Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*				R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	60.516	66.636	50.178	-	50.178	48.151	45.566	41.200	45.543	Continuing	Continuing
0253: *Nav & Electro-Optical Supt*	7.651	7.470	5.986	-	5.986	7.579	7.654	7.818	7.955	Continuing	Continuing
0676: *Improve ID Development*	2.692	2.662	1.842	-	1.842	2.337	2.399	2.419	2.438	Continuing	Continuing
0921: *NAVSTAR GPS Equipment*	20.849	20.021	20.038	-	20.038	21.167	21.388	21.662	21.920	Continuing	Continuing
1253: *Combat Ident System*	29.324	36.483	22.312	-	22.312	17.068	14.125	9.301	13.230	Continuing	Continuing

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(V), covers the Navy lead of a Mark XIIA Mode 5 upgrade to the existing Mark XII family of systems that is Joint and North Atlantic Treaty Organization (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. Navigation Sensor System Interface (NAVSSI) is a system that provides an integrated navigation message structure for network distribution to support combat, command and control, information and other mission critical capabilities. 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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	62.886	66.636	67.420	-	67.420
Current President's Budget	60.516	66.636	50.178	-	50.178
Total Adjustments	-2.370	-	-17.242	-	-17.242
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-0.915	-			
• SBIR/STTR Transfer	-1.076	-			
• Program Adjustments	-	-	-16.657	-	-16.657
• Section 219 Reprogramming	-0.363	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.585	-	-0.585
• Congressional General Reductions Adjustments	-0.016	-	-	-	-

Change Summary Explanation

Technical: Not applicable.

Schedule:

Realigned Funding due to increased requirement to Mode 5 Improvement in support of Operational Assessment deficiencies. This drove schedule changes for both projects 0676 and 1253.

Project 0676: Changes in the OE-120/UPX Antenna schedule reflect the revised Mode 5 Acquisition Program Baseline. Changes to the the OE-120 Contract Schedule and Review Milestones reflects reprioritization of Operation Assessment correction of deficiencies. Removal of the Naval Tactical Data System elimination efforts reflects reprioritization of Operation Assessment correction of deficiencies. The Mode 5 Joint IOC scheduled for 4QFY14 will not include F/A-18E/F, EA-18G, and KC-130J per JROCM 047-07.

Project 1253: The Mode 5 Joint IOC scheduled for 4QFY14 will not include F/A-18E/F, EA-18G, and KC-130J per JROCM 047-07.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 0253: *Nav & Electro-Optical Supt*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0253: *Nav & Electro-Optical Supt*	7.651	7.470	5.986	-	5.986	7.579	7.654	7.818	7.955	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

The Navigation and Electro-Optical (E-O) 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 SSGN and VIRGINIA Class submarines. 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 Infra-Red (IR) imaging capability. The non-hull penetrating design provides freedom in ship design and space savings for SSGN and VIRGINIA Class and future submarines designs. The system was designed to satisfy Operational Requirement #365-87-94. Specific efforts include: (1) Low Light Level TV development, digital sensor development and integration, and displays, and (2) Imaging System Test Efforts.

The Department of the Navy established the Integrated Submarine Imaging System (ISIS) to rapidly field the Type 18 Periscope Patriot Rangefinder, Type 8 Mod 4 IR Periscope systems, and integrate existing periscope imagery systems into a single system for installation on board SSN 688 Class and SEAWOLF Class submarines. The ISIS baseline includes the Type 18 Periscope Patriot Rangefinder, Type 8 Mod 4 IR Periscope, and supports high intensity operations in the littorals 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) Development of hardware capabilities common to ISIS and Photonics via the Technology Insertion process. The AN/BVS-1 Photonics Mast Program (PMP) is dated 24 Sept 2001 and provides for the development and acquisition of a non-hull penetrating submarine electronic imaging system for VIRGINIA Class submarines. The Integrated Submarine Imaging System (ISIS) is dated 07 Jul 2003 and will provide mission critical, all weather, visual, and electronic search, digital image management, indication, warning, and platform architecture interface capabilities for SSN 688, SSN 21, SSN 774 and SSGN Class submarines.

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 situational 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.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Title: Upgrade/Resolve Obsolescent Photonics On-Board Team Trainer development.	0.139	0.131	-
Articles:	0	0	
FY 2010 Accomplishments:			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 0253: *Nav & Electro-Optical Supt*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Further developed the PMOBT system and necessary interface components to allow simulation of future capabilities of the Photonics Mast. In addition, updated hardware and software for obsolescence and other associated improvements. ***FY 2011 Plans:*** Update hardware and software of the PMOBT system for obsolescence and other associated improvements.			
Title: ISIS and Photonics common hardware capabilities development and obsolescence. ***Articles:*** ***FY 2010 Accomplishments:*** ISIS Technical Insertion (TI-10) development for LOS ANGELES and SEAWOLF Classes. ISIS Inboard System Development (TI-10) for VIRGINIA Class. ***FY 2011 Plans:*** ISIS Technical Insertion (TI-12) development for LOS ANGELES and SEAWOLF Classes. ***FY 2012 Plans:*** Continue ISIS Technical Insertion (TI) development for LOS ANGELES and SEAWOLF Classes.	3.919 0	3.989 0	3.227 0
Title: Low Light Level TV development, digital sensor development and integration and displays. ***Articles:*** ***FY 2010 Accomplishments:*** High Definition Color Camera Integration into ISIS TI-10. Infrared Camera Upgrade Development. ***FY 2011 Plans:*** Incorporation of IR Camera Upgrades into ISIS Inboard Systems. ***FY 2012 Plans:*** Development of display upgrades.	2.008 0	1.727 0	1.335 0
Title: Imaging Systems Test Efforts. ***Articles:*** ***FY 2010 Accomplishments:*** ISIS TI-10 EDM Testing. ***FY 2011 Plans:***	1.045 0	1.063 0	0.860 0

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0604777N: *Navigation/Id System*	**PROJECT** 0253: *Nav & Electro-Optical Supt*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
ISIS TI-10 OT Testing. ***FY 2012 Plans:*** ISIS TI-12 EDM Testing.			
Title: Patriot Radar Range Finder Development for Photonics for SSGN and VIRGINIA Class Submarine.	0.540	0.560	0.564
Articles:	0	0	0
FY 2010 Accomplishments: Upgraded the Type 18 Periscope Automated Rangefinder Software. Integrated the VA Class MTI-10 Patriot Rangefinder and Software Development. ***FY 2011 Plans:*** Upgrade the Type 18 Periscope Automated Rangefinder Software. Integrate the ISIS TI-10 Patriot Rangefinder and Software Development for VIRGINIA and SSGN Classes. ***FY 2012 Plans:*** Continue upgrading the Type 18 Periscope Automated Rangefinder Software. Integrate the ISIS TI-10 Patriot Rangefinder and Software Development for VIRGINIA and SSGN Classes.			
Accomplishments/Planned Programs Subtotals	7.651	7.470	5.986

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• SCN/201300: *Photonics Mast*	18.678	38.978	36.250	0.000	36.250	37.102	37.680	38.542	39.428	Continuing	Continuing
• OPN/0831: *Sub Periscopes & Imaging Equip.*	78.973	85.619	60.860	0.000	60.860	54.186	58.724	53.966	54.888	Continuing	Continuing
• RDT&E/0604558N: *VIRGINIA Class Design Development*	2.486	4.400	3.000	0.000	3.000	3.200	3.500	4.500	3.000	Continuing	Continuing

D. Acquisition Strategy

The Acquisition Strategy for AN/BVS-1 Photonics Mast Program (PMP) is dated 24 Sept 2001. The PMP provides for the development and acquisition of a non-hull penetrating submarine electronic imaging system for VIRGINIA Class submarines. The Acquisition Strategy for Integrated Submarine Imaging System (ISIS) is dated 07 Jul 2003. The ISIS will provide mission critical, all weather, visual, and electronic search, digital image management, indication, warning, and platform architecture interface capabilities for SSN 688, SSN 21, SSN 774 and SSGN class submarines.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 0253: *Nav & Electro-Optical Supt*

E. Performance Metrics

Successful application of system engineering processes. Design and development of improvements. Site acceptance of product improvements with no Priority 1 or 2 problem reports. Completion of 2 upgrade per year. Acceptance of product improvements with no Priority 1 or 2 problem reports.

The RDD program goal is to respond to urgent operational needs within 30 days and provide for rapid development and fielding of prototype solutions within 270 days.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 0253: *Nav & Electro-Optical Supt*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR	NUWC:Newport, RI	11.034	-		-	Oct 2011	-		-	Continuing	Continuing	Continuing
Software Development	C/CPIF	Lockheed Martin:Manassas, VA	9.712	1.546	Mar 2011	1.328	Oct 2011	-		1.328	Continuing	Continuing	Continuing
Systems Engineering	WR	NUWC:Newport, RI	10.645	2.129	Oct 2010	1.819	Oct 2011	-		1.819	Continuing	Continuing	Continuing
Miscellaneous	WR	NUWC:Newport, RI	3.070	0.519	Oct 2010	0.286	Oct 2011	-		0.286	Continuing	Continuing	Continuing
Primary Hardware Development	C/CPIF	Lockheed Martin:Manassas, VA	0.134	1.822	Mar 2011	1.421	Oct 2011	-		1.421	0.000	3.377	
		Subtotal	34.595	6.016		4.854		-		4.854			

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	C/CPAF	AT&T:Vienna, VA	2.952	0.569	Mar 2011	0.406	Oct 2011	-		0.406	Continuing	Continuing	Continuing
		Subtotal	2.952	0.569		0.406		-		0.406			

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Test & Evaluation	WR	NUWC:Newport, RI	4.622	0.833	Oct 2010	0.672	Oct 2011	-		0.672	Continuing	Continuing	Continuing
		Subtotal	4.622	0.833		0.672		-		0.672			

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 0253: *Nav & Electro-Optical Supt*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	C/CPAF	NAVSEA:Washington, DC	0.251	0.052	Oct 2010	0.054	Oct 2011	-		0.054	Continuing	Continuing	Continuing
Defense Acquisition Workforce Fund	Various	Not Specified:Not Specified	0.066	-	Oct 2010	-		-		-	0.000	0.066	
		Subtotal	0.317	0.052		0.054		-		0.054			

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	42.486	7.470		5.986		-		5.986			

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 0253: *Nav & Electro-Optical Supt*

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0604777N: *Navigation/Id System*	**PROJECT** 0253: *Nav & Electro-Optical Supt*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Nav & Electro-Optical Supt				
Major Milestones: ISIS Increment I Capability Insertion: ISIS Increment I Capability Insertion Fielding (TI-10)	2	2012	2	2012
Major Milestones: ISIS Increment I Capability Insertion: ISIS Increment I Capability Insertion Fielding (TI-12)	4	2013	4	2013
Spiral Developments: ISIS: Spiral Development: ISIS TI-10	1	2010	1	2011
Spiral Developments: ISIS: Spiral Development: ISIS TI-12	4	2011	1	2013
Spiral Developments: ISIS: Spiral Development: ISIS TI-14	4	2013	1	2015
Spiral Developments: ISIS: Spiral Development: ISIS TI-16	4	2015	4	2016
Test & Evaluation: ISIS: Test & Evaluation - ISIS TI-10 EDM	3	2010	3	2010
Test & Evaluation: ISIS: Test & Evaluation - ISIS TI-10 OT	4	2011	4	2011
Test & Evaluation: ISIS: Test & Evaluation - ISIS TI-12 EDM	3	2012	3	2012
Test & Evaluation: ISIS: Test & Evaluation - ISIS TI-12 OT	3	2013	3	2013
Test & Evaluation: ISIS: ISIS Test & Evaluation - TI-14 EDM	3	2014	3	2014
Test & Evaluation: ISIS: Test & Evaluation - ISIS TI-14 OT	4	2015	4	2015
Test & Evaluation: ISIS: Test & Evaluation - ISIS TI-16 EDM	3	2016	3	2016

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 0676: *Improve ID Development*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0676: *Improve ID Development*	2.692	2.662	1.842	-	1.842	2.337	2.399	2.419	2.438	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

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 providing platform identification 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. The Improved ID Development project addresses the Navy Lead of a Mark XIIA Mode 5 upgrade to the existing AN/UPX-29(V) Mark XII family of systems that is Joint and North Atlantic Treaty Organization (NATO) interoperable. This exhibit also addresses the AN/UPX-29(V) antenna, the OE-120/UPX.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Title: AN/UPX-29 (V) - OE-120/UPX Antenna Replacement	1.434	1.470	1.368
Articles:	0	0	0
Description: Engineering and integration development for antenna group OE-120/UPX modernization. Develop design studies and Analysis of Alternitives (AoA), draft specifications, and perform system development and integration efforts. ***FY 2010 Accomplishments:*** Performed Risk Mitigation for parts and components obsolescence. Evaluated Power Divider and provided redesigned alternatives. ***FY 2011 Plans:*** Initiate vendor Class 1 Part 1 ECP. To address obsol/producibility of the OE-120 antenna system for commissioned ships and new ship construction program. ***FY 2012 Plans:*** Finalize the Class 1 Part 1 ECP.			
Title: Mark XIIA Mode 5 Improvement for AN/UPX-29(V)	1.131	0.992	0.334
Articles:	0	0	0
Description: Engineering, development, and integration of Mark XIIA Improvements to the AN/UPX-29 (V). Correct deficiencies from Integrated Test and Operational Test (IT - OT) and baseline software and documentation. Funds development and integration of Mark XIIA Improvement to the AN/UPX-29 (V) system on CG 47, DDG 51, LHD 1, LPD 17 and CV/CVN class ships.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 0676: *Improve ID Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Provides core Integrated Logistics Support (ILS) documentation; formalizes hardware/software configuration; finalizes technical/ design data, and resolves testing anomalies. ***FY 2010 Accomplishments:*** Developed and tested AN/UPX-24(V) Software V2.1.2 to correct Developmental Test Deficiencies/Operational Assessment Risk items. Developed/Tested Jitter fix to meet FAA requirements. Addressed integration issues on LHD 1, LPD, and CV/CVN. Design: Completed final IDS review and approval, completed Critical Design Review, initiated Unit and System level testing. Participated in testing, test planning and issue resolution for technical evaluation and Initial Operational Test and Evaluation (IOT&E). ***FY 2011 Plans:*** Prepare systems and platforms for IOT&E. Final deficiency resolution. Resolve any remaining system deficiencies and any final ILS documentation updates. Continue integration on LHD 1 class and begin LPD 17 integration Certification testing. Conduct interface certification testing and qualification with CEC/7.1 ***FY 2012 Plans:*** Continue AN/UPX-29(V) integration and interface certification testing with ship baselines. Evaluate and replace system processors due to obsolescence.			
Title: AN/UPX-29(V) Management Support	0.127	0.200	0.140
Articles:	0	0	0
Description: Engineering and Program Management of the AN/UPX 29 (V). Perform system integration efforts. ***FY 2010 Accomplishments:*** Managed engineering investigations (EIs), provided engineering assessments, and recommended resolution. Reviewed and evaluated reports. ***FY 2011 Plans:*** Manage EIs, provide engineering assessments, and recommend resolution. Review and evaluate reports. ***FY 2012 Plans:*** Manage engineering assessments/evaluations/development efforts that provide resolution to EIs and obsolescence issues.			
Accomplishments/Planned Programs Subtotals	2.692	2.662	1.842

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 0676: *Improve ID Development*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• OPN/2851: *Identification Systems*	37.563	29.572	33.170	0.000	33.170	35.662	39.702	39.545	36.208	Continuing	Continuing

D. Acquisition Strategy

The Acquisition Strategy is to develop Mode 5 Engineering Change Proposals for modern Mark XII IFF equipment and integrate into all Navy Combat Weapons systems platforms and augment the Navy's Cooperative Identification Capability to include Mode 5.

E. Performance Metrics

Successfully complete ITR and IT Regression Test in FY 2010. Achieve Full Rate Production (FRP) Decision and Initial Operational Capability and award FRP contract in FY 2012.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 0676: *Improve ID Development*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR	NAWCAD:St Inigoes, MD	3.187	0.860	Nov 2010	1.093	Nov 2011	-		1.093	Continuing	Continuing	Continuing
Ship Integration	WR	NAWCAD:St Inigoes, MD	2.000	0.077	Nov 2010	0.075	Nov 2011	-		0.075	Continuing	Continuing	Continuing
Systems Engineering	WR	NAWCAD:St Inigoes, MD	4.469	0.533	Nov 2010	0.200	Nov 2011	-		0.200	Continuing	Continuing	Continuing
		Subtotal	9.656	1.470		1.368		-		1.368			

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Configuration Management	WR	NAWCAD:St Inigoes, MD	0.169	-		-		-		-	0.000	0.169	
ILS	WR	NAWCAD:St Inigoes, MD	2.334	0.037	Nov 2010	0.056	Nov 2011	-		0.056	Continuing	Continuing	Continuing
Software Development	WR	NAWCAD:St Inigoes, MD	4.312	0.769	Nov 2010	0.093	Nov 2011	-		0.093	Continuing	Continuing	Continuing
Technical Data	WR	NAWCAD:St Inigoes, MD	1.061	0.186	Nov 2010	0.185	Nov 2011	-		0.185	Continuing	Continuing	Continuing
Training	WR	NAWCAD:St Inigoes, MD	0.200	-		-		-		-	0.000	0.200	
		Subtotal	8.076	0.992		0.334		-		0.334			

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NAWCAD:St Inigoes, MD	0.500	-		-		-		-	0.000	0.500	
Operational Test & Evaluation	WR		1.328	-		-		-		-	0.000	1.328	

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 0676: *Improve ID Development*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		NAWCAD:St Inigoes, MD											
Test Assets	WR	NAWCAD:St Inigoes, MD	0.731	-		-		-		-	0.000	0.731	
		Subtotal	2.559	-		-		-		-	0.000	2.559	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	C/CPFF	American Electronics:California, MD	1.208	0.200	Dec 2010	0.140	Dec 2011	-		0.140	Continuing	Continuing	Continuing
Engineering Support	WR	NAWCAD:PAX River, MD	0.244	-		-		-		-	Continuing	Continuing	Continuing
		Subtotal	1.452	0.200		0.140		-		0.140			

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	21.743	2.662		1.842		-		1.842			

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 0676: *Improve ID Development*

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0604777N: *Navigation/Id System*	**PROJECT** 0676: *Improve ID Development*

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0604777N: *Navigation/Id System*	**PROJECT** 0676: *Improve ID Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Mode 5 Improv Identification Dev				
Acquisition Milestones: Milestones: Mode 5 - Full Rate Production Decision Review (FRPDR)	1	2012	1	2012
Acquisition Milestones: Milestones: IOC	1	2012	1	2012
Acquisition Milestones: Milestones: Mode 5 - Joint IOC	4	2014	4	2014
System Development: Reviews: Operational Test Readiness Review (OTRR)	3	2011	3	2011
Test & Evaluation Group: Operational Evaluation: Mode 5 - IT Regression Test	3	2010	4	2010
Test & Evaluation Group: Operational Evaluation: Mode 5 - OT-C2 (IOT&E)	4	2011	4	2011
Test & Evaluation Group: Operational Evaluation: Mode 5 - IOT&E Outbrief	1	2012	1	2012
Test & Evaluation Group: Operational Evaluation: Mode 5 - Follow-on Test and Evaluation	1	2012	4	2016
Production Milestones: Contract Awards: Mode 5 - LRIP 5 Contract Award (OPN, APN5, RDTEN)	2	2010	2	2010
Production Milestones: Contract Awards: Mode 5 - LRIP 6 Contract Award (OPN, APN5, RDTEN)	1	2011	1	2011
Production Milestones: Contract Awards: Mode 5 - FRP Contract Award	2	2012	2	2012
Deliveries: Mode 5 - Low-Rate Initial Production Deliveries (DI,CXP) (OPN, APN5, RDTEN)	1	2010	2	2013
Deliveries: Mode 5 - Production Line Insertion	1	2010	4	2016
Deliveries: Mode 5 - Prepare and Evaluate ECPs/SCDs	1	2010	4	2016
Deliveries: Mode 5 - Host Platform Integrations	1	2010	4	2016
Deliveries: Mode 5 - FRP Deliveries	2	2013	4	2016
OE-120/UPX Antenna Improv Identification Dev				

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 0676: *Improve ID Development*

	Start		End	
Events by Sub Project	Quarter	Year	Quarter	Year
System Development: Reviews: OE-120/UPX Antenna - System Functional Review (SFR)	4	2015	4	2015
System Development: Reviews: OE-120/UPX Antenna - PDR	3	2016	3	2016
System Development: Reviews: Part 1 Engeneering Change Proposal Class 1	1	2011	4	2012

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 0921: *NAVSTAR GPS Equipment*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0921: *NAVSTAR GPS Equipment*	20.849	20.021	20.038	-	20.038	21.167	21.388	21.662	21.920	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

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. Research, Development, Testing and Evaluation (RDT&E) funds are used to perform all the non-recurring GPS Surface Ship, Submarine and Aircraft Development, Integration, and Testing efforts. GPS continues to be integrated in all DoD platforms and the development of enhanced GPS is an urgent national security priority in accordance with US Code - 10USC2281 of 15 November 2005. As stated in the Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 6130.01D, 2007 Master Positioning, Navigation, and Timing Plan (MPNTP), "GPS is the primary source of Positioning Navigation and Timing (PNT) information for the DoD." Additionally, "beyond October 2006, hardware upgrades or modifications to operational subsystems from a non-GPS equipped subsystem to a GPS equipped subsystem or any upgrade of modification to existing GPS equipped subsystems, shall incorporate Selective Availability Anti-Spoofing Module (SAASM) or Military GPS User Equipment (MGUE)." In accordance with OPNAVINST 9420.1B "GPS Precise Positioning Service (PPS) systems shall be used for all combat, combat support, and combat service support operations and training" to provide assured access to accurate position and performance under intentional and unintentional interference. This direction is in keeping with the National Security/Presidential Directive (NSPD)-39 of 15 December 2004 and current solutions are well-supported by numerous studies and analyses that include Defense Science Board Task Force reports (October 2005), the DoD's GPS III System Architecture/Requirements Definition (SA/RD) of January 2003, and various DoD and Navy requirements documents.

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 Operational Requirement Document (ORD) was drafted to address operational requirements. The requirements 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 Navigation Warfare (NAVWAR) upgrade program with RDT&E leading to initial procurements of GPS anti-jam (AJ) antennas beginning in 2001 for aircraft and 2002 for ships. NAVWAR's mission is to provide continued access to GPS information in a denied environment. RDT&E continues to support platform integration requirements, Developmental Test/Operational Test (DT/OT), the Navy's development of a smaller Anti-Jam (AJ) antenna and a conformal low-observable AJ antenna for aircraft with unique requirements, and new technology AJ solutions 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 Air and Sea Navigation Warfare (NAVWAR) programs. The Sea NAVWAR Program is executed in 3 increments. The GPS Antenna System (GAS-1) is integrated on surface platforms in Increment 1. Increment 2 is Advanced Digital Antenna Production (ADAP). It is an enhanced adaptive AJ antenna system based on advanced digital electronics and digital signal processing planned for surface ship integrations. Increment 3 addresses AJ capabilities for submarines. The Air NAVWAR program is a single increment with GAS-1, ADAP, and other efforts continuing. The Capability Production Document for Sea NAVWAR Increment 2 (12/08) was approved to support the ADAP production and procurement.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 0921: *NAVSTAR GPS Equipment*

The primary GPS shipboard systems fielded on the majority of U.S. Navy ships today include the AN/WRN-6 and the Navigation Sensor System Interface (NAVSSI). These military GPS systems provide precise Position, Navigation, and Time (PNT) data required for many Combat, Weapons, Command, Control, Communications, Navigation, and other systems, as well as providing the time synchronization critical to the network environments.

The Global Positioning System (GPS)-based Positioning, Navigation, and Timing (PNT) Service (GPNTS) system is being developed to replace stand-alone AN/WRN-6 receivers and integrated Navigation Sensor System Interface (NAVSSI) systems. Additionally, future capability will migrate toward a Common Computing Environment (CCE) such as Consolidated Afloat Networks Enterprise Services (CANES).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Title: Air Navigation Warfare (NAVWAR)	6.865	7.251	4.698
Articles:	0	0	0
FY 2010 Accomplishments: Continued integration of Controlled Reception Pattern Antenna (C-CRPA) and Advanced Digital Antenna Production (ADAP) on F/A-18 E/F/G and NAVWAR on other Air platforms to include unmanned air systems (UAS) and weapons. Started developmental testing of C-CRPA and ADAP on F/A-18 E/F/G. Continued Selective Availability Anti-Spoofing Module (SAASM) integration and testing on Air platforms. Monitored Small Antenna System (SAS)/Miniaturized - Controlled Reception Pattern Antenna (M-CRPA) development. Started GPS Modernization platform impact studies and provided Navy unique requirements to GPS Wing. Developed Navy Air GPS Modernization Acquisition Strategy, Systems Engineering Plan and Test and Evaluation Master Plan (TEMP). Coordinated GPS Modernization efforts with other programs and DoD services to reduce impacts to platform navigation systems. Participated in joint NAVWAR Memorandum of Understanding (MOU) initiatives with Canada, United Kingdom and Australia.			
FY 2011 Plans: Complete integration, developmental and operational testing of the NAVWAR anti-jam capability on F/A-18 E/F/G. Monitor SAS/M-CRPA development. Continue integration of NAVWAR on other Air platforms to include unmanned air systems and weapons. Continue GPS Modernization platform impact studies and provide Navy unique requirements to the GPS Wing. Continue to coordinate GPS Modernization efforts with other programs and DoD services to reduce impacts to platform navigation systems. Start studies for integration of GPS Wing developed Military GPS User Equipment (MGUE) into Air platforms. Participate in joint NAVWAR MOU initiatives with Canada, United Kingdom and Australia.			
FY 2012 Plans: Continue to assist other air platforms with integration of anti-jam capability to include UAS and weapons. Provide assured PNT efforts to Naval aircraft. Continue to provide GPS Modernization Navy unique requirements to GPS Wing. Continue to keep the Fleet apprised of GPS Enterprise SAASM developments. Continue to coordinate GPS Modernization efforts with other programs			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 0921: *NAVSTAR GPS Equipment*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
and DoD services to reduce impacts to platform navigation systems. Participate in joint NAVWAR MOU initiatives with Canada, United Kingdom and Australia.			
Title: Sea Navigation Warfare (NAVWAR)	4.132	4.776	2.990
Articles:	0	0	0
FY 2010 Accomplishments: Increment 2 Advanced Digital Antenna Production (ADAP): Completed Developmental Testing (DT) and supported Operational Assessment. Achieved Milestone C in 2Q10. Completed activities to support DT/OT on DDG 4Q10. Participated in joint Navigation Warfare (NAVWAR) Memorandum of Understanding (MOU) initiatives with Canada, United Kingdom, and Australia.			
FY 2011 Plans: Increment 2 (ADAP): Conduct DT and integration of ADAP on Cruiser Guided Missile (CG) ships and Carrier Vessel Nuclear (CVN) ships. Initiate discussion of Increment 3 Submarine Anti-Jam (SUB AJ) Analysis of Alternatives (AoA). Participation in joint NAVWAR MOU initiatives with Canada, United Kingdom, and Australia.			
FY 2012 Plans: Increment 3 (SUB AJ): Begin acquisition and logistics documentation in support of Milestone B. Participation in joint NAVWAR MOU initiatives with Canada, United Kingdom, and Australia.			
Title: Global Positioning System (GPS) - Based Positioning, Navigation and Timing (PNT) Service (GPNTS)	9.852	7.994	12.350
Articles:	0	0	0
FY 2010 Accomplishments: Began preparation of a Milestone B decision. Initiated source selection activities and a contract award for system development. Supported preparation of post contract award activities including tracking of contractor deliverables, earned value management, and financial management. Continued preparation of the Technical Requirements Document (TRD), the System Requirements Review (SSR) and the System Functional Reviews (SFR) to prepare for the Preliminary Design Review.			
FY 2011 Plans: Obtain a Milestone B decision. Award System Design and Development (SDD) contract. Develop statutory and regulatory acquisition requirements in accordance with the Milestone B Acquisition Decision Memorandum (ADM). Prepare the program for Preliminary Design Review (PDR).			
FY 2012 Plans: Complete post award contract activities. Conduct the Initial Baseline Review (IBR) with the Contractor. Complete Earned Value Management (EVM) analysis as required and monitor contract activities. Update acquisition documentation as necessary to support program changes. Provide engineering and technical support to the Contractor to ensure system design and software			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 0921: *NAVSTAR GPS Equipment*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
development are in alignment with the Capabilities Development Document (CDD) and Technical Requirements Document (TRD). Review the System Engineering Master Plan (SEMP) provided by the Contractor. Conduct the program's Preliminary Design Review (PDR) and post Preliminary Design Review assessment event with the Milestone Decision Authority (MDA). Prepare the program to conduct the Critical Design Review (CDR) and the Capability Production Document (CPD) in the following fiscal year. Completion of the Preliminary Design Review event and obtainment of the Preliminary Design Review Acqusition Decision Memorandum (ADM).			
Accomplishments/Planned Programs Subtotals	20.849	20.021	20.038

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• OPN / 2657, 0604777N: *Other Procurement, Navy*	7.940	9.319	9.926	0.000	9.926	9.564	12.445	15.654	16.265	Continuing	Continuing
• APN / 0577: *Common Avionics*	7.412	10.952	8.834	0.000	8.834	8.962	9.359	9.379	9.781	147.974	212.653

D. Acquisition Strategy

Navigation Warfare (NAVWAR): The Sea NAVWAR Program is executed in 3 increments. The Global Positioning System (GPS) Antenna System (GAS-1) is integrated on surface platforms in Increment 1. Increment 2 is Advanced Development Antenna Production (ADAP). Increment 3 is a submarine anti-jam solution (SUB AJ). The Air NAVWAR program is executed in a single increment with GAS-1 and ADAP to integrate on air platforms, and development of a smaller Anti-Jam (AJ) antenna and a conformal low-observable AJ antenna for aircraft with unique requirements.

GPNTS: The GPS-based Positioning, Navigation, and Timing Service (GPNTS) program will be conducted in two increments. Increment 1 will develop, acquire, and field the GPNTS, a scalable Selective Availability / Anti-Spoofing Module (SAASM) GPS based Service Oriented Architecture Positioning, Navigation, and Timing (PNT) system that will provide an open, extensible, modernized replacement for the current fleet PNT systems, while targeting Common Computing Environments (CCE). Increment 2 will integrate Military GPS User Equipment (MGUE) that will allow the U.S. Navy to leverage current and future technology development provided by the GPS Wing, formerly known as the GPS Joint Program Office (JPO). GPNTS will operate at the UNCLASSIFIED level, and can provide the PNT data to higher classified systems.

E. Performance Metrics

The primary metric used for the Air NAVWAR Program is acceptable system performance in a GPS denied environment which is defined by classified values of jamming to signal ratio (J/S) identified in the Enhanced GPS User Equipment (UE) Operational Requirements Document (ORD) 562-06-00 of 7 June 2000. The performance goal is met if acceptable system performance is achieved in the threshold J/S environment cited in the classified appendix.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 0921: *NAVSTAR GPS Equipment*

The primary metric used for the Sea NAVWAR is acceptable system performance in a GPS denial environment defined by classified values of jamming to signal ratio (J/S) identified in the Sea NAVWAR Increment 2 Capabilities Production Document (CPD) (12/08). The performance goal is met if acceptable system performance is achieved in the threshold J/S environment cited in the CPD.

The primary metrics used for the GPNTS is successful completion of the system development as outlined in the GPNTS Technical Requirement Document.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 0921: *NAVSTAR GPS Equipment*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Development	WR	SSC PAC/NAWC:San Diego/China Lake, Pax River	273.477	2.298	Oct 2010	-		-		-	0.000	275.775	
Product Development	WR	SSC PAC:San Diego	70.409	0.600	Oct 2010	0.900	Oct 2011	-		0.900	0.000	71.909	
Product Dev (other in house)	WR	SSC PAC:San Diego	439.397	-		-		-		-	0.000	439.397	
Systems Engineering	WR	Govt/Contractor:San Diego	18.391	1.750	Oct 2010	0.855	Jan 2012	-		0.855	0.000	20.996	
Product Development	C/CPIF	Unknown:Unknown	-	2.593	Oct 2010	8.531	Jan 2012	-		8.531	0.000	11.124	
Product Development	C/CPFF	Boeing:St Louis	15.445	-		-		-		-	0.000	15.445	
		Subtotal	817.119	7.241		10.286		-		10.286	0.000	834.646	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	WR	SSC PAC/NAWC:San Diego/Pax River/China Lake	12.710	-		-		-		-	0.000	12.710	
Software Development	WR	SSC PAC/NAWC:San Diego/Pax River/ China Lake	10.300	0.150	Oct 2010	-		-		-	0.000	10.450	
Integrated Logistics Support	WR	SSC PAC/NAWC:San Diego/Pax River	6.402	0.700	Oct 2010	0.596	Dec 2011	-		0.596	0.000	7.698	
Training Development	WR	SSC PAC/NAWC:San Diego/Pax River	4.925	0.450	Oct 2010	-		-		-	0.000	5.375	
Technical Data	WR	Platform PMOs:San Diego	4.200	0.450	Oct 2010	-		-		-	0.000	4.650	
Technical Data	C/CPAF	BAH:San Diego, Pax River	-	-		0.496	Jan 2012	-		0.496	0.000	0.496	
Technical Data	WR	SSC PAC:San Diego	-	-		2.000	Dec 2011	-		2.000	0.000	2.000	
Technical Data	WR	NAWC:Pax River	-	-		0.254	Dec 2011	-		0.254	0.000	0.254	

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 0921: *NAVSTAR GPS Equipment*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Technical Data	WR	NAWC:China Lake	-	-		0.250	Dec 2011	-		0.250	0.000	0.250	
		Subtotal	38.537	1.750		3.596		-		3.596	0.000	43.883	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test & Evaluation	WR	SSC PAC/NAWC PAX:San Diego/Pax River	27.929	1.800	Oct 2010	0.608	Nov 2011	-		0.608	0.000	30.337	
Test & Evaluation	C/CPAF	BAH:Pax River	4.776	0.500	Oct 2010	-		-		-	0.000	5.276	
Test & Evaluation	WR	SSC PAC:San Diego	7.975	0.900	Oct 2010	2.677	Dec 2011	-		2.677	0.000	11.552	
Test & Evaluation Platform Testing	WR	SSC PAC:San Diego	28.755	3.272	Oct 2010	-		-		-	0.000	32.027	
		Subtotal	69.435	6.472		3.285		-		3.285	0.000	79.192	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	C/CPAF	BAH:Pax River, San Diego	18.631	1.358	Oct 2010	2.871	Jan 2012	-		2.871	0.000	22.860	
Acquistion Workforce	Allot	Unknown:Uknown	0.139	-		-		-		-	0.000	0.139	
Contractor Engineering Services	C/CPAF	BAH:San Diego, Pax River, China Lake	-	1.400	Oct 2010	-		-		-	0.000	1.400	
Government Engineering Services	WR	SSC PAC, NAWC:San Diego, China Lake, Pax River	-	1.800	Oct 2010	-		-		-	0.000	1.800	
		Subtotal	18.770	4.558		2.871		-		2.871	0.000	26.199	

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 0921: *NAVSTAR GPS Equipment*

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	943.861	20.021		20.038		-		20.038	0.000	983.920	

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 0921: *NAVSTAR GPS Equipment*

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 0921: *NAVSTAR GPS Equipment*

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 0921: *NAVSTAR GPS Equipment*

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0604777N: *Navigation/Id System*	**PROJECT** 0921: *NAVSTAR GPS Equipment*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0921				
Air Navigation AV-8B Installations	1	2010	3	2013
Air Navigation P-3C installations	1	2010	3	2014
Air Navigation F/A 18 E/F/G DT/OT	2	2010	4	2011
Air Navigation GAS-1 Option 2010	2	2010	2	2010
Air Navigation ADAP Option 2010	2	2010	2	2010
Air Navigation MH-53E Installations	3	2010	4	2013
Air Navigation GAS-1 Option 2011	2	2011	2	2011
Air Navigation ADAP Option 2011	2	2011	2	2011
Air Navigation Conformal Antenna (C-CRPA) Production Award	2	2011	2	2011
Air Navigation GAS-1 Option 2012	2	2012	2	2012
Air Navigation ADAP Option 2012	2	2012	2	2012
Air Navigation C-CRPA Option 2012	2	2012	2	2012
Air Navigation F/A-18 E/F/G Installations	2	2012	4	2016
Air Navigation GAS-1 Option 2013	2	2013	2	2013
Air Navigation ADAP Option 2013	2	2013	2	2013
Air Navigation C-CRPA Option 2013	2	2013	2	2013
Air Navigation GAS-1 Option 2014	2	2014	2	2014
Air Navigation ADAP Option 2014	2	2014	2	2014
Air Navigation C-CRPA Option 2014	2	2014	2	2014
Air Navigation GAS-1 Option 2015	2	2015	2	2015
Air Navigation ADAP Option 2015	2	2015	2	2015

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 0921: *NAVSTAR GPS Equipment*

	Start		End	
Events by Sub Project	Quarter	Year	Quarter	Year
Air Navigation C-CRPA Option 2015	2	2015	2	2015
Air Navigation GAS-1 Option 2016	2	2016	2	2016
Air Navigation ADAP Option 2016	2	2016	2	2016
Air Navigation C-CRPA Option 2016	2	2016	2	2016
Sea Navigation Increment 1 (GAS-1) Installations	1	2010	3	2010
Sea Navigation Increment 2 (ADAP) DT/OA	1	2010	2	2010
Sea Navigation Increment 2 (ADAP) M/S C	2	2010	2	2010
Sea Navigation Increment 2 (ADAP) DT/OT	4	2010	2	2011
Sea Navigation Increment 3 (Sub A/J) AoA / Development	1	2011	4	2015
Sea Navigation Increment 2 (ADAP) FRP	2	2011	2	2011
Sea Navigation Increment 2 (ADAP) Installations	2	2011	4	2016
Sea Navigation Increment 2 (ADAP) IOC	3	2011	3	2011
Sea Navigation Increment 2 (ADAP) CVN DT	3	2011	3	2011
Sea Navigation Increment 2 (ADAP) CG DT	4	2011	4	2011
Sea Navigation Increment 3 (Sub A/J) M/S B	2	2012	2	2012
Sea Navigation Increment 2 (ADAP) LHA DT	1	2013	1	2013
Sea Navigation Increment 2 (ADAP) LPD DT	3	2013	3	2013
Sea Navigation Increment 3 (Sub A/J) DT/OA	4	2013	2	2014
Sea Navigation Increment 3 (Sub A/J) M/S C LRIP	2	2014	2	2014
Sea Navigation Increment 3 (Sub A/J) DT/OT	4	2014	2	2015
Sea Navigation Increment 3 (Sub A/J) Installations	1	2015	4	2016
Sea Navigation Increment 3 (Sub A/J) FRP	2	2015	2	2015
Sea Navigation Increment 3 (Sub A/J) IOC	4	2015	4	2015
GPNTS AS	3	2010	3	2010

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 0921: *NAVSTAR GPS Equipment*

	Start		End	
Events by Sub Project	Quarter	Year	Quarter	Year
GPNTS RFP Release	4	2010	4	2010
GPNTS Increment 1 TEMP	4	2010	4	2010
GPNTS INCREMENT 1 MS B	1	2011	1	2011
GPNTS APB	1	2011	1	2011
GPNTS AP	1	2011	1	2011
GPNTS Increment 1 Award	2	2011	2	2011
GPNTS Post PDR Assessment	1	2012	1	2012
GPNTS PDR	1	2012	1	2012
GPNTS Contract Order 1st Qtr	1	2012	1	2012
GPNTS Contract Order 4th Qtr	4	2012	4	2012
GPNTS Increment 1 Integrated Test 1st Qtr	1	2013	1	2013
GPNTS CDR	2	2013	2	2013
GPNTS Increment 1 Integrated Test 4th Qtr	4	2013	4	2013
GPNTS Increment 1 EDM Delivery	1	2014	1	2014
GPNTS INCREMENT 2 MS B Prep Activities	1	2015	1	2015
GPNTS MS C	1	2015	1	2015
GPNTS M/S C LRIP	2	2015	2	2015
GPNTS Increment 1 OTRR	3	2015	3	2015
GPNTS Increment 1 Tech Eval	4	2015	4	2015
GPNTS Increment 1 IOT&E	1	2016	1	2016
GPNTS Increment 1 JITC Testing	1	2016	1	2016
GPNTS IOC	2	2016	2	2016
GPNTS FRP DR	3	2016	3	2016
GPNTS Increment 1 FRP Option A	3	2016	3	2016

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 1253: *Combat Ident System*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
1253: *Combat Ident System*	29.324	36.483	22.312	-	22.312	17.068	14.125	9.301	13.230	Continuing	Continuing
Quantity of RDT&E Articles	24	0	11	0	11	0	0	0	0		

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 North Atlantic Treaty Organization (NATO) Allies to develop a new Mark 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 - Mark XIIA Mode 5. A separate five nation Communications Security group, led by the National Security Administration, 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 Mark XIIA Mode 5 program was approved for entry in Systems Development and Demonstration phase with approval to develop prototypes. In July 2006, the Navy Mark XIIA Mode 5 program was approved for entry into the Production and Deployment Phase and Low Rate Initial Production. In March 2007, Joint Requirements Oversight Council Memorandum (047-07) endorsed a Mode 5 Joint Initial Operational Capability (IOC) in FY14 and Joint Full Operational Capability in 2020. A Program Deviation Report was submitted in July 2009 reporting a schedule breach to Operational Evaluation and IOC due to joint asset participations and on-going resolution of Developmental Test (DT) deficiencies. The Initial Operational Test and Evaluation is replanned for FY2011 with additional DT events planned in FY10 to address system-of-system Operational Assessment (OA) deficiencies.

RDT&E articles include Mode 5 cryptographic modules and associated hardware and software changes, AN/APX-123, AN/APX-119, and AN/APX-111. These RDT&E units are to support hardware, software, and integration efforts to host systems on remaining aircraft Type/Model/Series, including AH-1Z/UH-1Y, E-2D, MH-60R/S, MV-22, KC-130J, and F/A-18E/F and EA-18G.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Title: Mode 5 prototype hardware, cryptographic module	18.681	21.632	15.233
Articles:	24	0	11
Description: Perform development of kits for installation into existing fleet assets including AN/UPX-37/41C Interrogator, AN/APX-118/123 Common Digital Transponder, and AN/APX-111 Combined Interrogator Transponder. Repair and correct deficiencies identified during testing and procure low rate initial production (LRIP) units (OPN, APN5, and RDTE) to support testing and platform integration. LRIP units include Mode 5 cryptographic module install kits for AN/UPX-37/41C, AN/APX-118/123, AN/APX-119, and AN/UPX-24 with associated hardware and software changes to the host boxes. Perform			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 1253: *Combat Ident System*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
platform integration efforts for the AN/UPX-37/41C Interrogator, AN/APX-118/123 Common Digital Transponder, AN/APX-119 Transponder, and AN/APX-111 Combined Interrogator Transponder. ***FY 2010 Accomplishments:*** Procured AN/APX-123 for MV-22 test aircraft, AN/APX-119 units for labs, and F/A-18E/F AN/APX-111 lab and test assets. Initiated integration on MV-22 aircraft. Initiated development of Mode 5 kit for the AN/APX-111 and software development integration into the F/A-18E/F and EA-18G. ***FY 2011 Plans:*** Continue integration in MV-22, F/A-18E/F and EA-18G aircraft. ***FY 2012 Plans:*** Continue integration in MV-22, F/A-18E/F and EA-18G aircraft.			
Title: Mode 5 systems Engineering and Integrated Logistics Support (ILS) ***Articles:*** ***Description:*** Performed systems engineering and analysis in support of Mode 5 hardware/software development on AN/UPX-37/41C Interrogator, AN/APX-118/123 Common Digital Transponder, AN/APX-119 Transponder, AN/APX-111 Combined Interrogator Transponder, Cryptographic Module, Mode 5 Engineering Test Equipment, and Mode 5 support equipment. The Cryptographic Module included, but is not limited to, activities such as ILS, Design and Engineering Studies and Analysis, and Configuration Management performed as the Lead Service. ***FY 2010 Accomplishments:*** Continued systems engineering and analysis on multiple aircraft platforms including MH-60R/S, AH-1Z/UH-1Y, and E-2D. Corrected deficiencies from FY09 OA, and addressed AIMS 03-1000A Specification Changes. ***FY 2011 Plans:*** Continue systems engineering and analysis for deficiency correction, and implementation of Mode 5 in AN/APX-111 equipment. Initiate systems engineering for F/A-18E/F, EA-18G, E-2D and MV-22 aircraft. ***FY 2012 Plans:*** Continue systems engineering and analysis for MV-22, F/A-18E/F and EA-18G aircraft.	3.397 0	7.786 0	2.413 0
Title: Mode 5 Upgrade DT & OT ***Articles:***	7.246 0	7.065 0	4.666 0

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 1253: *Combat Ident System*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Description: Perform Mode 5 developmental and operational test phases for AN/UPX-37/41C Interrogator, AN/APX-118/123 Common Transponder, AN/APX-119 Transponder, and AN/APX-111 Combined Interrogator Transponder. ***FY 2010 Accomplishments:*** Initiated DT testing for E-2D aircraft. Performed regression testing for OA deficiency correction for MH-60R/S, AH-1Z/UH-1Y aircraft and AN/APX-123/UPX-41 equipment. ***FY 2011 Plans:*** Conduct Integrated testing and Operational Testing for the AN/APX-123 on the MH-60R/S, AH-1Z/UH-1Y, E-2D, and AN/UPX-41C. ***FY 2012 Plans:*** Conduct initial lab testing on Mode 5 AN/APX-111, integrated testing on the MV-22 and operational testing on the E-2D and MV-22.			
Accomplishments/Planned Programs Subtotals	29.324	36.483	22.312

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• OPN/2851: *Identification Systems*	37.563	29.572	33.170	0.000	33.170	35.662	39.702	39.545	36.208	Continuing	Continuing
• APN/0582: *Identification Systems*	24.051	20.397	37.330	0.000	37.330	38.408	40.854	45.964	54.944	Continuing	Continuing

D. Acquisition Strategy

The Acquisition Strategy is to develop Mode 5 Engineering Change Proposals for modern Mark XII 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.

E. Performance Metrics

Award LRIP 5 Contract Option in 2nd Quarter FY 2010 and LRIP 6 Contract Option in 1st Quarter FY 2011. Complete Operational Test Readiness Review (OTRR) in 3rd Quarter FY 2011. Begin Full Rate Production and achieve Initial Operational Capability in FY 2012.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 1253: *Combat Ident System*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	C/FFP	Lockheed:Owego, NY	3.229	0.125	May 2011	-		-		-	3.640	6.994	6.994
Primary Hardware Development	WR	NAWCWD:China Lake CA	6.848	6.179	May 2011	2.957	May 2012	-		2.957	20.042	36.026	36.028
Primary Hardware Development	SS/CPFF	Northrup Grumman:Bethpage NY	3.886	-		-		-		-	1.701	5.587	5.587
Primary Hardware Development	Various	BAE:Greenlawn NY	26.343	-		0.479	Apr 2012	-		0.479	0.597	27.419	27.419
Primary Hardware Development	Various	Boeing:Philiadelphia, PA	4.394	2.289	Jun 2011	2.067	Jun 2012	-		2.067	0.639	9.389	9.389
Primary Hardware Development	Various	Raytheon:Towson, MD	1.027	0.137	Mar 2011	0.134	Mar 2012	-		0.134	0.277	1.575	1.575
Primary Hardware Development	Various	Boeing:St Louis. MO	9.172	12.902	Jun 2011	9.596	Jun 2012	-		9.596	22.468	54.138	54.138
Systems Engineering	WR	NAWCAD:PAX River, MD	7.383	4.288	Nov 2010	1.607	Nov 2011	-		1.607	7.131	20.409	
Systems Engineering	WR	NAWCAD:St Inigoes, MD	11.145	2.312	Nov 2010	0.134	Nov 2011	-		0.134	2.121	15.712	
Systems Engineering	WR	NAWCWD:China Lake, CA	0.600	-		-		-		-	0.000	0.600	
		Subtotal	74.027	28.232		16.974		-		16.974	58.616	177.849	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ILS	Various	Various:Various	2.366	1.186	Nov 2010	0.672	Nov 2011	-		0.672	0.000	4.224	
Software Development	Various	Various:Various	2.708	-		-		-		-	0.000	2.708	
Technical data	Various	Various:Various	0.053	-		-		-		-	0.000	0.053	
		Subtotal	5.127	1.186		0.672		-		0.672	0.000	6.985	

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 1253: *Combat Ident System*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental T & E	WR	NAWCAD:PAX River MD	10.642	3.970	Nov 2010	4.383	Nov 2011	-		4.383	0.000	18.995	
Operational T & E	WR	NAWCAD:PAX River MD	14.788	1.645	Nov 2010	0.283	Nov 2011	-		0.283	0.000	16.716	
Test Assets	Various	Various:Various	1.946	1.450	Nov 2010	-		-		-	0.000	3.396	
		Subtotal	27.376	7.065		4.666		-		4.666	0.000	39.107	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Contract Engineering Support	Various	Various:Various	0.450	-		-		-		-	0.000	0.450	0.450
Government Engineering Support	Various	Various:Various	1.811	-		-		-		-	0.000	1.811	
Program Management Support	Various	Various:Various	1.961	-		-		-		-	0.000	1.961	
ETS (Non-FFRDC)	WR	Various:PAX River MD	0.174	-		-		-		-	0.000	0.174	
		Subtotal	4.396	-		-		-		-	0.000	4.396	

	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	110.926	36.483		22.312		-		22.312	58.616	228.337	

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 1253: *Combat Ident System*

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 1253: *Combat Ident System*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Combat Identification Systems				
Acquisition Milestones: Milestones: Full Rate Production Decision Review (FRPDR)	1	2012	1	2012
Acquisition Milestones: Milestones: IOC	1	2012	1	2012
Acquisition Milestones: Milestones: Mode 5 Joint IOC	4	2014	4	2014
Systems Development: Hardware Development: Production Line Insertion	1	2010	4	2016
Systems Development: Hardware Development: Prepare & Evaluate ECPs/SCDs	1	2010	4	2016
Systems Development: Hardware Development: AN/APX-111 Upgrade/Integration Begins	3	2010	3	2010
Systems Development: Hardware Development: AN/APX 119 Integration Begins	4	2010	4	2010
Systems Development: Hardware Development: Mode 5 Spiral Development	2	2015	2	2015
Systems Development: Software Development Integration: Host Platform Integrations	1	2010	4	2016
Systems Development: Reviews: Operational Test Readiness Review (OTRR)	3	2011	3	2011
Test and Evaluation: Operational Evaluation: IT Regression Test	3	2010	4	2010
Test and Evaluation: Operational Evaluation: OT-C2 (IOT&E)	4	2011	4	2011
Test and Evaluation: Operational Evaluation: IOT&E Outbrief	1	2012	1	2012
Test and Evaluation: Operational Evaluation: Follow-on Test and Evaluation	1	2012	4	2016
Production Milestones: Contract Awards: LRIP 5 Contract Award (OPN, APN5, RDTEN)	2	2010	2	2010
Production Milestones: Contract Awards: LRIP 6 Contract Award (OPN, APN5, RDTEN)	1	2011	1	2011
Production Milestones: Contract Awards: FRP Contract Award	2	2012	2	2012
Deliveries: Low-Rate Initial Production (LRIP) Deliveries (DI,CXP) (OPN, APN5, RDTEN)	1	2010	2	2013

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604777N: *Navigation/Id System*	PROJECT 1253: *Combat Ident System*

	Start		End	
Events by Sub Project	Quarter	Year	Quarter	Year
Deliveries: FRP Deliveries	2	2013	4	2016