

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification								DATE:			
								June 2001			
APPROPRIATION/BUDGET ACTIVITY						R-1 ITEM NOMENCLATURE					
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY /BA-5						0604777N NAVIGATION/ID SYSTEMS					
COST (\$ in Millions)	Prior Year Cost	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Program
Total PE Cost		16.395	18.314	23.884							
F0253 Navigation and Electro-Optical Support		3.967	1.561	2.291							
W0676 Improved ID Development		0.000	0.000	1.771							
W1253 Combat ID System		1.296	3.147	6.077							
W2212 All Service Combat Identification Evaluation Test (ASCIET)		0.150	0.000	0.000							
X0921 NAVSTAR GPS Equipment		10.982	13.606	13.745							
A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Reliable and secure Navigation and positive identification (ID) systems are essential elements of battle management in the naval environment. The Photonics Mast (F0253) is a non-hull penetrating replacement for existing optical periscopes. The Photonics Mast exploits a wide portion of the electro-magnetic spectrum utilizing advanced Electro-Optic/thermal imaging and communications reception/Electronic Warfare Support Measures (ESM). The Combat Identification System (CIS) project (W1253) and Improved Identification Development (W0676) covers the Navy lead of a MK XII Mode5 upgrade to the existing Mark XII family of systems that is Joint and NATO interoperable. The All Service Combat Identification Evaluation Team (ASCIET) project (W2212) covers the Navy portion of a new joint service sponsored test and evaluation team effort, formerly the OSD sponsored Joint Air Defense Organization-Joint Engagement Zone (JADO-JEZ) program. The program is designed to evaluate cooperative and non-cooperative combat identification systems and tactics, as well as serve as a conduit for evaluating research and development in promising combat identification technologies. Per OSD direction, NATO participation is encouraged and performance data is exchanged to ensure the opportunity for interoperability with allied identification systems is maximized. NAVSTAR Global Positioning System (GPS), project (X0921) is a space-based radio positioning and navigation system that provides users with worldwide, all weather, three dimensional position, velocity and precise time data based on a constellation of 24 satellites. Navy Navigation Warfare (NAVWAR) is a key element and subset of this program and will provide Air and Sea units with jam resistant GPS antennas and GPS receivers to ensure the continued use of GPS information in a hostile environment. In addition to distinguishing friend from foe for weapons employment, the Navy requires secure, jam resistant Identification Friend or Foe (IFF) systems for battle group air defense management and air traffic control. Identification is multifaceted and includes information received from several sensors (both cooperative and non-cooperative systems).											

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APPROPRIATION/BUDGET ACTIVITY RDT&E,N/BA-5		PROGRAM ELEMENT NUMBER AND NAME 0604777N NAVIGATION/ID SYSTEMS				PROJECT NUMBER AND NAME F0253 Navigation and Electro-Optical Support						
COST (\$ in Millions)		Prior Year Cost	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Program
F0253 Navigation and Electro-Optical Support			3.967	1.561	2.291							

A. (U) Mission Description and Budget Item Justification: The Photonics Mast mounted on the Universal Modular Mast will provide imaging capability for the VIRGINIA class submarine. The Photonics Mast design exploits a wide portion of the electro-magnetic spectrum through advanced E-O/thermal imaging and Electronic Support Measures (ESM)/Communications reception. It will provide major improvements in submarine stealth and infrared imaging capabilities. The non-hull penetrating design provides freedom in ship design as well as space savings for VIRGINIA CLASS and future design submarines. The system has been designed to satisfy Operational Requirement #365-87-94.

(U) Program Accomplishments and Plan:

- (U) FY 2000 Accomplishments:
 - (U) (\$1.482) Completed Shore Based Testing of Engineering Development Model.
 - (U) (\$1.024) Commenced Photonics Mast At-Sea Test and Evaluation.
 - (U) (\$0.992) Continued On-Board Team Trainer Development.
 - (U) (\$0.469) System Engineering Support.
- (U) FY 2001 Plan:
 - (U) (\$0.384) Continue Photonics Mast At-Sea Test and Evaluation.
 - (U) (\$0.542) Continue On-Board Team Trainer Development.
 - (U) (\$0.200) System Removal/Deinstallation Planning.
 - (U) (\$0.435) System Engineering Support.
- (U) FY2002 Plan:
 - (U) (\$0.915) Complete On-Board Team Trainer Development
 - (U) (\$0.123) EDM Removal
 - (U) (\$0.826) EDM Refurbishment
 - (U) (\$0.427) System Engineering Support

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B. (U) Program Change Summary

	<u>FY2000</u>	<u>FY2001</u>	<u>FY2002</u>
FY2001 President's Budget:	4.062	1.575	2.288
Appropriated Value:	4.062	1.575	
Adjustment To FY2000/2001 Appropriated Value/FY2001 Presidents Budget	-0.095	-0.014	0.003
FY2002 PRES Budget Submit:	3.967	1.561	2.291

(U) Change Summary Explanation:

FY2000: SBIR Assessment (-\$71K), Across-the-Board Reduction (-\$22K), Section 8055: Congressional Rescission (-\$16K), FY2000 Actuals (+\$14K);
FY2001: Section 8086: 7% Pro-Rata (-\$11K), Government-Wide Recission (-\$3K).

(U) Schedule: Additional at sea testing required based on DT&E test results. The system will be left on the USS Annapolis to insure that all technical issues are resolved prior to installation on the Virginia class submarine.

(U) Technical: Not applicable.

C. (U) Other Program Funding Summary

	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Program
(U) SCN Line 201300	0	20.850	22.904	23.727						

(U) Related RDT&E

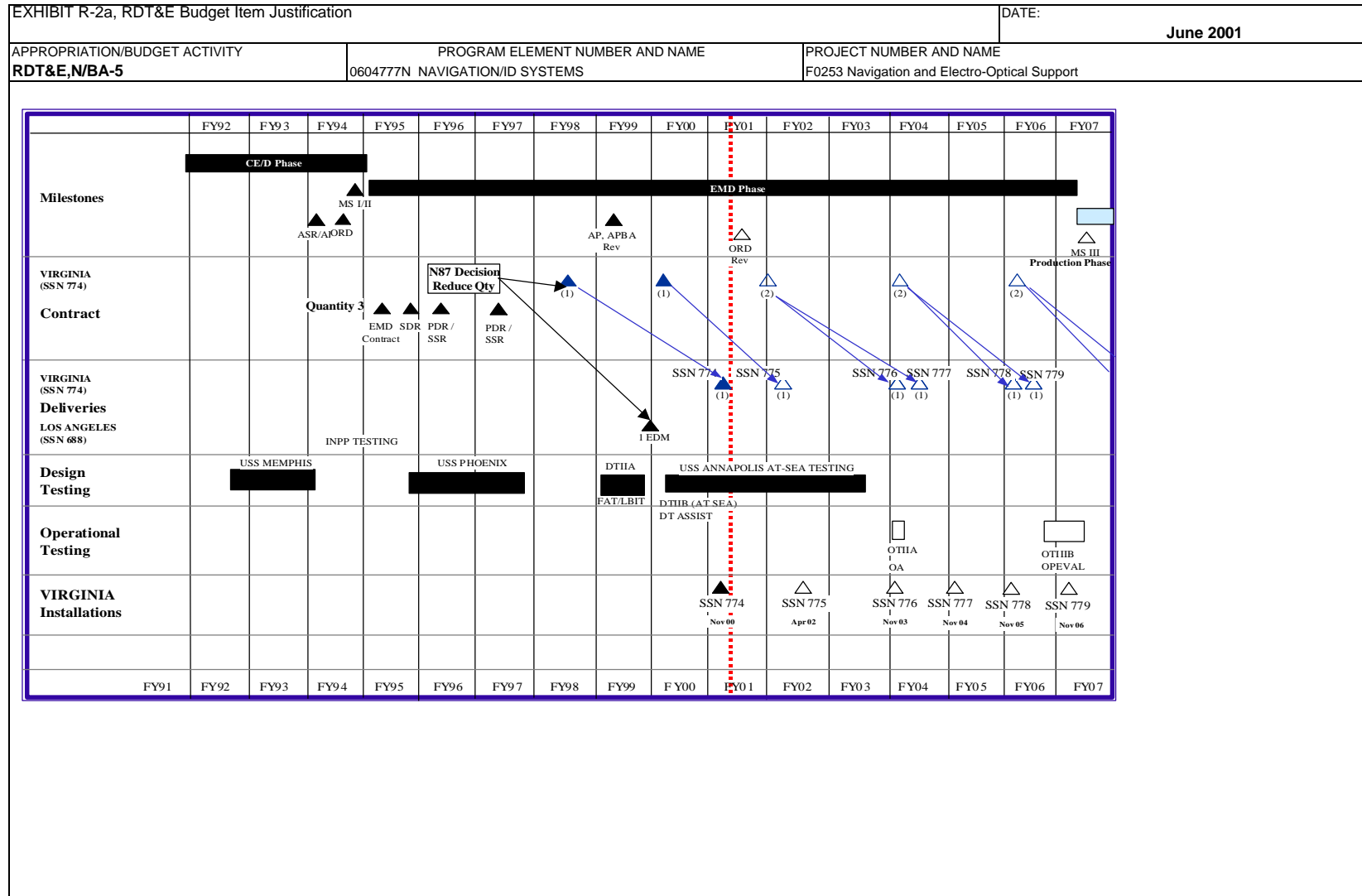
(U) PE 0603226E (Experimental Evaluation of Inovative Technology)
(U) PE 0604558N (The VIRGINIA Class Design Development)

D. (U) Acquisition Strategy: Not Applicable.

E. (U) Schedule Profile: See Attached.

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Exhibit R-3 Cost Analysis								DATE: June 2001				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-5			PROGRAM ELEMENT NUMBER AND NAME 0604777N NAVIGATION/ID SYSTEMS				PROJECT NUMBER AND NAME F0253 Navigation and Electro-Optical Support					
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 00 Cost	FY 00 Award Date	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	CPIF	Kollmorgen, Northampton, MA	31.975	2.198	10/99	0.506	10/00	0.926		1.380	36.985	
Software Development											0.000	
Ancillary Hardware Development											0.000	
Systems Engineering	Various	Various	2.437	1.461		0.790		0.855		CONT.	CONT.	
Site Platform Integration											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			34.412	3.659		1.296		1.781		CONT.	CONT.	
Remarks:												
Development Support Equipment											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	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-5			PROGRAM ELEMENT NUMBER AND NAME 0604777N NAVIGATION/ID SYSTEMS			PROJECT NAME AND NUMBER F0253 Navigation and Electro-Optical Support						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 00 Cost	FY 00 Award Date	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Developmental/Operational T&E											0.000	
Tooling											0.000	
GFE											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Management Support Services ETS	Various	Various	3.072	0.230		0.140		0.198		CONT.	CONT.	
Miscellaneous	Various	Various	0.254	0.017		0.065		0.252		CONT.	CONT.	
Travel			0.336	0.061		0.060		0.060		CONT.	CONT.	
Labor (Research Personnel)											0.000	
Overhead											0.000	
Subtotal Management			3.662	0.308		0.265		0.510		CONT.	CONT.	
Remarks:												
Total Cost			38.074	3.967		1.561		2.291		CONT.	CONT.	
Remarks:												

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APPROPRIATION/BUDGET ACTIVITY RDT&E,N/BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604777N NAVIGATION/ID SYSTEMS					PROJECT NUMBER AND NAME W0676 IMPROVED ID DEVELOPMENT					
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	0.000	0.000	0.000	1.771							
RDT&E Articles Qty											
<p>A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Reliable and secure navigation and positive identification (ID) systems are essential elements of battle management in the naval environment. In addition to distinguishing friend from foe for weapons employment, the Navy requires secure, jam resistant Identification Friend or Foe (IFF) systems for battle group air defense management and air traffic control. Identification is multifaceted and includes information received from several sensors (both cooperative and non-cooperative systems). The Improved Identification Development project (W0676) covers the Navy lead of a MK XII Mode 5 upgrade to the existing Mark XII family of systems that is Joint and NATO interoperable. These funds provide for Mode 5 integration into the controls and displays of the AEGIS baseline weapon system.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. FY 2000 ACCOMPLISHMENTS:</p> <p>Not Applicable.</p> <p>2. FY 2001 PLANS:</p> <p>Not Applicable.</p> <p>3. FY 2002 PLANS:</p> <ul style="list-style-type: none"> - (U) (\$1.284) Initiate software development for Mode 5 integration into AEGIS weapon system baseline 5.3.8. - (U) (\$.486) Initiate integration testing of UPX-29 shipboard IFF system interface for AEGIS integration. 											

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APPROPRIATION/BUDGET ACTIVITY RDT&E,N/BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604777N NAVIGATION/ID SYSTEMS	PROJECT NUMBER AND NAME W0676 IMPROVED ID DEVELOPMENT

B. (U) PROGRAM CHANGE SUMMARY: (Show total funding, schedule, and technical changes for the program element that have occurred since the last President's submission.)

	FY2000	FY2001	FY2002
(U) FY 2001 President's Budget:	0	0	0
(U) Adjustments from the President's Budget:	0	0	1.771
(U) FY 2002 Presidents Budget Submit:			1.771

CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY2002 net increase of \$1.771 million consists of a \$1.800 million increase for Mode 5 AEGIS integration, a net decrease of a \$.008 million for reprioritization of requirements within the Navy, and a \$.021 million decrease for economic assumptions.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

C. (U) OTHER PROGRAM FUNDING SUMMARY:

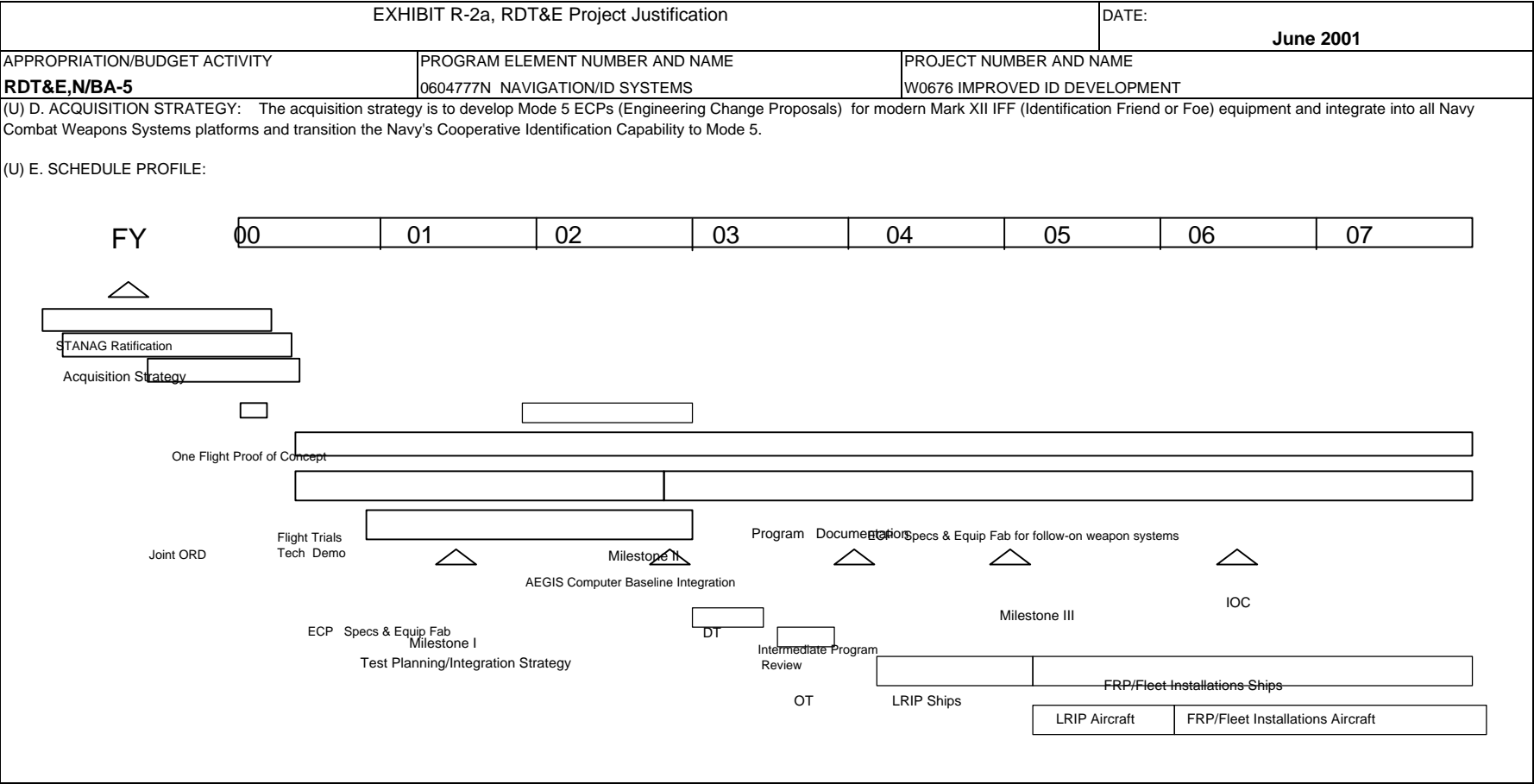
<u>Line Item No. & Name</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>
Identification Systems - 42MT	9.163	14.032	18.935

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Exhibit R-3 Cost Analysis (page 1)										DATE: June 2001			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME						
RDT&E,N/BA-5			0604777N NAVIGATION/ID SYSTEMS				W0676 IMPROV ID DEVELOPMENT						
Cost Categories (Tailor to WBS, or System/Item Requirements)	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											0.000		
Ancillary Hardware Development											0.000		
Systems Engineering											0.000		
Licenses											0.000		
Tooling											0.000		
GFE											0.000		
Award Fees											0.000		
Subtotal Product Development			0.000	0.000		0.000		0.000		0.000	0.000		
Remarks:													
Development Support Equipment											0.000		
Software Development	WR	NSWC, Dahlgren/NAWCAD, Pax				1.284	11/01			Continuing	Continuing		
Training Development											0.000		
Integrated Logistics Support											0.000		
Configuration Management											0.000		
Technical Data											0.000		
GFE											0.000		
Subtotal Support			0.000	0.000		1.284		0.000		Continuing	Continuing		
Remarks:													

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Exhibit R-3, Project Cost Analysis

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Exhibit R-3 Cost Analysis (page 2)										DATE: June 2001		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/BA-5			PROGRAM ELEMENT 0604777N NAVIGATION/ID SYSTEMS			PROJECT NUMBER AND NAME W0676 IMPROVED ID DEVELOPMENT						
Cost Categories (Tailor to WBS, or System/Item Requirements)	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										Continuing	Continuing	
Operational Test & Evaluation										Continuing	Continuing	
Tooling											0.000	
GFE											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		Continuing	Continuing	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support	WR	NAWCAD, Pax				0.486	11/01			Continuing	Continuing	
Program Management Support											0.000	
Travel											0.000	
Labor (Research Personnel)											0.000	
Overhead											0.000	
Subtotal Management			0.000	0.000		0.486		0.000		Continuing	Continuing	
Remarks:												
Total Cost			0.000	0.000		1.770		0.000		Continuing	Continuing	
Remarks:												

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APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME				PROJECT NUMBER AND NAME						
RDT&E,N/BA-5		0604777N NAVIGATION/ID SYSTEMS				W1253 Combat ID System						
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			1.296	3.147	6.076							
RDT&E Articles Qty												
A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: In 1995, the Under Secretary of Defense (Acquisition and Technology)/Vice Chairman, Joint Chiefs of Staff [USD(A&T)/VCJCS] tasked the Services to develop a high-level plan and long-range strategy for migrating to new digital Mark XII (MK XII) equipment. The services were also tasked to work with participating NATO Allies to develop a new MK XII waveform and document it in a NATO Standard Agreement (STANAG). The Navy took the lead in a waveform development effort conducted in coordination with a Five-Nation Technical Working Group (TWG), supported by Joint Services and Industry. The Navy, in conjunction with the TWG, designed, developed, modeled, and tested a new waveform – MK XIIA Mode 5. A separate Five-Nation Communication Security (COMSEC) group, led by the National Security Administration (NSA), developed a new cryptographic algorithm and associated Cryptographic Equipment Interoperability Requirements Specification. STANAG 4193, Parts V and VI were submitted to NATO in September 1998 for formal ratification. This STANAG is the standard that will ensure U.S./Allied interoperability for future Identification Friend or Foe (IFF) implementation programs that feature the new MK XIIA Mode 5 waveform.												
(U) PROGRAM ACCOMPLISHMENTS AND PLANS:												
1. FY 2000 ACCOMPLISHMENTS:												
- (U) (\$.192) Developed Acquisition Strategy and required Mode 5 documentation, to include a draft ORD.												
- (U) (\$.400) Developed detailed cost estimates and conducted flight trials, test planning and preparation for Mode 5 Navy implementation.												
- (U) (\$.579) Conducted systems engineering for prototype IFF and Communication Security (COMSEC) hardware development.												
- (U) (\$.125) Conducted frequency supportability, modeling and simulation in support of Mode 5 Stage III frequency assignment.												
2. FY 2001 PLANS:												
- (U) (\$.190) Develop Test and Evaluation and platform integration strategy for MK XIIA Mode 5.												
- (U) (\$1.940) Begin development of Mode 5 hardware in preparation for the Developmental Test in FY03.												
- (U) (\$.400) Begin development of cryptographic hardware.												
- (U) (\$.073) Initiate Stage 3 Frequency Allocation waveform analysis and simulation.												
- (U) (\$.535) Continue to develop and coordinate program documentation.												
- (U) (\$.009) Portion of extramural program reserved for Small Business Innovation Reasearch assessment in accordance with 15 USC 68.												
3. FY 2002 PLANS:												
- (U) (\$2.577) Continue development of Mode 5 ECP including Stage 3 Frequency assignment and cryptographic hardware in preparation for the Developmental Test in FY03.												
- (U) (\$.385) Continue Mode 5 Test Planning and preparation.												
- (U) (\$3.114) Initiate software development for integration into F/A-18E/F.												

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<p>B. (U) PROGRAM CHANGE SUMMARY: (Show total funding, schedule, and technical changes for the program element that have occurred since the last President's submission.</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">FY2000</th> <th style="text-align: center;">FY2001</th> <th style="text-align: center;">FY2002</th> </tr> </thead> <tbody> <tr> <td>(U) FY 2001 President's Budget:</td> <td style="text-align: center;">0.886</td> <td style="text-align: center;">3.180</td> <td style="text-align: center;">3.514</td> </tr> <tr> <td>(U) Adjustments from the President's Budget:</td> <td style="text-align: center;">0.410</td> <td style="text-align: center;">-0.033</td> <td style="text-align: center;">2.563</td> </tr> <tr> <td>(U) FY 2002 President's Budget Submit:</td> <td style="text-align: center;">1.296</td> <td style="text-align: center;">3.147</td> <td style="text-align: center;">6.077</td> </tr> </tbody> </table> <p>CHANGE SUMMARY EXPLANATION:</p> <p>(U) Funding: The FY 2000 net increase of \$.410 million resulted from a Below Threshold reprogramming from the ASCIET program to the Combat ID System for Mode 5. The FY 2001 net decrease of \$.033 million consists of a \$.004 million decrease for reprioritization of requirements within the Navy and a \$.022 million decrease for a Congressional reduction and \$.007 million decrease for a Congressional rescission. The FY 2002 net increase of \$2.562 million consists of a \$2.693 million increase for MKXII IFF and a net decrease of \$.026 million for reprioritization of requirements within the Navy, and a \$.104 million decrease for economic assumptions.</p> <p>(U) Schedule: Not Applicable.</p> <p>(U) Technical: Not Applicable.</p> <p>C. (U) OTHER PROGRAM FUNDING SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Line Item No. & Name</u></th> <th style="text-align: center;"><u>FY 2000</u></th> <th style="text-align: center;"><u>FY 2001</u></th> <th style="text-align: center;"><u>FY 2002</u></th> <th style="text-align: right;"><u>Total Cost</u></th> </tr> </thead> <tbody> <tr> <td>Identification Systems - 42MT</td> <td style="text-align: center;">9.168</td> <td style="text-align: center;">14.032</td> <td style="text-align: center;">18.935</td> <td style="text-align: right;">Continuing</td> </tr> </tbody> </table>						FY2000	FY2001	FY2002	(U) FY 2001 President's Budget:	0.886	3.180	3.514	(U) Adjustments from the President's Budget:	0.410	-0.033	2.563	(U) FY 2002 President's Budget Submit:	1.296	3.147	6.077	<u>Line Item No. & Name</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Total Cost</u>	Identification Systems - 42MT	9.168	14.032	18.935	Continuing
	FY2000	FY2001	FY2002																											
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<u>Line Item No. & Name</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Total Cost</u>																										
Identification Systems - 42MT	9.168	14.032	18.935	Continuing																										

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<p>D. (U) ACQUISITION STRATEGY: The acquisition strategy is to develop Mode 5 ECPs (Engineering Change Proposals) for modern Mark XII IFF (Identification Friend or Foe) equipment and integrate into all Navy Combat Weapons Systems platforms and transition the Navy's Cooperative Identification Capability to Mode 5.</p> <div><div><div>FY 00</div><div>01</div><div>02</div><div>03</div><div>04</div><div>05</div><div>06</div><div>07</div></div><div><div><div>△ One Flight Proof of Concept</div><div>STANAG Ratification</div><div>Acquisition Strategy</div><div>Joint ORD</div><div><div><input type="checkbox"/> Flight Trials</div><div>Tech Demo</div></div><div>Program Documentation</div><div><div>ECP Specs & Equip Fab</div><div>ECP Specs & Equip Fab for follow-on weapon systems</div></div><div>Test Planning/Integration Strategy</div><div><div>Milestone I</div><div>Milestone II</div><div>Intermediate Program Review</div><div>Milestone III</div><div>IOC</div></div><div><div>DT</div><div>OT</div></div><div><div>LRIP Ships</div><div>FRP/Fleet Installations Ships</div></div><div><div>LRIP Aircraft</div><div>FRP/Fleet Installations Aircraft</div></div></div></div></div>							

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Cost Categories (Tailor to WBS, or System/Item Requirements)	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	VAR	VAR	0.185	1.844	VAR	0.852	VAR			Continuing	Continuing	
Ancillary Hardware Development											0.000	
Systems Engineering	VAR	NAWCAD, Pax	0.602	0.491	VAR	0.341	VAR			Continuing	Continuing	
SBIR				0.009							0.009	
											0.000	
											0.000	
Award Fees											0.000	
Subtotal Product Development			0.787	2.344		1.193		0.000		Continuing	Continuing	
Remarks:												
	VAR	VAR								Continuing	Continuing	
Software Development	VAR	VAR				3.114	VAR			Continuing	Continuing	
	VAR	VAR								Continuing	Continuing	
Integrated Logistics Support	VAR	VAR				0.145	VAR			Continuing	Continuing	
											0.000	
Technical Data	VAR	VAR				0.053	VAR			Continuing	Continuing	
											0.000	
Subtotal Support			0.000	0.000		3.312		0.000		Continuing	Continuing	
Remarks:												

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Exhibit R-3, Project Cost Analysis

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Exhibit R-3 Cost Analysis (page 2)										DATE: June 2001		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/BA-5			PROGRAM ELEMENT 0604777N NAVIGATION/ID SYSTEMS			PROJECT NUMBER AND NAME W1253 Combat ID System						
Cost Categories (Tailor to WBS, or System/Item Requirements)	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	VAR	NAWCAD, Pax	0.275	0.190	VAR	0.385	VAR			Continuing	Continuing	
										Continuing	Continuing	
											0.000	
											0.000	
Subtotal T&E			0.275	0.190		0.385		0.000		Continuing	Continuing	
Remarks:												
Contractor Engineering Support	VAR	VAR				0.450				Continuing	Continuing	
Government Engineering Support	VAR	NAWCAD, Pax		0.467	VAR	0.477	VAR			Continuing	Continuing	
Program Management Support	VAR	NAWCAD, Pax	0.234	0.146	VAR	0.225				Continuing	Continuing	
Travel	VAR	VAR				0.035	VAR			Continuing	Continuing	
											0.000	
											0.000	
Subtotal Management			0.234	0.613		1.187		0.000		Continuing	Continuing	
Remarks:												
Total Cost			1.296	3.147		6.077		0.000		Continuing	Continuing	
Remarks:												

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Exhibit R-3, Project Cost Analysis

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: June 2001			
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/BA-5		PROGRAM ELEMENT NUMBER AND NAME 0604777N NAVIGATION/ID SYSTEMS				PROJECT NUMBER AND NAME W2212 All Service Combat Identification					
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		0.150	0.000	0.000							
RDT&E Articles Qty											
<p>A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The All Services Combat Identification Evaluation Team (ASCIET) program was a Joint Requirements Oversight Council (JROC) – directed, four-Service organization located at Eglin AFB, Florida. ASCIET reports to the Office of Joint Chiefs of Staff, J-8. Oversight of ASCIET activities, which included annual evaluations of combat identification (ID) effectiveness on the Joint battlefield, was accomplished by the Director for Force Structure, Resources, and Assessment (DJ-8), in collaboration with the JROC Review Board (JRB).</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. FY 2000 ACCOMPLISHMENTS:</p> <p>- (U) (\$.150) Attended ASCIET 00 Planning conferences and prepared and developed test plans and test procedures for collection of baseline parameter and event data collection and analysis.</p> <p>2. FY 2001 PLANS:</p> <p>Not Applicable.</p> <p>3. FY 2002 PLANS:</p> <p>Not Applicable.</p>											

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Exhibit R-2a, RDT&E Project Justification

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EXHIBIT R-2a, RDT&E Project Justification		DATE: June 2001
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604777N NAVIGATION/ID SYSTEMS	PROJECT NUMBER AND NAME W2212 All Service Combat Identification

B. (U) PROGRAM CHANGE SUMMARY: (Show total funding, schedule, and technical changes for the program element that have occurred since the last President's submission.

	FY2000	FY2001	FY2002
(U) FY 2001 President's Budget:	1.576	0	0
(U) Adjustments from the President's Budget:	-1.426	0	0
(U) FY 2002 Presidents Budget Submit:	0.150	0	0

CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 2000 net decrease of \$1.426 million consists of \$1.416 million departmental adjustments and \$.010 million for a Congressional Rescission.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

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

D. (U) ACQUISITION STRATEGY: This is a non-ACAT program and requires no specific acquisition strategy.

E. (U) SCHEDULE PROFILE: Not Applicable.

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Exhibit R-2a, RDT&E Project Justification

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification								DATE:				
								June 2001				
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME					PROJECT NUMBER AND NAME					
RDT&E,NBA-5		0604777N NAVIGATION/ID SYSTEMS					X0921 NAVSTARS GPS Equipment					
COST (\$ in Millions)		Prior Year Cost	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Program
X0921 NAVTAR Global Positioning System (GPS) Equipment			10,982	13,606	13,745							
A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The mission is to provide supported, affordable, integrated, and interoperable navigation solutions to the warfighters. RDT&E funds are used to perform all the non-recurring Global Positioning System (GPS) Surface Ship, Submarine and Aircraft Integration efforts. The Aircraft integration efforts are required for 102 different configurations of Navy, Marine Corps and Coast Guard aircraft in response to the CNO GPS Integration Guidance (GIG), the Public Law 103-160 and the Secretary of Defense As Soon As Possible direction of April 1996 (ASAP program). The GIG directs GPS design functional characteristics for the aircraft and Public Law 103-160 directs the schedule for completion of all installations by 30 September 2005. The GPS is a space-based radio positioning and navigation system that provides users with worldwide, all-weather, three-dimensional position, velocity and precise time data based on a constellation of 24 satellites. PMW/PMA-156 is the central office responsible for funding all GPS aircraft integration RDT&E efforts performed by over 20 NAVAIR program offices, dozens of DoD/Navy field activities and laboratories, and dozens of contractors. The aircraft installation recurring efforts are funded separately by PMW/PMA-156 and the platform program offices with APN dollars. The primary tasks to be accomplished for each of the 102 aircraft configurations include: GPS integration design studies; acquisition of aircraft and lab RDT&E assets; development of test aircraft hardware and/or software designs; development of Integrated Logistics Support (ILS) elements to support test (operator and maintenance training, technical manuals); and Formal Navy Test and Evaluation (Development and Operational Test). Other tasks include the development of new hardware systems to meet GIG requirements when existing systems are unsuitable (Miniaturized Airborne GPS Receiver (MAGR) 2000 for MH-53; Embedded GPS Inertial (EGI) for the EA-6B and F/A-18; the Digital Data Set (DDS); the Control Display Navigation Unit (CDNU) and associated software for many different aircraft) and the development of and modifications to the GPS Mission Planning Module for the Naval Mission Planning System (NAVMPMS)/Joint Mission Planning System (JMPS). The Surface Ship and Submarine integration efforts include two vitally important navigation integration initiatives. The first program is the Navigation Sensor System Interface (NAVSSI) development. The NAVSSI is the surface ship system which is integrated with over 54 systems on 145 surface ship platforms. This operational requirement for the NAVSSI has two distinct functions. The first is the integration and distribution of real time navigation and time sources, primarily GPS, to combat systems, combat support systems, air alignment systems and support systems. The second is as the primary surface ship navigators' electronic workstation required to perform fully integrated Electronic Chart Display Information System for the Navy (ECDIS-N) navigation. NAVSSI is an evolutionary acquisition development. The second surface ship development program is the replacement of the AN/WRN-6, which is out of production and approaching obsolescence, with low cost Versa Module Europa (VME) card technology (GPS VME Receiver Card (GVRC)) combined with Fiber Optic Antenna Link (FOAL) antenna capability. For NAVSSI ships, this integration will be done in conjunction with NAVSSI integrations. (For non-NAVSSI surface ships, PMW/PMA 156 is developing a low cost system to replace the AN/WRN-6.) For submarine systems, PMW/PMA 156 is supporting ongoing NAVSEA initiatives for the replacement of the AN/WRN-6 systems with the GVRC card technology. The National Defense Authorization Act for Fiscal Year 1999 included GPS language directing DoD to start "The development of an enhanced Global Positioning System [as] an urgent national security priority."												

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Exhibit R-2a, RDT&E Project Justification

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE: June 2001
APPROPRIATION/BUDGET ACTIVITY RDT&E,NBA-5	PROGRAM ELEMENT NUMBER AND NAME 0604777N NAVIGATION/ID SYSTEMS	PROJECT NUMBER AND NAME X0921 NAVSTARS GPS Equipment
<p>OSD directed (by PBD) the start of Navy GPS NAVWAR procurements starting in 2001 in order to equip Naval platforms with GPS Anti-Jam upgrades to enable them to operate in an environment with GPS interference. The Naval Research Advisory Committee (NRAC) GPS Vulnerability Study Panel tasked by OPNAV N6 and ASN(RD&A), assessed the Navy's GPS Vulnerabilities and recommended specific actions to resolve serious vulnerabilities. As a result, OPNAV N633 and N880 have drafted an ORD to address these operational requirements which have been validated and approved on June 7, 2000. This signed ORD is resulting in the formation of two ACAT III GPS NAVWAR programs(Air and Sea). This has become the Navy's GPS NAVWAR program. Given the current threat to GPS navigation from jamming, and the increasing use of GPS by potential adversaries, RDT&E funds are required to design, develop, and test anti-jam antenna and receiver equipment for use on naval platforms. Funds are also required to integrate identified JPO GPS modernization requirements (new signals in space, enhanced receiver security, and operation in controlled airspace) into naval platforms. All of the above efforts are directed by, tasked by and funded by PMW/PMA-156.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>(U) 1. FY 2000 ACCOMPLISHMENTS:</p> <p>(U) (\$5.236) Continued NAVSSI upgrade, integration engineering and testing with shipboard combat, weapons, navigation, and command and control systems. Evolutionary upgrades included all integrations required for the support Platform Integrations. Testing of evolutionary upgrades included collection/distribution of precise navigation and time data from/to Aircraft Carrier Systems, Aegis Weapon Systems, electronic charting integration, Meteorological and Oceanographic Systems(METOC), Carrier Air Traffic Control System (TPX-42), Computer Aided Dead Reckoning Tracer (CADRT) and Gun Weapon Systems(GWS). Developed interface support for CVN-76, CVN-69, LPD-17 and DDG-51 Navigation integration efforts. Began integrations with Voyage Management Systems(VMS), Integrated Bridge System (IBS). Continued RDT&E support of (NSSN) integration of GPS VME Receiver Card (GVRC). Continued development of Interactive Electronic Technical Manual (IETM) to meet the standards of the current NAVSSI Block.</p> <p>(U) (\$3.522) Continued aircraft integration effort.</p> <p>(U) (\$2.224) Began the NAVWAR air integration study for the CH-60S and SH-60R to determine the feasibility of integrating the GPS JPO production antenna (GAS-1) on the platforms. Began the Non-recurring Engineering (NRE) for integration design of the GAS-1 on the KC-130 platform including the preparation of the ECP/Technical Directive for the airframe.</p>		

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Exhibit R-2a, RDT&E Project Justification

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EXHIBIT R-2, RDT&E Budget Item Justification			DATE:
			June 2001
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E,NBA-5	0604777N NAVIGATION/ID SYSTEMS	X0921 NAVSTARS GPS Equipment	
<p>Performed GAS-1 antenna compatibility investigation on several platforms including the KC-130, P-3C and EA-6B. Determined the Electro-Magnetic Interference/Electro-Magnetic Compatibility (EMI/EMC) capabilities of the GAS-1 antenna in terms of carrier Radio Frequency (RF) environment. Continued the Landing Craft Air Cushion (LCAC) GAS-1 antenna integration efforts and prepared for the “at sea” developmental tests with actual jamming. Participated in antenna requirements definition IPT at the GPS JPO. Initiated an antenna quick look study for attack submarines.</p>			
<p>(U) 2. FY 2001 PLAN:</p>			
<p>(U) (\$4.803) Continue NAVSSI upgrade, integration engineering and testing with shipboard combat, weapons, navigation, and command and control systems. Evolutionary upgrades include all integrations required for the support of Aircraft Carrier Platform Integrations, Theater Ballistic Missile Defense (TBMD) integration, radar overlay integration. Testing of evolutionary upgrades include collection/distribution of precise navigation and time data from/to Aircraft Carrier Systems, TBMD, radar overlay, Electronic Charting (ECDIS) integration and Extended Range Guided Munitions (ERGM). Develop interface support for LHD-8, LPD-18 and DDG-51 Navigation integration efforts. Begin integrations with Hostile Force Integrated Targeting System (HITS), AEGIS LAN Interconnection System Local Area Network (ALIS LAN), Tactical Control System (TCS), Position Location Reporting Systems (PLRS) and weather tracking. Develop a low cost GPS replacement system. Begin development for integration into emerging combat, combat support and support systems including Joint Precision Approach Landing System (JPALS). Continue support of NSSN integration of GVRC. Continue development of Interactive Electronic Technical Manual (IETM) to meet the standards of the current NAVSSI Block. Transition NAVSSI hardware/software into updated environment. Initiate precise time and time interval effort to support hot-starting GPS-guided munitions such as ERGM, Tomahawk, Standard Missile-3 (SM-3) and Land Attack Standard Missile (LASM). Restart development of NAVSSI Computer Based Trainer (CBT) to meet the standards of the current NAVSSI Block.</p>			
<p>(U) (\$1.303) Continue aircraft integration effort.</p>			
<p>(U) (\$7.500) Continue NAVWAR integration efforts on initial platforms and begin selected DT and OT testing on the C-130 and P-3C. Begin integration efforts on priority platforms in each of the other aircraft category areas, i.e. EA-6B and HH-60H. Continue RDT&E efforts on F/A-18 C/D (modeling/simulation and integration analysis). Complete LCAC test data reduction, validate modeling techniques, ground plane design, and conduct OT. Begin RDT&E modeling/simulation and integration /analysis for Mine Counter Measure (MCM) class ships.</p>			

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Exhibit R-2a, RDT&E Project Justification

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE: June 2001
APPROPRIATION/BUDGET ACTIVITY RDTE,NBA-5	PROGRAM ELEMENT NUMBER AND NAME 0604777N NAVIGATION/ID SYSTEMS	PROJECT NUMBER AND NAME X0921 NAVSTARS GPS Equipment
<p>Continue to evaluate anti-jam technology for application to selected Naval air, surface, and subsurface platforms. This includes continued evaluation of ongoing RDT&E special projects/SBIRs associated with anti-jam GPS user equipment and prevention programs. Continue support as the Navy's representative to the GPS Joint Program Office for all GPS Modernization Initiatives.</p> <p>(U) 3. FY 2002 PLAN:</p> <p>(U) (\$9.563) Complete Development Test/Operational Test (DT/OT) on the EA-6B and HH-60H. Validate aircraft modeling/simulation data. Start NAVWAR anti-jam antenna and receiver integration on F/A 18C/D and AV-8B. Begins RDT&E on F/A-18E/F and CH-60S.</p> <p>(U) (\$3.664) Complete DT/OT on the MCM. Begin RDT&E modeling/simulation and integration analysis for MCS and MCH class ships. Begin DT on the MCS and MCH class ship. Begin Modeling and Simulation and integration analysis for CG/DDG/DD class ships. Conduct LCAC/EGI integration analysis and test.</p> <p>(U) (\$.518) Continue participation as the Navy's representative to the GPS Joint Program Office for all GPS Modernization Initiatives. Begin evaluation of Navy platform GPS Modernization integration requirements. Continue to evaluate anti-jam technology for application to selected Naval air, surface, and subsurface platforms.</p> <p>B. (U) PROGRAM CHANGE SUMMARY</p> <p>(U)FY 2000: SBIR Assessment (-\$.048), NAVWAR GPS (+\$1.067), Section 8055: Congressional Proportionate Rescission (-\$.052), Micellaneous Navy Adjustment (-\$.112), Across the Board Reduction (-\$.057)</p> <p>FY 2001: Section 8086: .7% Pro-Rata Reduction (-\$.096), Government-Wide Recission (-\$.030)</p> <p>(U) Schedule: None.</p> <p>(U) Technical: None.</p>		

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Exhibit R-2a, RDT&E Project Justification

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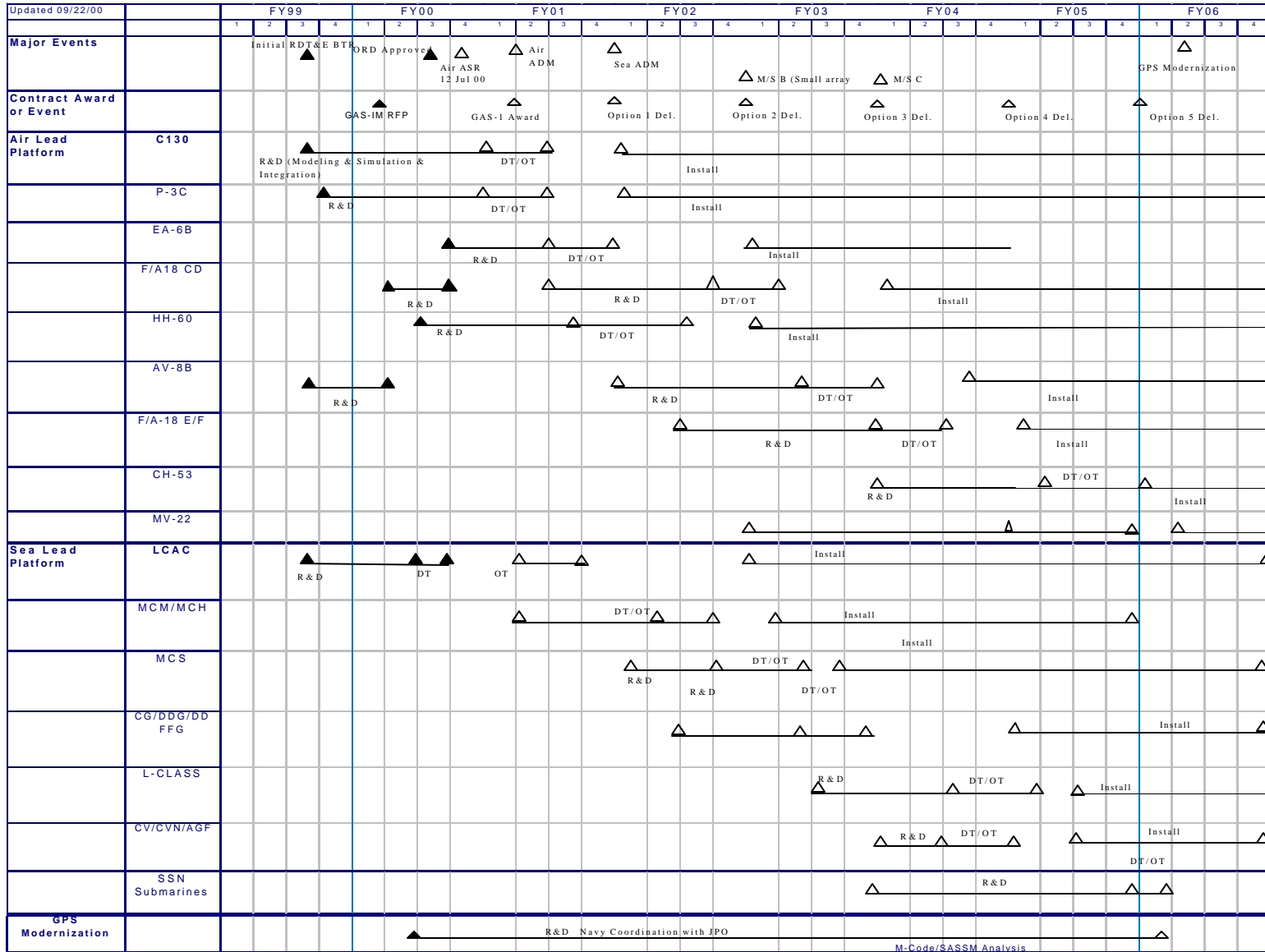
EXHIBIT R-2, RDT&E Budget Item Justification									DATE: June 2001																																																								
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/BA-5			PROGRAM ELEMENT NUMBER AND NAME 0604777N NAVIGATION/ID SYSTEMS				PROJECT NUMBER AND NAME X0921 NAVSTARS GPS Equipment																																																										
<p>B. (U) Other Program Funding Summary</p> <table> <thead> <tr> <th></th> <th>FY 2000</th> <th>FY 2001</th> <th>FY 2002</th> <th>FY 2003</th> <th>FY 2004</th> <th>FY 2005</th> <th>FY 2006</th> <th>FY 2007</th> <th>To Complete</th> <th>Total Program</th> </tr> </thead> <tbody> <tr> <td>(U) O&MN PE # 0305164N</td> <td>2.168</td> <td>1.881</td> <td>2.523</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) OPN Line #26570</td> <td>8.596</td> <td>9.519</td> <td>9.857</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) APN - Common Avionics</td> <td>9.107</td> <td>13.035</td> <td>7.110</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Related RDT&D: None</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>D. (U) ACQUISTION STRATEGY: (NAVWAR) Participate in GPS Joint Program Office FY 01-FY 05 procurements for GAS-1 and GAS-1M anti-jam antennas. Investigate JPO/Navy contracting options for smaller array anti-jam antenna solutions for selected aircraft. Participate in GPS JPO procurements where practicable for GPS Modernization Enhancements. See attached Milestone chart.</p> <p>E. (U) Schedule Profile: See Attached.</p>												FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Program	(U) O&MN PE # 0305164N	2.168	1.881	2.523								(U) OPN Line #26570	8.596	9.519	9.857								(U) APN - Common Avionics	9.107	13.035	7.110								(U) Related RDT&D: None										
	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Program																																																							
(U) O&MN PE # 0305164N	2.168	1.881	2.523																																																														
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(U) Related RDT&D: None																																																																	

R-1 SHOPPING LIST - Item No. 141

Exhibit R-2a, RDT&E Project Justification

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Exhibit R-3 Cost Analysis						DATE: June 2001				
APPROPRIATION/BUDGET ACTIVITY RDT&E,NBA-5			PROGRAM ELEMENT NUMBER AND NAME 0604777N NAVIGATION/ID SYSTEMS		PROJECT NUMBER AND NAME X0921 NAVSTARS GPS Equipment					
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Dev. (F-14B, F-18B, S-3B, F-14D, C-12, Etc.)	Various	Other Contracts	260.415	0.169	Various	0.000		0.000	260.584	
Product Dev. (SSC -SD)	WX	SSC-SD	58.510	4.678	10/00	0.000		0.000	63.188	
Product Dev. (Other Inhouse)	WX	Various Field Activities	437.966	2.204	10/00	0.000		0.000	440.170	
Subtotal Product Development			756.891	7.051		0.000			763.942	
Remarks:										
Development Support Equipment	Various	Various	12.710	0.000		0.000		0.000	12.710	
Software Development									0.000	
Training Development									0.000	
Integrated Logistics Support									0.000	CONT.
Configuration Management									0.000	
Technical Data									0.000	
GFE									0.000	
Subtotal Support			12.710	0.000		0.000		0.000	12.710	CONT.
Remarks:										

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-5			PROGRAM ELEMENT NUMBER AND NAME 0604777N NAVIGATION/ID SYSTEMS			PROJECT NAME AND NUMBER X0921 NAVSTARS GPS Equipment				
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	Cost to Complete	Total Cost	Target Value of Contract
T&E (NAWC PAX)	WX	NAWC PAX	9.514	4.241	10/00	9.013	10/01	CONT.	CONT.	
T&E (DCS Corp)	T&M	DCS Corp, Pax	0.417	0.313	10/00	0.368	10/01	CONT.	CONT.	
T&E (SSC San Diego)	WX	SSC San Diego	0.000	0.800	10/00	3.300	10/01	CONT.	CONT.	
Subtotal T&E			9.931	5.354		12.681		CONT.	CONT.	
Remarks:										
Contractor Engineering Support										
Government Engineering Support										
Program Management Support	T&M	DCS Corp, San Diego	4.146	1.201	10/00	1.064	10/01	CONT.	CONT.	CONT.
Management Support Services										
Travel										
Labor (Research Personnel)										
Overhead										
Subtotal Management			4.146	1.201		1.064		CONT.	CONT.	CONT.
Remarks:										
Total Cost			783.678	13.606		13.745				
Remarks:										

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Exhibit R-3, Project Cost Analysis

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