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Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Navy									DATE: February 2010		
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 5: Development & Demonstration (SDD)				R-1 ITEM NOMENCLATURE PE 0604503N: SSN-688 & Trident Modernization							
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	131.196	120.779	118.897	0.000	118.897	105.140	100.506	98.468	94.963	Continuing	Continuing
0219: Sub Sonar Improvement (ENG)	64.716	59.075	71.795	0.000	71.795	58.314	61.225	61.552	70.248	Continuing	Continuing
0742: Sub Integrated Ant System	49.360	37.460	29.341	0.000	29.341	29.042	30.641	28.083	15.706	Continuing	Continuing
0775: Submarine Supt Equip Prog	1.412	1.445	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	16.046
1411: Sub Tact Comm System	15.708	21.206	17.761	0.000	17.761	17.784	8.640	8.833	9.009	Continuing	Continuing
9999: Congressional Adds	0.000	1.593	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	33.782
A. Mission Description and Budget Item Justification											
A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Submarine Support Equipment Program develops and improves submarine Electronic Warfare Support (EWS) technology, components, equipment, and systems that will increase submarine operational effectiveness, safety of ship, and survivability in an increasingly dense and sophisticated electromagnetic environment caused by the proliferation of complex radar, communications, and navigation equipment of potential adversaries. Enhancements are necessary for submarine EWS to be operationally effective in the following mission areas: Joint Littoral Warfare, Joint Surveillance, Space and Electronic Warfare and Intelligence Collection, Maritime rotection, and Joint Strike.											
The Submarine Sonar Improvement Program delivers block updates to Sonar Systems and improved Sensors installed on SSN 688, 688I, SSN 21, TRIDENT, Virginia, SSBN, and SSGN Class Submarines to maintain clear acoustical, tactical and operational superiority over submarine and surface combatants in all scenarios through detection, classification, localization and contact following. Current developments are focused on supporting Littoral Warfare, Regional Sea Denial, Battle Group Support, Diesel Submarine Detection, Surveillance, and Peacetime Engagement.											

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APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE			
1319: Research, Development, Test & Evaluation, Navy BA 5: Development & Demonstration (SDD)		PE 0604503N: SSN-688 & Trident Modernization			
B. Program Change Summary (\$ in Millions)					
	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	142.836	122.733	0.000	0.000	0.000
Current President's Budget	131.196	120.779	118.897	0.000	118.897
Total Adjustments	-11.640	-1.954	118.897	0.000	118.897
• Congressional General Reductions		-0.503			
• Congressional Directed Reductions		0.000			
• Congressional Rescissions	0.000	-0.051			
• Congressional Adds		1.600			
• Congressional Directed Transfers		0.000			
• Reprogrammings	-8.065	0.000			
• SBIR/STTR Transfer	-3.575	0.000			
• Program Adjustments	0.000	-3.000	118.897	0.000	118.897
Congressional Add Details (\$ in Millions, and Includes General Reductions)					
Project: 9999: Congressional Adds					
Congressional Add: Improved Submarine Towed Array Systems					
Congressional Add Subtotals for Project: 9999					
Congressional Add Totals for all Projects					
Change Summary Explanation					
FY11 from previous President's Budget is shown as zero because no FY11-15 data was presented in President's Budget 2010.					

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APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 5: <i>Development & Demonstration (SDD)</i>				R-1 ITEM NOMENCLATURE PE 0604503N: <i>SSN-688 & Trident Modernization</i>				PROJECT 0219: <i>Sub Sonar Improvement (ENG)</i>			
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
0219: <i>Sub Sonar Improvement (ENG)</i>	64.716	59.075	71.795	0.000	71.795	58.314	61.225	61.552	70.248	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		
A. Mission Description and Budget Item Justification <p>This program delivers block updates to Sonar Systems installed on SSN 688, 688I, SSN 21, TRIDENT, Virginia, SSBN, and SSGN Class Submarines to maintain clear acoustical, tactical and operational superiority over submarines and surface combatants in all scenarios through detection, classification, localization and contact following.</p> <p>Acoustics Rapid COTS Insertion (A-RCI) was a multi-phased evolutionary development geared toward addressing acoustic superiority issues through the rapid introduction of interim development products applicable to all classes of submarines. A-RCI Phase I and II introduced Towed Array processing improvements, Phase III introduced Spherical</p> <p>Array processing improvements, and Phase IV provided High Frequency (HF) Array processing improvements for SSN 688I, SSGN, Virginia and SSN 21 Class Submarines. As part of CNO N872's plan to maintain acoustic superiority for in-service submarines, a joint cooperative effort with PEO IWS-5 was established to deliver annual Advanced Processing</p> <p>Builds (APBs) to prevent obsolescence and deliver ongoing capability improvements. The capabilities in the APBs will be integrated as part of A-RCI certified system.</p> <p>Current developments to maintain Acoustic Superiority with new capability and prevent obsolescence are accomplished through annual Advanced Processing Builds (APBs). The capabilities in the APBs are integrated as part of the A-RCI certified system. Sensor efforts provide increased operational capabilities for littoral operations, situational awareness and reliability improvements.</p> <p>Towed System's development efforts provide increased operational capabilities and reliability improvements to maintain a clear acoustical, tactical, and operational superiority over submarine and surface combatants. These efforts include development of a Fiber Optic Thinline Towed Array, (TB-33) for increased reliability, the Next Generation Fatline Towed Array (TB-34) which provide improved Littoral Operational capability and the Low Cost Conformal Array, an HF array that provides enhanced situational awareness. Future Sensor development includes enhancements to long range passive detection, continued reliability improvements, and wide area search.</p>											
B. Accomplishments/Planned Program (\$ in Millions) 											

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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
APB Productionization FY 2009 Accomplishments: Continued Advanced Processing Build (APB) Sea Testing, Integration and Certification. This effort was primarily the transition of APB software from development to A-RCI for integration and test, and formal certification. FY 2010 Plans: Continue Advanced Processing Build (APB) Sea Testing, Integration and Certification. This effort is primarily the transition of APB software from development to A-RCI for integration and test, and formal certification. FY 2011 Base Plans: Continue Advanced Processing Build (APB) Sea Testing, Integration and Certification. This effort is primarily the transition of APB software from development to A-RCI for integration and test, and formal certification.		14.562	15.476	15.816	0.000	15.816
Integration and Testing. FY 2009 Accomplishments: Supported Advanced Processing Builds installed on SSN 688I, SSN 688, SSBN 730, SSN 21, SSGN 726, VA Class, and new sensors TB-34 Towed Arrays, TB-33 Towed Arrays and Low Cost Conformal Array (LCCA). FY 2010 Plans: Supports Advanced Processing Builds installed on SSN 688I, SSN 688, SSBN 730, SSN 21, SSGN 726, VA Class, and new sensors TB-34 Towed Arrays, TB-33 Towed Arrays and Low Cost Conformal Array (LCCA).		32.298	40.243	41.231	0.000	41.231

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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 Base Plans: Supports Advanced Processing Builds installed on SSN 688I, SSN 688, SSBN 730, SSN 21, SSGN 726, VA Class, and new sensors TB-34 Towed Arrays, TB-33 Towed Arrays and Low Cost Conformal Array (LCCA).						
HF Precision Imaging Active Sonar FY 2009 Accomplishments: Development of HF Precision Imaging Active Sonar was completed in FY09. The HF Precision Imaging Active Sonar provided improvements for under-ice capability and mine detection. It assisted the submarine in maneuvering near the bottom in medium and littoral waters, as well as the marginal ice zone and ice pack regions.		2.200	0.000	0.000	0.000	0.000
Low Cost Confromal Array (LCCA) FY 2009 Accomplishments: Low Cost Confromal Array (LCCA) is a low cost HF array that provided enhanced situational awareness and also supplied the capability to extend passive detection range in littoral environments against quiet threats and multi-path ranging beyond first bottom bounce capability. Development of LCCA light weight Advanced Development Model began in FY09. EDM procurements, fabrication and assembly also began in FY09. FY 2010 Plans: ARCI Integration, TECHEVAL and OPEVAL testing is planned for FY10.		3.000	1.700	0.000	0.000	0.000
Affordable Towed Array Technology (TB-33) Affordable Towed Array Technology (TB-33) development provided more affordable and reliable thinline arrays using fiber optic technology and eliminating "wet end" electronics. The program will transition to Production Representative Unit (PRU) Fabrication.		4.713	0.828	11.575	0.000	11.575

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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: Continue development of PRU.						
FY 2010 Plans: Continue development of PRU and testing.						
FY 2011 Base Plans: Continue development of special test modules to evaluate PRU design.						
Future Sensor Capability Providing array capability improved long range passive detection, continued reliability improvements, and wide area search. FY 2009 Accomplishments: Milestone C and completion of the functional configuration audit occurred. FY 2010 Plans: TECHEVAL and OPEVAL tests are scheduled along with the development and deliveries of the first three systems. FY 2011 Base Plans: Continue testing engineering capabilities.		7.623	0.828	3.173	0.000	3.173
Acquisition Workforce FY 2009 Accomplishments: N/A		0.320	0.000	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals		64.716	59.075	71.795	0.000	71.795

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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• OPN/BLI 214700: <i>SSN Acoustics</i>	202.658	241.315	184.528	0.000	184.528	247.301	236.557	311.371	259.182	Continuing	Continuing
• OPN/BLI 214705: <i>SSN Acoustics Installation</i>	72.103	55.452	52.487	0.000	52.487	44.844	44.811	37.454	51.438	Continuing	Continuing

D. Acquisition Strategy

Acoustic Systems:

A-RCI utilizes an open architecture and Commercial Off-the-Shelf products in support of new and upgraded sonar systems. A follow-on development and production sole source cost plus incentive fee contract was awarded to General Dynamics, Advanced Information Systems in August 2009 and will be awarded to Lockheed Martin Maritime Systems & Sensors in March 2010. Program Review with Milestone Decision Authority was conducted in November 2009 granting approval for the FY10 production option.

Thinline Arrays:

Towed Systems is the development of a highly reliable and more affordable Fiber Optic Thinline variant towed array which uses fiber optic sensor technology for data collection and moves all outboard electronics from the array to inboard the submarine where they can be easily maintained. Cost savings in array production will be gained by using automated production techniques and significantly reducing or eliminating the "hand touch" labor common to today's towed array production methods because of the number of different electronics that must be wired together to achieve the acoustics capabilities necessary to meet the threats of today and tomorrow. This development is being accomplished under a Phase III SBIR. The Critical Design Review (CDR) was completed in FY06 and the program has transitioned to the fabrication of Production Representative Units. Milestone C/LRIP planned for FY13. TECHEVAL and OPEVAL tests are scheduled for FY13 and FY14 respectively along with the development of the first three systems.

Hull Mounted Arrays:

The Low Cost Conformal Array (LCCA) transitioned from PEO IWS in FY08 with a competitive contract being awarded for the PRU development. PRU procurements, fabrication, and assembly began in FY08. PRU deliveries will be accepted in FY10. ARCI Integration, TECHEVAL and OPEVAL testing is planned for FY10.

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E. Performance Metrics <p>The Acoustics Rapid Commercial Off the Shelf (ARCI) program will modernize and sustain approximately 25% of the SSN Fleet per year through executing annual software Advanced Processing Builds (APBs) and bi-annual hardware Technical Insertions (TIs). The Low Cost Conformal Array (LCCA) program will successfully complete initial installation, developmental testing (DT), and operational testing (OT) in support of achieving the Initial Operating Capability (IOC). The TB-34 program will successfully achieve a Milestone C Full Rate Production decision. The TB-33 program will complete efforts to redesign critical components in support of initial installations.</p>		

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Product Development (\$ in Millions)														
				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Primary Hardware Development	SS/CPIF	LMC Manassas, VA	211.675	25.447	Mar 2010	25.722	Dec 2010	0.000		25.722	Continuing	Continuing	Continuing	
Primary Hardware Development	C/Various	Chesapeake Sciences Millersville, MD	36.339	0.828	Dec 2009	11.325	Dec 2010	0.000		11.325	Continuing	Continuing	Continuing	
Ancillary Hardware Development	C/TBD	ARL University of Texas Austin, TX	16.710	2.437	Feb 2010	2.653	Feb 2011	0.000		2.653	Continuing	Continuing	Continuing	
Systems Engineering	C/TBD	John Hopkins APL Baltimore, MD	19.327	2.375	Dec 2009	2.553	Dec 2010	0.000		2.553	Continuing	Continuing	Continuing	
Systems Engineering	SS/CPAF	Lockheed Eagan MN -Keyport	16.244	2.425	Jan 2010	2.607	Jan 2011	0.000		2.607	Continuing	Continuing	Continuing	
Primary Hardware Development	SS/CPAF	Progeny Systems Manassas, VA	20.481	6.500	Jan 2010	6.500	Jan 2011	0.000		6.500	Continuing	Continuing	Continuing	
Primary Hardware Development	SS/CPIF	LM Syracuse Syracuse, NY	11.023	0.500	Dec 2009	0.000		0.000		0.000	Continuing	Continuing	Continuing	
Systems Engineering	WR	NUWC Newport, RI	128.233	7.615	Dec 2009	7.847	Dec 2010	0.000		7.847	Continuing	Continuing	Continuing	
Systems Engineering	WR	NSWC Carderock, MD	11.300	2.123	Dec 2009	2.282	Dec 2010	0.000		2.282	Continuing	Continuing	Continuing	
Systems Engineering	WR	NSWC, Crane IN	0.503	0.000		0.000		0.000		0.000	0.000	0.503	0.503	
Systems Engineering	WR	Naval Research Lab Washington, DC	1.607	0.000		0.250	Oct 2010	0.000		0.250	Continuing	Continuing	Continuing	

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Product Development (\$ in Millions)													
				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	SS/CPIF	LM (IWS 5) Not Specified	7.774	0.828	Jan 2010	3.173	Jan 2011	0.000		3.173	Continuing	Continuing	Continuing
Hardware/Software Development	C/Various	SBIR (Various) Not Specified	2.127	0.403	Jun 2010	0.135	Jun 2011	0.000		0.135	Continuing	Continuing	Continuing
Subtotal			483.343	51.481		65.047		0.000		65.047			
Remarks													
Support (\$ in Millions)													
				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Software Development	SS/CPAF	General Dynamics, AIS Fairfax, VA	137.508	2.449	Aug 2009	2.596	Dec 2010	0.000		2.596	Continuing	Continuing	Continuing
Primary Software Development	C/CPFF	Sedna Digital, Manassas, VA	9.580	3.358	Feb 2010	3.819	Dec 2010	0.000		3.819	Continuing	Continuing	Continuing
Subtotal			147.088	5.807		6.415		0.000		6.415			
Remarks													

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Test and Evaluation (\$ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Operational Test and Evaluation	WR	OPTEVFOR Norfolk, VA	6.387	0.684	Dec 2009	0.333	Dec 2010	0.000		0.333	Continuing	Continuing	Continuing
Subtotal			6.387	0.684		0.333		0.000		0.333			

Remarks

Management Services (\$ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Management Support Services	C/FFP	EG&G Technical Services Washington, DC	9.247	0.853	Feb 2009	0.000	Feb 2010	0.000		0.000	Continuing	Continuing	Continuing
Travel	WR	NAVSEA Washington, DC	1.325	0.250	Nov 2008	0.000	Nov 2009	0.000		0.000	Continuing	Continuing	Continuing
Subtotal			10.572	1.103		0.000		0.000		0.000			

Remarks

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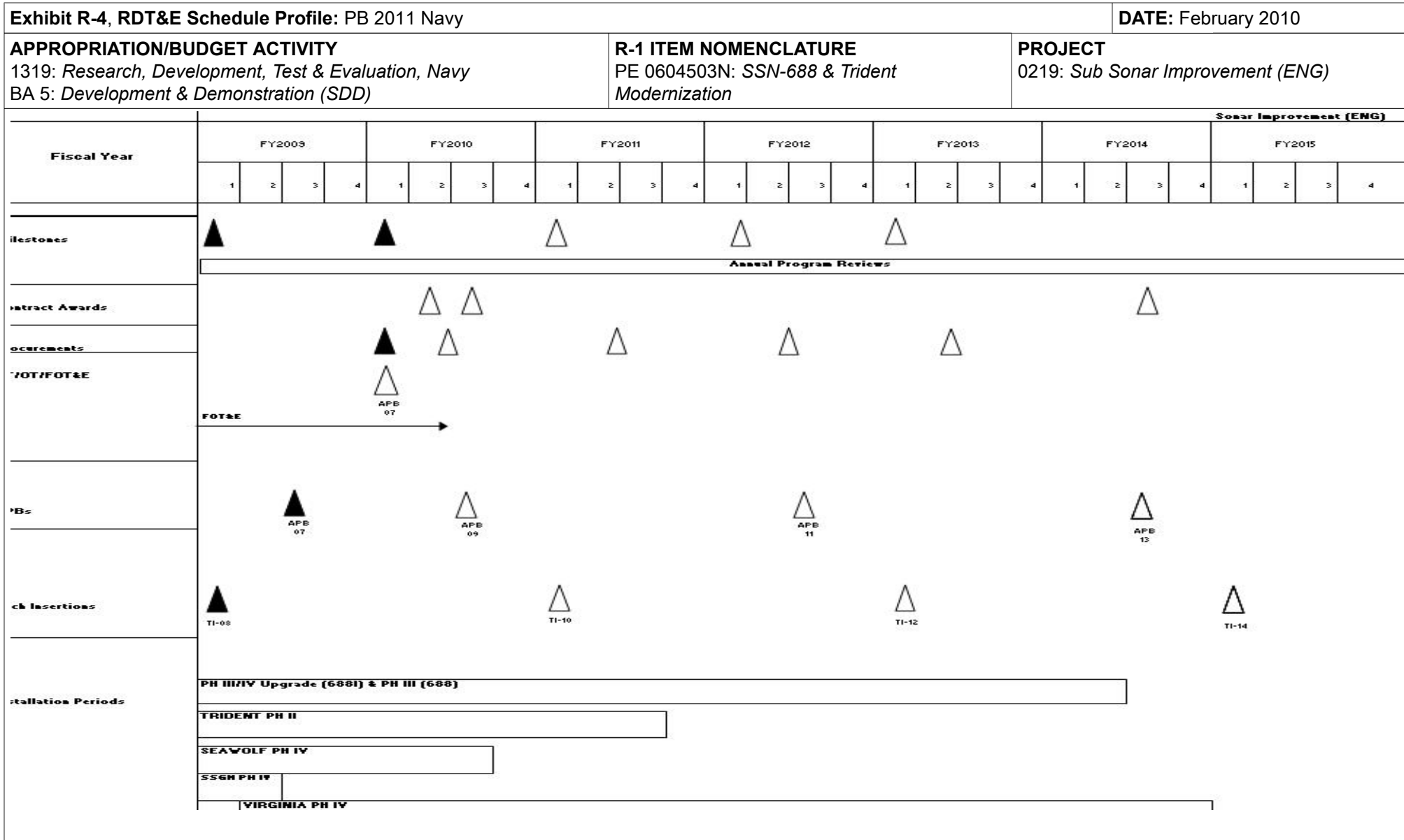
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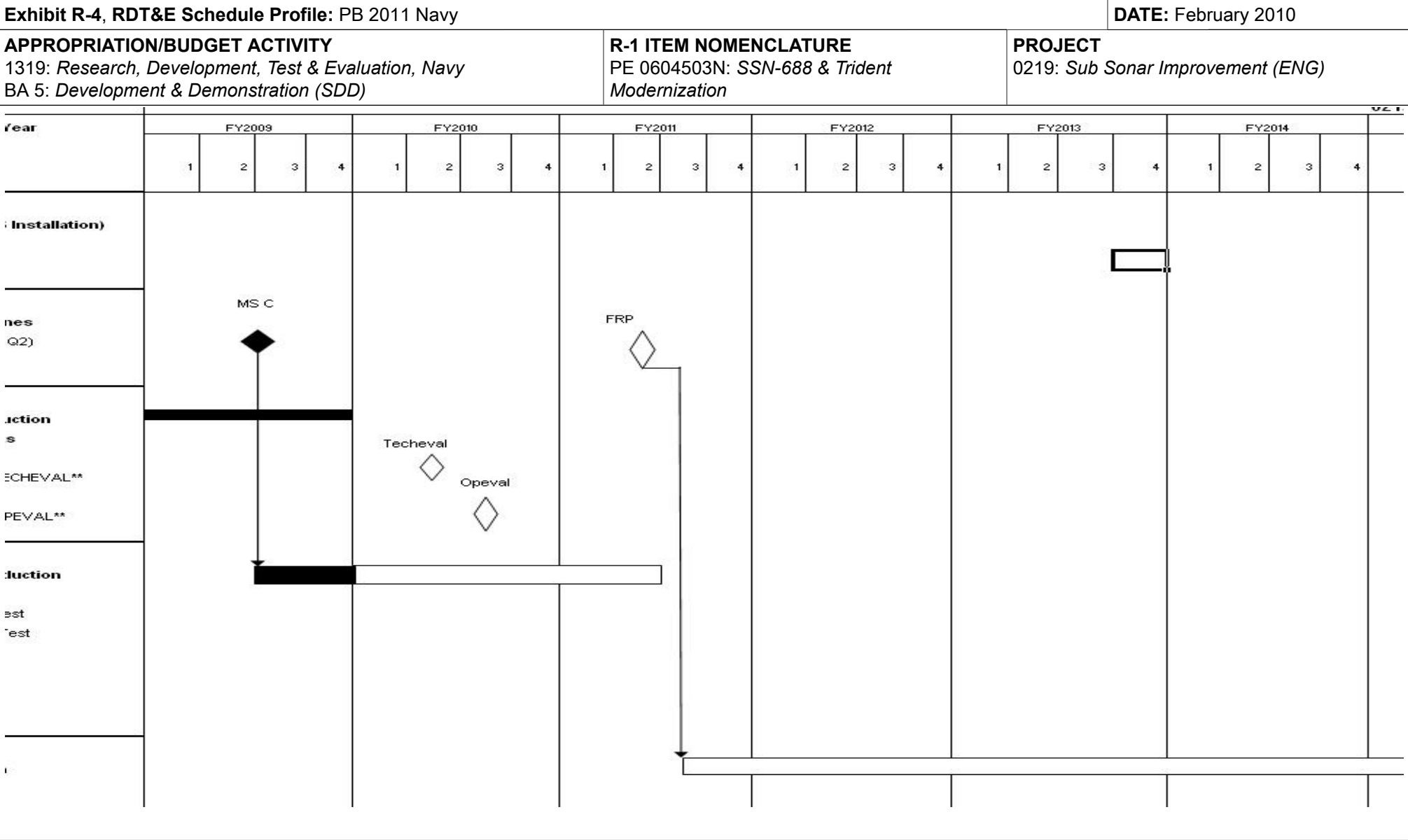
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	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	647.390	59.075		71.795		0.000		71.795			
Remarks											

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Exhibit R-4, RDT&E Schedule Profile: PB 2011 Navy																DATE: February 2010									
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1319: Research, Development, Test & Evaluation, Navy									PE 0604503N: SSN-688 & Trident								0219: Sub Sonar Improvement (ENG)								
BA 5: Development & Demonstration (SDD)									Modernization																
Fiscal Year	FY2009				FY2010				FY2011				FY2012				FY2013				FY2014				0219D/E
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
Development and																									
Modeling and Simulation																									
Design/Best Value																									
Decision (LRIP)/ ARB																									
Prototype and reliability testing																									
Contract Award																									
Procurement, fab and																									
Tests (including LPO)																									
Full Production (LRIP)																									
Test - TECHEVAL																									
Test - OPEVAL																									
Decision Full Rate (P)																									

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Exhibit R-4, RDT&E Schedule Profile: PB 2011 Navy

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APPROPRIATION/BUDGET ACTIVITY

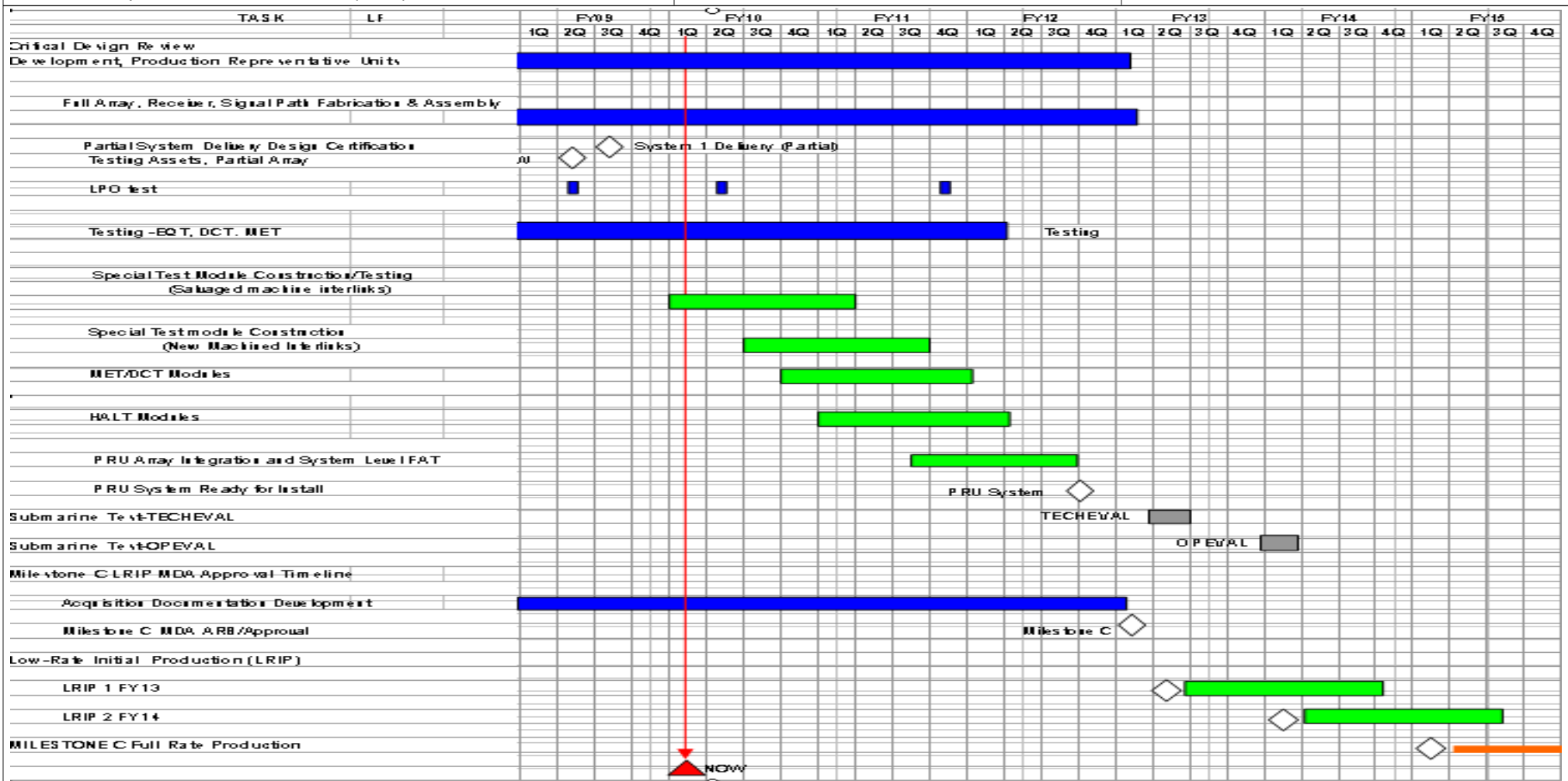
1319: Research, Development, Test & Evaluation, Navy
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R-1 ITEM NOMENCLATURE

PE 0604503N: SSN-688 & Trident
Modernization

PROJECT

0219: Sub Sonar Improvement (ENG)



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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
ACOUSTICS	1	2009	4	2015
Acquisition Milestones	1	2009	1	2013
Annual Program Review	1	2009	4	2015
Contract Awards	2	2010	3	2014
Procurements	1	2010	3	2013
DT/OT/FOT&E Tests	1	2009	2	2010
APB Deliveries	3	2009	2	2012
Tech Insertions	4	2009	3	2014
Installation Periods	1	2009	4	2014
LCCA	1	2009	4	2015
LCCA Development FY08-FY09	1	2009	4	2009
Acquisition Milestone C	2	2009	3	2009
Acquisition Milestone B (MS B) Complete	4	2009	4	2009
Production Representative Units Delivery	1	2009	4	2009
LCCA Submarine Test - TECHEVAL	2	2010	2	2010
LCCA Submarine Test - OPEVAL	3	2010	3	2010
Low Rate Initial Production	2	2009	2	2011
Full Rate Production	3	2011	4	2015

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Event	Start		End	
	Quarter	Year	Quarter	Year
TB-33	1	2009	1	2009
Fiber Optic Thinline Development FY02-FY13	1	2009	1	2013
System Deliveries	4	2012	4	2012
LPO Test (Lake Test)	2	2010	2	2010
TB-33 Submarine Test - TECHEVAL	2	2013	2	2013
TB-33 Submarine Test - OPEVAL	1	2014	1	2014
MS C LRIP Production Contract Award	2	2013	1	2014
MS C Full Rate Production	1	2015	1	2015
TB-33 Production Deliveries	4	2014	4	2015
TB-34	1	2009	1	2009
Low Rate Initial Production (LRIP)	1	2009	2	2010
TB-34 Submarine Test - TECHEVAL	3	2009	3	2009
TB-34 Submarine Test - OPEVAL	1	2010	1	2010
Milestone C Decision (FRP) / ARB	3	2010	3	2010
TB-34 Production Deliveries	3	2010	4	2015

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy								DATE: February 2010			
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 5: <i>Development & Demonstration (SDD)</i>				R-1 ITEM NOMENCLATURE PE 0604503N: <i>SSN-688 & Trident Modernization</i>				PROJECT 0742: <i>Sub Integrated Ant System</i>			
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
0742: <i>Sub Integrated Ant System</i>	49.360	37.460	29.341	0.000	29.341	29.042	30.641	28.083	15.706	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

The Submarine Integrated Antenna System project (0742) provides for the development and testing of submarine antennas designed to meet emerging submarine requirements of: (a) Improved frequency coverage and data rate capabilities of submarine antennas and their interface to the External Communications System, (b) Improved submarine antenna performance and data rate while the submarine is operating at speed and depth, (c) Antenna compatibility with new waveforms and transceiver equipment, (d) Improved stealth capability of existing and future antennas and (e) Improved antenna design to reduce Total Ownership Cost. This project funds research and development for submarine antennas including (1) Pre-Planned Product Improvement efforts to existing antennas including Outboard Electronics-538/BRC (OE-538/BRC) Multi-Function Antenna, (2) OE-562 Submarine, High Data Rate (SubHDR) system development of Underwater Explosion (UNDEX) modification kits, (3) Development of new systems including Advanced High Data Rate (AdvHDR) and (4) Communication at Speed and Depth (CSD) design efforts. These efforts will provide Ship Submersible Nuclear, Ship Submersible Ballistic Nuclear and Ship Submersible Guided Nuclear platforms with an improved communications capability while operating at speed and depth thus enhancing operational flexibility and maintaining stealth in littoral mission applications.

JUSTIFICATION FOR BUDGET ACTIVITY:

This program is funded under ENGINEERING AND MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

Notes/Comments:

FY11 Antenna Transition Engineering: Continue research analysis for investigating new technologies for legacy antenna systems.

FY11 OE-538: Complete the manufacturing of the Engineering Development Model. Perform a Development Test (DT).

FY11 SubHDR: Complete UNDEX development. Continue research and analysis on performance reliability components.

FY11 AdvHDR: Continue risk mitigation demonstrations and technology maturation efforts towards technology readiness assessments in preparation of Milestone B.

FY11 CSD: Conduct a Developmental Test/Operational Assessment of the 2 EDMs.

B. Accomplishments/Planned Program (\$ in Millions)

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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Antenna Transition Engineering FY 2009 Accomplishments: Continued to provide emerging requirements and satellite communications database/link analysis for other development programs in support of current & future communication architectures. Continued Preplanned Product Improvement (P3I) investigation and developed efforts for the legacy antenna systems. Continued concept engineering, new technology evaluations, and assessments in support of current and future submarine antenna applications, to include Hull, Mechanical, & Electrical (HM&E) interfaces. Continued to investigate multiple usage antennas, including antennas that can be used for communications and other functions. FY 2010 Plans: Continue to provide emerging requirements and satellite communications database/link analysis for other development programs i.e. Mobile User Objective System, Link 16, Wideband Global SATCOM, Advanced Extremely High Frequency, other new waveforms. Continue P3I investigation and development efforts for the legacy antenna systems. Continue to investigate multiple usage and assessments in support of current and future submarine antenna applications; specifically to assess the impact to the sail and hull penetrators on different classes of submarines. FY 2011 Base Plans: Continue to provide emerging requirements and satellite communications database/link analysis for other development programs in support of current & future communication architectures. Continue P3I investigation and development efforts towards 2 legacy antenna systems. Continue concept engineering, new technology evaluations, and assessments in support of current and future submarine antenna applications, to include HM&E interfaces. Continue to investigate multiple usage antennas, including antennas that can be used for communications and other functions.		2.860	4.329	4.557	0.000	4.557
OE-538		6.884	7.376	11.744	0.000	11.744

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy				DATE: February 2010		
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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: Commenced system design for Increment 2 Engineering Development Model (EDM) hardware/software. Commenced preparation of integration and system testing of Increment 2 system. Completed development of documentation in preparation for a Milestone B and contract award. Commenced system engineering support for Increment 2, including development of Integrated Logistics Support (ILS) products.						
FY 2010 Plans: Continue system design for Increment 2 EDM hardware/software. Continue integration and system testing of Increment 2 system. Continue system engineering including development of documentation and ILS products for Increment 2. Commence development/update of required Milestone C acquisition documents.						
FY 2011 Base Plans: Complete Increment 2 system design, manufacture & test EDM to validate the design supports Fleet requirements (Mobile User Objective System (MUOS)/Link-16/Iridium). Prepare acquisition (e.g., Capabilities Production Document (CPD)) and applicable ILS documentation to support Low-Rate Initial Production decision.						
SubHDR P3I		8.329	1.722	1.621	0.000	1.621
FY 2009 Accomplishments: Continued system engineering for the development efforts to meet Grade-A shock requirement. Completed program planning for Grade-A shock requirements. Commenced Engineering Change Proposal/Integrated Logistics Supported documentation development and test support development of Grade-A shock requirements.						

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy				DATE: February 2010		
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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2010 Plans: Continue Underwater Explosive development and testing. Commence research and analysis on SubHDR components to increase performance reliability.						
FY 2011 Base Plans: Complete system engineering, Engineering Change Proposal/Integrated Logistics Support documentation development and test support development of Grade-A shock requirements. Continue research and analysis on Submarine High Data Rate (SubHDR) components to increase performance reliability; Radome special study report.						
Advanced HDR		6.907	7.830	6.719	0.000	6.719
FY 2009 Accomplishments: Continued design and acquisition documentation development in support of Milestone B. Continued system definition/risk reduction and system development efforts. Continued technology maturation and demonstration efforts. Continued system development engineering efforts.						
FY 2010 Plans: Continue design and acquisition documentation development in support of Milestone B. Continue system definition/risk reduction and system development efforts. Continue technology maturation and demonstration efforts. Continue system development engineering efforts.						
FY 2011 Base Plans: Continue design and acquisition documentation development in support of Milestone B. Continue system definition/risk reduction and system development efforts based on risk mitigation hardware. Continue technology maturation and demonstration efforts. Continue system development engineering efforts.						
Communications at Speed and Depth		24.100	16.203	4.700	0.000	4.700

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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: Continued to design and develop Increment 1 Engineering Development Models (EDMs) and test assets. Commenced design and development of the shore sites. Provided technical oversight to include management of all technical reviews, manage and provide government furnished equipment, program, acquisition and contract management.						
FY 2010 Plans: Continue the design and development of the Increment 1 EDMs (Qty 2) and test assets including integrating the Communications at Speed and Depth (CSD) capability into the shore Broadcast Control Authority (BCA). Conduct Developmental Testing and an Operational Assessment (DT/OA) of the EDMs. Provide ongoing acquisition, program management, contracting and systems engineering oversight in support of CSD to include updating all acquisition documentation in preparation for a Milestone C decision.						
FY 2011 Base Plans: Conduct DT/OA of the 2 EDMs. Provide program, contract and systems engineering management support.						
Acquisition Workforce Fund FY 2009 Accomplishments: Acquisition Workforce Fund		0.280	0.000	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals		49.360	37.460	29.341	0.000	29.341

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C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 313000: Submarine Communications	79.026	48.579	59.013	0.000	59.013	84.655	86.221	89.646	90.310	Continuing	Continuing
D. Acquisition Strategy											
Program Milestones: Outboard Electronics-538 (OE-538): 3rd QTR FY09 Milestone B (MS B); 3rd QTR FY12 Milestone C (MS C); 3rd QTR FY13 Full Rate Production (FRP) Decision Review Advanced High Data Rate (AdvHDR): 2nd QTR FY12 MS B; 2nd QTR FY15 MS C T&E Milestones: OE-538: 4th QTR FY11 Developmental Test (DT) for MS C; 2nd QTR FY12 Operational Assessment (OA) for MS C; 1st QTR FY13 DT for FRP; 3rd QTR FY13 Operational Test (OT) for FRP AdvHDR: 1st QTR FY15 OA for MS C Communications at Speed and Depth (CSD): 2nd QTR FY11 for Test and Evaluation Increment 1 Contract Milestones: OE-538: 4th QTR FY09 Development Contract Award AdvHDR: 2nd QTR FY12 Engineering Demonstration Model (EDM) Contract Award CSD: 2nd QTR FY09 Development Contract Award											
E. Performance Metrics											
FY11 Antenna Transition Engineering: Continue research analysis for investigating new technologies for legacy antenna systems. FY11 OE-538: Complete the manufacturing of the Engineering Development Model. Perform a Development Test (DT). FY11 SubHDR: Complete UNDEX development. Continue research and analysis on performance reliability components. FY11 AdvHDR: Continue risk mitigation demonstrations and technology maturation efforts towards technology readiness assessments in preparation of Milestone B. FY11 CSD: Conduct a Developmental Test (DT)/Operational Assessment (OA) of the 2 EDMs.											

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Product Development (\$ in Millions)														
				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Digital Interface Dev (SubHDR)	C/CPAF	Raytheon Marlboro, MA	3.545	0.000		0.000		0.000		0.000	0.000	3.545	3.545	
Digital Dev (SubHDR)	C/CPAF	Raytheon Marlboro, MA	8.182	0.000		0.000		0.000		0.000	0.000	8.182	8.182	
Hardware Dev (SubHDR)	WR	NUWC Newport, RI	2.888	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing	
Hardware Dev (HDR SHF/FOT)	C/CPAF	Raytheon Marlboro, MA	14.632	0.000		0.000		0.000		0.000	0.000	14.632	14.632	
Hardware Dev (Antenna Trans Eng)	C/CPAF	Sippican Marion, MA	2.207	0.000		0.000		0.000		0.000	0.000	2.207	2.207	
Hardware Dev (CSD)	C/CPAF	Apogen CA	2.800	0.000		0.000		0.000		0.000	0.000	2.800	2.800	
Systems/Hardware Dev (CSD)	C/CPAF	Various Various	31.172	8.181	Feb 2010	1.970	Nov 2010	0.000		1.970	Continuing	Continuing	Continuing	
Hardware Dev (OE-538)	C/CPAF	Various Various	4.768	4.477	Nov 2009	8.319	Oct 2010	0.000		8.319	0.000	17.564	17.564	
Systems Engineering (OE-538)	WR	NUWC Newport, RI	2.799	0.700	Feb 2010	1.250	Oct 2010	0.000		1.250	Continuing	Continuing	Continuing	
Systems Engineering (SubHDR)	C/CPFF	Raytheon Marlboro, MA	6.316	0.000		0.000		0.000		0.000	0.000	6.316	6.316	
System Engineering (SubHDR)	WR	NUWC Newport, RI	15.304	0.303	Feb 2010	0.200	Dec 2010	0.000		0.200	Continuing	Continuing	Continuing	
Systems Engineering (AdvHDR)	WR	NUWC Newport, RI	6.980	1.500	Feb 2010	2.298	Nov 2010	0.000		2.298	Continuing	Continuing	Continuing	
	WR	NUWC	15.972	1.995	Feb 2010	1.837	Nov 2010	0.000		1.837	Continuing	Continuing	Continuing	

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Product Development (\$ in Millions)														
				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
System Engineering (Antenna Trans Eng)		Newport, RI												
System Engineering (Antenna Trans Eng)	Various/ Various	Various Various	7.066	1.829	Feb 2010	2.029	Nov 2010	0.000		2.029	Continuing	Continuing	Continuing	
System Engineering (CSD)	Various/ Various	Various Various	4.078	0.250	Feb 2010	0.300	Dec 2010	0.000		0.300	Continuing	Continuing	Continuing	
System Engineering (CSD)	WR	SSC PAC San Diego, CA	2.828	0.220	Feb 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing	
Systems Engineering (CSD)	WR	NUWC Newport, RI	12.610	4.210	Feb 2010	1.701	Dec 2010	0.000		1.701	Continuing	Continuing	Continuing	
UNDEX Kit Development (SubHDR)	C/CPAF	Raytheon Marlboro, MA	5.325	0.150	Feb 2010	0.000		0.000		0.000	0.000	5.475	5.475	
Technology Maturation/ Demonstrations Dev(AdvHDR)	C/CPAF	Various Various	1.945	4.176	Feb 2010	1.550	Jan 2011	0.000		1.550	0.000	7.671	7.671	
Research and Analysis Reliability Dev (SubHDR)	WR	NUWC Newport, RI	0.000	0.618	Feb 2010	0.711	Jan 2011	0.000		0.711	0.000	1.329	1.329	
Systems Engineering (AdvHDR)	Various/ Various	Various Various	2.126	0.500	Feb 2010	0.766	Nov 2010	0.000		0.766	Continuing	Continuing	Continuing	
Subtotal			153.543	29.109		22.931		0.000		22.931				
Remarks														

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Support (\$ in Millions)														
				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Integrated Logistics Support (AdvHDR)	Various/ Various	Various Various	0.579	0.075	Feb 2010	0.249	Nov 2010	0.000		0.249	Continuing	Continuing	Continuing	
Integrated Logistics Support (Antenna Trans Eng)	Various/ Various	Various Various	0.050	0.000		0.000		0.000		0.000	0.000	0.050	0.050	
Integrated Logistics Support (OE-538)	Various/ Various	Various Various	0.000	0.820	Feb 2010	0.850	Oct 2010	0.000		0.850	Continuing	Continuing	Continuing	
Integrated Logistics Support (CSD)	Various/ Various	Various Various	0.283	0.000		0.000		0.000		0.000	0.000	0.283	0.283	
Acquisition Documentation (Various)	Various/ Various	Various Various	0.622	0.310	Feb 2010	0.200	Oct 2010	0.000		0.200	Continuing	Continuing	Continuing	
Subtotal			1.534	1.205		1.299		0.000		1.299				
Remarks														
Test and Evaluation (\$ in Millions)														
				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Test & Evaluation (CSD)	WR	COTF Norfolk, VA	0.350	0.087	Feb 2010	0.200	Dec 2010	0.000		0.200	Continuing	Continuing	Continuing	
Test & Evaluation (OE-538)	WR	COTF Norfolk, VA	0.185	0.114	Feb 2010	0.125	Oct 2010	0.000		0.125	Continuing	Continuing	Continuing	

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Test and Evaluation (\$ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test & Evaluation (SubHDR)	WR	NUWC Newport, RI	0.357	0.126	Feb 2010	0.120	Dec 2010	0.000		0.120	Continuing	Continuing	Continuing
Developmental/ Operational T&E (AdvHDR)	WR	COTF Norfolk, VA	0.000	0.015	Feb 2010	0.050	Nov 2010	0.000		0.050	Continuing	Continuing	Continuing
Developmental/ Operational T&E (AdvHDR)	WR	NUWC Newport, RI	0.000	0.350	Feb 2010	0.255	Nov 2010	0.000		0.255	Continuing	Continuing	Continuing
Developmental/ Operational T&E (OE-538)	WR	NUWC Newport, RI	0.000	0.266	Feb 2010	0.350	Oct 2010	0.000		0.350	Continuing	Continuing	Continuing
Test & Evaluation (CSD)	WR	SSC PAC San Diego, CA	0.268	2.000	Feb 2010	0.229	Dec 2010	0.000		0.229	Continuing	Continuing	Continuing
Subtotal			1.160	2.958		1.329		0.000		1.329			

Remarks

Management Services (\$ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support (SubHDR)	Various/ Various	Various Various	0.977	0.525	Feb 2010	0.540	Dec 2010	0.000		0.540	Continuing	Continuing	Continuing

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Management Services (\$ in Millions)														
				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Program Management Support (AdvHDR)	Various/ Various	Various Various	3.426	1.214	Feb 2010	1.551	Nov 2010	0.000		1.551	Continuing	Continuing	Continuing	
Program Management Support (Antenna Trans Eng)	Various/ Various	Various Various	0.901	0.505	Feb 2010	0.541	Nov 2010	0.000		0.541	Continuing	Continuing	Continuing	
Program Management Support (CSD)	Various/ Various	Various Various	4.143	0.945	Feb 2010	0.300	Nov 2010	0.000		0.300	Continuing	Continuing	Continuing	
Program Management Support (OE-538)	Various/ Various	Various Various	1.334	0.999	Feb 2010	0.850	Oct 2010	0.000		0.850	Continuing	Continuing	Continuing	
Acquisition Workforce	Various/ Various	Various Various	0.280	0.000		0.000		0.000		0.000	0.000	0.280	0.280	
Subtotal			11.061	4.188		3.782		0.000		3.782				
Remarks														
			Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals			167.298	37.460		29.341		0.000		29.341				
Remarks														

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Exhibit R-4, RDT&E Schedule Profile: PB 2011 Navy																DATE: February 2010																																																																															
APPROPRIATION/BUDGET ACTIVITY																R-1 ITEM NOMENCLATURE																PROJECT																																																															
1319: Research, Development, Test & Evaluation, Navy																PE 0604503N: SSN-688 & Trident Modernization																0742: Sub Integrated Ant System																																																															
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February 2010																																																																																															
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RD TEN/BA 5																0604503N/SSN-688 AND TRIDENT MODERNIZATION																0742B/Adv HDR																																																															
Fiscal Year																2009				2010				2011				2012				2013				2014				2015																																																							
																1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4																																																				
Acquisition (AdvHDR)																Technology Development																Engineering & Manufacturing Development																Production																																															
Milestones																																MS B																																MSC																															
Requirements																CDD																																CPD																																															
Technology Demonstration																DEMO																																																																															
																Technology Maturation																																																																															
System Development																																EDM Contract Award																PDR																CDR																															
Engineering Dev. Model																																																EDM DEVELOPMENT																																															
Development Test																																																																OA																															
Contract Deliveries (Down select)																																																																EDM Delivery																															
Vendor 1																																																																																LRP Award															
Vendor 2																																																																																															

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Exhibit R-4, RDT&E Schedule Profile: PB 2011 Navy																		DATE: February 2010													
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 5: Development & Demonstration (SDD)														R-1 ITEM NOMENCLATURE PE 0604503N: SSN-688 & Trident Modernization										PROJECT 0742: Sub Integrated Ant System							
CLASSIFICATION:														UNCLASSIFIED																	
EXHIBIT R-4, SCHEDULE PROFILE																		DATE February 2010													
APPROPRIATION/BUDGET ACTIVITY RD TEN/BA 5														PROGRAM ELEMENT NUMBER AND NAME 0604503N/SSN-688 AND TRIDENT MODERNIZATION										PROJECT NUMBER AND NAME 0742C/CSD							
Fiscal Year		2009				2010				2011				2012				2013				2014				2015					
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4						
Acquisition Milestones (CSD)		Contract Award																													
Requirements																															
Next Generation Technology Demonstrations		Technology Development																													
System Development						PDR				CDR				SVR																	
Engineering Dev. Model										EDM Development Inc 1																					
Deliverables										EDM																					
Test and Evaluation Increment 1														DT/OA																	
Production Milestones LRIP FRP																															
Ship-Set Deliverables (Afloat)																															
RTOF Tech Demo (US/UK)						Install, Test, & Restore SSN Submarine																									

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Exhibit R-4, RDT&E Schedule Profile: PB 2011 Navy

DATE: February 2010

APPROPRIATION/BUDGET ACTIVITY

1319: *Research, Development, Test & Evaluation, Navy*

BA 5: *Development & Demonstration (SDD)*

R-1 ITEM NOMENCLATURE

PE 0604503N: SSN-688 & *Trident*

Modernization

PROJECT

0742: Sub Integrated Ant System

CLASSIFICATION:		UNCLASSIFIED	
EXHIBIT R-4, SCHEDULE PROFILE			DATE February 2010
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME	
RD TEN/BA 5		0604503N/SSN-688 AND TRIDENT MODERNIZATION 0742D/OE-538	
Fiscal Year	2009	2010	2011
	1 2 3 4	1 2 3 4	1 2 3 4
Acquisition OE-538 Inc 2 Milestones	MS B		MS C
Requirements	CDD	CPD	
System Development		PDR CDR	
Engineering Dev. Model		EDM Development	
Development Contract Award	Contract Award		EDM Delivery
Testing		DT	DT OA
Contract/Deliveries			
LRIP Contract Option			7
LRIP Deliveries			7
FRP Contract Option			8
FRP Deliveries			8 12 21

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Exhibit R-4, RDT&E Schedule Profile: PB 2011 Navy

DATE: February 2010

APPROPRIATION/BUDGET ACTIVITY

1319: *Research, Development, Test & Evaluation, Navy*

BA 5: *Development & Demonstration (SDD)*

R-1 ITEM NOMENCLATURE

PE 0604503N: SSN-688 & *Trident*

Modernization

PROJECT

0742: Sub Integrated Ant System

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Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 5: <i>Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604503N: <i>SSN-688 & Trident Modernization</i>	PROJECT 0742: <i>Sub Integrated Ant System</i>	

Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
SubHDR Research & Analysis for Performance Reliability	1	2010	1	2012
SubHDR Performance Reliability Development/Test	2	2012	2	2015
SubHDR FOT/SHF Procurement Contract Option Award	2	2009	2	2009
SubHDR GBS/SHF Procurement Contract Option Award	1	2009	1	2009
SubHDR UNDEX Development	1	2009	4	2011
SubHDR FOT/SHF Production Deliveries	3	2009	3	2010
SubHDR GBS/SHF Production Deliveries	1	2010	2	2015
AdvHDR DEMO	1	2009	2	2012
AdvHDR Technology Maturation	1	2009	1	2012
Adv HDR Capabilities Development Document (CDD)	1	2009	4	2010
Adv HDR Milestone B Decision (MS B)	2	2012	2	2012
Adv HDR Milestone C Decision (MS C)	2	2015	2	2015
Adv HDR Eng Dev Model (EDM) Contract Award	2	2012	2	2012
AdvHDR Eng Dev Model (EDM) Development	2	2012	3	2014
Adv HDR Eng Dev Model (EDM) Delivery	3	2014	3	2014
Adv HDR Capabilities Production Document (CPD)	4	2013	4	2014
Adv HDR Preliminary Design Review (PDR)	4	2012	4	2012
Adv HDR Critical Design Review (CDR)	4	2013	4	2013

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Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy			DATE: February 2010	
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 5: Development & Demonstration (SDD)	R-1 ITEM NOMENCLATURE PE 0604503N: SSN-688 & Trident Modernization	PROJECT 0742: Sub Integrated Ant System		
	Start		End	
Event	Quarter	Year	Quarter	Year
Adv HDR Operational Assessment (OA)	1	2015	1	2015
Adv HDR Low-Rate Initial Production (LRIP) Award	3	2015	3	2015
CSD Technology Demonstrations	1	2009	2	2010
CSD RTOF Install, Test, and Restore	1	2009	2	2009
CSD Towed Communications Buoy Replacement (Joint effort with UK)	1	2012	4	2015
CSD Contract Award Increment 1	2	2009	2	2009
CSD EDM Development Increment 1	2	2009	2	2011
CSD Preliminary Design Review (PDR) Increment 1	4	2009	4	2009
CSD Critical Design Review (CDR) Increment 1	2	2010	2	2010
CSD EDM Deliveries Increment 1	4	2010	4	2010
CSD System Verification Review (SVR) Increment 1	3	2010	3	2010
CSD Test and Evaluation Increment 1	2	2011	4	2011
OE-538 Capability Development Document (CDD)	1	2009	1	2009
OE-538 Full Rate Production Decision Review (FRP DR)	3	2013	3	2013
OE-538 Full Rate Production (FRP) Contract Option	4	2013	4	2013
OE-538 Full Rate Production (FRP) First Delivery	2	2014	2	2014
OE-538 Milestone B Decision (MS B)	3	2009	3	2009
OE-538 Development Contract Award	4	2009	4	2009
OE-538 System Development	4	2009	2	2012
OE-538 Engineering Development Model Development	4	2009	4	2011

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Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 5: <i>Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604503N: <i>SSN-688 & Trident Modernization</i>	PROJECT 0742: <i>Sub Integrated Ant System</i>	

Event	Start		End	
	Quarter	Year	Quarter	Year
OE-538 Preliminary Design Review (PDR)	2	2010	2	2010
OE-538 Critical Design Review (CDR)	1	2011	1	2011
OE-538 Eng Dev Model (EDM) - Delivery	4	2011	4	2011
OE-538 Developmental Test (DT)	4	2011	1	2013
OE-538 Operational Assessment (OA)	2	2012	2	2012
OE-538 Operational Test (OT)	3	2013	3	2013
OE-538 Capability Production Document (CPD)	2	2010	3	2011
OE-538 Milestone C (MS C) Decision	3	2012	3	2012
OE-538 Low-Rate Initial Production (LRIP) Contract Option	3	2012	3	2012
OE-538 Low-Rate Initial Production (LRIP) First Delivery	1	2013	1	2013
OE-538 Initial Operational Capability (IOC)	4	2013	4	2013
OE-538 Full Rate Production (FRP) Contract Options	4	2013	2	2015
OE-538 Full Rate Production (FRP) First Deliveries	2	2014	4	2015

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy								DATE: February 2010			
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 5: Development & Demonstration (SDD)				R-1 ITEM NOMENCLATURE PE 0604503N: SSN-688 & Trident Modernization				PROJECT 0775: Submarine Supt Equip Prog			
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
0775: Submarine Supt Equip Prog	1.412	1.445	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	16.046
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		
A. Mission Description and Budget Item Justification											
<p>This program develops and improves techniques, components, equipment, and systems that will increase submarine operational effectiveness, safety of ship, and survivability in the increasingly dense and sophisticated electromagnetic environment caused by the proliferation of complex radar, communications, and navigation equipment of potential adversaries. Improvements are necessary for Submarine Electronic Warfare Support (ES) systems to be operationally effective in the following mission areas: Joint Littoral Warfare; Joint Surveillance, Space and Electronic Warfare and Intelligence Collection; Maritime Protection; Information Operations, Special Operations Force (SOF) Support; and Joint Strike. Efforts include: (1) Integration of the technology developed and transitioned from the Advanced Submarine Support Equipment Program (ASSEP), project F0770 into the tactical ES system; (2) Resolution of software trouble reports during technology updates, from fleet feedback reports, and Submarine Warfare Federated Tactical System (SWFTS)/Non Propulsion Electronic System (NPES) Tactical Local Area Network (TACLAN) migrations; (3) Integration, test, and installation of COTS technology for system enhancements.</p> <p>The Advanced Electronic Warfare Support (ES) Development Projects include the development of: PATRIOT Phase B - Low Probability of Intercept (LPI) Radar, LPI Direction Finding (DF), Distant ES Support and Remote Log-In, Specific Emitter Identification (SEI) Improvements, ES Vulnerability Tool, Integrated ES and ECS Radio Frequency Distribution Unit (RFDU), Multi-function Modular Mast (MMM) payloads, Mast Signature Reduction, PATRIOT Non-Scanning LPI Radar, Capability and Technical Initiatives, and next generation processes and radar wideband miniaturization.</p> <p>RDTE Funding line supports the entire AN/BLQ-10 ES procurement program. Average FY OPN and SCN hardware procurement yearly funds are \$100M.</p> <p>Submarine Support Equipment Program was changed to a Military Intelligence Program beginning Fiscal Year 2011 under a new Program Element 0304503.</p>											
B. Accomplishments/Planned Program (\$ in Millions)											
	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total						
Submarine Support Equipment Program	1.405	1.445	0.000	0.000	0.000						

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy									DATE: February 2010				
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 5: Development & Demonstration (SDD)				R-1 ITEM NOMENCLATURE PE 0604503N: SSN-688 & Trident Modernization			PROJECT 0775: Submarine Supt Equip Prog						
B. Accomplishments/Planned Program (\$ in Millions)													
									FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: FY 09 Conduct Test of Specific Emitter Identification, Automatic Contact Correlation, and LPI Receiver. Passive Ranging Development and Processor improvements. Research and resolve AN/BLQ-10 SPRs.													
FY 2010 Plans: FY 10 Complete Test of LPI Receiver. Develop remote maintenance, processor improvements, Advanced EW tuners, and IO payloads. Research and resolve AN/BLQ-10 SPRs. NPES and SWFTS software baseline changes.													
Defense Acquisition Workforce Defense Fund (DAWDF) FY 2009 Accomplishments: N/A									0.007	0.000	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals									1.412	1.445	0.000	0.000	0.000
C. Other Program Funding Summary (\$ in Millions)													
Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost		
• SCN/201300: VIRGINIA Class Submarine	3,573.127	3,957.409	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7,530.536		
• OPN/083100: Submarine Support Equipment Program	67.179	69.812	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	136.991		
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy										DATE: February 2010		
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 5: <i>Development & Demonstration (SDD)</i>				R-1 ITEM NOMENCLATURE PE 0604503N: <i>SSN-688 & Trident Modernization</i>				PROJECT 0775: <i>Submarine Supt Equip Prog</i>				
C. Other Program Funding Summary (\$ in Millions)												
	<u>Line Item</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u> <u>Base</u>	<u>FY 2011</u> <u>OCO</u>	<u>FY 2011</u> <u>Total</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
	• RDT&E/0603562N: <i>Submarine Tactical Warfare System</i>											
D. Acquisition Strategy AN/BLQ-10 (V) ES System - Procurements are executed/managed in accordance with the Acquisition Strategy Report (Rev 4) for AN/BLQ-10(V) ES System dtd 3/7/06 and the Acquisition Plan (Rev 6) for AN/BLQ-10(V) ES System dtd 3/7/06.												
E. Performance Metrics 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.												

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy								DATE: February 2010			
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 5: <i>Development & Demonstration (SDD)</i>				R-1 ITEM NOMENCLATURE PE 0604503N: <i>SSN-688 & Trident Modernization</i>				PROJECT 1411: <i>Sub Tact Comm System</i>			
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
1411: <i>Sub Tact Comm System</i>	15.708	21.206	17.761	0.000	17.761	17.784	8.640	8.833	9.009	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		
A. Mission Description and Budget Item Justification <p>The Submarine Tactical Communications System project (1411) provides submarines with communications systems designed to: (a) enhance data throughput through automation and integrated network management; (b) convert to ForceNet and tactical data networks, (c) provide submarines Internet Protocol (IP) connectivity; (d) be interoperable with other joint United States and combined allied military networks; and (e) improve reliability, maintainability, and availability. This is accomplished by providing the submarine with a properly integrated mix of fully interoperable Navy standard and Commercial Off-The-Shelf (COTS) communication equipment covering a wide range of frequencies and modes. The Common Submarine Radio Room (CSRR) integrates COTS and Government Off-The-Shelf components into a single radio room configuration for all classes of submarines. CSRR leverages the development of VIRGINIA Class Exterior Communications System which includes Open Systems Architecture design. The project utilizes land-based integration test facilities to integrate C4I Program of Record components into the open architecture prior to fleet implementation on all submarine platforms. This project funds the development of a replacement Simulation/Stimulation suite to support testing and training requirements. The project includes system engineering efforts associated with demonstration of new technology which will allow submarines to connect to the Global Information Grid and participate in strike group, as well as joint operations. The new technology will ensure the submarine's continued ability to participate in Network-Centric Warfare and exploit its inherent stealth capabilities in support of the joint and combined fight to achieve total battlespace dominance.</p> <p>JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under SYSTEMS DEVELOPMENT and DEMONSTRATION because it encompasses development and demonstration of new end-items prior to production approval decision.</p> <p>Notes/Comments: FY11 Complete system engineering for Common Submarine Radio Room (CSRR) modernization Increment 1 Version 3 LOS ANGELES platform. Continue modernization Increment 1 Version 3 for SEAWOLF, VIRGINIA and SSGN class submarines. 2) Per Acquisition Decision Memorandum signed by Assistant Secretary of Navy for Research, Development & Acquisition dated 15 July 2008 approval to consolidate Increments 1 and 2 to a single Increment 1 with multiple block upgrades (Versions).</p>											
B. Accomplishments/Planned Program (\$ in Millions)											

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy				DATE: February 2010		
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 5: Development & Demonstration (SDD)		R-1 ITEM NOMENCLATURE PE 0604503N: SSN-688 & Trident Modernization		PROJECT 1411: Sub Tact Comm System		
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Common Submarine Radio Room (CSRR)		15.708	21.206	17.761	0.000	17.761
<p><i>FY 2009 Accomplishments:</i></p> <p>Continued system engineering and development of the Multi-Purpose Reconfigurable Training System (MRTS) maintenance trainers Increment 1 Version 1, and upgraded maintenance and operator MRTS to the Common Submarine Radio Room (CSRR) Increment 1 Ver 2 baseline. Continued implementation of security upgrades and met Information Assurance (IA), Information Security (INFOSEC) and multiple levels of certification requirements for General Service (GENSER) and Sensitive Compartmented Information (SCI) for all CSRR platforms. Continued systems engineering/design development and supported testing for CSRR Increment 1 Ver 2 for VIRGINIA FLT 1&2, SEAWOLF and completed Ship Submersible Guided Nuclear (SSGN) platforms. Upgraded Control & Management software integration of CSRR Increment 1 Ver 2 capabilities. Commenced systems engineering development supporting CSRR modernization Increment 1 Ver 3 for LOS ANGELES class submarines.</p>						
<p><i>FY 2010 Plans:</i></p> <p>Complete MRTS software upgrade for Increment 1 Ver 1 and Ver 2 CSRR baselines. Commence MRTS software upgrade for Increment 1 Ver 3. Continue implementation of security upgrades to meet IA, INFOSEC and multiple levels of certification requirements for GENSER and SCI on all CSRR platforms. Complete systems engineering/design development and testing for CSRR Increment 1 Ver 2 for VIRGINIA FLT 1&2 and SEAWOLF platforms. Continue systems engineering development efforts for CSRR modernization Increment 1 Ver 3 for LOS ANGELES class submarines. Commence systems engineering development efforts supporting CSRR modernization Increment 1 Ver 3 for SEAWOLF, VIRGINIA and SSGN class submarines. Commence upgrade of C&M software to include Increment 1 Ver 3 capabilities. Conduct Developmental Testing and Follow-On Test and Evaluation on the CSRR Increment 1 Ver 2 baseline.</p>						

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy							DATE: February 2010				
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 5: Development & Demonstration (SDD)				R-1 ITEM NOMENCLATURE PE 0604503N: SSN-688 & Trident Modernization			PROJECT 1411: Sub Tact Comm System				
B. Accomplishments/Planned Program (\$ in Millions)											
							FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 Base Plans: Continue Multi-Purpose Reconfigurable Training System (MRTS) software upgrade for Increment 1 Ver 3 Common Submarine Radio Room (CSRR) baseline. Continue implementation of security upgrades and meet Information Assurance, Information Security and multiple levels of certification requirements for General Service and Sensitive Compartmented Information for all CSRR platforms. Complete systems engineering development for CSRR modernization Increment 1 Ver 3 LA class submarines. Continue CSRR modernization Increment 1 Version 3 for SEAWOLF, VIRGINIA and SSGN class submarines. Continue upgrade of Control & Management software to include Increment 1 Ver 3 capabilities.											
Accomplishments/Planned Programs Subtotals							15.708	21.206	17.761	0.000	17.761
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 313000: Submarine Communications	79.026	48.579	59.013	0.000	59.013	84.655	86.221	89.646	90.310	Continuing	Continuing
D. Acquisition Strategy											
CSRR transforms LOS ANGELES, OHIO and SEAWOLF Class radio rooms from suites of class-specific, closed system equipment to a common design which incorporates Open System Architecture communications equipment. CSRR will leverage VIRGINIA Class Exterior Communication System (ECS) design, utilize VIRGINIA Class ECS Control and Management software, apply a systems approach to design and implementation of Joint Maritime Communication System, and maximize use of Commercial Off-The-Shelf products and emerging technologies. Program Milestones: Increment 1 Ver 2 Developmental Test & Evaluation (DT) scheduled 2Q FY10, Follow-on Test & Evaluation (FOT&E) 3Q FY10 on a Ship Submersible Guided Nuclear (SSGN) platform. Increment 1 Ver 3 DT 2Q FY12, FOT&E 3Q FY12.											

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 5: <i>Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604503N: <i>SSN-688 & Trident Modernization</i>	PROJECT 1411: <i>Sub Tact Comm System</i>
E. Performance Metrics FY09 - FY11 CSRR reduces the overall cost for implementation of Command, Control, Communications Computer, Intelligence (C4I) Programs of Record (POR) components into the submarine external communication system by implementing block upgrades and reducing the integration/installation costs. The amount of RDTE funding is dependent on the number of baselines being integrated and tested in any given year.		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy											DATE: February 2010			
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 5: <i>Development & Demonstration (SDD)</i>				R-1 ITEM NOMENCLATURE PE 0604503N: <i>SSN-688 & Trident Modernization</i>				PROJECT 1411: <i>Sub Tact Comm System</i>						
Product Development (\$ in Millions)														
				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Hardware Development	C/CPFF	SSC PAC San Diego, CA	2.776	0.000		0.000		0.000		0.000	0.000	2.776	2.776	
Hardware Development	C/CPFF	Various Various	0.211	0.000		0.000		0.000		0.000	0.000	0.211	0.211	
MCS Development	Various/ Various	Motorola Scottsdale, Arizona	10.214	0.000		0.000		0.000		0.000	0.000	10.214	10.214	
Software Development	Various/ Various	SSC PAC San Diego, CA	2.068	0.000		0.000		0.000		0.000	0.000	2.068	2.068	
Software Development	WR	NUWC Newport, RI	5.498	0.000		0.000		0.000		0.000	0.000	5.498	5.498	
MRTS Development	C/CPFF	NAVAIR Orlando, FL	8.370	2.695	Dec 2009	2.772	Jan 2011	0.000		2.772	Continuing	Continuing	Continuing	
Systems Engineering	Various/ Various	Various Various	24.766	4.688	Nov 2009	4.103	Dec 2010	0.000		4.103	Continuing	Continuing	Continuing	
Systems Eng/Design 688 Class	Various/ Various	Various Various	4.556	1.866	Nov 2009	0.662	Dec 2010	0.000		0.662	Continuing	Continuing	Continuing	
Site Platform Integration/ Certification	Various/ Various	NUWC Newport, RI	11.085	0.598	Nov 2009	0.434	Dec 2010	0.000		0.434	Continuing	Continuing	Continuing	
BCA/OPCON architecture	WR	NUWC Newport, RI	3.683	0.000		0.000		0.000		0.000	0.000	3.683	3.683	
Subtotal			73.227	9.847		7.971		0.000		7.971				
Remarks														

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy											DATE: February 2010			
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 5: <i>Development & Demonstration (SDD)</i>				R-1 ITEM NOMENCLATURE PE 0604503N: <i>SSN-688 & Trident Modernization</i>				PROJECT 1411: <i>Sub Tact Comm System</i>						
Support (\$ in Millions)														
				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Software Development (CSRR)	C/CPAF	Lockheed Martin Eagan, MN	21.904	4.876	Jan 2010	4.198	Jan 2011	0.000		4.198	Continuing	Continuing	Continuing	
Integrated Logistics Support	WR	NUWC Newport, RI	2.081	0.488	Dec 2009	0.502	Dec 2010	0.000		0.502	Continuing	Continuing	Continuing	
Software Engineering	WR	SSC PAC San Diego, CA	1.741	0.605	Dec 2009	0.623	Dec 2010	0.000		0.623	0.000	2.969	2.969	
INFOSEC/IA Certification	Various/ Various	Various Various	10.534	3.920	Dec 2009	3.674	Dec 2010	0.000		3.674	Continuing	Continuing	Continuing	
Subtotal			36.260	9.889		8.997		0.000		8.997				
Remarks														
Test and Evaluation (\$ in Millions)														
				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Developmental/ Operational T&E	Various/ Various	Various Various	8.583	0.700	Nov 2009	0.000		0.000		0.000	Continuing	Continuing	Continuing	
Subtotal			8.583	0.700		0.000		0.000		0.000				
Remarks														

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy											DATE: February 2010		
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 5: <i>Development & Demonstration (SDD)</i>				R-1 ITEM NOMENCLATURE PE 0604503N: <i>SSN-688 & Trident Modernization</i>				PROJECT 1411: <i>Sub Tact Comm System</i>					
Management Services (\$ in Millions)													
				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	Various/ Various	Various Various	8.614	0.770	Nov 2009	0.793	Dec 2010	0.000		0.793	Continuing	Continuing	Continuing
Acquisition Workforce	Various/ Various	Various Various	0.077	0.000		0.000		0.000		0.000	0.000	0.077	0.077
Subtotal			8.691	0.770		0.793		0.000		0.793			
Remarks													
			Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			126.761	21.206		17.761		0.000		17.761			
Remarks													

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Exhibit R-4, RDT&E Schedule Profile: PB 2011 Navy																DATE: February 2010												
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 5: Development & Demonstration (SDD)										R-1 ITEM NOMENCLATURE PE 0604503N: SSN-688 & Trident Modernization										PROJECT 1411: Sub Tact Comm System								
CLASSIFICATION:										UNCLASSIFIED																		
EXHIBIT R-4, SCHEDULE PROFILE																DATE February 2010												
APPROPRIATION/BUDGET ACTIVITY RD TEN/BA 5										PROGRAM ELEMENT NUMBER AND NAME 0604503N/SSN-688 AND TRIDENT MODERNIZATION										PROJECT NUMBER AND NAME 1411/SUBM TACT COMM SYS								
Fiscal Year	2009				2010				2011				2012				2013				2014				2015			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones					Inc1V2 Fielding Decision				Inc1V3 Fielding Decision				Inc1V4 Fielding Decision															
Technical Reviews	● SSBN I1V1 VCD ● I1V3 PDR ● SW I1V2 CDR				○ I1V3 CDR				○ I1V4 PDR				○ I1V4 CDR															
Contracts																												
Software/Lockheed Martin																												
System Development																												
Technology Demonstration																												
Engineering Dev. Model																												
Technology Demonstration																												
Test & Evaluation					CSRR Inc1V2 FOT&E				CSRR Inc1V3 FOT&E				CSRR Inc1V4 FOT&E															
Development Test					Inc1V2 DT △ JITC Cert				Inc1V3 DT △ JITC Cert				Inc1V4 DT △ JITC Cert															
Operational Test					Inc1V2 OT △				Inc1V3 OT △				Inc1V4 OT △															
Production (Increment 1)																												
LRIP																												
LRIP Deliveries																												
FRP Award																												
FRP Deliveries																												
Procurement Inc 1 mod kits	11 ▲				9 △				11 △				14 △				16 △				17 △				10 △			
Installation Inc 1 mod kits	21 ▲				9 △				6 △				10 △				14 △				16 △				17 △			

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Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 5: <i>Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604503N: <i>SSN-688 & Trident Modernization</i>	PROJECT 1411: <i>Sub Tact Comm System</i>	

Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Fielding Decision (Increment 1 Ver 2)	4	2010	4	2010
Technical Reviews (SSBN Inc 1 V1 VCD)	2	2009	2	2009
Fielding Decision (Increment 1 Ver 3)	4	2012	4	2012
Technical Reviews (Inc 1 V3 PDR)	4	2009	4	2009
Fielding Decision (Increment 1 Ver 4)	2	2015	2	2015
Technical Reviews (Software Inc 1 V2 CDR)	4	2009	4	2009
Technology Demonstration (Increment 1 Ver 2)	1	2009	4	2009
Technical Reviews (Inc 1 V3 CDR)	1	2011	1	2011
Technology Demonstration (Increment 1 Ver 3)	3	2009	4	2011
Technical Reviews (Inc 1 V4 PDR)	3	2012	3	2012
Technology Demonstration (Increment 1 Ver 4)	4	2011	1	2014
Technical Reviews (Inc 1 V4 CDR)	4	2013	4	2013
DT (Increment 1 Ver 2)	2	2010	2	2010
Contracts (Software---Lockheed Martin)	1	2009	4	2015
OT (Increment 1 Ver 2)	3	2010	3	2010
-System Development (Engineering Development Model: Certification Testing)	1	2009	1	2009
DT (Increment 1 Ver 3)	2	2012	2	2012
Production (Increment 1) (FRP Award)	1	2009	1	2009

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Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy			DATE: February 2010	
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 5: Development & Demonstration (SDD)	R-1 ITEM NOMENCLATURE PE 0604503N: SSN-688 & Trident Modernization		PROJECT 1411: Sub Tact Comm System	
	Start		End	
Event	Quarter	Year	Quarter	Year
OT (Increment 1 Ver 3)	3	2012	3	2012
Production (Increment 1) (FRP Deliveries)	1	2009	1	2010
DT (Increment 1 Ver 4)	3	2014	3	2014
Procurement (Inc 1 Mod Kits)	1	2009	4	2015
OT (Increment 1 Ver 4)	4	2014	4	2014
-Installation (Inc 1 Mod Kits)	1	2009	4	2015

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy								DATE: February 2010			
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 5: <i>Development & Demonstration (SDD)</i>				R-1 ITEM NOMENCLATURE PE 0604503N: <i>SSN-688 & Trident Modernization</i>				PROJECT 9999: <i>Congressional Adds</i>			
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	0.000	1.593	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	33.782
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		
A. Mission Description and Budget Item Justification Continue research, development, and testing for several future arrays including the Vector Sensor Towed Array (VSTA), Sparsely Populated Volmetric Array (SPVA), and Multi-Function Towed Array (MFTA) to reduce array damage and enhance hull surveillance and detection.											
B. Accomplishments/Planned Program (\$ in Millions)											
							FY 2009	FY 2010			
Congressional Add: Improved Submarine Towed Array Systems <i>FY 2010 Plans:</i> Conduct research, development, and testing for several future arrays including the Vector Sensor Towed Array (VSTA), Sparsely Populated Volmetric Array (SPVA), and Multi-Function Towed Array (MFTA) to reduce array damage and enhance hull surveillance and detection.							0.000	1.593			
Congressional Adds Subtotals							0.000	1.593			
C. Other Program Funding Summary (\$ in Millions) N/A											
D. Acquisition Strategy N/A											
E. Performance Metrics Congressional add.											

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