CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification — DATE: **February 2008**

APPROPRIATION/BUDGET ACTIVITY
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA 5

R-1 ITEM NOMENCLATURE
0604777N NAVIGATION/ID SYSTEMS

COST ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**45.045**	**41.226**	**49.007**	**48.498**	**45.376**	**51.565**	**52.583**
0253 Navigation and Electro-Optical Support	**7.806**	**7.508**	**7.942**	**8.196**	**8.425**	**8.585**	**8.745**
0676 Improved ID Development	**3.034**	**3.315**	**2.889**	**2.926**	**2.715**	**2.636**	**2.738**
0921 NAVSTAR GPS Equipment	**19.592**	**18.813**	**28.589**	**22.044**	**19.250**	**25.096**	**25.564**
1253 Combat ID System	**13.637**	**11.590**	**9.587**	**15.332**	**14.986**	**15.248**	**15.536**
9999 Congressional Increases	**0.975**						
Quantity of RDT&E Articles	**7**	**5**	**5**	**18**			

(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 Integrated Submarine Imaging System (ISIS) (0253) is a back fit system to integrate all imaging capabilities on existing submarine classes. 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 positioning, navigation and timing (PNT) system that provides authorized users with secure, worldwide, all weather, three dimensional position, velocity and precise time data. Navy Air and Sea Navigation Warfare (NAVWAR) are major elements of the GPS program. NAVWAR's mission is to provide continued access to GPS information in a denied environment. NAVWAR accomplishes this through the use of enhanced user equipment (UE). GPS Modernization addresses the Navy's future integration of GPS Joint Program Office (JPO) Modernized User Equipment (MUE) products being developed that will enable the use of new signals in space. WRN-X is a modernized ship GPS equipment development program required to provide a replacement for the existing WRN-6 receiver and other shipboard receivers. Navigation Sensor System Interface (NAVSSI) is a surface based system that integrates shipboard position, navigation and timing data and distributes the processed output to user systems and networks.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: **February 2008**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA 5**	R-1 ITEM NOMENCLATURE 0604777N NAVIGATION/ID SYSTEMS

(U) B. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2007	FY 2008	FY 2009
FY08/09 President's Budget	47.887	42.121	48.947
FY09 President's Submit	45.045	41.226	49.007
Total Adjustments	-2.842	-0.895	0.060
Summary of Adjustments			
Small Business Innovative Research Tax (SBIR)	-0.642	-0.627	
Miscellaneous Congressional Adjustments		-0.268	
Miscellaneous Adjustments	-2.200		0.060
Subtotal	-2.842	-0.895	0.060

(U) Schedule:

Proj 0676: DDG 104 is now the Mode 5 OPEVAL platform, with an availability in 3Q of FY08 necessitating a change in Operational Test Readiness Review (OTRR) OPEVAL from 4Q FY07 to 3Q FY08. OPEVAL OUTBRIEF is now occurring only in 4Q of FY08.

Proj 1253: DDG 104 is now the Mode 5 OPEVAL platform, with an availability in 3Q of FY08 necessitating a change in Operational Test Readiness Review (OTRR) OPEVAL from 4Q FY07/1Q FY08 to 3Q FY08.OPEVAL OUTBRIEF is now occurring in 4Q of FY08.

Proj 0921: Changes to the Advanced Digital Antenna Production (ADAP) development schedule are due to late delivery of First Article hardware. This change also delayed Full Rate Production schedule from 3Q07 to 3Q08. NAVWAR Sea Phase 1B has been replaced by Increment 2, in which ADAP is integrated on all active surface ships.

Technical: Not applicable

CLASSIFICATION:	UNCLASSIFIED						
EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION					DATE February 2008		
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 5**	PROGRAM ELEMENT NUMBER AND NAME **0604777N/NAVIGATION/ID SYSTEM**				PROJECT NUMBER AND NAME **0253/Nav & Electro-Optical Supt**		
COST (In Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	7.806	7.508	7.942	8.196	8.425	8.585	8.745
RDT&E Articles Qty	0	0	0	0	0	0	0

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 E-O 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.

The Department of the Navy 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 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.

This program funds the development of Patriot Radar Range Finding for Photonics for SSGN and VIRGINIA Class Submarines. Patriot for Photonics will provide SSGN and VIRGINIA Class submarines with enhanced situations awareness and collision avoidance. Currently Patriot has only been developed for SSN 688 and SSN 21 Class submarines. This effort will provide Patriot Radar Range Finding to SSGN and VIRGINIA Class submarines on the Photonics Mast.

CLASSIFICATION:	UNCLASSIFIED	
EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION		DATE February 2008
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 5**	PROGRAM ELEMENT NUMBER AND NAME **0604777N/NAVIGATION/ID SYSTEM**	PROJECT NUMBER AND NAME **0253/Nav & Electro-Optical Supt**

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2007	FY 2008	FY 2009
Accomplishments/Effort/Subtotal Cost	0.365	0.154	0.147
RDT&E Articles Quantity	0	0	0

Upgrade/Resolve Obsolescent Photonics On-Board Team Trainer development.

	FY 2007	FY 2008	FY 2009
Accomplishments/Effort/Subtotal Cost	4.213	4.429	4.985
RDT&E Articles Quantity	0	0	0

Commence development of capabilities common to ISIS and Photonics, including: Image stitching, super resolution imaging, automatic visual detection, tracking and classification capabilities using the advanced processing build.

	FY 2007	FY 2008	FY 2009
Accomplishments/Effort/Subtotal Cost	2.028	0.915	1.040
RDT&E Articles Quantity	0	0	0

Develop Low Light Level TV, improved image processing, Photonics Imaging System all digital signal path and Photonics Integrated Control and Display.

	FY 2007	FY 2008	FY 2009
Accomplishments/Effort/Subtotal Cost	0.000	0.950	0.720
RDT&E Articles Quantity	0	0	0

Complete Photonics Imaging System EDM Shock Test and convert to the configuration control model.

	FY 2007	FY 2008	FY 2009
Accomplishments/Effort/Subtotal Cost	1.200	1.060	1.050
RDT&E Articles Quantity	0	0	0

Develop Patriot Radar Range Finding for Photonics for SSGN and VIRGINIA Class Submarines.

CLASSIFICATION:	UNCLASSIFIED											
EXHIBIT R-3, RDT&E PROJECT COST ANALYSIS									DATE February 2008			
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 5**		PROGRAM ELEMENT NUMBER AND NAME **0604777N/NAVIGATION/ID SYSTEM**					PROJECT NUMBER AND NAME **0253/Nav & Electro-Optical Supt**					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY Cost ($000)	FY 2007 Cost ($000)	FY 2007 Award Date	FY 2008 Cost ($000)	FY 2008 Award Date	FY 2009 Cost ($000)	FY 2009 Award Date	Cost to Complete ($000)	Total Cost ($000)	Target Value of Contract
Primary Hardware Development	Various	Various	3.264	2.470	OCT-06	1.889	OCT-07	1.760	OCT-08	CONT	CONT	0.000
Software Development	Various	Various	2.343	1.691	OCT-06	1.550	OCT-07	2.227	OCT-08	CONT	CONT	0.000
Systems Engineering	Various	Various	2.830	1.609	OCT-06	2.377	OCT-07	2.059	OCT-08	CONT	CONT	0.000
Miscellaneous	Various	Various	0.979	0.655	OCT-06	0.418	OCT-07	0.503	OCT-08	CONT	CONT	0.000
Subtotal Product Development			**9.416**	**6.425**		**6.234**		**6.549**		**0.000**	**CONT**	**0.000**
Remarks:												
Program Management Support	CPAF	AT&T	0.511	0.600	JAN-07	0.530	OCT-07	0.543		CONT	CONT	0.000
Subtotal Support Costs			**0.511**	**0.600**		**0.530**		**0.543**		**0.000**	**CONT**	**0.000**
Remarks:												
Development Test & Evaluation	Various	Various	1.580	0.731	OCT-06	0.694	OCT-07	0.800	OCT-08	CONT	CONT	0.000
Subtotal Test and Evaluation			**1.580**	**0.731**		**0.694**		**0.800**		**0.000**	**0.000**	**0.000**
Remarks:												
Travel	CPAF	AT&T	0.050	0.050		0.050		0.050		CONT	CONT	0.000
Subtotal Management Services			**0.050**	**0.050**		**0.050**		**0.050**		**0.000**	**0.000**	**0.000**
Remarks:												
Total Cost			**11.557**	**7.806**		**7.508**		**7.942**		**0.000**	**CONT**	**0.000**

CLASSIFICATION:	UNCLASSIFIED	
EXHIBIT R-4, SCHEDULE PROFILE		DATE February 2008
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 5**	PROGRAM ELEMENT NUMBER AND NAME **0604777N/NAVIGATION/ID SYSTEM**	PROJECT NUMBER AND NAME **0253/Nav & Electro-Optical Supt**

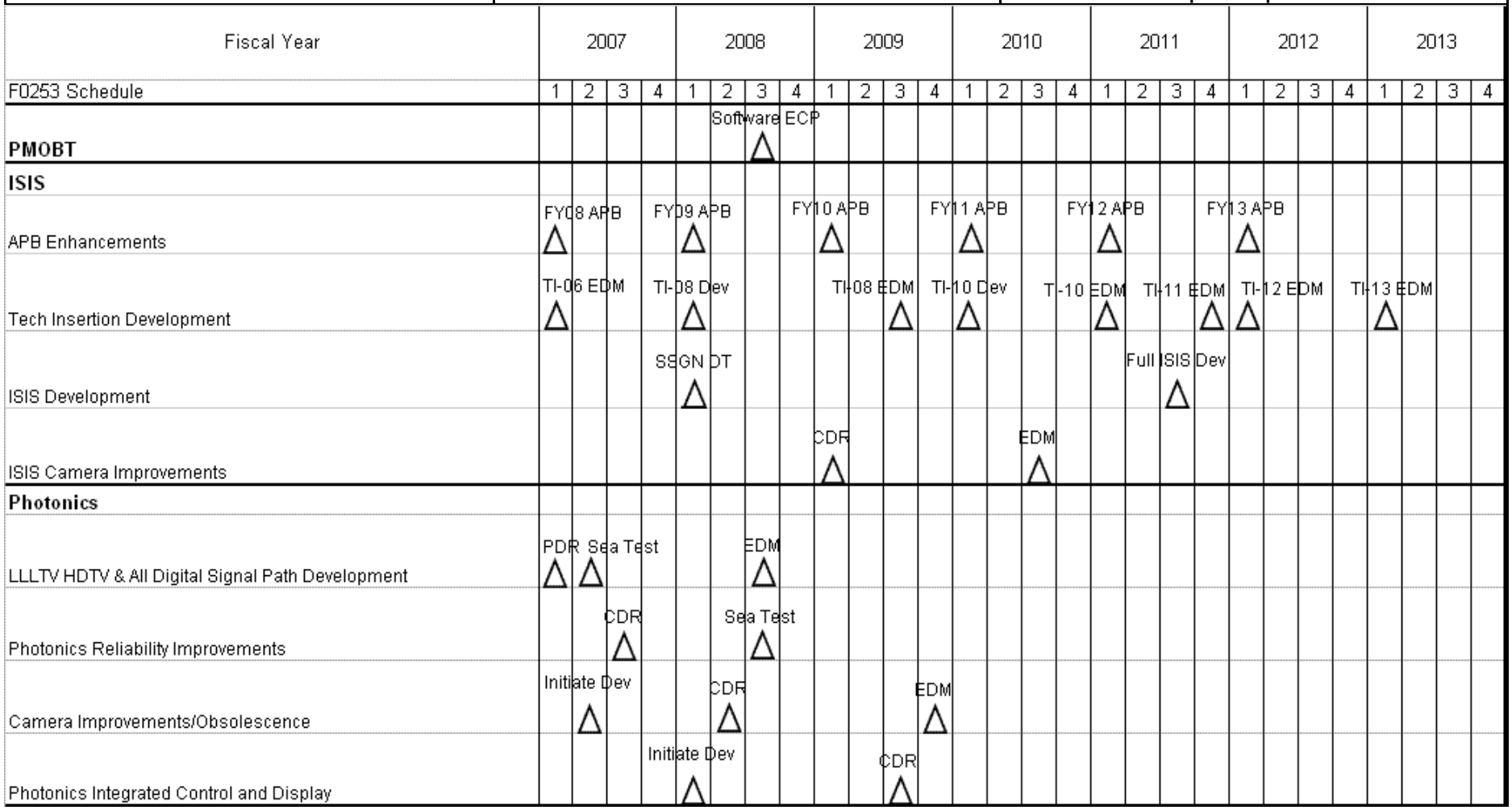


EXHIBIT R-4
SCHEDULE PROFILE

CLASSIFICATION:	UNCLASSIFIED						
EXHIBIT R-4a, SCHEDULE DETAIL						DATE February 2008	
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 5**	PROGRAM ELEMENT NUMBER AND NAME **0604777N/NAVIGATION/ID SYSTEM**			PROJECT NUMBER AND NAME **0253/Nav & Electro-Optical Supt**			
Schedule Profile	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
PMOBT							
PMOBT SPORT Software ECP		3Q					
ISIS/APB							
Initiate FY08 APB	1Q						
Test TI-06 EDM	1Q						
Initiate FY09 APB		1Q					
Initiate TI-08 Development		1Q					
ISIS SSGN DT		1Q					
Initiate FY10 APB			1Q				
Test TI-08 EDM			3Q				
ISIS Camera Improvements CDR			1Q				
Initiate FY11 APB				1Q			
Initiate TI-10 Development				1Q			
ISIS Camera Improvements EDM				3Q			
Initiate FY12 APB					1Q		
Test TI-10 EDM					1Q		
Test TI-11 EDM					4Q		
Full ISIS Development					3Q		
Initiate FY13 APB						1Q	
Test TI-12 EDM						1Q	
Test TI-13 EDM							1Q
Photonics							
Photonics LLLTV, HDTV, All Digital Signal Path PDR	1Q						
Photonics LLLTV, HDTV, All Digital Signal Path Sea Test	2Q						
Photonics Reliability Improvements CDR	3Q						
Initiate Photonics Camera Development	2Q						
Photonics LLLTV, HDTV, All Digital Signal Path EDM		3Q					
Photonics Realibility Improvements Sea Test		3Q					
Photonics Camera Development Improvement CDR		2Q					
Initiate Photonics Integrated Control and Display Development		1Q					
Photonics Camera Development EDM			4Q				
Photonics Integrated Control and Display CDR			3Q				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: **February 2008**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/ BA-5**	PROGRAM ELEMENT NUMBER AND NAME 0604777N NAVIGATION / ID SYSTEMS			PROJECT NUMBER AND NAME 0676 IMPROV IDENTIFICATION DEV			
COST ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
0676 IMPROV IDENTIFICATION	**3.034**	**3.315**	**2.889**	**2.926**	**2.715**	**2.636**	**2.738**
RDT&E Articles Qty							

(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. 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 ID Development project unit (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.

Exhibit R-2a, RDTEN Budget Item Justification

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2008**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/ BA-5	0604777N NAVIGATION / ID SYSTEMS	0676 IMPROV IDENTIFICATION DEV

(U) B. Accomplishments/Planned Program

Mark XIIA Mode 5 Improvements for AN/UPX-29	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.315	0.918	0.465
RDT&E Articles Quantity			

Engineering and integration development of MARK XIIA Improvements to the AN/UPX-29 (V). Correct deficiencies from Developmental Test B1 and Operational Test B1. (DTB1 - OTB1). Develop AN/UPX-29 interface capability.

AN/UPX-29 (V) Software Development	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.099	1.213	0.302
RDT&E Articles Quantity			

Funds Development of MARK XIIA Improvement to the AN/UPX-29 (V) system software for interface with AEGIS weapon system and core Integrated Logistics Support (ILS) documents; formalize hardware/software configuration; update technical data. Develop ILS documentation in support of DT-C1/OT-C1 and software for AN/UPX-29 (V) interface. Correct DT-C1/OT-C1 software deficiencies and baseline software and documentation.

Mark XIIA Mode 5 Development and Operational	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.620	0.934	1.022
RDT&E Articles Quantity			

Provide support for MARK XIIA Mode 5 DT/OA and provide test asset for Mark XIIA Mode 5 DT/OT B1 and AEGIS Combat system development site.
Provide support for MARK XIIA Improvements to the AN/UPX-29(V) DT-B1/OT-B1. Provide support for AEGIS Combat System operational demonstration.
Provide Support for AEGIS Combat System certification.

AN/UPX-29 (V) - OE-120 Antenna Replacement	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost		0.250	1.100
RDT&E Articles Quantity			

Engineering and integration development of the new OE-120 antenna replacement. Develop design studies and test procedures, draft specifications, and perform system integration efforts.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2008**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-5	0604777N NAVIGATION / ID SYSTEMS	0676 IMPROV IDENTIFICATION DEV

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
285100: Identification Systems - OPN	27.066	26.675	34.560	39.407	26.811	35.192	35.902	Continuing	Continuing

D. 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.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)				DATE: February 2008								
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-5**		PROGRAM ELEMENT 0604777N NAVIGATION / ID SYSTEMS						0676 IMPROV IDENTIFICATION DEV				
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WX	NAWCAD, St Inigoes, MD	1.333	0.200	11/06	0.308	11/07	0.605	11/08	Continuing	Continuing	
Ship Integration	WX	NAWCAD, St.St Inigoes, MD	0.810	0.434	11/06	0.430	11/07	0.445	11/08	Continuing	Continuing	
Systems Engineering	WX	NAWCAD, St Inigoes, MD	2.648	0.495	11/06	0.693	11/07	0.420	11/08	Continuing	Continuing	
Subtotal Product Development			4.791	1.129		1.431		1.470		Continuing	Continuing	
Remarks:												
Configuration Management	WX	NAWCAD, St. St Inigoes, MD	0.169							Continuing	Continuing	
ILS	WX	NAWCAD, St Inigoes, MD	1.284	0.360	11/06	0.223	11/07	0.251	11/08	Continuing	Continuing	
Software Development	WX	Various	1.980	0.378	11/06	0.400	11/07	0.200	11/08	Continuing	Continuing	
Technical Data	WX	NAWCAD, St Inigoes, MD	0.388			0.300	11/07	0.300	11/08	Continuing	Continuing	
Training	WX	NAWCAD, St Inigoes, MD	0.100			0.100	11/07	0.073	11/08	Continuing	Continuing	
Subtotal Support			3.921	0.738		1.023		0.824		Continuing	Continuing	
Remarks:												
Developmental Test & Evaluation	WX	Various	0.250			0.150	11/07	0.100	11/08	Continuing	Continuing	
Operational Test & Evaluation	WX	NAWCAD, St Inigoes, MD	0.568	0.360	11/06	0.300	11/07	0.100	11/08	Continuing	Continuing	
Test Assets	WX	NAWCAD, St. St Inigoes, MD	0.250	0.260	11/06	0.121	11/07	0.100	11/08	Continuing	Continuing	
Subtotal T&E			1.068	0.620		0.571		0.300		Continuing	Continuing	
MANAGEMENT	C-CPFF	AMERICAN ELECTRONICS INC, CALIFORNIA, MD		0.547	12/06	0.290	12/07	0.295	12/08	Continuing	Continuing	
Subtotal Management				0.547		0.290		0.295				
Remarks:												
Total Cost			9.780	3.034		3.315		2.889		Continuing	Continuing	
Remarks:												

Exhibit R-3, Project Cost Analysis

CLASSIFICATION:

EXHIBIT R-4, Schedule Profile | DATE: **February 2008**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N / BA-5**

PROGRAM ELEMENT NUMBER AND NAME: 0604777N, NAVIGATION/ID SYSTEM

PROJECT NUMBER AND NAME: 0676 IMPROV ID DEVELOPMENT

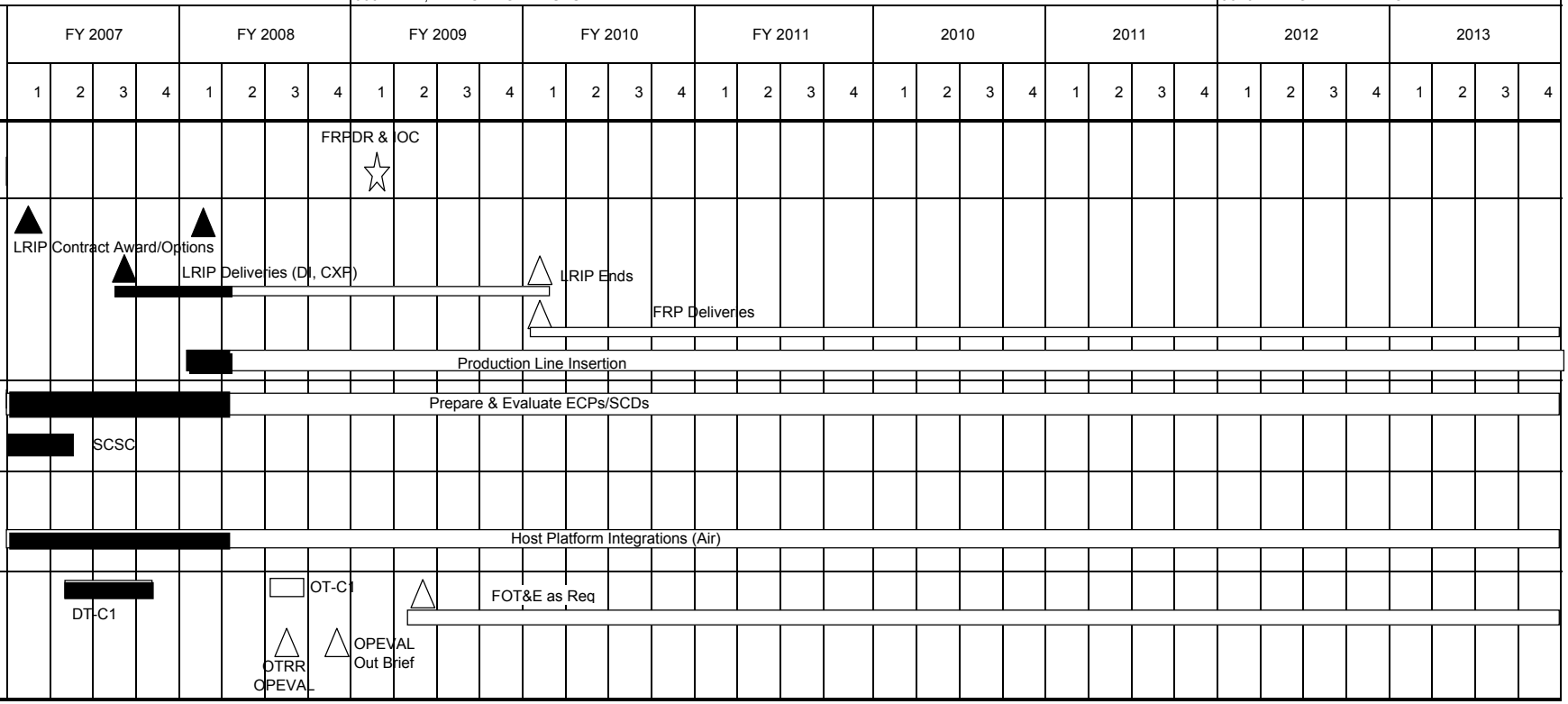


Exhibit R-4, Schedule Profile

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2008**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-5**	PROGRAM ELEMENT 0604777N, NAVIGATION/ID SYSTEM			PROJECT NUMBER AND NAME 0676 COMBAT ID SYSTEMS			
Schedule Profile	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Full Rate Production Decision Review (FRPDR) & IOC			1Q				
Low-Rate Initial Production Contract Award/Options	1Q	1Q					
Low-Rate Initial Production Deliveries (DI, CXP)	3Q-4Q	1Q-4Q	1Q-4Q	1Q			
FRP Deliveries				1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Prepare & Evaluate ECPs/SCDs	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Surface Combat Systems Center (SCSC)	1Q-2Q						
Production Line Insertion		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Host Platform Integrations (Air)	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Technical Evaluation (DT-C1)	2Q-4Q						
Operational Evaluation (OT-C1)		3Q					
Operational Test Readiness Review (OTRR) OPEVAL		3Q					
OPEVAL Out Brief		4Q					
Follow-on Test and Evaluation			2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

Exhibit R-4a, Schedule Detail

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2008**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-5**	PROGRAM ELEMENT NUMBER AND NAME 0604777N NAVIGATION/ID SYSTEMS	PROJECT NUMBER AND NAME 0921 NAVSTAR GPS EQUIPMENT	

COST ($ in Millions)		FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost		**19.592**	**18.813**	**28.589**	**22.044**	**19.250**	**25.096**	**25.564**
RDT&E Articles Qty								

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

The mission of the GPS program efforts is to provide assured and protected navigation solutions to the war fighters through supported, affordable, and integrated systems. RDT&E funds are used to perform all the non-recurring Global Positioning System (GPS) Surface Ship, Submarine and Aircraft Integration efforts. GPS continues to be integrated in all DoD platforms in accordance with Public Law 103-160, its amendment 105-261 (National Defense Authorization Acts for FYs 94 and 99 respectively) which make development of enhanced GPS an "urgent national security priority", and CJCS Instruction 6130.01(Ser). This direction is in keeping with the National Security/Presidential Directive (NSPD)-39 of 15 December 2004 and is current solutions are well-supported by numerous studies and analyses that include Defense Science Board Task Force reports (October 2005), the DoD's GPS II System Architecture/Requirements Definition (SA/RD) of January 2003, and various DoD and Navy requirements documents. The Navigation Warfare (NAVWAR) effort initiated in FY99 and planned GPS Modernization, an extension of the NAVWAR effort, are designed to continue the aircraft and shipboard integration efforts outlined by public law and Joint instruction, respond to the well-documented emerging GPS electronic jamming and interference threats by incorporating GPS protection measures, and leverage the DoD's and Navy's growing investment in GPS.

The GPS is a space-based positioning, navigation and timing (PNT) system that provides authorized users with secure, worldwide, all-weather, three-dimensional position, velocity and precise time data. The primary tasks to be accomplished for each Naval aircraft configuration include GPS integration design studies, acquisition of lab test and design assets, timing and frequency synchronization, development of software designs or platform mission computer upgrades, 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 those associated with the development of new hardware and software systems for over 3300 Naval Aircraft to meet GPS flight In controlled airspace (FICA), common navigation air traffic management (ATM), and precision approach and landing system (PALS) requirements.

The Surface Ship and Submarine integration efforts include two vitally important navigation integration initiatives: Navigation Sensor System Interface (NAVSSI) and the AN/WRN-6 replacement. 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 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. NAVSSI is an evolutionary acquisition development.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: **February 2008**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-5**	PROJECT NUMBER AND NAME 0921 NAVSTAR GPS EQUIPMENT

The Naval Research Advisory Committee (NRAC) GPS Vulnerability Study Panel 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, the Navy Enhanced GPS User Equipment ORD was drafted 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&E leading to initial procurements of GPS anti-jam (AJ) antennas beginning in 2001 for aircraft and 2002 for ships. RDT&E continues to support platform integration requirements, Developmental Test/Operational Test (DT/OT), as well as the GPS Joint Program Office's (JPO) development of an Advanced Digital Antenna Production (ADAP) program, the Navy's development of a smaller Anti-Jam (AJ) antenna and a conformal low-observable AJ antenna for aircraft with unique requirements, new technology AJ solutions for submarines (Frequency Excision Filter (FEF)), and the integration of AJ protection into handheld receivers. Two similar but separate ACAT III programs (Air and Sea NAVWAR) have been established and have become the basis for the Navy's Naval Air and Sea Navigation Warfare (NAVWAR) program. The NAVWAR Sea Program is executed in 3 increments. The GPS Antenna System (GAS01) is integrated on surface platforms in Increment 1. Increment 2 replaces GAS-1 with ADAP and continues surface ship integrations. Increment 3 addresses anti-jam (AJ) capabilities for submarines

The second phase of the Navy's overall GPS User Equipment upgrade is Modernization of all GPS systems on Air and Sea platforms. This will require RDT&E to support the replacement of existing legacy GPS receivers with enhanced capability receivers and antennas based upon and coordinated with the GPS Joint Program Office Modernized User Equipment (JPO MUE) program. These new receivers and antennas will incorporate GPS Joint Program Office (JPO) and Navy directed and developed technology enhancements to support new signals in space, enhanced receiver security, aircraft operations within controlled airspace and future weapons, combat, and C4I systems requirements such as the development of a precision approach and landing system (PALS). In step with DoD guidance, central planning and programming efforts have been initiated to integrate GPS Modernization systems and architectures in all Naval aircraft.

The primary Global Positioning System (GPS) shipboard receivers fielded on the majority of U.S. Navy ships today include the AN/WRN-6 and the GPS VME Receiver Card (GVRC). These military GPS receivers provide precise Position, Navigation, and Time (PNT) data required for many combat weapons and navigation systems, as well as providing the time synchronization critical to the network environments. The failure of the GPS receiver ultimately means the loss of GPS for the ship and those systems that depend upon it. However, as GPS devices have proliferated throughout the commercial community, it has become more readily available not only to civilians, but to adversaries as well. As a result, even the military GPS Precise Positioning System (PPS) is more vulnerable today to unintentional and intentional jamming. The new security architecture, known as Selective Availability Anti-Spoof Module (SAASM), addresses this vulnerability, and has been mandated for all military combat GPS receiver procurements beginning in FY07. Additionally, the GPS satellite constellation is being modernized to incorporate new GPS signals from space for both military and civilian users (e.g., M-code and L5). While SAASM-capable GPS receivers are available commercially today, they require modification to support the various combat system requirements and interfaces required by the Navy shipboard systems, and will require modification in the future to implement the new GPS modernized signals (expected to become available in FY11). The WRN-X system will be engineered for immediate implementation of SAASM, and will be an open architecture allowing for modification to implement modernized GPS signals when they become available; thus making it backwards and forwards compatible with all GPS systems (e.g., Y code, M code, (C/A) code (YMCA)).

SAASM is also required in GPS receivers being installed in aircraft. Similar to shipboard use, airborne SAASM GPS receivers also require integration and test.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2008**
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

(U) B. Accomplishments/Planned Program

Air NAVWAR		FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost		10.645	7.515	13.720
RDT&E Articles Quantity		0	0	0

(U) FY07 ACCOMPLISHMENTS: ($10.645) Air NAVWAR: Started integration of antenna mounting on the F/A-18 E/F/G. Started development of conformal array for F/A-18 E/F/G. Started integration study on E-2D and supported platform and system level vulnerability assessments for other potential forward fit platforms. Completed integration and started testing of ADAP on H-53. Completed NAVWAR AJ & SAASM integration and test on AV-8B . Monitored and impacted development and testing of small antenna system (SAS) and miniature controlled reception pattern (M-CRPA) AJ antenna. Continued participation in joint NAVWAR MOU initiatives with Canada, United Kingdom and Australia.

(U) FY08 PLANS: ($7.515) Air NAVWAR: Complete development of conformal array for F/A-18 E/F/G. Complete ADAP testing on H-53 (IOC). Complete integration efforts on E-2D. Continue integration/testing of antenna mounting on F/A-18 E/F/G. Continue monitoring potential SAS/M-CRPA solutions. Continue participation in joint NAVWAR MOU initiatives with Canada, United Kingdom and Australia.

(U) FY09 PLANS: ($13.720) Air NAVWAR: Start integration of NAVWAR conformal array electronics on F/A-18 E/F/G. Continue SAASM integration and testing on F/A 18 E/F/G. Continue monitoring of SAS (Small Antenna System)/M-CRPA (Miniaturized - Controlled Reception Pattern Antenna) development. Continue participation in joint NAVWAR MOU initiatives with Canada, United Kingdom and Australia.

Sea NAVWAR		FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost		4.447	4.274	4.964
RDT&E Articles Quantity		0	0	0

(U) FY07 ACCOMPLISHMENTS: ($4.447) Sea NAVWAR: Conducted modeling/simulation, integration, Developmental Test (DT) efforts for ADAP on DDG and LSD platforms. Continued participation in Joint NAVWAR MOU initiatives with Canada, United Kingdom and Australia.

(U) FY08 PLANS: ($4.274) Sea NAVWAR: Conduct modeling/simulation, integration, DT efforts for ADAP on CG 47 and CVN 68 platforms. Support Operational Test (OT) on DDG. Continue participation in Joint NAVWAR MOU initiatives with Canada, United Kingdom and Australia.

(U) FY09 PLANS: ($4.964) Sea NAVWAR: Conduct modeling/simulation, integration, DT efforts for ADAP on WPB and LPD 17 platforms. Continue participation in Joint NAVWAR MOU initiatives with Canada, United Kingdom and Australia.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2008**
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

(U) B. Accomplishments/Planned Program

GPS Modernization		FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost		1.500	2.148	4.641
RDT&E Articles Quantity		0	0	0

(U) FY07 ACCOMPLISHMENTS: ($1.500) GPS Modernization: Continued GPS Modernization support to the GPS JPO, Program Executive Office Command, Control, Communications, Computers, & Intelligence (PEO C4I), Space & Naval Warfare Systems Command (SPAWAR), Naval Air Systems Command (NAVAIR) and Naval Sea Systems Command (NAVSEA). Began Air and Sea platform specification developments for hardware/software upgrades to support the integration of new capabilities and signals from space.

(U) FY08 PLANS: ($2.148) GPS Modernization activities: Pre Milestone B market research, acquisition strategies and plans will be performed in preparation for Milestone B. Perform acquisition document development and planning for the various entities of the modernization program.

(U) FY09 PLANS: ($4.641) GPS Modernization: Continue the above activities completing pre-Milestone B efforts. Complete requirements development and develop Draft RFP and RFP for Milestone B Modernization. Conduct Milestone B preparations and review. Begin to develop adaptations of Modernized GPS receiver technology with Binary Offset Carrier (BOC) waveform technology for capability with Modernized GPS space and control segments.

WRN X		FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost		3.000	4.876	5.264
RDT&E Articles Quantity		0	0	0

(U) FY07: ACCOMPLISHMENTS: ($3,000) WRN X: Developed pre Milestone B acquisition documents. Released RFI. Conducted contracting planning conference. Completed WRN-X requirements documents. Developed Draft RFP in preparation for WRN-X System Development and Demonstration (SDD) contract.

(U) FY08 PLANS: ($4.876) WRN X Finalize mandatory acquisition documentation to obtain a Milestone B decision. Conduct appropriate milestone decision review. Finalize the WRN-X technical specifications. Finalize and issue the Draft RFP and RFP. Evaluate responses through a source selection team. Award the WRN-X SDD contract.

(U) FY09 PLANS: ($5.264) WRN X Initiate system development and demonstration tasking requirements. Begin preparations for a design readiness review. Finalize all documentation for system integration and system demonstration activities. Update the acquisition strategy and other documents as needed to support Milestone C activities. Intensify efforts to finalize the Performance Based Logistics Strategy and other documents as required. Prepare pre-milestone C acquisition documentation requirements.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2008**
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

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2007	FY 2008	FY 2009	FY 2010	FY2011	FY2012	FY2013
(U) OPN Line #2657	10.804	7.122	10.893	10.956	15.151	16.718	17.246
(U) APN - Common Avionics Line # 0577	21.737	9.984	9.074	7.862	8.844	9.022	9.229

(U) D. ACQUISITION STRATEGY:

NAVWAR/GPS Modernization: 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 Wing in their development of an Advanced Digital Antenna Program (ADAP) Line Replaceable Unit (LRU) and identify potential Navy candidate platforms. Participate in GPS JPO procurements wherever practicable for GPS Modernization Enhancements. Develop the Navy's specifications necessary to capture and implement future GPS enhancements. See attached Milestone chart.

WRN-X: Investigate Navy contracting options for a WRN-6/GVRC Replacement (WRN-X Modernized Shipboard GPS system). Investigate commercial modernized GPS engines certified through the GPS JPO for application in the WRN-X system. Support the development of the Navy's Modernized GPS User Equipment efforts as they apply specifically to NAVSSI and non-NAVSSI shipboard applications. Work in concert with the WRN-6 sustainment efforts to ensure a coupled solution of obsolescence upgrades (occurring under WRN-6 Sustainment) and modernization tasks (for WRN-X development).

(U) E. Major Performers:

SPAWAR Systems Center, San Diego CA	NAVWAR Engineering and Product Development	Award funding Oct of each year
Naval Air Warfare Center, Pax River, MD	NAVWAR System Engineering and Test	Award funding Oct of each year

(U) F. Metrics:

Quarterly program reviews, monthly financial reviews to evaluate cost, schedule, performance, award fee inputs.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2008**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N / BA-5**

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 07 Cost	FY 07 Award Date	FY08 Cost	FY08 Award Date	FY09 Cost	FY09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development	Various	Product Vendors	274.111	2.633	Various	2.832	Various	5.509	Various	Continuing	Continuing	
Product Development (SSC-SD)	WX	SSC-SD	67.059	0.850	10/06	0.850	10/07	0.850	10/08	Continuing	Continuing	
Product Dev (other in house)	WX	Various Field Activities	439.397									
Systems Engineering	Various	Various Govt/Contractor	8.210	2.640	Various	2.618	Various	2.923	Various	Continuing	Continuing	
Subtotal Product Development			788.777	6.123		6.300		9.282		Continuing	Continuing	

Remarks:

Development Support	Various	Various	12.710									
Software Development	Various	SSC-SD/Platform Primes	7.600	1.000	10/06	0.500	10/07	1.000	10/08	Continuing	Continuing	
Integrated Logistics Support	Various	SSC-SD/NAWC/Various Contractors	3.357	0.900	10/06	0.600	10/07	0.900	10/08	Continuing	Continuing	
Training Development	WX	SSC-SD/NAWC	2.325	0.600	10/06	0.600	10/07	0.600	10/08	Continuing	Continuing	
Technical Data	Various	Platform PMO's	1.900	0.600	10/06	0.600	10/07	0.600	10/08	Continuing	Continuing	
Subtotal Support			27.892	3.100		2.300		3.100		Continuing	Continuing	

Remarks:

Exhibit R-3 Cost Analysis

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2008**

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 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Test & Evaluation (NAWC PAX)	WX	NAWC PAX	17.929	3.000	10/06	2.500	10/07	2.500	10/08	Continuing	Continuing	
Test & Evaluation (DCS)	CPAF	DCS CORP PAX	2.926	0.450	10/06	0.450	10/07	0.450	10/08	Continuing	Continuing	
Test & Evaluation (SSC-SD)	WX	SSC-SD	4.031	0.900	10/06	0.900	10/07	1.144	10/08	Continuing	Continuing	
Test & Evaluation Platform Testing	Various	VARIOUS CONTRACTORS	13.297	3.040	Various	3.040	Various	6.266	Various	Continuing	Continuing	
Subtotal T&E			38.183	7.390		6.890		10.360		Continuing	Continuing	

Remarks:

Contractor Engineering Support	Various	DCS, SAIC, ARINC	8.037	0.967	10/06	1.153	10/07	1.800	10/08	Continuing	Continuing	
Government Engineering Support	WX	SSC, NAWC, WR	6.149	1.350	10/06	1.300	10/07	2.200	10/08	Continuing	Continuing	
Program Management Support	CPAF	DCS, Price Systems	13.521	0.662	10/06	0.870	10/07	1.847	10/08	Continuing	Continuing	
Subtotal Management			27.707	2.979		3.323		5.847		Continuing	Continuing	

Remarks:

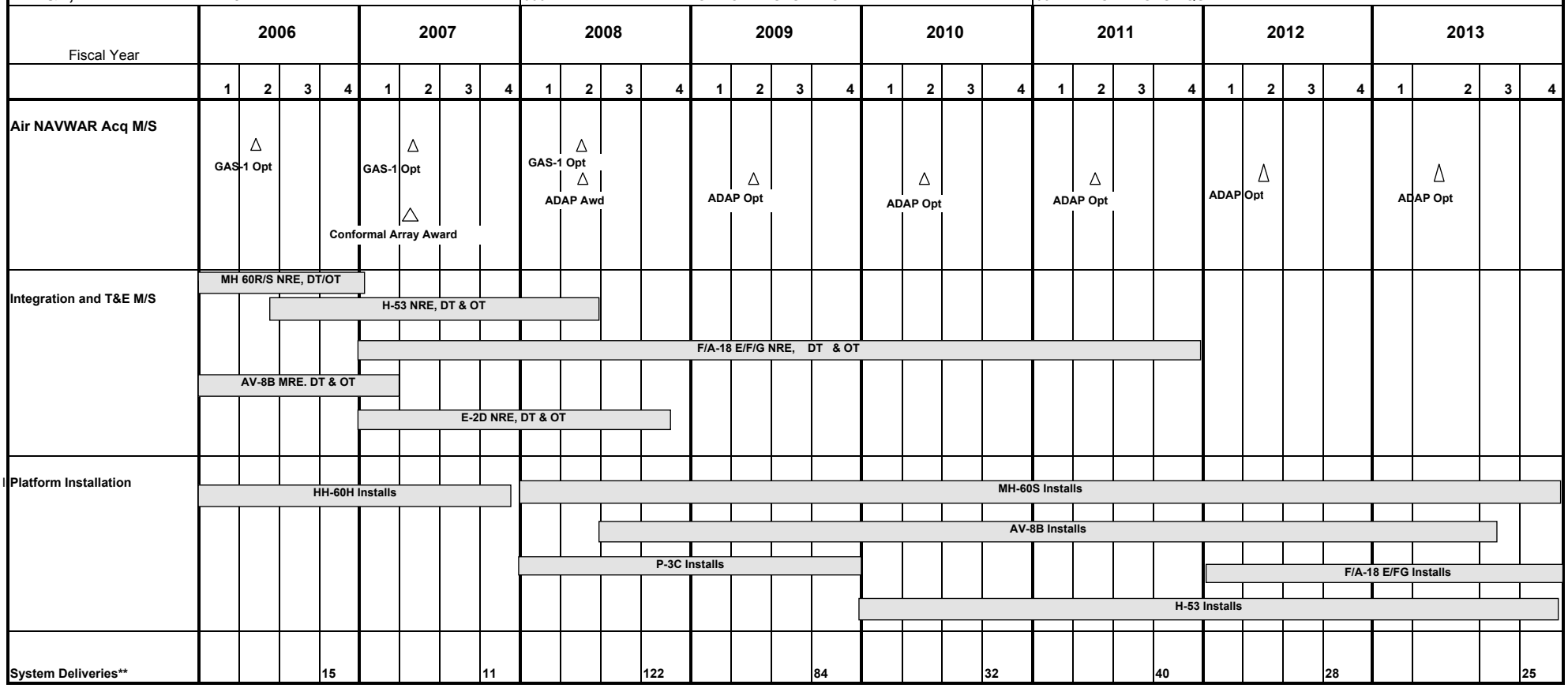
Total Cost			882.559	19.592		18.813		28.589		Continuing	Continuing	

Remarks:

CLASSIFICATION:

EXHIBIT R-4, Schedule Profile — DATE: **February 2008**

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



* ADAP (Advanced Digital Antenna Production), C-CRPA (Conformal Controlled Reception Pattern Antenna), GAS-1/1N (GPS Antenna System /Navy) are Anti-Jam (AJ) antenna solutions for designated platforms.

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

*** MDA direction of 3/30/06 directed streamlining Air NAVWAR program from three phases to one. Milestone C decision of Oct 2001 applies to all current phases. Anticipate NAVWAR Air Phase 2 to integrate Modernized (M-Code) GPS Receivers.

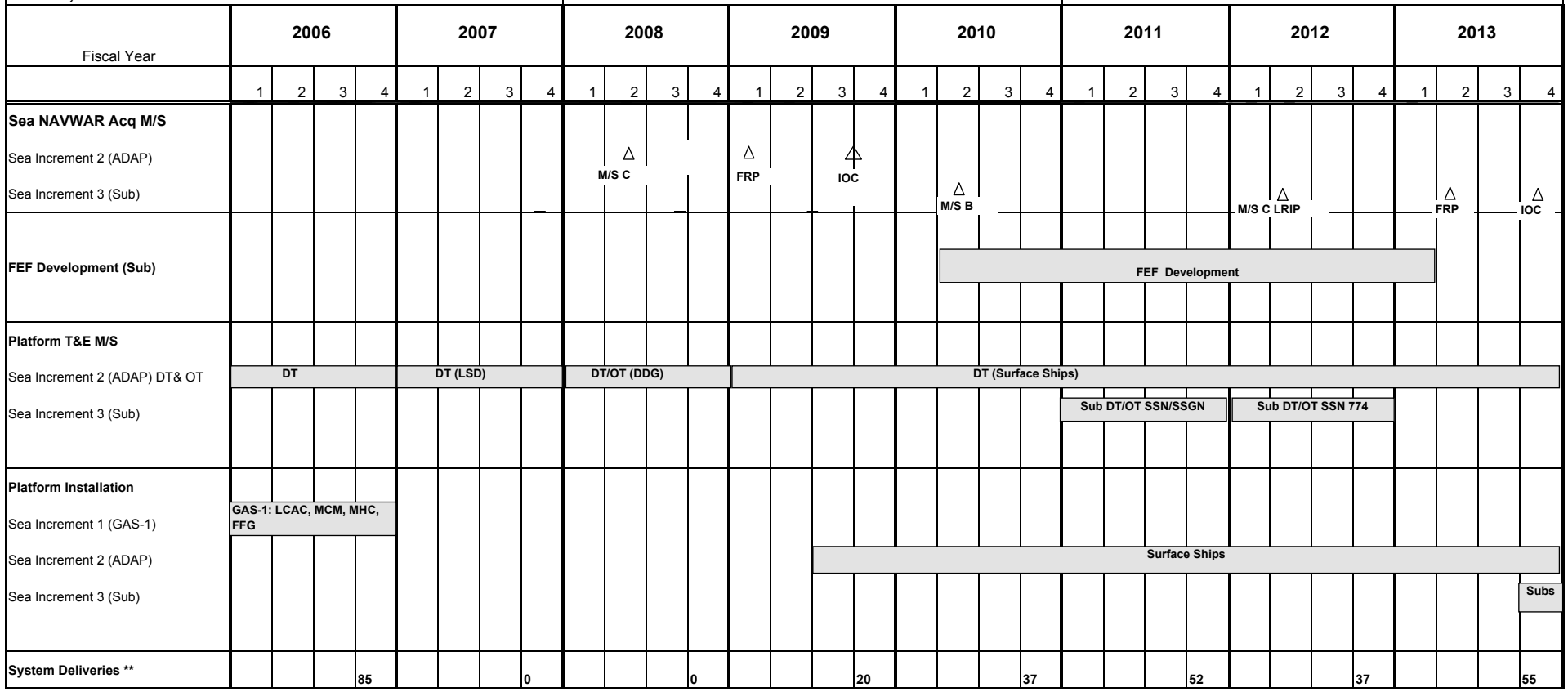
CLASSIFICATION:

EXHIBIT R-4, Schedule Profile — DATE: **February 2008**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N / BA-5**

PROGRAM ELEMENT NUMBER AND NAME: 0604777N NAVIGATION/ID SYSTEMS

PROJECT NUMBER AND NAME: 0921 NAVSTAR GPS EQUIPMENT



R-1 SHOPPING LIST - Item No. 131

* ADAP is the Advanced Digital Antenna Production program, the Navy's development of a smaller Anti-Jam (AJ) antenna.

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

*** NAVWAR Sea has been restructured to reflect program changes. Phase 1A has been redesignated as Increment 1. Phase 1B has been terminated and installations planned for this phase are deferred to ADAP (Increment 2). Submarine integrations have been redesignated as Increment 3.

CLASSIFICATION:

EXHIBIT R-4, Schedule Profile		DATE: **February 2008**
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

WRN-X Development Schedule

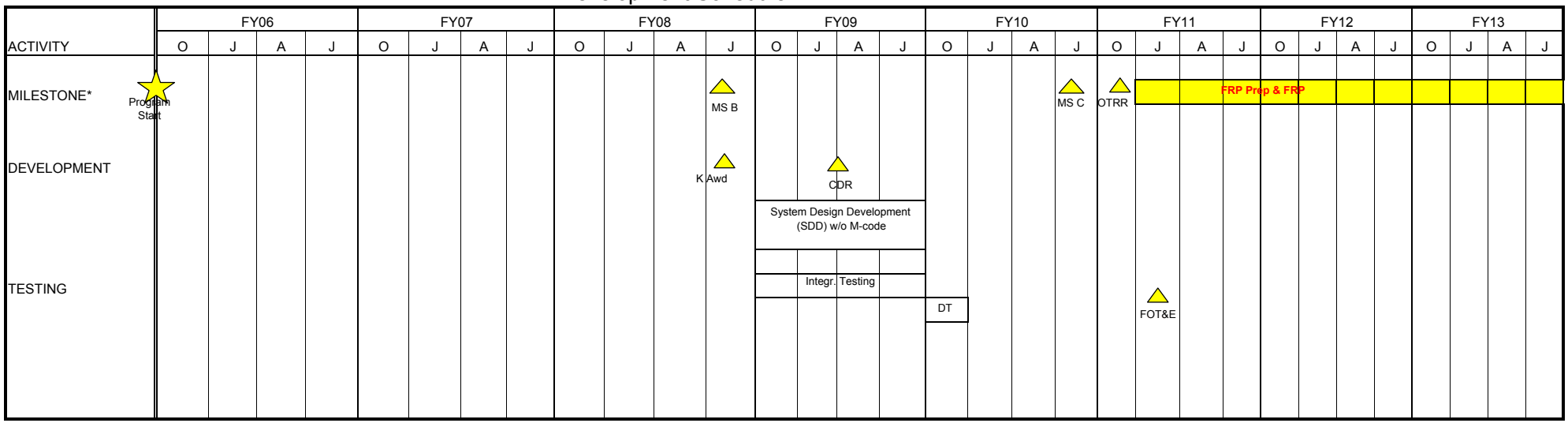


Exhibit R-4, Schedule Profile

CLASSIFICATION:

EXHIBIT R-4, Schedule Profile			DATE: **February 2008**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAM	PROJECT NUMBER AND NAME	
RDT&E, N / BA-5	0604777N NAVIGATION/ID SYSTEMS	0921 NAVSTAR GPS EQUIPMENT	

GPS Modernization Development Schedule

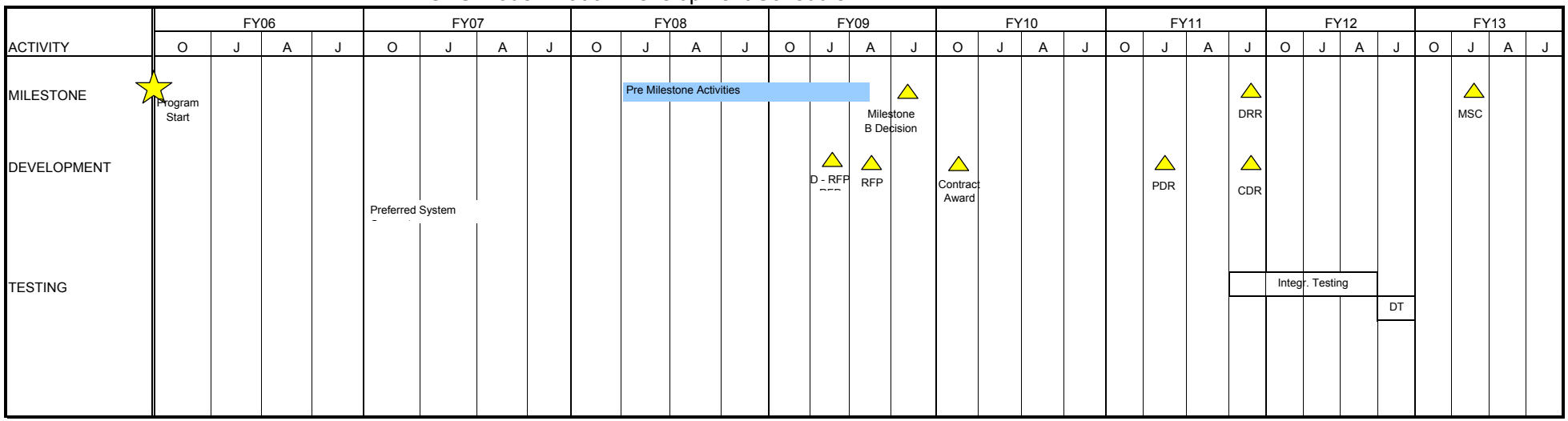


Exhibit R-4, Schedule Profile

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2008**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA 5**	PROGRAM ELEMENT 0604777N NAVIGATION/ID SYSTEMS				PROJECT NUMBER AND NAME 0921 NAVSTAR GPS EQUIPMENT			
NAVWAR Air Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Conformal Array Development		2-4Q	1-4Q					
MH-60 R/S DT/OT	1-4Q							
H-53 DT/OT	3Q-4Q	1-4Q	1-2Q					
AV-8B DT/OT	1-4Q	1Q						
F/A 18 E/F/G DT/OT		1-4Q	1-4Q	1-4Q	1-4Q	1-4Q		
E-2D DT/OT		1-4Q	1-4Q					
NAVWAR Sea Profile								
Increment 3 (Phase 2) M/S B (FEF)					2Q			
Increment 3 (Phase 2) DT/OT						1-4Q	1-4Q	
Increment 3 (Phase 2) M/S C LRIP							2Q	
Increment 3 (Phase 2) FRP								2Q
Increment 3 (Phase 2) IOC								4Q
Increment 2 (ADAP) DT/OT	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Increment 2 (ADAP) M/S C LRIP			2Q					
Increment 2 (ADAP) FRP				1Q				
Increment 2 (ADAP) IOC				3Q				
WRN X								
Milestone B*			4Q					
Milestone C					4Q			
MODERNIZATION								
Milestone B				4Q				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: **February 2008**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/ BA-5**	PROGRAM ELEMENT NUMBER AND NAME 0604777N NAVIGATION / ID SYSTEMS			PROJECT NUMBER AND NAME 1253 COMBAT IDENTIFICATION SYSTEMS			
COST ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
1253 Combat Identification Systems	**13.637**	**11.590**	**9.587**	**15.332**	**14.986**	**15.248**	**15.536**
RDT&E Articles Qty	**7**	**5**	**5**	**18**			

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

In 1995, the Under Secretary of Defense (Acquisition and Technology)/Vice Chairman, Joint Chiefs of Staff {USD(A7T)/VCJCS} tasked the Services to develop a high-level plan and long-range strategy for migrating to new 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 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 Communications 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.

In August 2003 the Navy MK XIIA Mode 5 program was approved for entry in Systems Development and Demonstration (SDD) phase with approval to develop prototypes.

The FY 2008 and out RDT&E articles include Mode 5 cryptographic modules and associated hardware and software changes to AN/APX-119 and XS-950SIs. Remaining RDT&E units are production representative Low Rate Initial Procurement units to support hardware, software, and integration efforts to host systems on remaining Aircraft T/M/S, including but not limited to AH-1Z/UH-1Y, E-2D, VH-71A, and MV-22.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2008**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/ BA-5	0604777N NAVIGATION / ID SYSTEMS	1253 COMBAT IDENTIFICATION SYSTEMS

(U) B. Accomplishments/Planned Program

Mode 5 prototype hardware, cryptographic module	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	4.998	4.372	3.685
RDT&E Articles Quantity	7	5	5

Perform development of kits for installation into existing fleet assets including AN/UPX-37/41C Interrogator, AN/APX-118/123 Common Digital Transponder, AN/APX-111 Interrogator/Transponder, and RT-1832/1918 APX Transponder. Repair and correct deficiencies identified during testing in support of Milestone C decision and procure 18 Low Rate Initial Procurement (LRIP) units in FY 06 to support OPEVAL. LRIP units include Mode 5 cryptographic modules install kits for AN/APX-118/123, AN/UPX-37/41C, R/T-1832/1918 and AN/UPX-24 with associated hardware and software change to the host boxes.

Mode 5 systems engineering and ILS	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	5.082	3.798	3.642
RDT&E Articles Quantity			

Perform systems engineering and analysis in support of Mode 5 hardware/software development and platform integration efforts on AN/UPX-37/41C Interrogator, AN/APX-118/123 Common Digital Transponder, AN/APX-111 Interrogator/Transponder, RT-1832/1918 APX Transponders, Cryptographic Module, Mode 5 Engineering Test Equipment, and Mode 5 support equipment. The Cryptographic Module includes, but is not limited to, activities such as Integrated Logistics Support, Design and Engineering Studies and Analysis, and Configuration Management performed as the Lea Service.

Mode 5 Upgrade DT & OT	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	3.557	3.420	2.260
RDT&E Articles Quantity			

Perform Mode 5 developmental and operational test phases for AN/UPX-37/41C Interrogator, AN/APX-118/123 Common Transponder, and RT-1832/1918 APX Transponder.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2008
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RESEARCH DEVELOPMENT TEST & EVALUATION, NAV	0604777N NAVIGATION / ID SYSTEMS	1253 COMBAT IDENTIFICATION SYSTEMS

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
285100: Identification Systems - OPN	27.066	26.675	34.560	39.407	26.811	35.192	35.902	Continuing	Continuing
058200: Identification Systems - APN-5	11.103	10.213	12.032	24.348	20.529	31.649	26.114	Continuing	Continuing

D. 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.

Exhibit R-3 Cost Analysis (page 1)									DATE: February 2008			
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-5		PROGRAM ELEMENT 0604777N, NAVIGATION/ID SYSTEM				PROJECT NUMBER AND NAME 1253, COMBAT IDENTIFICATION SYSTEMS						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost to Complete	Total Cost	Target Value of Contract
PRODUCT DEVELOPMENT												
Primary Hardware Development	FFP	LOCKHEED MARTIN CORP, OWEGO, NY		1.947	03/07	1.100	12/07	1.105	12/08	.427	4.579	4.579
Primary Hardware Development	WX	NAWCWD, CHINA LAKE CA		2.551	12/06	1.072	12/07	.180	12/08	Continuing	Continuing	
Primary Hardware Development	TBD	NORTHROP GRUMMAN , BETHPAGE, NY				2.200	12/07	2.400	12/08	.800	5.400	5.400
Primary Hardware Development	VAR	BAE, GREENLAWN NY	25.783	.500	10/06						26.283	26.283
Systems Engineering	WX	NAWCAD, PATUXENT RIVER MD		2.104	10/06	1.996	10/07	1.929	10/08	Continuing	Continuing	
Systems Engineering	WX	NAWCAD, ST INDIGOES MD	5.428	2.500	10/06	1.500	10/07	1.351	10/08	Continuing	Continuing	
SUBTOTAL PRODUCT DEVELOPMENT			31.211	9.602		7.868		6.965		Continuing	Continuing	
SUPPORT												
ILS	VAR	VAR	.317	.478	11/06	.302	11/07	.362	11/08	Continuing	Continuing	
Software Development	VAR	VAR	2.708								2.708	
Technical Data	VAR	VAR	.053								.053	
SUBTOTAL SUPPORT			3.078	.478		.302		.362		Continuing	Continuing	
TEST & EVALUATION												
OT	WX	NAWCAD, PATUXENT RIVER MD	.935			.936	11/07	.186	11/08	Continuing	Continuing	
DT	WX	NAWCAD, PATUXENT RIVER MD	6.721	2.892	11/06	2.272	11/07	1.928	11/08	Continuing	Continuing	
Test Assets	VAR	VAR	.761	.665	11/06	.212	11/07	.146	11/08	Continuing	Continuing	
SUBTOTAL TEST & EVALUATION			8.417	3.557		3.420		2.260		Continuing	Continuing	
MANAGEMENT												
Contractor Engineering Support	VAR	VAR	.450								.450	
Government Engineering Support	VAR	VAR	1.811								1.811	
Program Management Support	VAR	VAR	1.961								1.961	
ETS (Non-FFRDC)	WX	NAWCAD, PATUXENT RIVER MD	.174								.174	
SUBTOTAL MANAGEMENT			4.396								4.396	
Total Cost			47.102	13.637		11.590		9.587		Continuing	Continuing	

Exhibit R-3, Project Cost Analysis

CLASSIFICATION:

EXHIBIT R4, Schedule Profile			DATE: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604777N, NAVIGATION/ID SYSTEM	PROJECT NUMBER AND NAME 1253, COMBAT IDENTIFICATION SYSTEMS	

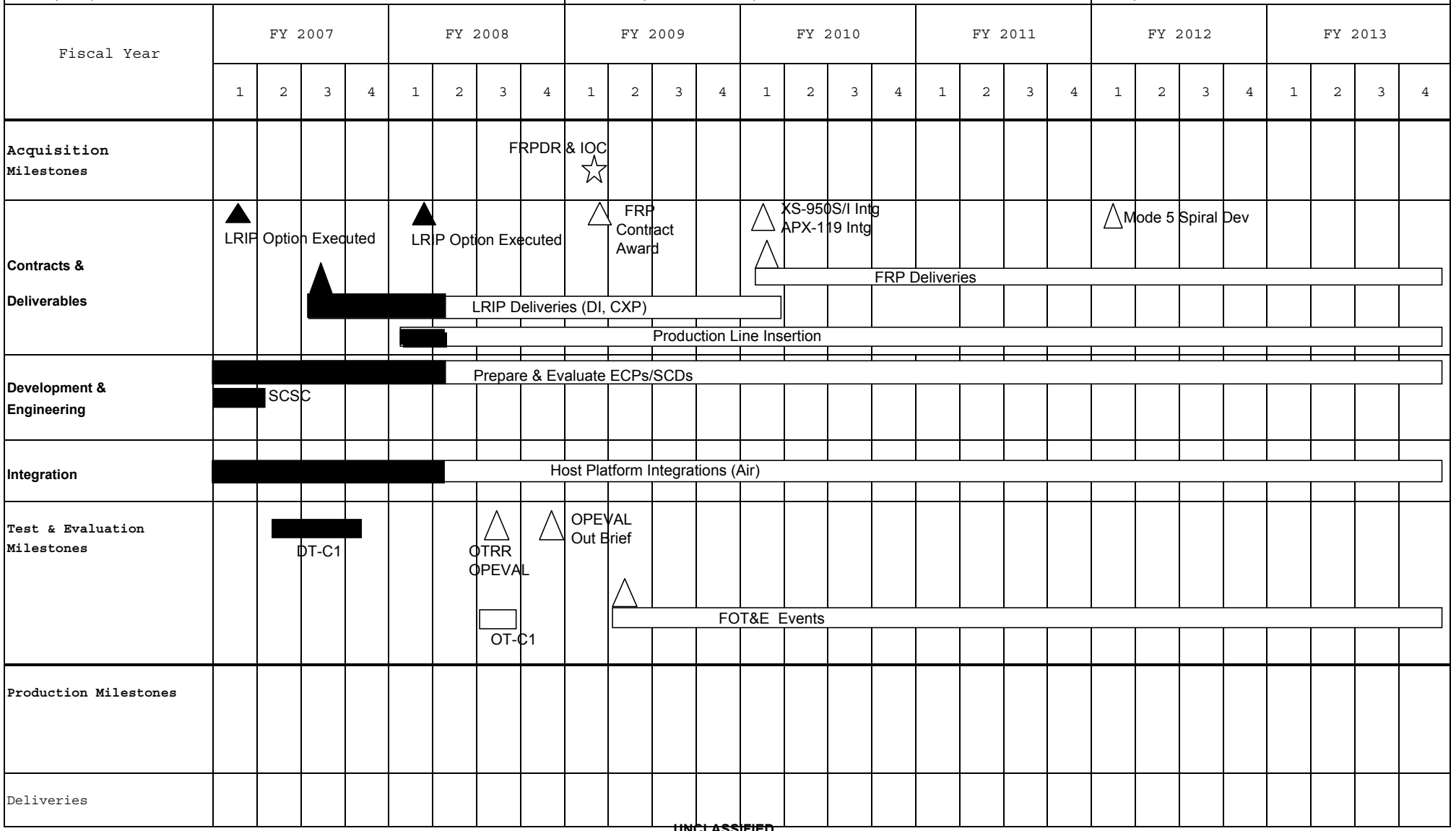


Exhibit R-4a, Schedule Detail						DATE: February 2008	
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-5	PROGRAM ELEMENT 0604777N, NAVIGATION/ID SYSTEM				PROJECT NUMBER AND NAME 1253, COMBAT IDENTIFICATION SYSTEMS		
Schedule Profile	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Full Rate Production Decision Review (FRPDR)			1Q				
Low-Rate Initial Production Contract Award and Options	1Q	1Q					
Low-Rate Initial Production Deliveries (CXP, DI)	3Q-4Q	1Q-4Q	1Q-4Q	1Q			
FRP Deliveries				1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Prepare & Evaluate ECPs/SCDs	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Surface Combat Systems Center (SCSC)	1Q-2Q						
Production Line Insertion		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Host Platform Integrations (Air)	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Technical Evaluation (DT-C1)	2Q-4Q						
Operational Evaluation (OT-C1)		3Q					
Operational Test Readiness Review (OTRR)		3Q					
OPEVAL Out Brief		4Q					
XS-950S/I and APX-119 Integration				1Q			
Mode 5 Spiral Development						1Q	
Follow-on Test and Evaluation			2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

Exhibit R-4a, Schedule Detail

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2008		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604777N, NAVIGATION/ID SYSTEM			PROJECT NUMBER AND NAME 9999, CONGRESSIONAL ADDS					
COST ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013		
Project Cost	.975								
RDT&E Articles Qty Not Applicable.									

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This project extends and improves the air and sea surveillance and data sharing capabilities within the Chesapeake Bay and National Capital Region through upgrades to the SureTrak Integrated Track Management System.

B. ACCOMPLISHMENTS / PLANNED PROGRAM:

9857C, SureTrak	FY 2007	FY 2008	FY 2009	
Accomplishments / Effort / Sub-total Cost	.975			
RDT&E Articles Qty				

This project will upgrade the SureTrak data management software and communication infrastructure and add additional surveillance sensors in order to demonstrate enhanced range safety and force protection information.

Exhibit R-2a, RDTEN Budget Item Justification