planning Software (N-PFPS) is the basic flight planning system for the Navy and Marine Corps. One of the fundamental planning functions of any automated aviation mission planner is the ability to calculate fuel required and performance available corrected for both the aircraft's configuration (weight, drag, speed, etc.) and the environmental factors (altitude, wind, pressure, humidity, etc.) In order to provide accurate performance calculations, performance polynomials (drop-in polynomials) reflecting the performance delineated in the approved Naval Air Training & Operations Procedure & Standard (NATOPS) manuals must be developed, implemented and maintained for each supported type/model/series aircraft. The following type/model/series aircraft are supported by this PE: F/A-18 (400), F/A-18 (402), C-2R, E-2C (Block II), F-14 B/D, AH-1W, UH-1N, CH-46E, H-60F/H, S-3B, EA-6B, AV-8B (406), AV-8 (408), T-45, and KC-130 F/R/T. The developed drop-in performance polynomials will initially be implemented in Naval Portable Flight Planning Software (N-PFPS).

Project E2311, Stores Planning and Weaponeering Module: The Naval Stores Planning and Weaponeering (NSPW), now referred to as the Naval Aviation Weaponeering Component (NAWC) project is an incrementally developed software product that will provide a certified unit level weaponeering capability for Naval aircraft in the Joint Mission Planning Segment (JMPS). NAWC will provide current planning results for specific aircraft type and model that include store/weapon carriage authorizations, restrictions and limitations; store/weapon delivery restrictions and limitations (including safe-escape aspects of the planned delivery profile); and will provide mandatory weapons employment planning information including weapons optimization. Selected functions of the Automated Tactical Manual Supplement (ATACS) will be rehosted in a Windows NT environment and integrated with Joint Munitions Effectiveness Manual (JMEM) software, and mission planning functions to comprise NSPW. F/A-18A/B/C/D is the first platform to be introduced in the first increment of NAWC as a stand alone product, prior to migration to JMPS.

R-1 SHOPPING LIST - Item No. 96

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: **February 2002**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-5**	R-1 ITEM NOMENCLATURE 0604215N, Standards Development

Project E2312, Common Helicopters: Automated mission planning systems to date have been developing targeting the 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 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, 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.

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 Tactical Aircraft Moving Map Capability (TAMMAC) Engineering & Manufacturing Development (EMD) units, Communication Navigation Surveillance/Air Traffic Management (CNS/ATM) EMD units, Advanced Mission Computer & Displays (AMC&D) EMD units which include Display Processors and Mission Processors, Display Heads, 8 x 10 displays, and Fiber Channel Network Switches.

(U) JUSTIFICATION FOR BUDGET ACTIVITY:

These programs are funded under ENGINEERING & MANUFACTURING DEVELOPMENT because they encompass engineering and manufacturing development of new end-items prior to production approval decision.

R-1 SHOPPING LIST - Item No. 96

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2002**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-5**	PROGRAM ELEMENT NUMBER AND NAME 0604215N Standards Development					PROJECT NUMBER AND NAME E2311 Naval Stores Planning and Weaponeering					
COST ($ in Millions)	Prior Year Cost		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost			**8.156**	**7.498**	**1.781**	**1.680**	**0.572**	**0.818**	**0.820**	**Continuing**	**Continuing**
RDT&E Articles Qty											

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Naval Stores Planning and Weaponeering (NSPW) project, now referred to as the Naval Aviation Weaponeering Component (NAWC) project is an incrementally developed software product that will provide a certified unit level weaponeering capability for Naval aircraft in the Joint Mission Planning Segment (JMPS). NAWC will provide current planning results for specific aircraft type and model that include store/weapon carriage authorizations, restrictions and limitations; store/weapon delivery restrictions and limitations (including safe-escape aspects of the planned delivery profile); and will provide mandatory weapons employment planning information including weapons optimization. Selected functions of the Automated Tactical Manual Supplement (ATACS) will be rehosted in a Windows NT environment and integrated with Joint Munitions Effectiveness Manual (JMEM) software, and mission planning functions to comprise NSPW. F/A-18A/B/C/D is the first platform to be introduced in the first increment of NAWC as a stand alone product, prior to migration to JMPS.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 2001 ACCOMPLISHMENTS:
   - -(U) ($6.663) Continued NAWC Construction Phase. Completed NAWC Iterations 5 and 75% of iteration 6.
   - -(U) ($1.493) Developed and released ATACS version 2.2. Began development of ATACS Version 2.3.

2. (U) FY 2002 PLAN:
   - -(U) ($2.583) Continue NAWC Construction Phase. Begin FQT and certification testing on F/A-18A/B/C/D stand alone product. Plan for NAWC transition to Fleet Users.
   - -(U))$3.321) Initiate development of the JMPS integrated version of NAWCand F/A-18E/F functionality.
   - -(U) ($.917) Provide essential updates to ATACS until NAWC is released.
   - -(U) ($.450) Initiate analysis and design of loading capability for JMPS Version 1 aircraft (CH-46, CH53D, CH-53E, HH-60H, KC-130, T-45, UH-1, SH-60R, and AH-1).
   - -(U) ($.227) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15USC 638.

3. (U) FY 2003 PLAN:
   - -(U) ($.311) Continue development of the F/A-18E/F NAWC applicaion.
   - -(U) ($.588) Continue JMPS/NAWC integration.
   - -(U) ($.882) Provide essential updates to NAWC.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2002**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-5	0604215N Standards Development	E2311 Navy Stores Planning and Weaponeering

(U) PROGRAM ACCOMPLISHMENTS AND PLANS (Cont):

(U) B. PROGRAM CHANGE SUMMARY:

	FY2001	FY2002	FY2003
(U) FY 2002 President's Budget:	8.497	7.565	
(U) Adjustments from the FY2002 President's Budget:	-0.341	-0.067	
(U) FY 2003 President's Budget Submit:	8.156	7.498	1.781

CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY2001 decrease of $.341 million reflects a $.175 million decrease due to a reprioritization of requirements within the Navy and a $.166 million decrease for a Small Business Innovative Research assessment. The FY2002 decrease of $.067 million reflects an undistributed congressional reduction.

(U) Schedule: ATACS Version 2.2 Release moved from 2Q/01 to 1Q/02. A 3Q/02 ATACS Version 2.3 Release was added. NSPW Version 1.0 was renamed. NSPW Version 2.0 has been renamed NAWC Version 2.0. A 3Q/02 NAWC Fleet Qualification Testing was added. A 4Q/02 NAWC Fleet Certification Testing was added. A 2Q/02 PRB GSA contract award was added. A 2Q/03 PRB GSA contract award was added.

(U) Technical: Not Applicable.

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete
BLI 287600 TAC A/C Mission Planning System (OPN)	11.830	13.223	6.597	8.899	10.317	6.705	12.321	Continuing

Related RDT&E:
(U) P.E. 0604231N (Mission Planning)

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2002**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-5	0604215N Standards Development	E2311 Navy Stores Planning and Weaponeering

(Related RDT&E
(U) P.E. 0604231N Mission Planning

(U) D. ACQUISITION STRATEGY: Naval Aviation Weaponeering Component (NAWC) software applications are being built by a software development team composed of government and contractor entities. Engineers provide domain expertise in the areas of platform specific stores compatibility and weapons separation, load validation, drag counts, fusing, delivery and safe escape, unguided trajectory modeling, guided weapons models, weapon effects, and aerodynamic flutter to the software development team. NAWC management and the test team for IV&V and Certification Testing are also combined teams of United State Government (USG) and contractor entities. Contractor efforts are procured predominately through fixed-price GSA or BPA contracts.

(U) E. SCHEDULE PROFILE

	FY 2001	FY 2002	FY 2003	TO COMPLETE
(U) Program Milestones				
ATACS Version 2.2		1Q/02 Release		
ATACS Version 2.3		3Q/02 Release		
NAWC Version 1.0		4Q/02 Release		
NAWC Version 2.0				4Q/04 Release
(U) Engineering Milestones				
(U) T&E Milestones				
NAWC Fleet Qualification Testing		3Q/02		
NAWC Fleet Certification Testing		4Q/02		
(U) Contract Milestones	2Q/01 DCS GSA	2Q/02 DCS GSA	2Q/03 DCS GSA	
NAWC	Contract Award	Contract Award	Contract Award	
NAWC		2Q/02 PRB GSA Contract Award	2Q/03 PRB GSA Contract Award	

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2002**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-5**		PROGRAM ELEMENT 0604215N STANDARD DEVELOPMENT			PROJECT NUMBER AND NAME E2311 NAVY STORES PLANNING AND WEAPONEERING							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Development	WX	NAWCAD, Pax River MD	7.489	2.384	11/00	2.514	11/01	0.746	11/02	Continuing	Continuing	
Primary Development	GSA/FP	DCS Inc., PRB, Pax River MD	5.955	2.602	01/01	2.818	01/02	0.355	11/02	Continuing	Continuing	
Systems Engineering	Various	Various	3.231	1.274	11/00	0.280	11/01	0.075	11/02	Continuing	Continuing	
Subtotal Product Development			16.675	6.260		5.612		1.176		Continuing	Continuing	

Remarks:

Subtotal Support												

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2002**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-5**		PROGRAM ELEMENT 0604215N STANDARD DEVELOPMENT			PROJECT NUMBER AND NAME E2311 NAVY STORES PLANNING AND WEAPONEERING							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	Various	Various	2.114	1.264	11/00	1.298	11/01	0.475	11/02	Continuing	Continuing	
Subtotal T&E			2.114	1.264		1.298		0.475		Continuing	Continuing	
Remarks:												
Program Management Support	RX	Various	1.275	0.485	11/00	0.215	11/01	0.075	11/02	Continuing	Continuing	
Travel	WX	NAWCAD, Pax River MD	0.466	0.147	11/00	0.146	11/01	0.055	11/02	Continuing	Continuing	
SBIR Assessment						0.227					0.227	
Subtotal Management			1.741	0.632		0.588		0.130		Continuing	Continuing	
Remarks:												
Total Cost			20.530	8.156		7.498		1.781		Continuing	Continuing	
Remarks:												

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-5**	PROGRAM ELEMENT NUMBER AND NAME 0604215N Standards Development					PROJECT NUMBER AND NAME E2312 Common Helicopters					
COST ($ in Millions)	Prior Year Cost	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost			**1.874**	**2.633**	**1.202**	**1.249**	**1.086**	**1.108**	**1.290**	**Continuing**	**Continuing**
RDT&E Articles Qty											

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Automated mission planning systems to date have been developing targeting the 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 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, and V-22. The developed common helicopter functionality will initially be implemented in Naval Portable Flight Planning Software (N-PFPS) then migrated to JMPS. Subsequesnt common helicopter functionality will be developed for implementation in the Joint Mission Planning Segment (JMPS) after JMPS initial fielding.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 2001 ACCOMPLISHMENTS:
   - (U) ($1.874) Continued development of Common Helicopter functionality and implementation into N-PFPS. Navy and Air Force personnel worked collaboratively to continue to develop common helicopter functionality for mission planning. Continued N-PFPS Version 3.2 development for release in FY02.

2. (U) FY 2002 PLAN:
   - (U) ($2.551) Continue development of Common Helicopter functionality and implementation into N-PFPS. N-PFPS Version 3.2, 3.3, and 3.4 are to be released.
   - (U) ($ .082) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

3. (U) FY 2003 PLAN:
   -(U) ($1.202) Continue development of Common Helicopter functionality and implemention into N-PFPS.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2002**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-5	0604215N Standards Development	E2312 Common Helicopters

(U) B. PROGRAM CHANGE SUMMARY:

	FY2001	FY2002	FY2003
(U) FY 2002 President's Budget:	1.952	2.738	
(U) Adjustments from the FY02 President's Budget:	-0.078	-0.023	
(U) FY 2003 President's Budget Submit:	1.874	2.715	1.202

CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY2001 decrease of $.078 million is due to a reprioritization of requirements within the Navy. The FY2002 decreae of $.023 million is for an undistributed congressional reduction.

(U) Schedule: N-PFPS Version 3.2 was delayed from 3Q/01 to 1Q/02. N-PFPS Version 3.3 was added and will be released in 2Q/02. N-PFPS Version 3.4 was added and will be released in 4Q/02. All JMPS versions and contract data were removed as they are not necessary because they are funded through E2213.

(U) Technical: Not Applicable

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete
BLI 287600 TAC A/C Mission Planning System (OPN)	11.83	13.223	6.597	8.899	10.317	6.705	12.321	Continuing

Related RDT&E:
(U) P.E. 0604231N (Mission Planning)

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2002**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-5	0604215N Standards Development	E2312 Common Helicopters

(Related RDT&E
(U) P.E. 0604231N Mission Planning (E2213)

(U) D. ACQUISITION STRATEGY: NOT APPLICABLE

(U) E. SCHEDULE PROFILE

	FY 2001	FY 2002	FY 2003	TO COMPLETE
(U) Program Milestones				
N-PFPS Version 3.2		1Q/02 Release		
N-PFPS Version 3.3		2Q/02 Release		
N-PFPS Version 3.4		4Q/02 Release		
(U) Engineering Milestones				
(U) T&E Milestones				
(U) Contract Milestones				

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2002**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-5**			PROGRAM ELEMENT 0604215N STANDARD DEVELOPMENT			PROJECT NUMBER AND NAME E2312 Common Helicopters						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Development	MP	Eglin AFB, Florida	1.677	0.474	11/00	0.939	11/01				3.090	
Subtotal Product Development			1.677	0.474		0.939				Continuing	Continuing	

Remarks: Funds initially allotted for a CPAF contract with Logicon, Inc. for primary development was redirected to NAWCAD, Eglin AFB and SPAWAR for Common Helo mission planning support.

Subtotal Support												

Remarks:

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2002**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-5**			PROGRAM ELEMENT 0604215N STANDARD DEVELOPMENT			PROJECT NUMBER AND NAME E2312 Common Helicopters						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal T&E												
Remarks:												
Government Engineering Support	WX	NAWCAD, Pax River MD	0.095	0.665	11/00	0.760	11/01	0.485	11/02	Continuing	Continuing	
Program Management Support	RX	Various		0.335	11/00	0.501	11/01	0.247	11/02	Continuing	Continuing	
Travel	WX	NAWCAD, Pax River MD		0.100	11/00	0.115	11/01	0.050	11/02	Continuing	Continuing	
Government Engineering Support	WX	SPAWAR, Philly PA		0.300	11/00	0.318	11/01	0.420	11/02	Continuing		
SBIR Assessment						0.082					0.082	
Subtotal Management			0.095	1.400		1.776		1.202		Continuing	Continuing	
Remarks:												
Total Cost			1.772	1.874		2.715		1.202		Continuing	Continuing	
Remarks:Total Cost on FY 02 should read 2715 vice 2797												

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-5**	PROGRAM ELEMENT NUMBER AND NAME 0604215N, Standards Development					PROJECT NUMBER AND NAME S1857, Calibration Standards					
COST ($ in Millions)	Prior Year Cost		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost			**7.499**	**4.860**	**1.698**	**1.720**	**1.765**	**1.775**	**1.803**	**Continuing**	**Continuing**
RDT&E Articles Qty											

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This project provides the engineering development of measurement reference/calibration standards (hardware) required to ensure measurement accuracy in support/maintenance of new advance technology weapon systems and associated support equipment. There individual tasks have been assigned to the Navy as lead-service responsibilities as part of a Joint Service/DOD program.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 2001 ACCOMPLISHEMENTS:

- (U) ($4.295) 13 New Projects: Begin development of 13 calibration standards (hardware) in support of microwave power measurements, broadband communications, fuel measurements systems, FLIR systems, electronic test systems, chemical/biological sensors, laser power measurements, optical systems, Watt Meter calibrators, missile guidance systems, capacitance measurement systems, fiber optic hydropones and new technology for reduced crew size.

Continued work on 17 projects begun in previous years as follows:

- (U) ($1.073) Completed 5 Projects : 5 calibration standards (hardware) in support of electromagnetic vulnerability measurements, underwater acoustic systems, Infrared (1.52u) systems, electronic maintenance, and AN/UPM-155 pulse characterization.
- (U) ($2.131) Continued development of 12 calibration standards (hardware) in support of fiber optic systems, shipboard gage calibration, composite material testing, laser power measurements, multifunction electrical test equipment, infrared imaging systems (8 - 12 um), infrared target designators (3 - 5 m) and Radar Cross Section measurements; 4 modeling and simulation projects begun in FY00 to develop tools for reducing the cost of maintenance and optimizing test decisions.

2. FY 2002 PLAN:

- (U) ($1.963) Complete 19 calibration standards (hardware) in support of fiber optic systems, Watt Meter calibrators, shipboard gage calibration, composite material testing, microwave power measurements, laser power measurements, fiber optic hydrophones, infrared imaging systems (8 – 12 um), and infrared target designators (3 – 5 um) 3 modeling and simulation projects begun in FY00 to develop tools for reducing the cost of maintenance and optimizing test decisions, radar crross section measurements, optical ysstems, fuel measurements sytems, multifunction electrical test equipment, electronic internet systems, new technology for reduced crew size, and capacitance measurement systems.
- (U) ($1.685) Continue development of 6 calibration standard (hardware) in support of laser power measurements, broadband communication systems, FLIR systems, chemical/biological sensors, missile guidance systems, and a modeling and simulation project.
- (U) ($1.212) Begin development of a suite of standards to reduce cumbersome work practices on board ships.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2002**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-5	0604215N, Standards Development	S1857, Calibration Standards

3. FY 2003 PLAN:

- (U) ($1.147) Complete 6 calibration standards (hardware) in support of biological warfare systems, broadband communication systems, laser power measurements, missile guidance systems, FLIR systems, and modeling and simulation project.
- (U) ($ .551) Continue development of a suite of standards to reduce cumbersome work practices on board ships.

(U) B. PROGRAM CHANGE SUMMARY:

	FY2001	FY2002	FY2003
(U) FY 2002 President's Budget:	7.503	1.653	
(U) Appropriated VALUE:	1.572	4.903	
(U) Adjustements To: FY 2001/2002 Appropriated Value/FY2002 President"s Budget Submit:	5.927	-0.043	
(U) FY 2003 President's Budget Submit:	7.499	4.860	1.698

CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 2001 change due to (-0.053) 7% Pro Rata, (+2,000) Calib & Measurement Tech, (+4,000) Joint Services Metrology, (-0.016) Gov't Wide Recission, (-0.004) 01 Actuals (30 Sept 01);

FY 02 change due to (-0.043) Section 8123: Management Reform.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

(U) C. OTHER PROGRAM FUNDING SUMMARY: Not applicable.

(U) D. ACQUISITION STRATEGY: Not applicable.

(U) E. SCHEDULE PROFILE: Not applicable.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2002**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-5**		PROGRAM ELEMENT 0604215N, Standards Development			PROJECT NUMBER AND NAME S1857, Calibration Standards							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR	NSWC NWAS	6.198	6.454	10/00	3.644	10/01	1.172	10/02	Continuing	Continuing	
Systems Engineering	WR	NSWC NWAS	1.983	1.023	10/00	1.196	10/01	0.506	10/02	Continuing	Continuing	
Award Fees												
Subtotal Product Development			8.181	7.477		4.840		1.678		Continuing	Continuing	
Remarks:												
Subtotal Support												
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2002**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-5**			PROGRAM ELEMENT 0604215N, Standards Development			PROJECT NUMBER AND NAME S1857, Calibration Standards						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal T&E												
Remarks:												
Travel		NSWC NWAS	0.050	0.022	10/00	0.020	10/01	0.020	10/02	Continuing	Continuing	
Subtotal Management			0.050	0.022		0.020		0.020		Continuing	Continuing	
Remarks:												
Total Cost			8.231	7.499		4.860		1.698		Continuing	Continuing	
Remarks:												

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EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2002**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-5**	PROGRAM ELEMENT NUMBER AND NAME 0604215N, Standards Development					PROJECT NUMBER AND NAME W0572, Joint Services/Navy Standard Avionics Components and Subsystems					
COST ($ in Millions)	Prior Year Cost		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost			**81.663**	**53.943**	**33.076**	**18.961**	**9.602**	**9.803**	**10.015**	**Continuing**	**Continuing**
RDT&E Articles Qty	140		43	44	34						**261**

(U) 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), Low Probability of Intercept Altimeter (LPIA), 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), and the Aircraft Wireless Intercommunication Systems (AWIS). Participation in Human Factors Quality Management Board (HFQMB) ensures Navy safety upgrades and mandatory safety improvements for naval aircraft.

The RDT&E Articles include Tactical Aircraft Moving Map Capability (TAMMAC) Engineering & Manufacturing Development (EMD) units, Communication Navigation Surveillance/Air Traffic Management (CNS/ATM) EMD units, AMC&D EMD units which include Display Processors and Mission Processors, Display Heads, 8 x 10 displays, and Fiber Channel Switches.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 2001 ACCOMPLISHMENTS:

- (U) ($67.862) Completed DT-IIA-1 for baseline AMC&D on F/A-18 E/F system. Began DT-IIA-2 for baseline system on F/A-18 E/F. Conducted PDR and CDR for Advanced Mission Computer (AMC) and Fibre Channel Network Switch and procured EMD assets for phased program (AMC&D, 8 x 10 display and Fibre Channel Network Switch). Conducted DT-IIB-1 and began DT-IIB-2 on AV-8B. Began development of Advanced Multi-Purpose Color Display (AMPCD) assets for F/A-18 C/D and AV-8B. Continued development of AMC&D for F/A-18E/F and AV-8B, and continued 8 x 10 and Fibre Channel Network Switch development for F/A-18E/F.

- (U) ($ 1.732) Continued to support the JSRC tri-service coordination to promote commonality and joint programs with focus on interoperability communications, and CNS/ATM. Supported and participated in Avionics Operational Assessment Group (OAG) panels and Human Factors Quality Management Board (HFQMB).

- (U) ($ .250) Completed OPEVAL and performed verification of corrections for deficiencies on C-2 aircraft for LPIA.

- (U) ($ 2.253) Safety: Integrated Phase I MCAS functionality into a host unit. Began and completed MCAS PDR/CDR. Developed a flight testable unit.

- (U) ($ 3.069) Safety: Commenced DT of the TAWS for F/A-18 Operational Flight Plan (OFP) 17C/18E. Investigated and conducted simulator and flight testing of industry based TAWS and sensors which supplement TAWS performance, as applied to other Naval platforms.

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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

1. FY 2001 ACCOMPLISHMENTS (CON'T):

- (U) ($ .770) Completed software coding and continue functional testing efforts for TAMMAC/N-PFPS map planning capability. Awarded TAMMAC/JMPS/Unique Planning Components (UPC) development contract.

- (U) ($ .425) Continued requirements identification and conducted design reviews for integration of Mission Planning System Module Integration for Common Avionics Systems, to include ARC-210 radio. First software release for ARC-210 Fill Program (AFP) as stand-alone system modified to operate in Defense Information Infrastructure Common Operating Enviornment (JMPS operating environment).

- (U) ($ 5.302) Completed DT for CNS/ATM civil data links and commenced TECHEVAL for RNP-4 and Mode S for CNS/ATM in VH and completed hardware development for data link.

2. FY 2002 PLANS:

- (U) ($39.440) Complete DT-IIA-2, conduct OT-IIA (OA) and begin DT-IIA-3 for AMC&D on F/A-18E/F system. Complete DT-IIB-1 and DT-IIB-2 (TECHEVAL) and begin OT-IIB (OPEVAL) on AV-8B. Conduct PDR and CDR for 8 X10 display. Continue development and obtain production approval for Advanced Multi-Purpose Color Display (AMPCD) for AV-8B and F/A-18C/D. Continue development of 8X10 display, Fibre Channel Network Switch and AMC for F/A-18E/F. Continue development of AMC for AV-8B.

- (U) ($ 1.202) Continue to support and chair the JSRC tri-service coordination to promote commonality and joint programs with focus on interoperability communications, and CNS/ATM. Support and participate in Avionics OAG panels and HFQMB.

- (U) ($ 1.663) Safety: Integrate unit on MCAS lead test platform and conduct MCAS developmental testing. Perform platform studies to determine integration impacts on other platforms.

- (U) ($ 3.105) Safety: Complete DT and commence OT of the TAWS for F/A-18 OFP 17C/18E. Evaluate data and test results from simulator and flight testing of industry based TAWS and sensors which supplement TAWS performance.

- (U) ($ .242) Complete functional testing efforts for TAMMAC/N-PFPS map planning capabilities. Conduct CDR, software coding and unit testing efforts for TAMMAC/JMPS (UPC).

- (U) ($ .594) 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).

- (U) ($ 6.064) Continue CNS/ATM integration of Mode S and Required Navigation Performance (RNP)-4 functional integration efforts into naval aircraft. Achieve MS III decision for Mode S.

- (U) ($1.633) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

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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

3. FY 2003 PLANS:

- (U) ($28.164) Complete AMC&D DT-IIA-3, conduct TECHEVAL, and begin DT-IIA-4 for F/A-18E/F. Begin OPEVAL for F/A-18E/F. Complete OPEVAL for AV-8B. Continue development of 8x10 display, Fibre Channel Network Switch (FCNS) and Advance Mission Computer and Displays (AMC&D). Achieve MS III for AV-8B.

- (U) ($ .962) Continue to support and chair the JSRC tri-service coordination to promote commonality and joint programs with focus on interoperability communications, and CNS/ATM. Support and participate in Avionics OAG panels and HFQMB.

- (U) ($ .483) Safety: 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. Begin development of program plans based on research of commercial based TAWS and sensors and applicability to other Navy platforms.

- (U) ($ .917) Third software release for ARC-210 AFP as fully integrated JMPS software segment (with corrected STRs from previous release). Complete software coding and unit testing. Begin Functional/developmental testing efforts for TAMMAC/JMPS Map planning capability.

- (U) ($ 1.253) Continue CNS/ATM functional integration and certification efforts for naval aircraft.

- (U) ($ .814) Conduct Vector Product Format (VPF) integration study for TAMMAC. Begin VPF software and hardware integration into TAMMAC. Complete VPF Integration Systems Design Review (SDR). Award EMD contract.

- (U) ($ .483) Conduct analysis and testing to verify AWIS performance and compatibility in multiple platforms.

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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) B. PROGRAM CHANGE SUMMARY:

	FY2001	FY2002	FY2003
(U) FY 2002 President's Budget:	82.444	54.436	
(U) Adjustments from the President's Budget:	-0.781	-0.493	
(U) FY 2003 President's Budget Submit:	81.663	53.943	33.076

CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 2001 net decrease of $.781 million results from a decrease of $2.238 million for Small Business Innovative Research (SBIR) assessment and a decrease of $.018 million for a Federal Technology Transfer offset by an increase of $1.475 million for reprioritization of requirements within the Navy, a

The FY 2002 decrease of $.0493 million results from a $.481 million undistributed congressional reductions and a $.012 million decrease for a congressional reduction to Federally Funded Research and Development Centers.

(U) Schedule: FY 2001 reflects a change in AMC&D OT-IIA-1 from 4Q/01 to 2Q/02 to incorporate fixes from DT-IIA-1. TAMMAC /JMPS UPC Development Contract Award changed from 2Q/01 to 4Q/01 due to delays in JMPS schedule reprogramming. TAMMAC/JMPS UPC SDR changed from 3Q/01 to 2Q/02 due to delays in JMPS schedule reprogramming.

FY 2002 reflects a change in TAMMAC/JMPS UPC CDR from 1Q/02 to 3Q/02 due to delays in JMPS schedule reprogramming. TAMMAC/JMPS UPC PDR and CDR have been combined into a single review and will occur in 3Q/02 instead of 2Q/02 and 3Q/02 respectively. LPIA Milestone III decision changed from 1Q/02 to 2Q/02 due to delays in flight testing. CNS/ATM Mode S Milestone III decision changed from 2Q/02 to 4Q/02 due to delayed production representative hardware to finalize DT. TAWS OT changed from 3Q/02 to 4Q/02 due to F/A-18 aircraft schedule delays.

(U) Technical: Not Applicable.

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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) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete
Common Avionics, APN	68.405	68.25	63.228	167.464	145.932	147.815	126.692	Continuing
0702207N, Depot Maintenance, RDT&E AN/ARC-210 RT-1794(C)	0.527	0.735	0	0	0	0	0	8.503

(U) D. ACQUISITION STRATEGY: 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 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.

	FY 2001	FY 2002	FY 2003	TO COMPLETE
(U) Program Milestones	3Q/01 TAMMAC MSIII	2Q/02 LPIA MSIII 4Q/02 CNS/ATM Mode S MSIII	2Q/03 AMC&D MSIII (AV-8B)	3Q/04 AMC&D MSIII (F/A-18) 4Q/05 VPF Fleet Introduction
(U) Engineering Milestones	3Q/01-3Q/01 MCAS PDR 4Q/01-4Q/01 MCAS CDR 1Q/01-1Q/01 AMC&D PDR (F/A-18E/F) 4Q/01-4Q/01 AMC&D CDR (F/A-18E/F)	2Q/02-2Q/02 TAMMAC/JMPS UPC SDR 3Q/02-3Q/02 TAMMAC/JMPS UPC PDR/CDR	4Q/03 VPF SDR	1Q/04 VPF PDR 2Q/04 VPF CDR
(U) T&E Milestones	4Q/01-3Q/02 TAWS DT (17C/18E OFP) 3Q/01-4Q/01 CNS/ATM DT 4Q/01-2Q/02 CNS/ATM TECHEVAL 3Q/01-3Q/02 AMC&D DT-IIA-2 (F/A-18E/F) 4Q/01-4Q/02 AMC&D DT-IIB-2 (AV-8B) 2Q/01-2Q/02 TAMMAC/N-PFPS DT	3Q/02-4Q/02 MCAS DT 4Q/02-1Q/03 TAWS OT (17C/18E OFP) 2Q/02-3Q/02 AMC&D OT-IIA-1 (F/A-18E/F) 3Q/02-2Q/03 AMC&D DT-IIA-3 (F/A-18E/F) 4Q/02-2Q/03 AMC&D OPEVAL (AV-8B)	3Q/03-4Q/03 AMC&D TECHEVAL (F/A-18E/F) 4Q/03-2Q/04 AMC&D OPEVAL (F/A-18E/F) 2Q/03-4Q/03 TAMMAC/JMPS UPC DT 4Q/03-3Q/04 AMC&D DT-IIA-4 (F/A-18E/F)	1Q/04-2Q/04 TAMMAC/JMPS UPC OPEVAL 4Q/04 VPF DT 2Q/05 VPF SQT
(U) Contract Milestones	4Q/01 TAMMAC/JMPS UPC DEVELOPMENT AWARD		2Q/03 VPF ECP Contract Award	

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Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
AMC&D/ OTA845 Prime Contract	SS/845	Boeing, St. Louis, MO	49.367	5.149	11/00						54.516	54.516
AMC&D/ EMD Prime Contract	SS/CP	Boeing, St. Louis, MO	15.658	56.789	11/00	36.773	11/01	25.381	11/02	Continuing	Continuing	
LPIA/EMD Prime Contract	C/CS	BAE Systems, Wayne, NJ	7.264								7.264	
TAMMAC/EMD Prime Contract	SS/CPIF	Boeing, St. Louis, MO	26.332								26.332	26.332
CNS/ATM/EMD Prime Contract	SS/BOA	Litton, Woodland Hills, CA	1.032			1.000	01/02				2.032	2.032
CNS/ATM/EMD Prime Contract	SS/CPIF	Rockwell, Cedar Rapids, IA	2.214	0.850	03/01						3.064	3.064
CNS/ATM/EMD Prime Contract	C/FPIF	BAE Systems, Greenlawn, NY	1.538	0.288	12/00	0.331	12/01				2.157	2.157
MCAS/EMD Prime Contract	SS/CPFF	BAE Systems, Greenlawn, NY		1.535	05/01	0.434	01/02				1.969	1.969
Miscellaneous	Misc	Misc	43.963	10.351	11/00	7.156	11/01	4.909	11/02		66.379	
Subtotal Product Development			147.368	74.962		45.694		30.290		Continuing	Continuing	

Remarks:

LPIA - BAE Systems Contract is a Cost Share Contract and does not have a Target Value. This contract has been changed from a CPIF to a Cost Share with a total liability to the government of $7,264.

Miscellaneous	Misc	Misc	14.392	3.574	11/00	3.520	11/01	1.542	11/02	Continuing	Continuing	
Subtotal Support			14.392	3.574		3.520		1.542		Continuing	Continuing	

Remarks:

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Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Systems T&E/OT&E	WX	NAWC PAX	1.733								1.733	
Miscellaneous	Misc	Misc	15.939	3.127	Various	3.096	Various	1.244	Various	Continuing	Continuing	
Subtotal T&E			17.672	3.127		3.096		1.244		Continuing	Continuing	
Remarks:												
SBIR						1.633					1.633	
Subtotal Management						1.633					1.633	
Remarks:												
Total Cost			179.432	81.663		53.943		33.076		Continuing	Continuing	
Remarks:												

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