

# UNCLASSIFIED

## CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: <b>February 2004</b>	
APPROPRIATION/BUDGET ACTIVITY <b>RESEARCH DEVELOPMENT TEST &amp; EVALUATION, NAVY /</b>					R-1 ITEM NOMENCLATURE 0604777N NAVIGATION/ID SYSTEMS			
<b>BA-5</b>								
COST (\$ in Millions)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	
Total PE Cost	45.080	45.168	28.104	47.752	46.172	47.656	48.600	
0253 Navigation and Electro-Optical Support	13.952	11.347	6.120	9.142	7.162	7.876	8.033	
0676 Improved ID Development	1.838	1.536	1.811	2.778	3.753	3.829	3.906	
1253 Combat ID System	11.344	10.454	5.706	14.399	13.401	13.669	13.942	
0921 NAVSTAR GPS Equipment	17.946	21.831	14.467	21.433	21.856	22.282	22.719	

**(U) A. 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 Imaging System (0253) is a non-hull penetrating replacement for existing optical periscopes. The Photonics Imaging System exploits a wide portion of the electro-magnetic spectrum utilizing advanced Electro-Optic/thermal imaging; and communications intercept/Electronic Warfare Support (ES). The Combat Identification System (CIS) project (1253) for Mark XIIA, and Improved Identification Development (0676) for AN/UPX-29, covers the Navy lead of a MK XIIA Mode 5 upgrade to the existing Mark XII family of systems that is Joint and NATO interoperable. Per OSD direction, NATO participation is encouraged and performance data is exchanged to ensure the opportunity for interoperability with allied identification systems is maximized. 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).

NAVSTAR Global Positioning System (GPS), project (0921) 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 Sensor System Interface (NAVSSI) is a system that provides an integrated navigation message structure for network distribution to support combat, information and other mission critical capabilities. Navy Navigation Warfare (NAVWAR) is a key element and subset of the GPS program and provides Air and Sea units with jam resistant GPS antennas and receivers to ensure the continued use of GPS information in a hostile environment.

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Exhibit R-2, RD TEN Budget Item Justification  
(Exhibit R-2, page 1 of 38)

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## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: <b>February 2004</b>	
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>		PROGRAM ELEMENT NUMBER AND NAME 0604777N NAVIGATION/ID SYSTEMS			PROJECT NUMBER AND NAME 0676 IMPROVED ID DEVELOPMENT			
COST (\$ in Millions)		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		1.838	1.536	1.811	2.778	3.753	3.829	3.906
RDT&E Articles Qty								

### A. 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 MK XII (0676) addresses the Navy lead of a MK XIIA 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 AN/UPX-29(V) IFF system which interfaces with the AEGIS baseline weapon system and for other AN/UPX-29(V) improvements.

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<p><b>(U) B. Accomplishments/Planned Program</b></p> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <th style="width: 60%;"></th> <th style="width: 15%;">FY 03</th> <th style="width: 15%;">FY 04</th> <th style="width: 10%;">FY 05</th> </tr> <tr> <td>Mark XIIA Mode 5 Improvement for AN/UPX-29</td> <td style="text-align: center;">1.311</td> <td style="text-align: center;">0.573</td> <td style="text-align: center;">1.385</td> </tr> <tr> <td>RDT&amp;E Articles Quantity</td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>Developed and completed baseline testing of MARK XIIA Mode 5 Improvements to the AN/UPX-29(V) to include land based testing in FY 03. Continue engineering and integration development of MARK XIIA Improvements to the AN/UPX-29(V); initiate AN/UPX-29(V) Engineering Change Proposal in FY 04. Complete engineering and integration development of MARK XIIA Improvements to the AN/UPX-29(V) and AN/UPX-29(V) Engineering Change Proposal in FY 05.</p> </div> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <th style="width: 60%;"></th> <th style="width: 15%;">FY 03</th> <th style="width: 15%;">FY 04</th> <th style="width: 10%;">FY 05</th> </tr> <tr> <td>AN/UPX-29(V) Software Developement</td> <td style="text-align: center;">0.527</td> <td style="text-align: center;">0.663</td> <td></td> </tr> <tr> <td>RDT&amp;E Articles Quantity</td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>Developed AN/UPX-29(V) system software for interface with AEGIS weapons system in FY 03. Continue development of MARK XIIA Improvement to the AN/UPX-29(V) system software for interface with AEGIS weapon system and core ILS documents; formalize hardware/software configuration; update technical data as required in FY 04.</p> </div> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <th style="width: 60%;"></th> <th style="width: 15%;">FY 03</th> <th style="width: 15%;">FY 04</th> <th style="width: 10%;">FY 05</th> </tr> <tr> <td>Mark XIIA Mode 5 Development and Operational Test</td> <td></td> <td style="text-align: center;">0.300</td> <td style="text-align: center;">0.426</td> </tr> <tr> <td>RDT&amp;E Articles Quantity</td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 5px;"> <p>Provide support for MARK XIIA Mode 5 DT/OA in FY 04. Provide test asset for MARK XIIA Mode 5 DT/OT in FY 04. Provide support for MARK XIIA Improvements to the AN/UPX-29(V) DT/OT in FY 05.</p> </div>					FY 03	FY 04	FY 05	Mark XIIA Mode 5 Improvement for AN/UPX-29	1.311	0.573	1.385	RDT&E Articles Quantity					FY 03	FY 04	FY 05	AN/UPX-29(V) Software Developement	0.527	0.663		RDT&E Articles Quantity					FY 03	FY 04	FY 05	Mark XIIA Mode 5 Development and Operational Test		0.300	0.426	RDT&E Articles Quantity			
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<p><b>(U) C. PROGRAM CHANGE SUMMARY:</b></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 40%;">(U) Funding:</th> <th style="text-align: right; width: 15%;">FY 2003</th> <th style="text-align: right; width: 15%;">FY 2004</th> <th style="text-align: right; width: 15%;">FY 2005</th> </tr> </thead> <tbody> <tr> <td>Previous President's Budget:</td> <td style="text-align: right;">1.912</td> <td style="text-align: right;">1.553</td> <td style="text-align: right;">1.810</td> </tr> <tr> <td>Current BES/President's Budget:</td> <td style="text-align: right;">1.838</td> <td style="text-align: right;">1.536</td> <td style="text-align: right;">1.811</td> </tr> <tr> <td>Total Adjustments</td> <td style="text-align: right; border-top: 1px solid black;">-0.074</td> <td style="text-align: right; border-top: 1px solid black;">-0.017</td> <td style="text-align: right; border-top: 1px solid black;">0.001</td> </tr> <tr> <td colspan="4" style="padding-top: 10px;">Summary of Adjustments</td> </tr> <tr> <td>    Congressional program reductions</td> <td></td> <td></td> <td></td> </tr> <tr> <td>    Congressional undistributed reductions</td> <td></td> <td style="text-align: right;">-0.017</td> <td></td> </tr> <tr> <td>    Congressional rescissions</td> <td></td> <td></td> <td></td> </tr> <tr> <td>    SBIR/STTR Transfer</td> <td></td> <td></td> <td></td> </tr> <tr> <td>    Economic Assumptions</td> <td></td> <td></td> <td></td> </tr> <tr> <td>    Reprogrammings</td> <td style="text-align: right;">-0.074</td> <td></td> <td></td> </tr> <tr> <td>    Rescission realignment</td> <td></td> <td></td> <td></td> </tr> <tr> <td>    Reprioritization</td> <td></td> <td></td> <td style="text-align: right;">-0.001</td> </tr> <tr> <td>    Congressional increases</td> <td></td> <td></td> <td></td> </tr> <tr> <td>    Subtotal</td> <td style="text-align: right; border-top: 1px solid black;">-0.074</td> <td style="text-align: right; border-top: 1px solid black;">-0.017</td> <td style="text-align: right; border-top: 1px solid black;">-0.001</td> </tr> </tbody> </table> <p style="margin-top: 20px;">(U) Schedule:</p> <p style="margin-left: 20px;">Program milestone changes reflect reduced development funding and extended cryptographic development/certification schedule.</p> <p style="margin-top: 20px;">(U) Technical: Not applicable.</p> <p><b>(U) D. OTHER PROGRAM FUNDING SUMMARY:</b></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 35%;"><u>Line Item No. &amp; Name</u></th> <th style="text-align: right; width: 7.5%;"><u>FY 2003</u></th> <th style="text-align: right; width: 7.5%;"><u>FY 2004</u></th> <th style="text-align: right; width: 7.5%;"><u>FY 2005</u></th> <th style="text-align: right; width: 7.5%;"><u>FY 2006</u></th> <th style="text-align: right; width: 7.5%;"><u>FY 2007</u></th> <th style="text-align: right; width: 7.5%;"><u>FY 2008</u></th> <th style="text-align: right; width: 7.5%;"><u>FY 2009</u></th> <th style="text-align: right; width: 10%;">To <u>Complete</u> Continuing</th> <th style="text-align: right; width: 10%;">Total <u>Cost</u> Continuing</th> </tr> </thead> <tbody> <tr> <td>Identification Systems - 42MT</td> <td style="text-align: right;">29.668</td> <td style="text-align: right;">21.668</td> <td style="text-align: right;">18.296</td> <td style="text-align: right;">26.237</td> <td style="text-align: right;">30.421</td> <td style="text-align: right;">30.671</td> <td style="text-align: right;">31.405</td> <td></td> <td></td> </tr> </tbody> </table>					(U) Funding:	FY 2003	FY 2004	FY 2005	Previous President's Budget:	1.912	1.553	1.810	Current BES/President's Budget:	1.838	1.536	1.811	Total Adjustments	-0.074	-0.017	0.001	Summary of Adjustments				Congressional program reductions				Congressional undistributed reductions		-0.017		Congressional rescissions				SBIR/STTR Transfer				Economic Assumptions				Reprogrammings	-0.074			Rescission realignment				Reprioritization			-0.001	Congressional increases				Subtotal	-0.074	-0.017	-0.001	<u>Line Item No. &amp; Name</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	To <u>Complete</u> Continuing	Total <u>Cost</u> Continuing	Identification Systems - 42MT	29.668	21.668	18.296	26.237	30.421	30.671	31.405		
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EXHIBIT R-2a, RDT&E Project Justification		DATE: <b>February 2004</b>
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>	PROGRAM ELEMENT NUMBER AND NAME 0604777N NAVIGATION/ID SYSTEMS	PROJECT NUMBER AND NAME 0676 IMPROVED ID DEVELOPMENT
<p><b>(U) E. ACQUISITION STRATEGY:</b></p> <p>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>		

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**CLASSIFICATION:**

Exhibit R-3 Cost Analysis (page 1)								DATE: <b>February 2004</b>				
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>			PROGRAM ELEMENT 0604777N NAVIGATION/ID SYSTEMS			PROJECT NUMBER AND NAME 0676 IMPROVED ID DEVELOPMENT						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR	NAWCAD, MD	0.883							Continuing	Continuing	
Ancillary Hardware Development											0.000	
Aircraft Integration											0.000	
Ship Integration	WR	NAWCAD, MD		0.300	11/02	0.160	11/03	0.300	11./04	Continuing	Continuing	
Ship Suitability											0.000	
Systems Engineering	WR	NAWCAD, MD		0.719	11/02	0.426	11/03	0.695	11/04	Continuing	Continuing	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			0.883	1.019		0.586		0.995		Continuing	Continuing	
Remarks:												
Development Support											0.000	
Software Development	WR	NAWCAD, MD	0.778	0.527	11/02	0.333	11/03			Continuing	Continuing	
Integrated Logistics Support	WR	NAWCAD, MD		0.192	11/02	0.179	11/03	0.350	11/04	Continuing	Continuing	
Configuration Management	WR	NAWCAD, MD				0.050	11/03	0.050	11/04	Continuing	Continuing	
Technical Data	WR	NAWCAD, MD		0.100	11/02	0.088	11/03	0.100	11/04	Continuing	Continuing	
Studies & Analyses											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.778	0.819		0.650		0.500		Continuing	Continuing	
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)										DATE: <b>February 2004</b>		
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>			PROGRAM ELEMENT 0604777N NAVIGATION/ID SYSTEMS				PROJECT NUMBER AND NAME 0676 IMPROVED ID DEVELOPMENT					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NAWCAD, MD				0.050	11/03	0.100	11/04	Continuing	Continuing	
Operational Test & Evaluation	WR	NAWCAD, MD						0.216	11/04	Continuing	Continuing	
Live Fire Test & Evaluation											0.000	
Test Assets	WR	NAWCAD, MD				0.250	11/03				0.250	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.000	0.000		0.300		0.316		Continuing	Continuing	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel											0.000	
Transportation											0.000	
											0.000	
Subtotal Management			0.000	0.000		0.000		0.000		Continuing	Continuing	
Remarks:												
Total Cost			1.661	1.838		1.536		1.811		Continuing	Continuing	
Remarks:												

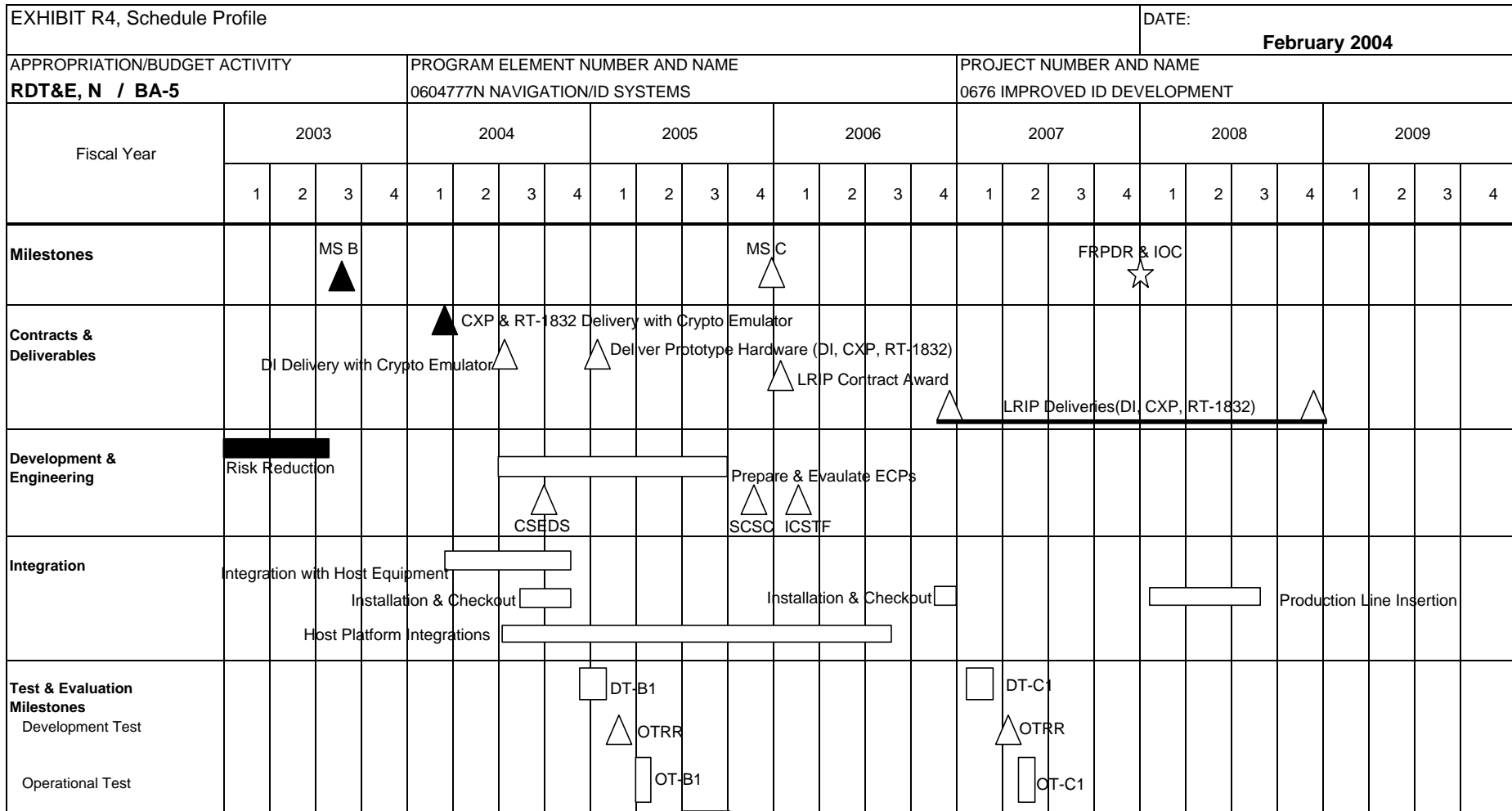
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Exhibit R-3, Project Cost Analysis  
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\* Not required for Budget Activities 1, 2, 3, and 6

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**Exhibit R-3, Project Cost Analysis**  
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APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>		PROGRAM ELEMENT NUMBER AND NAME 0604777N NAVIGATION/ID SYSTEMS			PROJECT NUMBER AND NAME 1253 COMBAT ID SYSTEMS			
COST (\$ in Millions)		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		11.344	10.454	5.706	14.399	13.401	13.669	13.942
RDT&E Articles Qty			28					

### A. 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 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, Part V has been ratified and promulgated to all NATO nations, and Part VI was approved for promulgation in January 2002.

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<b>(U) B. Accomplishments/Planned Program</b>			
	FY 03	FY 04	FY 05
Mode 5 prototype hardware & cryptographic module	7.065	6.040	2.281
RDT&E Articles Quantity		28	
<p>Designed and developed prototype Mode 5 ECP kits (Mode 5 processor card, software mode 5 cryptography and cryptographic emulator) in FY03. Design and develop lab-based Electronic Test Equipment (ETE) kits in FY03 to support integration and developmental test and evaluation . Continue development of kits for installation into existing fleet assets (AN/UPX-37 Interrogator, AN/APX-118 Common Digital Transponder, the RT-1832/APX Transponder) in FY04. Repair any deficiencies identified during testing in FY05 to support Milestone C.</p>			
	FY 03	FY 04	FY 05
Mode 5 systems engineering	3.487	1.492	1.585
<p>Perform systems engineering in support of the Mode 5 hardware/software development efforts on the the AN/UPX-37 Interrogator, AN/APX-118 Common Digital Transponder, the RT-1832/APX Transponder, cryptographic module and Electronic Test Equipment (ETE) during FY03 through FY05.</p>			
	FY 03	FY 04	FY 05
Conduct DT & OT of the Mode 5 upgrade	0.792	2.922	1.840
<p>Conducted test preparations in FY03. Mode 5 Developmental and Operational test phases for the AN/UPX-37 Interrogator, AN/APX-118 Common Digital Transponder, the RT-1832/APX Transponder, cryptographic module and ETE in FY04 and FY05.</p>			

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**(U) C. PROGRAM CHANGE SUMMARY:**

(U) Funding:	FY 2003	FY 2004	FY 2005	
Previous President's Budget:	10.693	10.572	5.750	
Current BES/President's Budget:	11.344	10.454	5.706	
Total Adjustments	0.651	-0.118	-0.044	

Summary of Adjustments

Congressional program reductions		-0.118		
Congressional undistributed reductions				
Congressional Recissions				
SBIR/STTR Transfer	-0.170			
Economic Assumptions			-0.005	
Reprogrammings	0.821			
Recission Realignment				
Reprioritization			-0.039	
Subtotal	0.651	-0.118	-0.044	

(U) Schedule:

Program milestone changes reflect reduced development funding and extended cryptographic development/certification schedule.

(U) Technical: Not applicable.

**(U) D. OTHER PROGRAM FUNDING SUMMARY:**

Line Item No. & Name	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete Continuing	Total Cost Continuing
Identification Systems - 42MT	29.668	21.668	18.296	26.237	30.421	30.671	31.405		

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**Exhibit R-2a, RD TEN Project Justification**  
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EXHIBIT R-2a, RDT&E Project Justification		DATE: <b>February 2004</b>
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>	PROGRAM ELEMENT NUMBER AND NAME 0604777N NAVIGATION/ID SYSTEMS	PROJECT NUMBER AND NAME 1253 COMBAT ID SYSTEMS
<p>(U) E. ACQUISITION STRATEGY: *</p> <p>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> <p>-</p>		

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# UNCLASSIFIED

**CLASSIFICATION:**

Exhibit R-3 Cost Analysis (page 1)								DATE: <b>February 2004</b>				
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>			PROGRAM ELEMENT 0604777N NAVIGATION/ID SYSTEMS			PROJECT NUMBER AND NAME 1253 COMBAT ID SYSTEMS						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	VAR	VAR	2.735	7.065	05/03	6.040	12/03	2.281	12/04	Continuing	Continuing	
Primary Hardware Dev, Electronics											0.000	
Aircraft Integration											0.000	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering	WR	NAWCAD, MD	1.175	2.105	11/02	0.348	12/03	0.288	12/04	Continuing	Continuing	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			3.910	9.170		6.388		2.569		Continuing	Continuing	
Remarks:												
Development Support											0.000	
Software Development, Electronics			2.933							Continuing	Continuing	
Integrated Logistics Support	WR	NAWCAD, MD	0.145	0.172	11/02					Continuing	Continuing	
Configuration Management											0.000	
Technical Data			0.053							Continuing	Continuing	
Studies & Analyses											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			3.131	0.172		0.000		0.000		Continuing	Continuing	
Remarks:												

# UNCLASSIFIED

**CLASSIFICATION:**

Exhibit R-3 Cost Analysis (page 2)										DATE: <b>February 2004</b>			
APPROPRIATION/BUDGET ACTIVITY <b>RDTE, N / BA-5</b>			PROGRAM ELEMENT 0604777N NAVIGATION/ID SYSTEMS				PROJECT NUMBER AND NAME 1253 COMBAT ID SYSTEMS						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
Developmental Test & Evaluation	WR	NAWCAD, MD	0.850	0.792	11/02	2.922	12/03	0.882	12/04	Continuing	Continuing		
Operational Test & Evaluation	WR	NAWCAD, MD						0.958	12/04	Continuing	Continuing		
Live Fire Test & Evaluation											0.000		
Test Assets											0.000		
Tooling											0.000		
GFE											0.000		
Award Fees											0.000		
Subtotal T&E			0.850	0.792		2.922		1.840		Continuing	Continuing		
Remarks:													
Contractor Engineering Support			0.450								0.450		
Government Engineering Support	WR	NAWCAD, MD	0.918	0.446	11/02	0.447	12/03	0.558	12/04	Continuing	Continuing		
Program Management Support	WR	NAVAIR, MD	0.605	0.699	11/02	0.657	12/03	0.699	12/04	Continuing	Continuing		
Travel	WR	NAVAIR, MD	0.060	0.065	11/02	0.040	12/03	0.040	12/04	Continuing	Continuing		
Transportation											0.000		
											0.000		
Subtotal Management			2.033	1.210		1.144		1.297		Continuing	Continuing		
Remarks:													
Total Cost			9.924	11.344		10.454		5.706		Continuing	Continuing		
Remarks:													

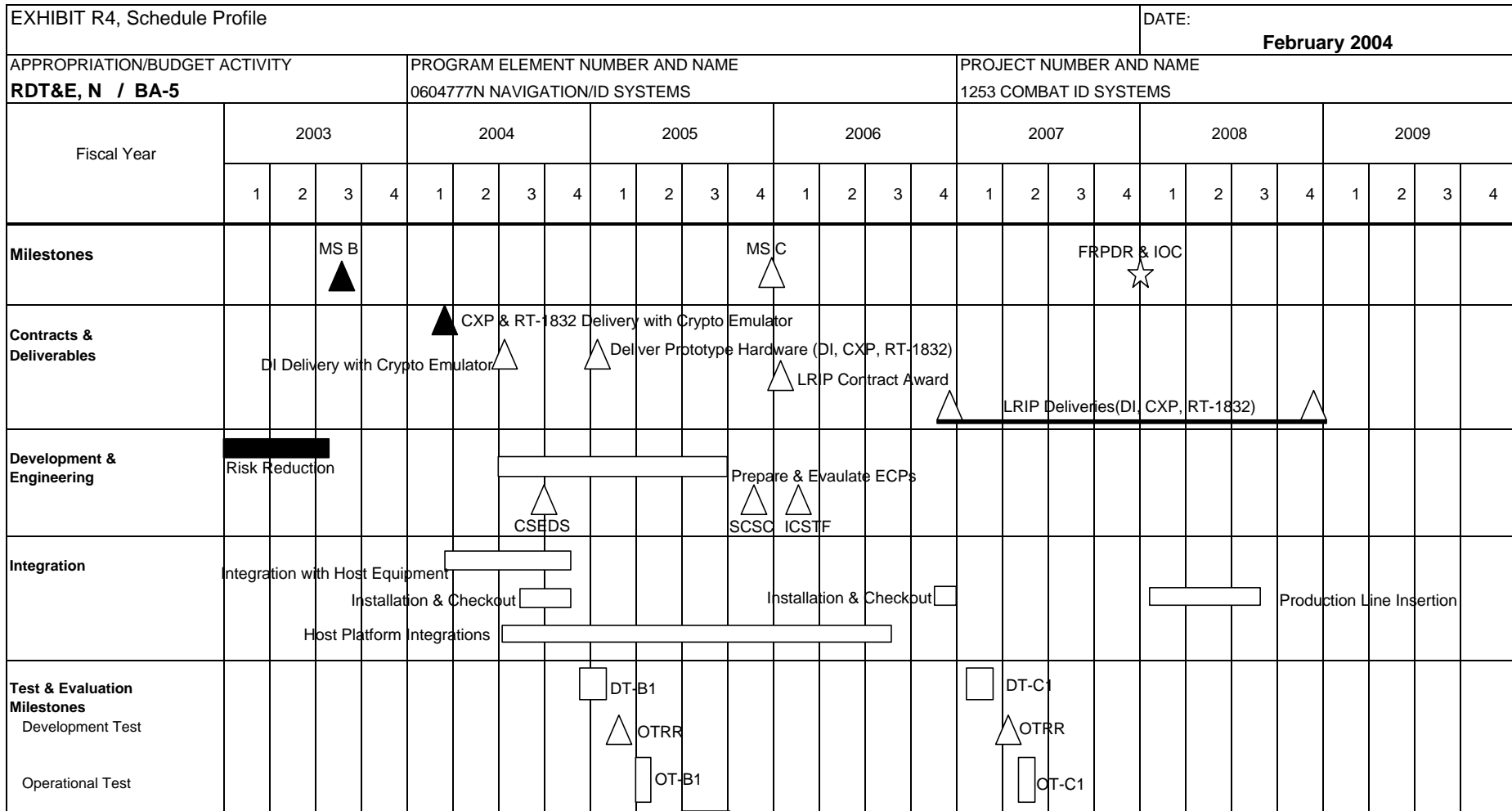
R-1 SHOPPING LIST - Item No. 131

# UNCLASSIFIED

**Exhibit R-2a, RDTE Project Justification**  
(Exhibit R-2a, page 15 of 38)

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

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**CLASSIFICATION:**

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[illegible]

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**Exhibit R-4, Schedule Profile**  
(Exhibit R-4, page 17 of 38)

# UNCLASSIFIED

## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: <b>February 2004</b>	
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>		PROGRAM ELEMENT NUMBER AND NAME 0604777N NAVIGATION / ID SYSTEMS			PROJECT NUMBER AND NAME 0253 Navigation and Electro-Optical Support			
COST (\$ in Millions)		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		13.952	11.347	6.120	9.142	7.162	7.876	8.033
RDT&E Articles Qty								

**(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:** The Navigation and Electro-Optical Support program develops Submarine Electro-Optical and imagery systems and equipment that will improve submarine imaging capability in the areas of: ship safety, Intelligence, Surveillance and Reconnaissance (ISR), and tactical control (contact management in the littorals). The Photonics Imaging System, mounted on the Universal Modular Mast will provide imaging capability for the VIRGINIA class submarine. The Photonics Imaging System design exploits a wide portion of the electro-magnetic spectrum through advanced Electro-Optical and thermal imaging and Electronic Warfare Support (ES)/Communications intercept. It will provide significant improvements in submarine stealth and infrared imaging capability. The non-hull penetrating design provides freedom in ship design and space savings for VIRGINIA CLASS and future submarines designs. The system was designed to satisfy Operational Requirement #365-87-94. Specific efforts include: (1) Photonics Imaging System On-Board Team Trainer Development (2) Photonics Imaging System At Sea Test And Evaluation (3) Photonics Imaging System Sensors and image processing improvements. By OPNAV Ltr Ser. N77/3U629209, 12 June 2003, OPNAV N77 established the Integrated Submarine Imaging System (ISIS) to rapidly field the Type 18 Periscope Patriot Rangefinder, Type 8IR Periscope systems, and integrate existing periscope imagery systems into a single system for installation on board submarines. The ISIS baseline includes the Type 18 Periscope Patriot Rangefinder, Type 8IR Periscope, and the Submarine Common Imaging System (SCIS) and supports high intensity operations in the littoral and provides the submarine force with the tactical imaging systems necessary to safely and effectively employ its surveillance and weapons capabilities. Specific efforts undertaken to meet the ISIS requirements are: (1) Type 18 Periscope Automated Range Finder development. (2) Submarine Common Imagery System Development. Development of capabilities common to ISIS and Photonics, include: image stitching, high resolution imaging, automatic visual detection, tracking and classification capabilities.

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## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: <b>February 2004</b>																
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N /BA-5</b>	PROGRAM ELEMENT NUMBER AND NAME 0604777N NAVIGATION / ID SYSTEMS	PROJECT NUMBER AND NAME 0253 Navigation and Electro-Optical Support																	
<b>(U) B. Accomplishments/Planned Program</b>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 30%;"></td><td style="width: 30%;"></td><td style="width: 20%; text-align: center;">FY 03</td><td style="width: 20%; text-align: center;">FY 04</td><td style="width: 20%; text-align: center;">FY 05</td></tr><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td style="text-align: center;">0.422</td><td style="text-align: center;">0.391</td><td style="text-align: center;">0.130</td></tr><tr><td>RDT&amp;E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></table>							FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost		0.422	0.391	0.130	RDT&E Articles Quantity				
		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		0.422	0.391	0.130															
RDT&E Articles Quantity																			
Complete Photonics On-Board Team Trainer development.																			
<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 30%;"></td><td style="width: 30%;"></td><td style="width: 20%; text-align: center;">FY 03</td><td style="width: 20%; text-align: center;">FY 04</td><td style="width: 20%; text-align: center;">FY 05</td></tr><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td style="text-align: center;">0.703</td><td></td><td></td></tr><tr><td>RDT&amp;E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></table>							FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost		0.703			RDT&E Articles Quantity				
		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		0.703																	
RDT&E Articles Quantity																			
FY03 - Performed EDM Removal/Deinstallation.																			
<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 30%;"></td><td style="width: 30%;"></td><td style="width: 20%; text-align: center;">FY 03</td><td style="width: 20%; text-align: center;">FY 04</td><td style="width: 20%; text-align: center;">FY 05</td></tr><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td style="text-align: center;">0.830</td><td></td><td></td></tr><tr><td>RDT&amp;E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></table>							FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost		0.830			RDT&E Articles Quantity				
		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		0.830																	
RDT&E Articles Quantity																			
FY03 - Completed Photonics At Sea Test And Evaluation.																			

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## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: <b>February 2004</b>																
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N /BA-5</b>	PROGRAM ELEMENT NUMBER AND NAME 0604777N NAVIGATION / ID SYSTEMS	PROJECT NUMBER AND NAME 0253 Navigation and Electro-Optical Support																	
<b>(U) B. Accomplishments/Planned Program</b>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 10%;"></th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td style="text-align: center;">3.891</td><td style="text-align: center;">5.429</td><td style="text-align: center;">3.939</td></tr><tr><td>RDT&amp;E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table> <div style="border: 1px solid black; padding: 10px; margin-top: 10px; min-height: 60px;">Commence development of capabilities common to ISIS and Photonics, including: image stitching, high resolution imaging, automatic visual detection, tracking and classification capabilities.</div>							FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost		3.891	5.429	3.939	RDT&E Articles Quantity				
		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		3.891	5.429	3.939															
RDT&E Articles Quantity																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 10%;"></th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td style="text-align: center;">0.957</td><td style="text-align: center;">0.000</td><td></td></tr><tr><td>RDT&amp;E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table> <div style="border: 1px solid black; padding: 10px; margin-top: 10px; min-height: 60px;">Performed Systems Engineering for Automated Rangefinder for Type 18 Periscope development.</div>							FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost		0.957	0.000		RDT&E Articles Quantity				
		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		0.957	0.000																
RDT&E Articles Quantity																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 10%;"></th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td style="text-align: center;">3.561</td><td style="text-align: center;">3.556</td><td style="text-align: center;">2.051</td></tr><tr><td>RDT&amp;E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table> <div style="border: 1px solid black; padding: 10px; margin-top: 10px; min-height: 60px;">Develop Low Light Level TV, improved image processing, and Photonics Imaging System all digital signal path.</div>							FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost		3.561	3.556	2.051	RDT&E Articles Quantity				
		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		3.561	3.556	2.051															
RDT&E Articles Quantity																			

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Exhibit R-2a, RDTEN Project Justification  
(Exhibit R-2a, Page 20 of 38)

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## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: <b>February 2004</b>																
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N /BA-5</b>	PROGRAM ELEMENT NUMBER AND NAME 0604777N    NAVIGATION / ID SYSTEMS	PROJECT NUMBER AND NAME 0253    Navigation and Electro-Optical Support																	
<b>(U) B. Accomplishments/Planned Program</b>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 10%;"></th><th style="width: 20%;">FY 03</th><th style="width: 20%;">FY 04</th><th style="width: 20%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td style="text-align: center;">0.167</td><td style="text-align: center;">1.971</td><td></td></tr><tr><td>RDT&amp;E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>							FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost		0.167	1.971		RDT&E Articles Quantity				
		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		0.167	1.971																
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;">Complete Photonics Imaging System EDM Shock Test and convert to the configuration control model.</div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 10%;"></th><th style="width: 20%;">FY 03</th><th style="width: 20%;">FY 04</th><th style="width: 20%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td style="text-align: center;">3.421</td><td></td><td></td></tr><tr><td>RDT&amp;E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>							FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost		3.421			RDT&E Articles Quantity				
		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		3.421																	
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;">Completed Photonics ESM Performance Improvement (PEPI) development.</div>																			

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# UNCLASSIFIED

## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: <b>February 2004</b>																																																																																	
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>	PROGRAM ELEMENT NUMBER AND NAME 0604777N NAVIGATION / ID SYSTEMS	PROJECT NUMBER AND NAME 0253 Navigation and Electro-Optical Support																																																																																		
<p><b>(U) C. PROGRAM CHANGE SUMMARY:</b></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 45%;"></th> <th style="text-align: right; width: 15%;">FY 2003</th> <th style="text-align: right; width: 15%;">FY 2004</th> <th style="text-align: right; width: 15%;">FY 2005</th> </tr> </thead> <tbody> <tr> <td>(U) Funding:</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Previous President's Budget: (FY 04/05 President's Budget Controls)</td> <td style="text-align: right;">14.262</td> <td style="text-align: right;">11.474</td> <td style="text-align: right;">6.249</td> </tr> <tr> <td>Current BES/President's Budget: (FY 05 President's Budget Controls)</td> <td style="text-align: right; border-bottom: 1px solid black;">13.952</td> <td style="text-align: right; border-bottom: 1px solid black;">11.347</td> <td style="text-align: right; border-bottom: 1px solid black;">6.120</td> </tr> <tr> <td>Total Adjustments</td> <td style="text-align: right;">-0.310</td> <td style="text-align: right;">-0.127</td> <td style="text-align: right;">-0.129</td> </tr> <tr> <td colspan="4" style="padding-top: 10px;">Summary of Adjustments</td> </tr> <tr> <td>SBIR/STTR Transfer</td> <td style="text-align: right;">-0.273</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> </tr> <tr> <td>BSO Adjustments</td> <td style="text-align: right;">-0.037</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> </tr> <tr> <td>MANPOWER</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">-0.114</td> </tr> <tr> <td>NWCF Rates - NAWC Rates</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">-0.014</td> </tr> <tr> <td>NWCF Rates - NUWC Rates</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">-0.004</td> </tr> <tr> <td>Section 8094: Management Improvements</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">-0.030</td> <td style="text-align: right;">0.000</td> </tr> <tr> <td>Sec. 8126: Efficiencies/Revisions</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">-0.097</td> <td style="text-align: right;">0.000</td> </tr> <tr> <td>WCF - R&amp;D - NAWC - PBD 430</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.013</td> </tr> <tr> <td>WCF - R&amp;D - NUWC - PBD 430</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">-0.001</td> </tr> <tr> <td>Rates - NAWC</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.014</td> </tr> <tr> <td>Inflation</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">-0.016</td> </tr> <tr> <td>non purchase inflation</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">-0.003</td> </tr> <tr> <td>Issue 69707 FY05 ITR RDTEN Balancing</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">-0.004</td> </tr> <tr> <td>Subtotal</td> <td style="text-align: right;">-0.310</td> <td style="text-align: right;">-0.127</td> <td style="text-align: right;">-0.129</td> </tr> </tbody> </table> <p style="margin-top: 20px;">(U) Schedule: Not applicable</p> <p style="margin-top: 20px;">(U) Technical: Not applicable</p>						FY 2003	FY 2004	FY 2005	(U) Funding:				Previous President's Budget: (FY 04/05 President's Budget Controls)	14.262	11.474	6.249	Current BES/President's Budget: (FY 05 President's Budget Controls)	13.952	11.347	6.120	Total Adjustments	-0.310	-0.127	-0.129	Summary of Adjustments				SBIR/STTR Transfer	-0.273	0.000	0.000	BSO Adjustments	-0.037	0.000	0.000	MANPOWER	0.000	0.000	-0.114	NWCF Rates - NAWC Rates	0.000	0.000	-0.014	NWCF Rates - NUWC Rates	0.000	0.000	-0.004	Section 8094: Management Improvements	0.000	-0.030	0.000	Sec. 8126: Efficiencies/Revisions	0.000	-0.097	0.000	WCF - R&D - NAWC - PBD 430	0.000	0.000	0.013	WCF - R&D - NUWC - PBD 430	0.000	0.000	-0.001	Rates - NAWC	0.000	0.000	0.014	Inflation	0.000	0.000	-0.016	non purchase inflation	0.000	0.000	-0.003	Issue 69707 FY05 ITR RDTEN Balancing	0.000	0.000	-0.004	Subtotal	-0.310	-0.127	-0.129
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# UNCLASSIFIED

## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: <b>February 2004</b>																																																																								
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>		PROGRAM ELEMENT NUMBER AND NAME 0604777N NAVIGATION / ID SYSTEMS			PROJECT NUMBER AND NAME 0253 Navigation and Electro-Optical Support																																																																										
<p><b>D. OTHER PROGRAM FUNDING SUMMARY:</b></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 35%;"><u>Line Item No. &amp; Name</u></th> <th style="text-align: right; width: 8%;"><u>FY 2003</u></th> <th style="text-align: right; width: 8%;"><u>FY 2004</u></th> <th style="text-align: right; width: 8%;"><u>FY 2005</u></th> <th style="text-align: right; width: 8%;"><u>FY 2006</u></th> <th style="text-align: right; width: 8%;"><u>FY 2007</u></th> <th style="text-align: right; width: 8%;"><u>FY 2008</u></th> <th style="text-align: right; width: 8%;"><u>FY 2009</u></th> <th style="text-align: center; width: 10%;"><u>To Complete</u></th> <th style="text-align: center; width: 10%;"><u>Total Cost</u></th> </tr> </thead> <tbody> <tr> <td>(U) SCN Line 201300 (Photonics Mast only)</td> <td style="text-align: right;">22.556</td> <td style="text-align: right;">18.865</td> <td style="text-align: right;">19.208</td> <td style="text-align: right;">19.558</td> <td style="text-align: right;">19.665</td> <td style="text-align: right;">20.039</td> <td style="text-align: right;">49.144</td> <td style="text-align: center;">Continuing</td> <td style="text-align: center;">Continuing</td> </tr> <tr> <td>    OPN Line 083100 (PL018, PL021 &amp; PL022)</td> <td style="text-align: right;">5.705</td> <td style="text-align: right;">16.596</td> <td style="text-align: right;">50.700</td> <td style="text-align: right;">61.361</td> <td style="text-align: right;">51.804</td> <td style="text-align: right;">47.174</td> <td style="text-align: right;">45.104</td> <td style="text-align: center;">Continuing</td> <td style="text-align: center;">Continuing</td> </tr> <tr> <td>    OPN Line 083105</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.100</td> <td style="text-align: right;">0.945</td> <td style="text-align: right;">4.159</td> <td style="text-align: right;">7.411</td> <td style="text-align: right;">5.715</td> <td style="text-align: right;">4.860</td> <td style="text-align: center;">Continuing</td> <td style="text-align: center;">Continuing</td> </tr> <tr> <td colspan="10" style="padding-top: 10px;">(U) Related RDT&amp;E</td> </tr> <tr> <td>    (U) PE 0604558N</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>    (The VIRGINIA Class Design Development)</td> <td style="text-align: right;">5.106</td> <td style="text-align: right;">1.159</td> <td style="text-align: right;">1.171</td> <td style="text-align: right;">1.183</td> <td style="text-align: right;">.188</td> <td style="text-align: right;">.196</td> <td style="text-align: right;">.202</td> <td style="text-align: center;">Continuing</td> <td style="text-align: center;">Continuing</td> </tr> </tbody> </table> <p style="margin-top: 20px;"><b>E. ACQUISITION STRATEGY: *</b> Not applicable</p>										<u>Line Item No. &amp; Name</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>To Complete</u>	<u>Total Cost</u>	(U) SCN Line 201300 (Photonics Mast only)	22.556	18.865	19.208	19.558	19.665	20.039	49.144	Continuing	Continuing	OPN Line 083100 (PL018, PL021 & PL022)	5.705	16.596	50.700	61.361	51.804	47.174	45.104	Continuing	Continuing	OPN Line 083105	0.000	0.100	0.945	4.159	7.411	5.715	4.860	Continuing	Continuing	(U) Related RDT&E										(U) PE 0604558N										(The VIRGINIA Class Design Development)	5.106	1.159	1.171	1.183	.188	.196	.202	Continuing	Continuing
<u>Line Item No. &amp; Name</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>To Complete</u>	<u>Total Cost</u>																																																																						
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<p>* Not required for Budget Activities 1,2,3, and 6</p>																																																																															

R-1 SHOPPING LIST - Item No. 131

UNCLASSIFIED

Exhibit R-2a, RDTEN Project Justification  
(Exhibit R-2a, Page 23 of 38)

# UNCLASSIFIED

## CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: <b>February 2004</b>				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
<b>RDT&amp;E, N / BA-5</b>			0604777N NAVIGATION / ID SYSTEMS			0253 Navigation and Electro-Optical Support						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	Various	Various	34.962	8.489	10/02	6.188	10/03	3.256	10/04	Continuing	Continuing	
Software Development	Various	Various		1.477	10/02	1.149	10/03	0.430	10/04	Continuing	Continuing	
Aircraft Integration											0.000	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering	WR / RC	NUWC Newport, RI	5.922	2.567	10/02	1.676	10/03	0.956	10/04	Continuing	Continuing	
Training Development											0.000	
Licenses											0.000	
Miscellaneous	Various	Various	0.556	0.695	01/03	0.808	10/03	0.568	10/04	Continuing	Continuing	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			41.440	13.228		9.821		5.210		Continuing	Continuing	
Remarks:												
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	0.000		0.000		0.000		0.000	0.000	
Remarks:												



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**CLASSIFICATION:**

Exhibit R-3 Cost Analysis (page 2)										DATE: <b>February 2004</b>		
APPROPRIATION/BUDGET ACTIVITY <b>RDTE&amp;E, N / BA-5</b>			PROGRAM ELEMENT 0604777N NAVIGATION / ID SYSTEMS			PROJECT NUMBER AND NAME 0253 Navigation and Electro-Optical Support						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											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		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support											0.000	
Program Management Support										Continuing	Continuing	
Management Support Services/ETS	Various	Various	3.650	0.680	11/02	1.484	10/03	0.869	10/04	Continuing	Continuing	
Travel			0.457	0.044		0.042		0.041			0.584	
Transportation											0.000	
											0.000	
Subtotal Management			4.107	0.724		1.526		0.910		Continuing	Continuing	
Remarks:												
Total Cost			45.547	13.952		11.347		6.120		Continuing	Continuing	
Remarks:												

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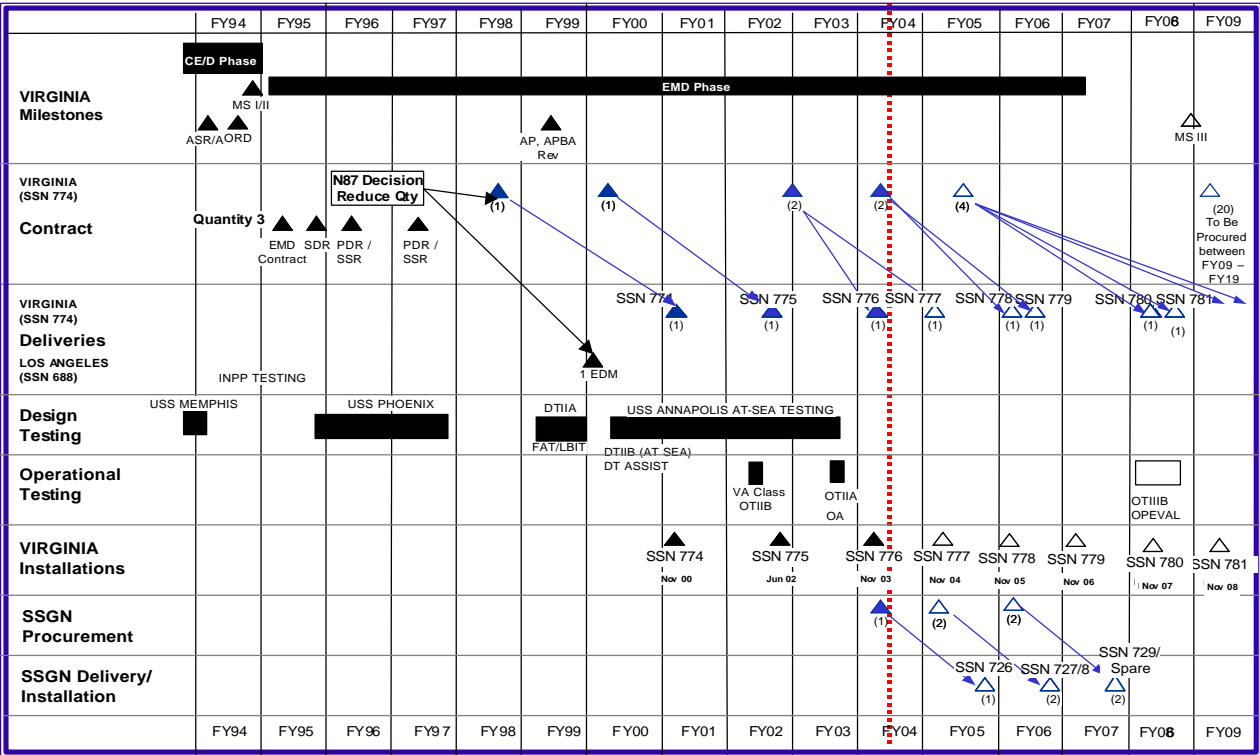
**Exhibit R-3, Project Cost Analysis**  
(Exhibit R-3, Page 25 of 38)

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CLASSIFICATION:

EXHIBIT R-4, RDT&E Schedule Profile			DATE: <b>February 2004</b>	
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER		
<b>RDT&amp;E, N/BA-5</b>	0604777N NAVIGATION / ID SYSTEMS	0253 Navigation and Electro-Optical Support		

PMP Milestone Schedule



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**Exhibit R-3, Project Cost Analysis**  
(Exhibit R-3, Page 27 of 38)

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**CLASSIFICATION:**

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**UNCLASSIFIED**

**Exhibit R-4a, Schedule Detail**  
(Exhibit R-4a, Page 28 of 38)

# UNCLASSIFIED

## 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		0604777N NAVIGATION/ID SYSTEMS				0921 NAVSTAR GPS EQUIPMENT						
COST (\$ in Millions)		Prior Years Cost	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009		Cost to Complete	Total Program
Project Cost		809.770	17.946	21.831	14.467	21.433	21.856	22.282	22.719		Continuing	Continuing
RDT&E Articles Qty												0
<p>A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The mission is to provide supported, affordable, integrated, and interoperable navigation solutions to the warfighters. RDT&amp;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.</p> <p>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&amp;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&amp;E assets; timing and frequency, 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 and software systems for over 3300 Naval Aircraft to meet GIG, GPS Flight In Controlled Airspace (FICA), CNS/ATM and JPALS requirements when existing systems are unsuitable; the Digital Data Set (DDS); the Control Display Navigation Unit (CDNU) and associated software for many different aircraft and modifications to the GPS Mission Planning Module for the Naval Mission Planning System (NAVMPS)/Joint Mission Planning System (JMPS).</p> <p>The Surface Ship and Submarine integration efforts include two vitally important navigation integration initiatives: NAVSSI and the AN/WRN-6 replacement. The first program is the Navigation Sensor System Interface (NAVSSI) development. The NAVSSI is the surface ship system with a requirement of integrating with over 54 systems/interfaces on 131 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. A low cost ECDIS-N system will also be developed to support non-NAVSSI ships. 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 GPS Versa Module Europa (VME) Receiver Card (GVRC) technology combined with fiber optic antenna capability and a new security chip. 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.)</p> <p>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."</p>												

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Exhibit R-4a, Schedule Detail  
(Exhibit R-4a, Page 29 of 38)

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## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: <b>February 2004</b>
APPROPRIATION/BUDGET ACTIVITY <b>RESEARCH DEVELOPMENT TEST &amp; EVALUATION, NAVY /BA-5</b>	PROJECT NUMBER AND NAME 0921 NAVSTAR GPS EQUIPMENT	
<p>The Naval Research Advisory Committee (NRAC) GPS Vulnerability Study Panel tasked by OPNAV N6 and ASN(RD&amp;A), assessed the Navy's GPS Vulnerabilities and recommended specific actions to resolve serious issues to ensure the continued availability of GPS information in a high risk hostile jamming environment. As a result, OPNAV N633 (now N611) and N880 (now N78) drafted the Navy Enhanced GPS User Equipment ORD to address operational requirements. These were validated and the ORD was approved on June 7, 2000. With this beginning, OSD directed the first phase of the Navy's overall GPS upgrade program with RDT&amp;E leading to initial procurements of GPS anti-jam (AJ) antennas beginning in 2001 for aircraft and 2002 for ships. RDT&amp;E continues to support platform integration requirements, DT/OT, as well as the GPS JPO's development of a Digital Antenna Electronics (DAE), the Navy's development of a smaller AJ antenna and a conformal low-observable AJ antennas for aircraft with those requirements, and a new a technology AJ solution for submarines. Two similar but separate ACAT III programs (Air and Sea NAVWAR) have been established and have become the basis for the Navy's NAVWAR program.</p> <p>The second phase (referred to as Air and Sea GPS Modernization) of the Navy's overall GPS User Equipment upgrade, will require RDT&amp;E to support the replacement of existing legacy GPS receivers with enhanced capability new receivers. These new receivers will incorporate GPS Joint Program Office (JPO) directed and developed technology enhancements to support new signals in space, enhanced receiver security, and aircraft operations within controlled airspace. All of these efforts will be directed, tasked, and funded through PMW/PMA-156.</p>		

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Exhibit R-4a, Schedule Detail  
(Exhibit R-4a, Page 30 of 38)

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EXHIBIT R-2a, RDT&E Project Justification			DATE: <b>February 2004</b>																
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA 5</b>	PROGRAM ELEMENT NUMBER AND NAME 0604777N      NAVIGATION/ID SYSTEMS	PROJECT NUMBER AND NAME 0921 NAVSTAR GPS EQUIPMENT																	
<b>(U) B. Accomplishments/Planned Program</b>																			
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	FY 03	FY 04	FY 05																
Accomplishments/Effort/Subtotal Cost	2.071	0.000	0.000																
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	FY 03	FY 04	FY 05																
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EXHIBIT R-2a, RDT&E Project Justification			DATE: <b>February 2004</b>																
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA 5</b>	PROGRAM ELEMENT NUMBER AND NAME 0604777N      NAVIGATION/ID SYSTEMS	PROJECT NUMBER AND NAME 0921 NAVSTAR GPS EQUIPMENT																	
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Accomplishments/Effort/Subtotal Cost	4.196	4.929	3.470																
RDT&E Articles Quantity																			
<p>(U) FY03 ACCOMPLISHMENTS:</p> <p>(U) (\$4.196) Sea NAVWAR: Began RDT&amp;E modeling/simulation and integration analysis for MHC and L-class ships. Initiated planning to conduct a friendly emitter analysis on selected US ships. Completed the OA on the MCM. Completed DT on the LCAC and MHC. Began integration on the FFG. Finalized the Fiber Optic Antenna Link and GAS-1 AE integration with NAVSSI. Began integration efforts on the DDG and other Phase 1B platforms. Initiated an analysis of WDM technology for application to the Sea NAVWAR environment. Continued to evaluate anti-jam technologies for application to the submarine environment.</p> <p>(U) FY04 PLANS:</p> <p>(U) (\$4.929) Sea NAVWAR: Continue initial integration efforts (modeling and simulation) on selected Phase 1 platforms. Begin DT efforts on selected Phase 1A (i.e. FFG) and Phase 1B (DDG) ship classes. Continue WDM technology evaluation. Conduct submarine AOA and technology downselect for Phase 2 efforts.</p> <p>(U) FY05 PLANS:</p> <p>(U) (\$3.470) Sea NAVWAR: Continue modeling/simulation, integration, DT/OT efforts on selected Phase 1A &amp; 1B platforms. Continue submarine AJ development and integration efforts. Support Phase 2 M/S B decision efforts.</p>																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"></td> <td style="width: 15%; text-align: center;">FY 03</td> <td style="width: 15%; text-align: center;">FY 04</td> <td style="width: 15%; text-align: center;">FY 05</td> <td style="width: 25%;"></td> </tr> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td style="text-align: center;">0.000</td> <td style="text-align: center;">1.500</td> <td style="text-align: center;">1.500</td> <td></td> </tr> <tr> <td>RDT&amp;E Articles Quantity</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>						FY 03	FY 04	FY 05		Accomplishments/Effort/Subtotal Cost	0.000	1.500	1.500		RDT&E Articles Quantity				
	FY 03	FY 04	FY 05																
Accomplishments/Effort/Subtotal Cost	0.000	1.500	1.500																
RDT&E Articles Quantity																			
<p>(U) FY04 PLANS:</p> <p>(U) (\$1.500) Continue support to the GPS JPO for modernization Initiatives (i.e. Advanced digital Antenna Program (ADAP)). Coordinate JPO and F/A-18 program office efforts on F/A-18 "lead the force" GPS Modernization efforts.</p> <p>(U) FY05 PLANS:</p> <p>(U) (\$1.500) Continue support to the GPS JPO for modernization Initiatives (i.e. Advanced digital Antenna Program (ADAP)). Coordinate JPO and F/A-18 program office efforts on F/A-18 "lead the force" GPS Modernization efforts.</p>																			

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**Exhibit R-2a, RDTEN Project Justification**  
(Exhibit R-2a, page 32 of 38)



# UNCLASSIFIED

## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: <b>February 2004</b>																																																													
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA 5</b>	PROGRAM ELEMENT NUMBER AND NAME 0604777N      NAVIGATION/ID SYSTEMS	PROJECT NUMBER AND NAME 0921 NAVSTAR GPS EQUIPMENT																																																														
<p><b>(U) C. PROGRAM CHANGE SUMMARY:</b></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 40%;">(U) Funding:</th> <th style="text-align: right; width: 15%;">FY 2003</th> <th style="text-align: right; width: 15%;">FY 2004</th> <th style="text-align: right; width: 15%;">FY 2005</th> </tr> </thead> <tbody> <tr> <td>Previous President's Budget:</td> <td style="text-align: right;">19.144</td> <td style="text-align: right;">22.127</td> <td style="text-align: right;">14.979</td> </tr> <tr> <td>Current BES/President's Budget:</td> <td style="text-align: right;">17.946</td> <td style="text-align: right;">21.831</td> <td style="text-align: right;">14.467</td> </tr> <tr> <td>Total Adjustments</td> <td style="text-align: right; border-top: 1px solid black;">-1.198</td> <td style="text-align: right; border-top: 1px solid black;">-0.296</td> <td style="text-align: right; border-top: 1px solid black;">-0.512</td> </tr> <tr> <td colspan="4" style="padding-top: 10px;">Summary of Adjustments</td> </tr> <tr> <td>    FY 03 SBIR</td> <td style="text-align: right;">-0.362</td> <td></td> <td></td> </tr> <tr> <td>    FY2003 Update</td> <td style="text-align: right;">-0.404</td> <td></td> <td></td> </tr> <tr> <td>    Management Improvments</td> <td></td> <td style="text-align: right;">-0.058</td> <td></td> </tr> <tr> <td>    Miscellaneous Adjustments</td> <td style="text-align: right;">-0.432</td> <td></td> <td></td> </tr> <tr> <td>    Efficiencies/Revised Econ Assumptions</td> <td></td> <td style="text-align: right;">-0.188</td> <td></td> </tr> <tr> <td>    SPAWAR Service Center Cost Adj</td> <td></td> <td style="text-align: right;">-0.050</td> <td style="text-align: right;">-0.034</td> </tr> <tr> <td>    NWCF Rate Adjustments</td> <td></td> <td></td> <td style="text-align: right;">-0.002</td> </tr> <tr> <td>    Inflation Adjustment</td> <td></td> <td></td> <td style="text-align: right;">-0.046</td> </tr> <tr> <td>    N61 Headquarters Support</td> <td></td> <td></td> <td style="text-align: right;">-0.430</td> </tr> <tr> <td>Subtotal</td> <td style="text-align: right; border-top: 1px solid black;">-1.198</td> <td style="text-align: right; border-top: 1px solid black;">-0.296</td> <td style="text-align: right; border-top: 1px solid black;">-0.512</td> </tr> </tbody> </table> <p style="margin-top: 20px;">(U) Schedule:</p> <p style="margin-left: 20px;">Air Phase 1: Schedule now includes F/A-18 C/D which was previously a Phase 2B candidate platform. This will extend the Phase 1 integration &amp; test schedule out through FY 05 for that platform.</p> <p style="margin-top: 20px;">(U) Technical:</p> <p style="margin-left: 20px;">Air Phase 1: Engineering and Technical analysis determined that the F/A-18 C/D is a good candidate for Phase 1 GAS-1 integration and this platform is now a priority for Air NAVWAR RDT&amp;E integration and test.</p>					(U) Funding:	FY 2003	FY 2004	FY 2005	Previous President's Budget:	19.144	22.127	14.979	Current BES/President's Budget:	17.946	21.831	14.467	Total Adjustments	-1.198	-0.296	-0.512	Summary of Adjustments				FY 03 SBIR	-0.362			FY2003 Update	-0.404			Management Improvments		-0.058		Miscellaneous Adjustments	-0.432			Efficiencies/Revised Econ Assumptions		-0.188		SPAWAR Service Center Cost Adj		-0.050	-0.034	NWCF Rate Adjustments			-0.002	Inflation Adjustment			-0.046	N61 Headquarters Support			-0.430	Subtotal	-1.198	-0.296	-0.512
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Exhibit R-2a, RDTE Project Justification  
(Exhibit R-2a, page 33 of 38)

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**CLASSIFICATION:**

EXHIBIT R-2a, RDT&E Project Justification		DATE:	<b>February 2004</b>
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
<b>RDT&amp;E, N / BA 5</b>	0604777N NAVIGATION/ID SYSTEMS	0921 NAVSTAR GPS EQUIPMENT	

(U) D. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. &amp; Name</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>To Complete</u>	<u>Total Cost</u>
(U) OPN Line #2657	11.436	15.519	11.65	13.204	12.504	12.759	13.021	Continuing	Continuing
(U) APN - Common Avionics	4.443	2.264	0.000	17.946	22.182	22.607	23.031	Continuing	Continuing
(U) OMN - PE 0305164N	1.063	2.537	2.491	2.503	2.553	2.616	2.682		

(U) E. ACQUISITION STRATEGY: \*

NAWWAR Participate in GPS Joint Program Office and Warner Robbins ALC FY 01-FY 07 procurements for the GAS-1 anti-jam antenna. Initiate Navy contracting options for smaller array anti-jam antennas and conformal/low observable arrays for selected aircraft. Initiate Navy contracting for the shipboard ground plane and submarine array. Participate with the GPS JPO in their development of a Advanced Digital Antenna Program (DPAP) LRU and identify potential Navy candidate platforms. Support the GPS JPO in their F/A-18 "lead the force" GPS Modernization efforts. Participate in GPS JPO procurements wherever practicable for GPS Modernization Enhancements. See attached Milestone chart.

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

**\*\* Required for DON and OSD submit only.**

# UNCLASSIFIED

**CLASSIFICATION:**

Exhibit R-3 Cost Analysis (page 1)								DATE: <b>February 2004</b>				
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>			PROGRAM ELEMENT 0604777N NAVIGATION/ID SYSTEMS			PROJECT NUMBER AND NAME 0921 NAVSTAR GPS EQUIPMENT						
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
Product Development	Various	Product Vendors	263.979	1.867	Various	3.032	Various	1.800	Various	Continuing	Continuing	
Product Development SSC-SD	WX	SSC-SD	64.678	0.610	10/02	0.650	10/03	0.371	10/04	Continuing	Continuing	
Prod Dev (other in house)	WX	Various Field Activities	440.748								440.748	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering	Various	Various Govt/Cont		2.110	Various	2.200	Various	1.500	Various	Continuing	Continuing	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			769.405	4.587		5.882		3.671		Continuing	Continuing	
Remarks:												
Development Support	Various	Various	12.710							Continuing	Continuing	
Software Development	Various	SSC-SD/Platfrom Primes	3.250	1.650	10/02	1.000	10/03	0.700	10/04	Continuing	Continuing	
Integrated Logistics Support	Various	SSC-SD/NAWC/SIR/DCS		0.750	10/02	0.857	10/03	0.850	10/04	Continuing	Continuing	
Training Development	WX	SSC-SD/NAWC	0.450	0.500	10/02	0.500	10/03	0.275	10/04	Continuing	Continuing	
Technical Data	Various	Platform PMO's		0.500	10/02	0.500	10/03	0.300	10/04	Continuing	Continuing	
Studies & Analyses											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			16.410	3.400		2.857		2.125		Continuing	Continuing	
Remarks:												

# UNCLASSIFIED

## CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2004		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-5			0604777N NAVIGATION/ID SYSTEMS			0921 NAVSTAR GPS EQUIPMENT						
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
Test & Evaluation (NAWC PAX)	WX	NAWC PAX	10.969	0.700	10/02	2.060	10/03	1.700	10/04	Continuing	Continuing	
Test & Evaluation (DCS)	CPAF	DCS CORP PAX	1.427	0.334	10/02	0.350	10/03	0.365	10/04	Continuing	Continuing	
Test & Evaluation (SSC-SD)	WX	SSC-SD	1.145	0.600	10/02	0.800	10/03	0.586	10/04	Continuing	Continuing	
Test & Evaluation Platform Testing	Various	VARIOUS CONTRACTORS	1.379	3.800	Various	3.500	Various	2.025	Various	Continuing	Continuing	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			14.920	5.434		6.710		4.676		Continuing	Continuing	
Remarks:												
Contractor Engineering Support	Various	DCS, SAIC, ARINC	1.500	1.409	10/02	1.876	10/03	1.452	10/04	Continuing	Continuing	
Government Engineering Support	WX	SSC, NAWC, WR	0.700	1.120	10/02	2.230	10/03	0.899	10/04	Continuing	Continuing	
Program Management Support	CPAF	DCS, Price Systems	7.180	1.996	10/02	2.276	10/03	1.644	10/04	Continuing	Continuing	
Travel											0.000	
Transportation											0.000	
											0.000	
Subtotal Management			9.380	4.525		6.382		3.995		Continuing	Continuing	
Remarks:												
Total Cost			810.115	17.946		21.831		14.467		Continuing	Continuing	
Remarks:												

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Exhibit R-2a, RDTEN Project Justification  
(Exhibit R-2a, page 36 of 38)

**UNCLASSIFIED**

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

\*\* Quantities are approximate year-end total number of NAVWAR system deliveries including those projected for new construction aircraft and ships. Quantities do not include RDT&E units or Spares.

R-1 SHOPPING LIST - Item No. 131

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

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**Exhibit R-4, Schedule Profile**  
(Exhibit R-4, page 37 of 38)

# UNCLASSIFIED

## CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: February 2004		
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT				PROJECT NUMBER AND NAME		
RDT&E, N / BA 5		0604777N NAVIGATION/ID SYSTEMS				0921 NAVSTAR GPS EQUIPMENT		
Air Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Phase 1 FRP	3Q							
Phase 1 1st production platform integration	4Q							
H-60 DT	4Q	1-4Q	1-4Q					
Phase 1 IOC		1Q						
AB-8B DT/OT		1-4Q	1-4Q	1Q				
Phase 2A 1st platform production integration						1Q		
Phase 2A LRIP				3Q				
Phase 2A FRP					3Q			
Phase 2A IOC						4Q		
Phase 2B Milestone B					1Q			
F/A-18 E/F DT/OT		2-4Q	1-4Q	1-4Q	1-4Q			
Phase 2B Milestone C LRIP						4Q		
Phase 2B 1st platform production integration							4Q	
Phase 2B FRP							4Q	
Phase 2B IOC								
Sea Profile								
Phase 1A LRIP	3Q							
Phase 1A Operational Assessment (OA)	4Q	1Q						
MCM 1st production installation		4Q						
Phase 1A FRP		3Q						
Phase 1A IOC			1Q					
Phase 1B LRIP				1Q				
Phase 1B Operational Test (OT)				4Q	1Q			
Phase 1B Platform 1st production installation					1Q			
Phase 1B FRP					1Q			
Phase 1B IOC					1Q			
Phase 2 M/S B				2Q				
Phase 2 LRIP					3Q			
Phase 2 Operational Test (OT)						3Q		
Phase 2 Platform 1st production installation						3Q		
Phase 2 FRP						3Q		
Phase 2 IOC						3Q		

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**Exhibit R-4, Schedule Profile**  
(Exhibit R-4, page 38 of 38)