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Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Navy	DATE: February 2012
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APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE							
1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 5: <i>Development & Demonstration (SDD)</i>				PE 0604503N: <i>SSN-688 & Trident Modernization</i>							
COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	100.717	90.180	82.620	-	82.620	88.156	82.653	97.962	103.826	Continuing	Continuing
0219: <i>Sub Sonar Improvement (ENG)</i>	63.150	54.389	53.835	-	53.835	56.319	57.605	58.447	59.759	Continuing	Continuing
0742: <i>Sub Integrated Ant System</i>	19.257	22.671	18.395	-	18.395	16.383	13.888	26.663	30.945	Continuing	Continuing
0775: <i>Submarine Supt Equip Prog</i>	-	1.271	1.297	-	1.297	1.325	1.361	1.394	1.420	Continuing	Continuing
1411: <i>Sub Tact Comm System</i>	18.310	11.849	9.093	-	9.093	14.129	9.799	11.458	11.702	Continuing	Continuing

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 protection, and Joint Strike.

The Submarine Sonar Improvement Program delivers block updates to Sonar Systems and improved Sensors installed on SSN 688, 688I, SSN 21, 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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1319: Research, Development, Test & Evaluation, Navy		PE 0604503N: SSN-688 & Trident Modernization			
BA 5: Development & Demonstration (SDD)					
B. Program Change Summary (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	118.897	100.591	87.802	-	87.802
Current President's Budget	100.717	90.180	82.620	-	82.620
Total Adjustments	-18.180	-10.411	-5.182	-	-5.182
• Congressional General Reductions	-	-0.111			
• Congressional Directed Reductions	-	-10.300			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-7.800	-			
• SBIR/STTR Transfer	-3.025	-			
• Program Adjustments	-	-	-4.974	-	-4.974
• Rate/Misc Adjustments	-	-	-0.208	-	-0.208
• Congressional General Reductions Adjustments	-0.655	-	-	-	-
• Congressional Directed Reductions Adjustments	-6.700	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy									DATE: February 2012		
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 0219: Sub Sonar Improvement (ENG)			
COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
0219: Sub Sonar Improvement (ENG)	63.150	54.389	53.835	-	53.835	56.319	57.605	58.447	59.759	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

This program delivers block updates to Sonar Systems installed on SSN 688, 688I, SSN 21, 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.

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

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

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.

Sensor efforts provide increased operational capabilities for littoral operations, situational awareness, and reliability improvements.

Towed Systems development efforts provide increased operational capabilities and reliability improvements to maintain a clear acoustical, tactical, and operational superiority over submarine and surface combatants.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2011	FY 2012	FY 2013
Title: APB Productionization	14.065	14.474	14.002
Articles:	0	0	0
Description: APB productionization provides for the transition of APB capability improvements to the Fleet for the integration, testing and formal certification.			
FY 2011 Accomplishments: Continued 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, testing, and formal certification.			
FY 2012 Plans:			

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2011	FY 2012	FY 2013
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, testing, and formal certification.				
FY 2013 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, testing, and formal certification.				
Title: Integration and Testing		41.231	39.648	39.833
Articles:		0	0	0
Description: Integration and Testing provides support to integrated and test APB's into all submarine classes with numerous sensor systems.				
FY 2011 Accomplishments: Supported Advanced Processing Builds installed on SSN 688I, SSN 688, SSBN 730, SSN 21, SSGN 726, VA Class, new sensors TB-34 Towed Arrays, and Low Cost Conformal Array (LCCA).				
FY 2012 Plans: Supports Advanced Processing Builds installed on SSN 688I, SSN 688, SSBN 730, SSN 21, SSGN 726, VA Class, new sensors TB-34 Towed Arrays, and Low Cost Conformal Array (LCCA).				
FY 2013 Plans: Supports Advanced Processing Builds installed on SSN 688I, SSN 688, SSBN 730, SSN 21, SSGN 726, VA Class, new sensors TB-34 Towed Arrays, and Low Cost Conformal Array (LCCA).				
Title: Affordable Towed Array Technology (TB-33)		5.044	-	-
Articles:		0		
Description: Affordable Towed Array Technology development provides more affordable and reliable thinline arrays using fiber optic technology and eliminates "wet end" electronics.				
FY 2011 Accomplishments: Continued development of special test modules to evaluate PRU design.				
TB-33 program was cancelled, letter dated February 28, 2011 signed by RDML Johnson				
Title: Future Sensor Capability		2.810	0.267	-
Articles:		0	0	

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2011	FY 2012	FY 2013
Description: Improving array capabilities, long-range passive detection, and component reliability through development of state-of-the-art technologies. FY 2011 Accomplishments: Funded operational testing for Small Diameter Heading Sensors, Compact Towed Array Telemetry, and software development for the Non-Traditional Sensor System. FY 2012 Plans: Develop a Non-Traditional Sensor System to furnish the sonar suite with previously-unavailable search tactics. Continue initiatives with single crystal, vector sensor, and fiber optic sonar technologies.			
Accomplishments/Planned Programs Subtotals	63.150	54.389	53.835

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u> <u>Base</u>	<u>FY 2013</u> <u>OCO</u>	<u>FY 2013</u> <u>Total</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPN/BLI 214700: <i>SSN Acoustics</i>	185.367	176.482	156.353	0.000	156.353	231.308	210.615	260.133	183.036	Continuing	Continuing
• OPN/BLI 214705: <i>SSN Acoustics Installation</i>	47.376	36.431	34.521	0.000	34.521	23.102	36.444	38.749	38.727	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 to Lockheed Martin Maritime Systems & Sensors in April 2010. Program Review with Milestone Decision Authority was conducted in November 2011 granting approval for the FY12 production option. Thinline Arrays: Thin line towed arrays provide a key anti-submarine capability, and towed array reliability remains a critical Fleet need. Investment in engineering efforts such as array telemetry improvements along with Highly Accelerated Life Testing (HALT), array hosewall ruggedization, a solid-state heading sensor, and others, are still needed for continued system improvements. Hull Mounted Arrays:

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The Low Cost Conformal Array (LCCA) transitioned from PEO IWS in FY08 with a competitive contract awarded for the PRU development. PRU procurements, fabrication, and assembly began in FY08. PRU deliveries were accepted in FY10. ARCI Integration, TECHEVAL, and OPEVAL testing were conducted in FY10. LCCA Milestone C Full Rate Production was accomplished in August 2011. E. Performance Metrics The A-RCI program will modernize and sustain approximately 25% of the SSN Fleet per year through executing bi-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.		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Navy											DATE: February 2012			
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Product Development (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 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	262.844	21.706	Dec 2011	20.991	Dec 2012	-		20.991	Continuing	Continuing	Continuing	
Primary Hardware Development	C/CPFF	Chesapeake Sciences:Millersville, MD	48.492	-		-		-		-	0.000	48.492		
Ancillary Hardware Development	SS/CPFF	ARL University of Texas:Austin, TX	21.800	3.061	Feb 2012	3.113	Feb 2013	-		3.113	Continuing	Continuing	Continuing	
Systems Engineering	SS/CPFF	Johns Hopkins APL:Baltimore, MD	24.255	2.980	Dec 2011	3.030	Dec 2012	-		3.030	Continuing	Continuing	Continuing	
Systems Engineering	C/CPFF	Lockheed Eagan:MN - Keyport	21.276	3.024	Jan 2012	3.075	Jan 2013	-		3.075	Continuing	Continuing	Continuing	
Primary Hardware Development	C/CPIF	Progeny Systems:Manassas, VA	33.481	6.171	Jan 2012	6.257	Jan 2013	-		6.257	Continuing	Continuing	Continuing	
Systems Engineering	WR	NUWC:Newport, RI	143.445	6.250	Jan 2012	5.987	Dec 2012	-		5.987	Continuing	Continuing	Continuing	
Systems Engineering	WR	NSWC:Carderock, MD	15.705	2.514	Dec 2011	2.557	Dec 2012	-		2.557	Continuing	Continuing	Continuing	
Systems Engineering	WR	Naval Research Lab:Washington, DC	1.857	-		-		-		-	Continuing	Continuing	Continuing	
Hardware/Software Development	C/CPFF	SBIR (Various):Not Specified	2.665	-		-		-		-	0.000	2.665		
Subtotal			575.820	45.706		45.010		-		45.010				
Support (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 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	C/CPIF	General Dynamics, AIS:Fairfax, VA	142.553	3.015	Dec 2011	3.066	Dec 2012	-		3.066	Continuing	Continuing	Continuing	
Primary Software Development	C/CPFF	Sedna Digital,:Manassas, VA	16.757	4.004	Dec 2011	4.072	Dec 2012	-		4.072	Continuing	Continuing	Continuing	
Subtotal			159.310	7.019		7.138		-		7.138				

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Test and Evaluation (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 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	7.404	0.600	Jan 2012	0.610	Dec 2012	-		0.610	Continuing	Continuing	Continuing
Subtotal			7.404	0.600		0.610		-		0.610			

Management Services (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 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	10.100	0.814	Jan 2012	0.827	Dec 2012	-		0.827	0.000	11.741	
Travel	WR	NAVSEA:Washington, DC	1.825	0.250	Dec 2011	0.250	Dec 2012	-		0.250	Continuing	Continuing	Continuing
Subtotal			11.925	1.064		1.077		-		1.077			

			Total Prior Years Cost	FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			754.459	54.389		53.835		-		53.835			

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2013 Navy		DATE: February 2012
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Exhibit R-4, RDT&E Schedule Profile: PB 2013 Navy		DATE: February 2012
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 0219: Sub Sonar Improvement (ENG)

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Exhibit R-4, RDT&E Schedule Profile: PB 2013 Navy		DATE: February 2012
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 0219: Sub Sonar Improvement (ENG)

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Exhibit R-4A, RDT&E Schedule Details: PB 2013 Navy			DATE: February 2012
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>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 0219				
ACOUSTICS	1	2011	4	2017
Acquisition Milestones	1	2011	1	2013
Annual Program Review	1	2011	4	2017
Contract Awards	2	2011	3	2014
Procurements	2	2011	2	2017
DT/OT/FOT&E Tests	2	2011	2	2012
APB Deliveries	1	2011	4	2012
Tech Insertions	1	2011	1	2015
Installation Periods	1	2011	4	2014
LCCA	1	2011	4	2017
Low Rate Initial Production	1	2011	2	2011
Full Rate Production	3	2011	4	2017
Low Rate Initial Production (LRIP)	1	2011	4	2011
Milestone C Decision (FRP) / ARB	2	2011	3	2011
TB-34 Production Deliveries	2	2011	4	2017

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COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
0742: Sub Integrated Ant System	19.257	22.671	18.395	-	18.395	16.383	13.888	26.663	30.945	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 (P3I) efforts to existing antennas including Outboard Electronics (OE)-538/BRC Multi-Function Antenna, (2) OE-562 Submarine, High Data Rate (SubHDR) system development of components for reliability improvements, (3) Development of new systems including Advanced High Data Rate (AdvHDR), and (4) Commence support of Submarine Communications Buoy (SCB) Project Arrangement with United Kingdom (UK). The efforts listed above will provide Ship Submersible Nuclear (SSN), Ship Submersible Ballistic Nuclear (SSBN) and Ship Submersible Guided Nuclear (SSGN) platforms with improved communications capabilities to support future Joint, Allied, and Naval operations.											
JUSTIFICATION FOR BUDGET ACTIVITY: This project 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: FY13 OE-538: Complete Developmental Test (DT) and Operational Assessment (OA), continue development/update of required Milestone C acquisition documents, and complete additional EDM procurement. FY13 SubHDR: Continue development of components identified by research and analysis. Complete UNDEX development and testing. FY13 Advanced High Data Rate (AdvHDR): Continue risk mitigation demonstrations and technology maturation efforts towards technology readiness assessments in preparation of Advanced Development Model (ADM) Demonstration. FY13 Submarine Communications Buoy (SCB): Continue support for SCB Project Arrangement with United Kingdom and continue providing program, contract, and system engineering management support for Submarine Communications Buoy.											
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2011	FY 2012	FY 2013	
Title: Antenna Transition Engineering								4.557	3.942	4.096	
Articles:								0	0	0	
FY 2011 Accomplishments: - Continued to provide emerging requirements and satellite communications database/link analysis for other development programs in support of current & future communication architectures.											

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2011	FY 2012	FY 2013
- Continued Pre-Planned Product Improvement (P3I) investigation and development efforts towards legacy antenna systems. - Continued concept engineering, new technology evaluations, and assessments in support of current and future submarine antenna applications, which included Hull, Mechanical, and Electrical (HM&E) interfaces. - Continued to investigate multiple usage antennas, including antennas that can be used for communications and other functions. FY 2012 Plans: - Continued to provide emerging requirements and satellite communications (SATCOM) database/link analysis for other development programs in support of current & future communication architectures. - Continued Pre-Planned Product Improvement (P3I) investigation and development efforts towards legacy antenna systems. - Continued concept engineering, new technology evaluations, and assessments in support of current and future submarine antenna applications, to include HM&E interfaces. - Continued to investigate multiple usage antennas, including antennas that can be used for communications and other functions. FY 2013 Plans: - Continue to provide emerging requirements and SATCOM database/link analysis for other development programs in support of current & future communication architectures. - Continue P3I investigation and development efforts towards 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.				
Title: Outboard Electronics (OE)-538 Articles: FY 2011 Accomplishments: - Continued Increment 2 system design, manufactured & tested EDM to validate the design supports Fleet requirements (Mobile User Objective System (MUOS)/Link-16/Iridium). - Prepared acquisition (e.g., Capabilities Production Document (CPD)) and applicable ILS documentation to support Low-Rate Initial Production decision. - Continued development/updated required Milestone C acquisition documents. FY 2012 Plans: - Completed Increment 2 system design, manufacture & test EDM to validate the design supports Fleet requirements (MUOS/Link-16/Iridium). - Continued Capabilities Production Document (CPD) and applicable ILS documentation to support Low-Rate Initial Production (LRIP) decision.		6.970 0	8.875 0	3.972 0

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2011	FY 2012	FY 2013
- Continued development/update of required Milestone C acquisition documents.				
FY 2013 Plans: - Complete CPD and continue applicable ILS documentation to support Low-Rate Initial Production (LRIP) decision. - Continue development/update of required Milestone C acquisition documents. - Complete Developmental Test (DT) and Operational Assessment (OA). - Complete additional EDM procurement in support of MUOS Terminal DT/OT.				
Title: Submarine High Data Rate (SubHDR) Pre-Planned Product Improvement (P3I) Articles: FY 2011 Accomplishments: Continued Underwater Explosion (UNDEX) development and testing. Continued research and analysis on SubHDR components to increase performance reliability. FY 2012 Plans: Continued UNDEX development and testing. Completed research and analysis on SubHDR components to increase performance reliability. Commenced development of components identified by research and analysis for performance reliability improvements. FY 2013 Plans: - Continue development of components identified by research and analysis for performance reliability improvements. Complete UNDEX development and testing.		1.621 0	3.649 0	5.151 0
Title: Advanced High Data Rate (AdvHDR) Articles: FY 2011 Accomplishments: - Continued design and acquisition documentation development in support of Milestone B. - Continued system definition/risk reduction and system development efforts based on risk mitigation hardware. - Continued technology maturation and demonstration efforts. - Continued system development engineering efforts. FY 2012 Plans: - Continued design and acquisition documentation development in support of Milestone B. - Continued system definition/risk reduction and system development efforts based on risk mitigation hardware. - Continued technology maturation and demonstration efforts. - Continued system development engineering efforts. FY 2013 Plans:		6.109 0	3.291 0	2.634 0

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)							FY 2011	FY 2012	FY 2013		
- Continue design and Capability Development Document (CDD) in support of Advanced Development Model (ADM) demonstration. - Continue system definition/risk reduction and system development efforts based on risk mitigation hardware. - Complete technology maturation. - Continue demonstration efforts. - Continue system development engineering efforts.											
Title: Submarine Communications Buoy (SCB) Description: A project arrangement between the United States and the United Kingdom. FY 2012 Plans: - Commenced support for SCB Project Arrangement with United Kingdom. - Commenced component design specification development of a candidate SCB components. - Commenced development of demonstration plan for SCB components. - Commenced performance evaluation of the candidate SCB components. FY 2013 Plans: - Continue support for SCB Project Arrangement with United Kingdom - Continue component design specification development of a candidate SCB components. - Continue development of demonstration plan for SCB components. - Continue performance evaluation of the candidate SCB components.							Articles: -	2.914 0	2.542 0		
Accomplishments/Planned Programs Subtotals							19.257	22.671	18.395		
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 313000: Submarine Communications	55.434	74.047	69.025	0.000	69.025	74.698	71.576	46.746	59.558	Continuing	Continuing
D. Acquisition Strategy											
Program Milestones (MS): Outboard Electronics (OE)-538: 4th Quarter (QTR) FY14 Milestone C (MS C); 4th QTR FY16 Full Rate Production (FRP) Decision Review.											

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Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy		DATE: February 2012
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>
Advanced High Data Rate (AdvHDR): 4th QTR FY14 Advanced Development Model (ADM) Demonstration. Test and Evaluation (T&E) Milestones: OE-538: 3rd QTR FY13 Developmental Test (DT) for MS C; 4th QTR FY13 Operational Assessment (OA) for MS C; 2nd QTR FY16 DT for FRP; 3rd QTR FY16 Operational Test for FRP <u>E. Performance Metrics</u> FY13 OE-538: Complete Capability Production Document (CPD). FY13 AdvHDR: Complete Capability Development Document (CDD).		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Navy										DATE: February 2012			
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT					
1319: Research, Development, Test & Evaluation, Navy BA 5: Development & Demonstration (SDD)				PE 0604503N: SSN-688 & Trident Modernization				0742: Sub Integrated Ant System					
Product Development (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 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 (Submarine High Data Rate - SubHDR)	C/CPAF	Raytheon:Marlboro, MA	3.545	-		-		-		-	0.000	3.545	3.545
Digital Dev (SubHDR)	C/CPAF	Raytheon:Marlboro, MA	8.182	-		-		-		-	0.000	8.182	8.182
Hardware Dev (SubHDR)	WR	NUWC:Newport, RI	2.888	-		-		-		-	0.000	2.888	Continuing
Hardware Dev (SubHDR SHF/ FOT)	C/CPAF	Raytheon:Marlboro, MA	14.632	-		-		-		-	0.000	14.632	14.632
Hardware Dev (Antenna Trans Eng)	C/CPAF	Sippican:Marion, MA	2.207	-		-		-		-	0.000	2.207	2.207
Hardware Dev (Communications at Speed and Depth - CSD)	C/CPAF	Apogen:San Diego, CA	2.800	-		-		-		-	0.000	2.800	2.800
Systems/Hardware Dev (CSD)	C/CPAF	Various:Various	36.623	-		-		-		-	0.000	36.623	Continuing
Systems/Hardware Dev (Submarine Communications Buoy - SCB)	WR	NSWC:Philadelphia	-	1.900	May 2012	2.316	Nov 2012	-		2.316	Continuing	Continuing	Continuing
Hardware Dev (Outboard Electronics (OE)-538)	C/CPAF	Submarine Antenna Joint Venture:MA and NH	17.564	1.241	Jan 2012	-		-		-	Continuing	Continuing	Continuing
Systems Engineering (OE-538)	WR	NUWC:Newport, RI	3.975	1.310	Jan 2012	1.056	Oct 2012	-		1.056	Continuing	Continuing	Continuing
Systems Engineering (SubHDR)	C/CPFF	Raytheon:Marlboro, MA	6.316	-		-		-		-	0.000	6.316	6.316
System Engineering (SubHDR)	WR	NUWC:Newport, RI	15.807	0.354	Jan 2012	0.400	Dec 2012	-		0.400	Continuing	Continuing	Continuing
Systems Engineering (Advanced High Data Rate - AdvHDR)	WR	NUWC:Newport, RI	6.412	0.800	Nov 2011	0.802	Nov 2012	-		0.802	Continuing	Continuing	Continuing
System Engineering (Antenna Trans Eng)	WR	NUWC:Newport, RI	19.804	1.581	Nov 2011	1.388	Nov 2012	-		1.388	Continuing	Continuing	Continuing
System Engineering (Antenna Trans Eng)	Various	NUWC:Newport, RI	10.924	1.681	Nov 2011	1.825	Nov 2012	-		1.825	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Navy											DATE: February 2012			
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						
Product Development (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 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 (CSD)	Various	Various:Various	4.628	-		-		-		-	0.000	4.628		
System Engineering (CSD)	WR	SSC PAC:San Diego, CA	3.048	-		-		-		-	0.000	3.048		
Systems Engineering (SCB)	C/CPFF	FSI:San Diego, CA	-	0.550	Oct 2011	0.100	Nov 2012	-		0.100	0.000	0.650		
Systems Engineering (CSD)	WR	NUWC:Newport, RI	18.521	-		-		-		-	0.000	18.521	Continuing	
UNDEX Kit Development (SubHDR)	C/CPAF	Raytheon:Marlboro, MA	5.475	-		-		-		-	0.000	5.475	5.475	
Technology Maturation/ Demonstrations Dev (Advanced High Data Rate - AdvHDR)	C/CPAF	NUWC:Newport, RI	7.671	0.799	Dec 2011	0.642	Dec 2012	-		0.642	Continuing	Continuing	Continuing	
Research and Analysis Reliability Dev (Submarine High Data Rate - SubHDR)	WR	NUWC:Newport, RI	1.329	0.620	Jan 2012	0.780	Dec 2012	-		0.780	Continuing	Continuing	Continuing	
Systems Engineering (AdvHDR)	Various	NUWC:Newport, RI	3.392	0.486	Nov 2011	0.468	Nov 2012	-		0.468	Continuing	Continuing	Continuing	
Research and Analysis Reliability Dev (Submarine High Data Rate - SubHDR)	C/CPAF	I Square Systems:Middletown, RI	-	2.198	Jan 2012	2.956	Feb 2013	-		2.956	0.000	5.154		
Subtotal			195.743	13.520		12.733		-		12.733				
Support (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 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)	C/CPFF	UNKNOWN:UNKNOWN	0.903	0.128	May 2012	0.103	Nov 2012	-		0.103	Continuing	Continuing	Continuing	
Integrated Logistics Support (Antenna Trans Eng)	C/CPFF	UNKNOWN:UNKNOWN	0.050	-	May 2012	-		-		-	0.000	0.050	0.050	
Integrated Logistics Support (Outboard Electronics - OE-538)	C/CPFF	UNKNOWN:UNKNOWN	1.670	1.875	May 2012	0.715	Oct 2012	-		0.715	Continuing	Continuing	Continuing	

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Navy										DATE: February 2012			
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					
Support (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 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 (Communications at Speed and Depth - CSD)	C/CPFF	UNKNOWN:UNKNOWN	0.283	-	May 2012	-		-		-	0.000	0.283	
Cost Estimating(Submarine Communication Buoy - SCB)	C/CPFF	BAH:San Diego, CA	-	0.050	Oct 2011	0.025	Nov 2012	-		0.025	0.000	0.075	
Acquisition Documentation (Various)	C/CPFF	UNKNOWN:UNKNOWN	1.132	-		-		-		-	Continuing	Continuing	Continuing
Subtotal			4.038	2.053		0.843		-		0.843			
Test and Evaluation (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 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 (Communication at Speed and Depth - CSD)	WR	COTF:Norfolk, VA	0.637	-		-		-		-	0.000	0.637	
Test & Evaluation (Outboard Electronics (OE)-538)	WR	COTF:Norfolk, VA	0.424	1.178	Jan 2012	0.246	Oct 2012	-		0.246	Continuing	Continuing	Continuing
Test & Evaluation (Submarine High Data Rate - SubHDR)	WR	NUWC:Newport, RI	0.603	-		0.540	Dec 2012	-		0.540	Continuing	Continuing	Continuing
Developmental/Operational T&E (Advanced High Data Rate - AdvHDR)	WR	COTF:Norfolk, VA	0.065	0.022	Nov 2011	0.018	Nov 2012	-		0.018	Continuing	Continuing	Continuing
Developmental/Operational T&E (AdvHDR)	WR	NUWC:Newport, RI	0.605	0.115	Nov 2011	0.170	Nov 2012	-		0.170	Continuing	Continuing	Continuing
Developmental/Operational T&E (OE-538)	WR	NUWC:Newport, RI	0.616	2.425	Jan 2012	1.263	Oct 2012	-		1.263	Continuing	Continuing	Continuing
Test & Evaluation (CSD)	WR	SSC PAC:San Diego, CA	2.497	-		-		-		-	0.000	2.497	
Test & Evaluation (SCB)	WR	NUWC:Newport, RI	-	0.214	Nov 2011	0.025	Nov 2012	-		0.025	0.000	0.239	
Subtotal			5.447	3.954		2.262		-		2.262			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Navy										DATE: February 2012			
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					
Management Services (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 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)	C/CPFF	CSA:San Diego, CA	2.042	0.477	Jan 2012	0.475	Nov 2012	-		0.475	Continuing	Continuing	Continuing
Program Management Support (AdvHDR)	C/CPFF	CSA:San Diego, CA	6.191	0.941	Nov 2011	0.431	Nov 2012	-		0.431	Continuing	Continuing	Continuing
Program Management Support (Antenna Trans Eng)	C/CPFF	CSA:San Diego, CA	1.947	0.680	Nov 2011	0.884	Nov 2012	-		0.884	Continuing	Continuing	Continuing
Program Management Support (CSD)	C/CPFF	CSA:San Diego, CA	4.819	-		-		-		-	0.000	4.819	
Program Management Support (Submarine Communications Buoy - SCB)	C/CPFF	CSA:San Diego, CA	-	0.200	Nov 2011	0.076	Nov 2012	-		0.076	0.000	0.276	
Program Management Support (OE-538)	C/CPFF	CSA:San Diego, CA	3.183	0.846	Jan 2012	0.691	Oct 2012	-		0.691	Continuing	Continuing	Continuing
Acquisition Workforce	Various	Various:Various	0.280	-		-		-		-	0.000	0.280	0.280
Subtotal			18.462	3.144		2.557		-		2.557			
			Total Prior Years Cost	FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			223.690	22.671		18.395		-		18.395			
Remarks													

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Exhibit R-4, RDT&E Schedule Profile: PB 2013 Navy		DATE: February 2012
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>

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Exhibit R-4, RDT&E Schedule Profile: PB 2013 Navy		DATE: February 2012
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>

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Exhibit R-4, RDT&E Schedule Profile: PB 2013 Navy		DATE: February 2012
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>

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Exhibit R-4, RDT&E Schedule Profile: PB 2013 Navy		DATE: February 2012
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>

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Exhibit R-4A, RDT&E Schedule Details: PB 2013 Navy			DATE: February 2012
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

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 0742				
Submarine High Data Rate (SubHDR) Under Water Explosion (UNDEX) Development	1	2011	3	2013
SubHDR Research & Analysis for Performance Reliability	1	2011	1	2012
SubHDR Performance Reliability Component Development/Test	2	2012	4	2017
SubHDR Production Representative Engineering Development Model (EDM) Deliveries	4	2013	4	2013
SubHDR GBS/SHF Procurement Contract Option Award	2	2012	2	2012
SubHDR GBS/SHF Production Deliveries	2	2013	2	2013
SubHDR Radome Procurement Contract Option Awards	3	2012	2	2017
SubHDR Radome Production Deliveries	3	2013	2	2017
SubHDR Reliability Procurement Contract Award	2	2017	2	2017
Advanced High Data Rate (AdvHDR) Technology Development	1	2011	4	2014
AdvHDR Advanced Development Model (ADM) Demonstration	4	2014	4	2014
AdvHDR Material Development Decision (MDD) Optical Laser Communications (OLC)	3	2017	3	2017
AdvHDR Capabilities Development Document	1	2011	2	2013
AdvHDR Initial Capability Document (ICD) for OLC	1	2016	2	2017
AdvHDR Analysis of Alternative (AOA) for OLC	4	2017	4	2017
AdvHDR Demonstration (DEMO)	1	2011	4	2014
AdvHDR Technology Maturation	1	2011	3	2014
Submarine Communications Buoy (SCB) System Test & Evaluation	1	2016	4	2017
SCB Project arrangement with United Kingdom (UK)	2	2012	4	2015
Outboard Electronics (OE)-538 Milestone C (MS C) Decision	4	2014	4	2014

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Exhibit R-4A, RDT&E Schedule Details: PB 2013 Navy			DATE: February 2012	
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	
Events by Sub Project	Quarter	Year	Quarter	Year
OE-538 Full Rate Production Decision Review (FRP DR)	4	2016	4	2016
OE-538 Initial Operational Capability (IOC)	1	2017	1	2017
OE-538 Capability Production Document (CPD)	1	2011	2	2013
OE-538 Preliminary Design Review (PDR)	1	2011	1	2011
OE-538 Critical Design Review (CDR)	3	2011	3	2011
OE-538 System Development	1	2011	4	2012
OE-538 Engineering Development Model (EDM)	1	2011	2	2012
OE-538 2nd EDM Procurement	2	2013	2	2013
OE-538 1st EDM Delivery	2	2012	2	2012
OE-538 2nd EDM Delivery	2	2014	2	2014
OE-538 First Article Qualification Test (FAQT)	3	2014	3	2014
OE-538 Developmental Test (DT) for Milestone C (MS C)	3	2013	3	2013
OE-538 Operational Assessment (OA)	4	2013	4	2013
OE-538 Mobile Users Objective Systems (MUOS) Terminal IOT&E	1	2015	1	2015
OE-538 FAQT for OE-592 Variant	1	2016	1	2016
OE-538 DT for Full Rate Production (FRP)	2	2016	2	2016
OE-538 Operational Test (OT)	3	2016	3	2016
OE-538 Low-Rate Initial Production (LRIP) Contract Option Year 1	1	2015	1	2015
OE-538 LRIP Deliveries Year 1	4	2015	2	2016
OE-538 LRIP Contract Option Year 2	2	2016	2	2016
OE-538 LRIP Deliveries Year 2	2	2017	4	2017
OE-538 Full Rate Production (FRP) Contract Options Year 1	2	2017	2	2017

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Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy								DATE: February 2012			
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
0775: Submarine Supt Equip Prog	-	1.271	1.297	-	1.297	1.325	1.361	1.394	1.420	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

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.

The Electronic Warfare Support (ES) Development Projects include the development of: Distant ES Support and Remote Log-In, Specific Emitter Identification (SEI) Improvements, Integrated ES and Radio Frequency Distribution Unit (RFDU), Capability and Technical Initiatives, and next generation processes and radar wideband miniaturization.

RDTE Funding line supports the entire AN/BLQ-10 ES procurement program. Average FY OPN and SCN hardware procurement yearly funds are \$100M.

Submarine Support Equipment Program was transferred from a Military Intelligence Program, Program Element (PE) 0304503N in Fiscal Year 2012 back to PE 06034503N.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2011	FY 2012	FY 2013
Title: Submarine Support Equipment Program	-	1.271	1.297
Articles:		0	0
FY 2012 Plans: Update AN/BLQ-10 software baseline changes for SWFTS and NPES. Research, test and integrate technical insertion upgrades to the AN/BLQ-10 system. Test the next generation of technical processors.			
FY 2013 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy										DATE: February 2012	
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>			

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)										FY 2011	FY 2012	FY 2013
Update AN/BLQ-10 software baseline changes for SWFTS and NPES. Test and integrate technical insertion upgrades to the AN/BLQ-10 system. Research, test and develop the next generation of AN/BLQ-10 system processors.												
Accomplishments/Planned Programs Subtotals										-	1.271	1.297

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

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• OPN/256000: <i>Submarine Supt Equip Prog</i>	0.000	89.241	34.050	0.000	34.050	51.397	54.504	63.422	73.539	Continuing	Continuing
• SCN/201300: <i>VIRGINIA Class Submarine</i>	57.952	53.896	54.974	0.000	54.974	28.307	57.195	58.339	59.506	Continuing	Continuing
• RDT&E/0604558N: <i>Submarine Tactical Warfare System</i>	0.000	1.500	1.300	0.000	1.300	1.500	1.500	1.500	1.500	Continuing	Continuing

D. Acquisition Strategy
AN/BLQ-10 (V) ES System - Procurements are executed/managed in accordance with the Acquisition Strategy Report (Rev 6) for AN/BLQ-10(V) ES System dtd 12/14/09 and the Acquisition Plan (Rev 8) for AN/BLQ-10(V) ES System dtd 12/15/09.

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-3, RDT&E Project Cost Analysis: PB 2013 Navy											DATE: February 2012			
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						
Product Development (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 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	
AN/BLQ-10 ES Product Development	C/FP	Various Contractors:Not Specified	2.867	0.130	Mar 2012	0.130	Mar 2013	-		0.130	Continuing	Continuing	Continuing	
Systems Engineering & Test Support	WR	NUWC:Newport, RI	2.192	0.881	Oct 2011	1.137	Oct 2012	-		1.137	Continuing	Continuing	Continuing	
Systems Engineering & Test Support	C/CPAF	TBD*:Not Specified	0.369	0.225	Mar 2012	-	Oct 2012	-		-	0.000	0.594		
Subtotal			5.428	1.236		1.267		-		1.267				
Support (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 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	
Engineering Technical Support	C/CPAF	AT&T GSI:VA	1.131	-		-		-		-	0.000	1.131		
Subtotal			1.131	-		-		-		-	0.000	1.131		
Management Services (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 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	
Travel	WR	NAVSEA:WNY	0.347	0.005	Mar 2012	-	Mar 2013	-		-	0.000	0.352		
SBIR Assessment	Reqn	Not Specified:Not Specified	0.285	0.030	Feb 2012	0.030	Feb 2013	-		0.030	0.000	0.345		
Labor (Research Personnel)	Reqn	Not Specified:Not Specified	0.122	-	Oct 2011	-	Oct 2012	-		-	0.000	0.122		
Subtotal			0.754	0.035		0.030		-		0.030	0.000	0.819		
			Total Prior Years Cost	FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals			7.313	1.271		1.297		-		1.297				

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Navy						DATE: February 2012			
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>			
	Total Prior Years Cost	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	Cost To Complete	Total Cost	Target Value of Contract	
Remarks									

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Exhibit R-4, RDT&E Schedule Profile: PB 2013 Navy		DATE: February 2012
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>
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Exhibit R-4A, RDT&E Schedule Details: PB 2013 Navy			DATE: February 2012
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>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 0775				
AN/BLQ-10 Baseline Changes, SPR Resolution, and Software Enhancement: AN/BLQ-10 Baseline Changes, SPR Resolution, and Software Enhancement	2	2012	2	2012
AN/BLQ-10 Baseline Changes, SPR Resolution, and Software Enhancement: Software Update 1	2	2013	2	2013
AN/BLQ-10 Baseline Changes, SPR Resolution, and Software Enhancement: Software Update 2	2	2014	2	2014
AN/BLQ-10 Baseline Changes, SPR Resolution, and Software Enhancement: Software Update 3	2	2015	2	2015
AN/BLQ-10 Baseline Changes, SPR Resolution, and Software Enhancement: Software Update 4	2	2016	2	2016
AN/BLQ-10 Baseline Changes, SPR Resolution, and Software Enhancement: Software Update 5	2	2017	2	2017
Technical Insertions (Pulse Digitizer Upgrade, Processor Upgrade, Muliti Static Passive Ranging/Signature Reduction): Research	3	2012	3	2012
Technical Insertions (Pulse Digitizer Upgrade, Processor Upgrade, Muliti Static Passive Ranging/Signature Reduction): At-Sea Test	2	2013	2	2013
Technical Insertions (Pulse Digitizer Upgrade, Processor Upgrade, Muliti Static Passive Ranging/Signature Reduction): Integrate	4	2013	4	2013
Technical Insertions (Pulse Digitizer Upgrade, Processor Upgrade, Muliti Static Passive Ranging/Signature Reduction): Research 1	2	2014	2	2014
Technical Insertions (Pulse Digitizer Upgrade, Processor Upgrade, Muliti Static Passive Ranging/Signature Reduction): At-Sea Test 1	1	2015	1	2015
Technical Insertions (Pulse Digitizer Upgrade, Processor Upgrade, Muliti Static Passive Ranging/Signature Reduction): Integrate 1	3	2015	3	2015

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Exhibit R-4A, RDT&E Schedule Details: PB 2013 Navy			DATE: February 2012		
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	
		Start		End	
Events by Sub Project		Quarter	Year	Quarter	Year
Technical Insertions (Pulse Digitizer Upgrade, Processor Upgrade, Muliti Static Passive Ranging/Signature Reduction): Research 2		3	2016	3	2016
Technical Insertions (Next Generation Processor, RADAR Wide Band Miniturization, Advanced EW Tuners): Test		2	2012	2	2012
Technical Insertions (Next Generation Processor, RADAR Wide Band Miniturization, Advanced EW Tuners): Downselect & Integrate		4	2012	4	2012
Technical Insertions (Next Generation Processor, RADAR Wide Band Miniturization, Advanced EW Tuners): Research TI		4	2013	4	2013
Technical Insertions (Next Generation Processor, RADAR Wide Band Miniturization, Advanced EW Tuners): Test 1 TI		2	2014	2	2014
Technical Insertions (Next Generation Processor, RADAR Wide Band Miniturization, Advanced EW Tuners): Downselect & Integrate 1		4	2015	4	2015
Technical Insertions (Next Generation Processor, RADAR Wide Band Miniturization, Advanced EW Tuners): Research 2 TI		3	2016	3	2016
Technical Insertions (Next Generation Processor, RADAR Wide Band Miniturization, Advanced EW Tuners): Test 2		1	2017	1	2017
Technical Insertions (Next Generation Processor, RADAR Wide Band Miniturization, Advanced EW Tuners): Integrate TI		4	2017	4	2017

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Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy								DATE: February 2012			
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			
COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
1411: Sub Tact Comm System	18.310	11.849	9.093	-	9.093	14.129	9.799	11.458	11.702	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		
A. Mission Description and Budget Item Justification											
Common Submarine Radio Room (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 Communications 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 (COTS) products and emerging technologies. The Submarine Tactical Communications System project (1411) provides submarines with communications systems designed to: (a) enhance data throughout through automation and integrated network management; (b) convert to ForceNet and tactical data networks, (c) provide submarine internet protocol 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 COTS communication equipment covering a wide range of frequencies and modes. The project utilizes land-based integration test facilities to integrate Command, Control, Communications, Computer and Intelligence 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.											
JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING and MANUFACTURING DEVELOPMENT because it encompasses development and demonstration of new end-items prior to production approval decision.											
Funding in FY13 is to complete CSRR modernization Increment 1 Version 3 for SEAWOLF and Ship Submersible Guided Nuclear (SSGN) class submarines. Develop platform specific builds of control & management software incorporating Increment 1 Version 3 capabilities for SEAWOLF, SSGN and Ship Submersible Ballistic Nuclear (SSBN) submarines. Continue CSRR modernization of Increment 1 Version 3 for SSBN class submarines.											
Acquisition Decision Memorandum signed by Assistant Secretary of Navy for Research, Development & Acquisition dated 15 July 2008 approved consolidating Increments 1 and 2 to a single Increment 1 with multiple block upgrades (Versions).											
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2011	FY 2012	FY 2013	
Title: Common Submarine Radio Room (CSRR)								18.310	11.849	9.093	
								Articles: 0	0	0	

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Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy		DATE: February 2012		
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 Programs (\$ in Millions, Article Quantities in Each)		FY 2011	FY 2012	FY 2013
FY 2011 Accomplishments: - Continued Multi-Purpose Reconfigurable Training System (MRTS) software upgrade for Increment 1 Ver 3 Common Submarine Radio Room (CSRR) baseline. - Continued 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. - Completed upgrade of CSRR Increment 1 Ver 2 for VIRGINIA FLT 1&2 and SEAWOLF control and management software. - Completed systems engineering development for CSRR modernization Increment 1 Ver 3 LA class submarines. - Continued CSRR modernization Increment 1 Version 3 for SEAWOLF, VIRGINIA and Ship Submersible Guided, Nuclear (SSGN) class submarines. - Continued upgrade of Control and Management software to include Increment 1 Ver 3 capabilities.				
FY 2012 Plans: - Continued MRTS software upgrade for Increment 1 Ver 3 CSRR baseline. - Continued 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. - Completed CSRR modernization of Increment 1 Version 3 for VIRGINIA and continued for SEAWOLF and SSGN class submarines. - Supported Operational Testing of the CSRR Increment 1 Version 3 baseline. - Commenced CSRR modernization Increment 1 Version 3 for Ship Submersible Ballistic, Nuclear (SSBN) class submarines. - Completed Virginia and SSGN Increment 1 Version 3 upgrade of Control and Management software. - Commenced development of the Increment 1 Version Control and Management software for SEAWOLF and SSBN capabilities and provided specific builds.				
FY 2013 Plans: - Complete MRTS development for Increment 1 Version 3. - 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. - Continue modernization for Increment 1 Version 3 SSBN class submarines. - Complete Increment 1 Version 3 modernization for SEAWOLF and SSGN. - Complete Operational Testing (OT) of CSRR Increment 1 Version 3 baseline. - Develop platform specific builds of control & management software incorporating Increment 1 Version 3 capabilities for SEAWOLF, SSGN and SSBN.				
Accomplishments/Planned Programs Subtotals		18.310	11.849	9.093

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Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy									DATE: February 2012		
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			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 313000: Submarine Communications	55.434	74.047	69.025	0.000	69.025	74.698	71.576	46.746	59.558	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 (OSA) 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 (JMCOMS), and maximize use of Commercial Off-The-Shelf (COTS) products and emerging technologies. Program Milestones: Completed Increment 1 Ver 2 Developmental Test & Evaluation (DT) in 3Q FY10. Completed Follow-on Test & Evaluation (FOT&E) in 2Q FY11 on a Ship Submersible Guided Nuclear (SSGN) platform and was evaluated as operationally effective and operationally suitable. Increment 1 Ver 3 DT 3Q FY12, FOT&E 4Q FY12.											
E. Performance Metrics											
FY11 - FY13 CSRR reduces the overall cost for implementation of Command, Control, Communications, Computer, Intelligence (C4I) programs of record 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 2013 Navy										DATE: February 2012			
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT					
1319: Research, Development, Test & Evaluation, Navy BA 5: Development & Demonstration (SDD)				PE 0604503N: SSN-688 & Trident Modernization				1411: Sub Tact Comm System					
Product Development (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 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	2.776	2.776
Hardware Development	C/CPFF	SSC LANT:Charleston, SC	0.211	0.219	Nov 2011	-		-		-	Continuing	Continuing	Continuing
Multi-Crypto System (MCS) Development	Various	Motorola:Scottsdale, Arizona	10.214	-		-		-		-	0.000	10.214	10.214
Software Development	Various	SSC PAC:San Diego, CA	2.068	-		-		-		-	0.000	2.068	2.068
Software Development	WR	NUWC:Newport, RI	5.498	0.354	Nov 2011	-		-		-	Continuing	Continuing	Continuing
Multi-Purpose Reconfigurable Training System (MRTS) Development	C/CPFF	NAVAIR:Orlando, FL	15.037	0.969	Jan 2012	1.421	Jan 2013	-		1.421	Continuing	Continuing	Continuing
Systems Engineering	Various	NUWC:Newport, RI	33.041	2.916	Nov 2011	3.364	Nov 2012	-		3.364	Continuing	Continuing	Continuing
Systems Eng/Design 688 Class	Various	NUWC:Newport, RI	7.084	-		-		-		-	Continuing	Continuing	Continuing
Site Platform Integration/ Certification	Various	NUWC:Newport, RI	12.117	0.434	Nov 2011	-		-		-	Continuing	Continuing	Continuing
Broadcast Control Authority/ Operational Control (BCA/ OPCON) architecture	WR	NUWC:Newport, RI	3.683	-		-		-		-	0.000	3.683	3.683
Software Development (CSRR)	C/CPAF	Lockheed Martin:Eagan, MN	30.978	3.253	Dec 2011	2.610	Nov 2012	-		2.610	0.000	36.841	
Subtotal			122.707	8.145		7.395		-		7.395			
Support (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 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	WR	NUWC:Newport, RI	3.071	0.330	Dec 2011	-		-		-	Continuing	Continuing	Continuing
Software Engineering	WR	SSC PAC:San Diego, CA	2.969	0.239	Nov 2011	0.125	Nov 2012	-		0.125	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Navy											DATE: February 2012		
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 2012		FY 2013 Base		FY 2013 OCO		FY 2013 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
Information Security/ Information Assurance (INFOSEC/IA) Certification	Various	SSC PAC/SSC LANT:San Diego, CA/ Charleston, SC	18.128	1.123	Nov 2011	1.087	Nov 2012	-		1.087	Continuing	Continuing	Continuing
Subtotal			24.168	1.692		1.212		-		1.212			

Test and Evaluation (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 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 Test and Evaluation (T&E)	C/CPFF	COTF, JITC:Various	9.283	1.406	Dec 2011	0.486	Dec 2012	-		0.486	Continuing	Continuing	Continuing
Subtotal			9.283	1.406		0.486		-		0.486			

Management Services (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 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	C/CPFF	CSA:San Diego, CA	9.890	0.606	Nov 2011	-		-		-	Continuing	Continuing	Continuing
Acquisition Workforce	C/CPFF	UNKNOWN:UNKNOWN	0.077	-		-		-		-	0.000	0.077	0.077
Subtotal			9.967	0.606		-		-		-			

			Total Prior Years Cost	FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			166.125	11.849		9.093		-		9.093			

Remarks													

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Exhibit R-4, RDT&E Schedule Profile: PB 2013 Navy		DATE: February 2012
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>

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Exhibit R-4A, RDT&E Schedule Details: PB 2013 Navy			DATE: February 2012
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

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 1411				
Fielding Decision (Increment 1 Version 2)	3	2011	3	2011
Interim Fielding Decision (Increment 1 Version 3)	2	2012	2	2012
Fielding Decision (Increment 1 Ver 3)	1	2013	1	2013
Fielding Decision (Increment 1 Ver 4)	1	2017	1	2017
Technical Reviews (Increment 1 Ver 3 Critical Design Review (CDR))	2	2011	2	2011
Technical Reviews (Increment 1 Ver 4 Preliminary Design Review (PDR))	2	2014	2	2014
Technical Reviews (Increment 1 Ver 4 CDR)	2	2015	2	2015
Technology Demonstration (Increment 1 Ver 3) Development Phase	1	2011	2	2014
Technology Demonstration (Increment 1 Ver 4) Development Phase	1	2014	4	2017
Contracts (Software---Lockheed Martin)	1	2011	4	2012
Contracts (Software---Follow-On)	1	2013	4	2017
Operational Testing (OT) (Increment 1 Ver 2)	1	2011	2	2011
DT (Increment 1 Ver 3) JITC Cert	3	2012	3	2012
OT (Increment 1 Ver 3)	4	2012	4	2012
DT (Increment 1 Ver 4) JITC Cert	3	2016	3	2016
OT (Increment 1 Ver 4)	4	2016	4	2016
Procurement (Increment 1 Modernization Kits)	4	2011	3	2017
Installation (Increment 1 Modernization Kits)	4	2011	4	2017