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Exhibit R-2, RDT&E Budget Item 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 0604558N: <i>New Design SSN</i>
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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
Total Program Element	166.888	112.158	165.230	-	165.230	268.535	343.249	305.594	229.568	Continuing	Continuing
1947: <i>New Design SSN HM&E</i>	110.568	60.294	33.568	-	33.568	78.424	102.431	66.793	40.044	Continuing	Continuing
1950: <i>New Design SSN Combat Sys Dev</i>	34.983	33.874	29.065	-	29.065	37.585	38.424	36.474	37.080	Continuing	Continuing
3062: <i>Submarine Multi-Mission Team Trainer</i>	5.418	2.990	2.729	-	2.729	2.794	2.852	2.901	2.948	Continuing	Continuing
4500: <i>VIRGINIA Payload Module</i>	-	-	99.868	-	99.868	149.732	199.542	199.426	149.496	Continuing	Continuing
9999: <i>Congressional Adds</i>	15.919	15.000	-	-	-	-	-	-	-	0.000	30.919

A. Mission Description and Budget Item Justification

The U.S. Navy must maintain a submarine fleet that is of sufficient capability and numbers to defend American interests. The VIRGINIA Class Submarine, formerly the New Attack Submarine (New SSN), is being designed to fulfill this need. It will counter the potential threats of the next century in a multi-mission capable submarine that has the ability to provide covert, sustained combat presence in denied waters. The primary goal of the program is to develop an affordable yet capable submarine by evaluating a broad range of system and technology alternatives, and pursuing cost reduction, producibility improvement, and technical risk management. This Program Element (PE) provides the technology, prototype components, and systems engineering needed to design and construct the VIRGINIA Class Submarine and build its Command, Control, Communications, and Intelligence (C3I) System. This PE directly supports the following VIRGINIA Class Submarine missions: (1) covert strike warfare; (2) anti-submarine warfare; (3) covert intelligence collection/surveillance, indication and warning, and electronic warfare; (4) anti-surface ship warfare; (5) special warfare; (6) mine warfare; and (7) battle group support.

Project 9999: FY11 Congressional Add includes funding for Small Business Technology Insertion.

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B. Program Change Summary (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	155.489	97.235	91.818	-	91.818
Current President's Budget	166.888	112.158	165.230	-	165.230
Total Adjustments	11.399	14.923	73.412	-	73.412
• Congressional General Reductions	-	-0.077			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	15.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.300	-			
• SBIR/STTR Transfer	-3.412	-			
• Program Adjustments	-	-	73.629	-	73.629
• Rate/Misc Adjustments	-	-	-0.217	-	-0.217
• Congressional General Reductions Adjustments	-0.889	-	-	-	-
• Congressional Add Adjustments	16.000	-	-	-	-

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: 9999: *Congressional Adds*

Congressional Add: *SMALL BUSINESS TECHNOLOGY INSERTION*

Congressional Add: *New Design SSN SBIR (Cong)*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

	FY 2011	FY 2012
	15.919	-
	-	15.000
Congressional Add Subtotals for Project: 9999	15.919	15.000
Congressional Add Totals for all Projects	15.919	15.000

Change Summary Explanation

Technical: Not applicable.

Schedule: Not applicable.

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

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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
1947: <i>New Design SSN HM&E</i>	110.568	60.294	33.568	-	33.568	78.424	102.431	66.793	40.044	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

This project encompasses all the ship system development efforts for the VIRGINIA Class Submarine and the Technology Insertion Program for reducing cost and upgrading performance of future hulls by virtue of improvements in ship systems. Technology development implementation and logistics for developmental items, and VIRGINIA Class test & evaluation are included. This project is essential for pursuit of high priority Design For Affordability (DFA) and Reduced Total Ownership Cost (RTOC) initiatives while achieving platform requirements and providing mission capability and flexibility. The thrust of these efforts will be to develop and apply multiple advanced system technologies which are integrated into the design of the VIRGINIA Class Submarine. Technologies developed in this program will be considered for applicability to the Ohio Replacement Program (ORP) for commonality opportunities. New technologies are being transitioned from industry and government research and development programs where doing so offers substantial performance improvement and/or affordability payoffs. Transition opportunities include those from the Defense Advanced Research Projects Agency (DARPA) Sensors & Payloads program and Office of Naval Research (ONR) Future Naval Capabilities Program.

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

	FY 2011	FY 2012	FY 2013
Title: New Design SSN HM&E	99.259	54.143	28.116
Articles:	0	0	0
FY 2011 Accomplishments:			
Continued block upgrades of Ship Control Algorithms and software. Continued responding to SSN774 OPEVAL and TECHEVAL findings and prepared for FOT&E events. Continued software development for Advanced Electromagnetic Silencing capability. Acquired initial at-sea data. Completed prototype development testing for VIRGINIA Payload Tube and Large Aperture Bow Array. Continued design and development of Block III Cost Reduction components and technologies including, for example, Large Aperture Bow Array (LAB), payload tubes, hatches, reverse osmosis units, low cost sound isolation coupling, and Integrated Low Pressure Electrolyzer. Continued transition of products from the Office of Naval Research Manufacturing Technology Program (MANTECH). Continued development of concepts and technologies for Block IV Reduced Total Ownership Cost (RTOC). Addressed emergent reliability issues associated with HM&E components.			
FY 2012 Plans:			
Continue block upgrades of Ship Control Algorithms and software. Continue responding to SSN774 OPEVAL and TECHEVAL findings and prepare for FOT&E events. Continue software development for Advanced Electromagnetic Silencing capability. Complete design and development of Block III Cost Reduction components and technologies including, for example, LAB, payload tubes, hatches, reverse osmosis units, low cost sound isolation coupling, and Integrated Low Pressure Electrolyzer. Continue transition of products from the Office of Naval Research MANTECH Program. Continue development of concepts and			

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2011	FY 2012	FY 2013
technologies for Block IV RTOC. Address emergent reliability issues associated with HM&E components. Initiate Obsolescence Redesign for Block IV. FY 2013 Plans: Continue block upgrades of Ship Control Algorithms and software. Continue responding to SSN774 OPEVAL and TECHEVAL findings and prepare for FOT&E events. Complete software development for Advanced Electromagnetic Silencing capability. Continue transition of products from the Office of Naval Research MANTECH Program. Continue development of concepts and technologies for Block IV RTOC and finalize Block IV technical baseline. Address emergent reliability issues associated with HM&E components. Continue Obsolescence Redesign for Block IV.				
Title: TEST AND EVALUATION		11.309	6.151	5.452
		Articles: 0	0	0
FY 2011 Accomplishments: Continued block upgrades of Ship Control Algorithms and software. Continued responding to SSN774 OPEVAL and TECHEVAL findings and prepared for FOT&E events. Continued software development for Advanced Electromagnetic Silencing capability. Acquired initial at-sea data. Completed prototype development testing for VIRGINIA Payload Tube and Large Aperture Bow Array. Continued design and development of Block III Cost Reduction components and technologies including, for example, Large Area Bow Array, payload tubes, hatches, reverse osmosis units, low cost sound isolation coupling, and Integrated Low Pressure Electrolyzer. Continued transition of products from the Office of Naval Research Manufacturing Technology Program (MANTECH). Continued development of concepts and technologies for Block IV Reduced Total Ownership Cost (RTOC). Addressed emergent reliability issues associated with HM&E components. FY 2012 Plans: Continue block upgrades of Ship Control Algorithms and software. Continue responding to SSN774 OPEVAL and TECHEVAL findings and prepare for FOT&E events. Continue software development for Advanced Electromagnetic Silencing capability. Complete design and development of Block III Cost Reduction components and technologies including, for example, Large Area Bow Array, payload tubes, hatches, reverse osmosis units, low cost sound isolation coupling, and Integrated Low Pressure Electrolyzer. Continue transition of products from the Office of Naval Research Manufacturing Technology Program (MANTECH). Continue development of concepts and technologies for Block IV Reduced Total Ownership Cost (RTOC). Address emergent reliability issues associated with HM&E components. Initiate Obsolescence Redesign for Block IV. FY 2013 Plans: Continue block upgrades of Ship Control Algorithms and software. Continue responding to SSN774 OPEVAL and TECHEVAL findings and prepare for FOT&E events. Complete software development for Advanced Electromagnetic Silencing capability. Continue transition of products from the Office of Naval Research Manufacturing Technology Program (MANTECH). Continue				

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2011	FY 2012	FY 2013
development of concepts and technologies for Block IV Reduced Total Ownership Cost (RTOC) and finalize Block IV technical baseline. Address emergent reliability issues associated with HM&E components. Initiate Obsolescence Redesign for Block IV.			
Accomplishments/Planned Programs Subtotals	110.568	60.294	33.568

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>
• SCN/2013: <i>VA CL</i>	5,093.294	4,682.675	4,092.479	0.000	4,092.479	4,606.642	6,282.366	5,726.766	5,528.434	13,128.469	83,608.403
• O&M,N/0204283N: <i>Sub Ops & Safety</i>	48.223	54.608	45.169	0.000	45.169	44.917	45.644	46.453	46.887	Continuing	Continuing
• OPN/0942: <i>VA CL Support Equipment</i>	129.334	93.487	79.870	0.000	79.870	57.797	51.452	35.479	43.211	Continuing	Continuing

D. Acquisition Strategy

The VIRGINIA Class Submarine Program has implemented Integrated Product and Process Development (IPPD). The traditional distinct phasing of the design process has been replaced with the continuous concurrent engineering IPPD process. The IPPD approach has facilitated a smoother transition from design to manufacturing and has reduced the number of changes typically encountered during construction of the lead and early follow-on ships. In September 1997, Congress passed a law allowing Electric Boat (EB) and Northrop Grumman Newport News (NGNN), now Huntington Ingalls Industries (HII), to team for production of the first four VIRGINIA Class Submarines. Under the teaming agreement, EB remained the design yard for the VIRGINIA Class Submarine and HII became a part of the IPPD process. The Program Office is managing two multi-year contracts the first is for the FY04-08 ships and the second was awarded in December 2008 for the FY09-13 ships.

E. Performance Metrics

Successful completion of Milestone III Review. Successful completion of Final Operational Test and Evaluation (FOT&E) for Technology Insertion (TI)-08 and Block III. Successful implementation of Reduced Total Ownership (RTOC) initiatives

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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
Component Development	WR	NSWC:Carderock, MD	216.910	15.329	Feb 2012	9.592	Nov 2012	-		9.592	98.117	339.948	
Component Development	WR	NUWC:Newport, RI	105.875	0.492	Mar 2012	0.435	Nov 2012	-		0.435	99.221	206.023	
Component Development	WR	NRL:Washington, DC	4.918	0.300	Dec 2011	0.250	Nov 2012	-		0.250	0.000	5.468	
Component Development	C/CPFF	Electric Boat:Groton, CT	572.554	18.635	Mar 2012	8.074	Nov 2012	-		8.074	368.739	968.002	
Component Development	C/CPFF	Electric Boat:Groton, CT	22.964	-		-		-		-	0.000	22.964	
Component Development	C/CPFF	Electric Boat:Groton, CT	34.245	5.574	Dec 2011	3.950	Dec 2012	-		3.950	0.000	43.769	
Component Development	PO	SUPSHIP:Groton, CT	53.747	11.803	Mar 2012	4.721	Mar 2013	-		4.721	40.512	110.783	
Component Development	SS/CPFF	Lockheed Martin:Not Specified	15.703	0.821	Dec 2011	-	Dec 2012	-		-	0.000	16.524	
Component Development	SS/CPFF	Lockheed Martin:Not Specified	2.070	-		-		-		-	0.000	2.070	
Component Development	SS/CPFF	Applied Research Laboratory:Penn State University	21.906	0.115	Dec 2011	-	Dec 2012	-		-	0.000	22.021	
Component Development	SS/FP	National Shipbuilding Research Program:Not Specified	2.454	0.574	Mar 2012	0.594	Mar 2013	-		0.594	0.000	3.622	
Component Development	Various	Micellaneous:Not Specified	14.671	-		-		-		-	0.000	14.671	
Subtotal			1,068.017	53.643		27.616		-		27.616	606.589	1,755.865	

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 and Evaluation - DT&E	WR	NSWC:Carderock, MD	89.433	0.810	Feb 2012	0.800	Nov 2012	-		0.800	41.056	132.099	
Test and Evaluation - LFT&E	WR	NSWC:Carderock, MD	0.650	0.420	Dec 2011	0.415	Nov 2012	-		0.415	3.350	4.835	
Test and Evaluation - DT&E	WR	NSWC:Dahlgren, VA	0.315	-		-		-		-	0.000	0.315	

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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
Test and Evaluation - DT&E	WR	NUWC:Newport, RI	102.175	2.304	Feb 2012	1.695	Nov 2012	-		1.695	160.009	266.183	
Test and Evaluation - OT&E	PO	COMOPTEVFOR:PD	13.428	1.000	Mar 2012	1.000	Nov 2012	-		1.000	50.560	65.988	
Test and Evaluation - LFT&E	C/CPFF	Electric Boat:Groton, CT	1.088	0.202	Dec 2011	0.100	Dec 2012	-		0.100	0.100	1.490	
Test and Evaluation - DT&E	C/CPAF	SEAPORT:Rockville, MD	18.907	0.500	Nov 2011	0.500	Nov 2012	-		0.500	3.600	23.507	
Test and Evaluation - DT&E	C/CPFF	Progeny:Manassas, VA	3.460	0.915	Dec 2011	0.942	Dec 2012	-		0.942	6.808	12.125	
Test and Evaluation - DT&E	Various	Micellaneous:Not Specified	11.842	-		-		-		-	0.000	11.842	
Subtotal			241.298	6.151		5.452		-		5.452	265.483	518.384	

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
Contractor Engineering Support	C/CPAF	SEAPORT:Rockville, MD	19.025	0.500	Nov 2011	0.500	Nov 2012	-		0.500	7.000	27.025	
Travel	PO	Not Specified:Not Specified	1.919	-		-		-		-	0.000	1.919	
DAWDF	Various	Not Specified:Not Specified	0.597	-		-		-		-	0.000	0.597	
Subtotal			21.541	0.500		0.500		-		0.500	7.000	29.541	

	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		1,330.856	60.294		33.568		-	33.568	879.072	2,303.790	

Remarks

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

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 1947				
DT-IIIB (NPES)	1	2011	1	2011
Post Shakedown Availability (PSA SSN 779)	1	2011	4	2011
Post PSA Modernization (SSN 779)	1	2011	4	2011
Ship Authorization (786/787)	1	2011	1	2011
DT-IIIA1 (Arctic)	2	2011	2	2011
OT-IIIA1 (Arctic)	2	2011	2	2011
Post Shakedown Availability (PSA SSN 780)	2	2011	2	2012
Post PSA Modernization (SSN 780)	2	2011	2	2012
OT-IIIB (NPES)	2	2011	3	2011
Ship Delivery (SSN 781)	4	2011	4	2011
Ship Authorization (788/789)	1	2012	1	2012
DT-IIIA2 (DDS)	3	2012	4	2012
OT-IIIA2 (DDS)	3	2012	4	2012
Ship Delivery (SSN 782)	3	2012	3	2012
Post Shakedown Availability (PSA SSN 781)	2	2012	2	2013
Post PSA Modernization (SSN 781)	2	2012	2	2013
Post Shakedown Availability (PSA SSN 782)	1	2013	4	2013
Post PSA Modernization (SSN 782)	1	2013	4	2013
Ship Authorization (790/791)	1	2013	1	2013
Ship Delivery (SSN 783)	3	2013	3	2013
Ship Authorization (792)	1	2014	1	2014

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

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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Post Shakedown Availability (PSA SSN 783)	1	2014	1	2015
Post PSA Modernization (SSN 783)	1	2014	1	2015
Ship Delivery (SSN 784)	2	2014	2	2014
Block III FOT&E DT-III C (TBD)	3	2014	4	2015
Post Shakedown Availability (PSA SSN 784)	4	2014	2	2015
Ship Authorization (793/794)	1	2015	1	2015
Ship Delivery (SSN 785)	2	2015	2	2015
Block III FOT&E OT-III C (TBD)	4	2015	1	2016
Post Shakedown Availability (PSA SSN 785)	4	2015	2	2016
Ship Delivery (SSN 786)	1	2016	1	2016
Ship Authorization (795/796)	1	2016	1	2016
Post Shakedown Availability (SSN 786)	2	2016	4	2016
Ship Delivery (SSN 787)	3	2016	3	2016
Post Shakedown Availability (PSA SSN 787)	4	2016	2	2017
Ship Delivery (SSN 788)	1	2017	1	2017
Ship Authorization (SSNs 797/798)	1	2017	1	2017
Post Shakedown Availability (PSA SSN 788)	2	2017	4	2017
Ship Delivery (SSN 789)	3	2017	3	2017
Post Shakedown Availability (PSA SSN 789)	4	2017	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
1950: <i>New Design SSN Combat Sys Dev</i>	34.983	33.874	29.065	-	29.065	37.585	38.424	36.474	37.080	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

This project encompasses the top level systems development, test and integration into the ship of the VIRGINIA Class Submarine C3I System, which includes multiple subsystems. The scope of the system is expanded from Sonar and Combat Control subsystems to include AN/BLQ-10 Electronic Support Measures, Exterior Communications, Submarine Regional Warfare System, Navigation, Total Ship Monitoring, Imaging, Tactical Acoustic Communications, Radar, Interior Communications, Tactical Support Devices, Fiber Optic Cable Subsystem, and Special Purpose Subsystems, such as Battle Force Team Trainer and others. VIRGINIA Class Submarine specific development efforts include requirements definition, software, hardware development, software/hardware test, prototype production, and electronic integration as well as physical integration into the platform.

The VIRGINIA Class Submarine implementation approach is based on Open System, Commercial-off-the-Shelf (COTS) Non-Developmental Items or subsystems. The program leverages on-going subsystems developments or developing new subsystems where needed to satisfy VIRGINIA Class requirements. The recurring cost of VIRGINIA Class Submarine C3I Systems is being reduced to meet the program's affordability goals. Modifications to many subsystems must be developed to: (1) reduce the shipbuilding and construction recurring costs through the use of COTS components; (2) use proven computer technologies to evolve to an Open System design; (3) enhance capabilities to support expanded operational requirements, reduced manning, and reduced shipboard component footprint.

To meet the collective future threat, the submarine force must operate as effectively in littoral regions as it traditionally has in open ocean. Close coordination with surface battle groups and airborne units is essential to mission accomplishment. To meet the VIRGINIA Class Submarine mission, the following capabilities are provided by the VIRGINIA Class Submarine C3I System: (1) passive and active detection of multiple contacts, including early warning threat determination through processing and analysis of sensor data; (2) classification of sensor data for the purpose of identifying contacts; (3) localization (tracking) of contacts through target motion analysis; (4) preset, launch, and control of weapons and countermeasures; (5) improved communication and connectivity with other battle group elements, airborne units, and special operations forces; (6) incorporation of vertical launch system to enhance strike warfare; and (7) more effective covert surveillance through video imaging with onboard digital enhancement capabilities, and improved electronic warfare analysis capabilities.

The F1950 project mission includes an ongoing post VIRGINIA Class TECH/OPEVAL RDT&E effort to continue the development of VIRGINIA Unique Combat System Improvements. The VIRGINIA Class C3I will continue to leverage backfit communities efforts, but even with common systems that the Navy has developed there will continue to be VIRGINIA Unique capability improvements required. The FY09 and out funding identified is for those efforts.

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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 0604558N: <i>New Design SSN</i>	PROJECT 1950: <i>New Design SSN Combat Sys Dev</i>
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2011	FY 2012	FY 2013
<p>Title: Sonar Combat Control and Architecture Subsystems</p> <p style="text-align: right;">Articles:</p> <p>Description: The Sonar Combat Control and Architecture (S/CC/A) Subsystems funding provides for the VIRGINIA unique efforts performed by the S/CC/A PARMs (PMS401 and PMS435 respectively). These funds also provide for the integration and test of subsystems at the VIRGINIA Class system level. This is a constant and consistent effort ongoing throughout the life of the system to maintain subsystem commonality with the submarine in-service community.</p> <p>FY 2011 Accomplishments: Continued the development of S/CC/A System Improvements to maintain VIRGINIA Class Commonality to backfit fleet.</p> <p>FY 2012 Plans: Continue the development of S/CC/A System Improvements to maintain VIRGINIA Class Commonality to backfit fleet.</p> <p>FY 2013 Plans: Continue the development of S/CC/A System Improvements to maintain VIRGINIA Class Commonality to backfit fleet.</p>	19.091 0	17.273 0	15.343 0
<p>Title: C3I Systems Engineering</p> <p style="text-align: right;">Articles:</p> <p>FY 2011 Accomplishments: Continued the development of System Level and other subsystem Improvements to maintain VIRGINIA Class Commonality to backfit fleet.</p> <p>FY 2012 Plans: Continue the development of System Level and other subsystem Improvements to maintain VIRGINIA Class Commonality to backfit fleet.</p> <p>FY 2013 Plans: Continue the development of System Level and other subsystem Improvements to maintain VIRGINIA Class Commonality to backfit fleet.</p>	15.892 0	16.601 0	13.722 0
Accomplishments/Planned Programs Subtotals	34.983	33.874	29.065

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>
• SCN/2013: VA CL	5,093.294	4,682.675	4,092.479	0.000	4,092.479	4,606.642	6,282.366	5,726.766	5,528.434	36,203.595	106,683.529

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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 0604558N: <i>New Design SSN</i>	PROJECT 1950: <i>New Design SSN Combat Sys Dev</i>
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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>
• O&M,N/0204283N: <i>Sub Ops & Safety</i>	48.223	54.608	45.169	0.000	45.169	44.917	45.644	46.453	46.887	Continuing	Continuing
• OPN/0942: <i>VA CL Support Equipment</i>	129.334	93.487	79.870	0.000	79.870	57.797	51.452	35.479	43.211	Continuing	Continuing

D. Acquisition Strategy

The VIRGINIA Class Submarine Program has implemented Integrated Product and Process Development (IPPD). The traditional distinct phasing of the design process has been replaced with the continuous concurrent engineering IPPD process. The IPPD approach has facilitated a smoother transition from design to manufacturing and has reduced the number of changes typically encountered during construction of the lead and early follow-on ships. In September 1997, Congress passed a law allowing Electric Boat (EB) and Northrop Grumman Newport News (NGNN), now Huntington Ingalls Industries (HII), to team for production of the first four VIRGINIA Class Submarines. Under the teaming agreement, EB remained the design yard for the VIRGINIA Class Submarine and HII became a part of the IPPD process. The Program Office is managing two multi-year contracts the first is for the FY04-08 ships and the second was awarded in December 2008 for the FY09-13 ships.

E. Performance Metrics

Successful completion of Milestone III Review. Successful completion of Final Operational Test and Evaluation (FOT&E) for Technology Insertion (TI)-08 and Block III. Successful implementation of Reduced Total Ownership Costs (RTOC) initiatives.

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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 0604558N: <i>New Design SSN</i>	PROJECT 1950: <i>New Design SSN Combat Sys Dev</i>
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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
PTR Corrections	Various	Various:TBD	30.088	-		-		-		-	0.000	30.088	
Unique Virginia Class Improvements	Various	Various:TBD	34.299	10.317	Mar 2012	7.587	Nov 2012	-		7.587	103.037	155.240	
Advanced Display Sys (AN/UYQ-70)	SS/CPIF	Lockheed Martin:St. Paul, MN	32.143	1.059	Dec 2011	1.085	Nov 2012	-		1.085	8.025	42.312	
Photonics	C/CPIF	Kollmorgen:Northampton, MA	52.793	1.530	May 2012	1.569	May 2013	-		1.569	11.311	67.203	
Electronic Support Measures	C/FFP	Lockheed Martin:Syracuse, NY	38.067	-		-		-		-	0.000	38.067	
Platform Integration	SS/CPFF	Electric Boat:Groton, CT	45.576	1.224	Dec 2011	1.255	Nov 2012	-		1.255	9.112	57.167	
Technology Refreshment	Various	Various:TBD	20.355	-		-		-		-	0.000	20.355	
Technical Direction Agent	WR	NUWC:Newport, RI	273.505	8.160	Feb 2012	7.066	Jan 2013	-		7.066	62.048	350.779	
Technology Refreshment/Info. Assurance	C/CPFF	Progeny Systems:Manassas, VA	31.686	1.530	Dec 2011	1.568	Nov 2012	-		1.568	11.312	46.096	
Systems Engineering	WR	NSWC:Carderock, MD	9.443	0.816	Dec 2011	0.837	Nov 2012	-		0.837	6.075	17.171	
Systems Engineering	WR	SSC:Charleston, SC	6.046	0.510	Jan 2012	0.522	Nov 2012	-		0.522	3.877	10.955	
Systems Engineering	WR	NUWC:Keyport, WA	10.478	0.230	Mar 2012	0.236	Nov 2012	-		0.236	1.649	12.593	
Miscellaneous	Various	Various:TBD	125.881	5.848	Feb 2012	4.625	Nov 2012	-		4.625	42.813	179.167	
Subtotal			710.360	31.224		26.350		-		26.350	259.259	1,027.193	

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
Various	Various	Various:TBD	6.212	-		-		-		-	0.000	6.212	
Subtotal			6.212	-		-		-		-	0.000	6.212	

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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 0604558N: <i>New Design SSN</i>	PROJECT 1950: <i>New Design SSN Combat Sys Dev</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 0604558N: <i>New Design SSN</i>	PROJECT 1950: <i>New Design SSN Combat Sys Dev</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 1950				
DT-IIIB (NPES)	1	2011	1	2011
Post Shakedown Availability (SSN 779)	1	2011	4	2011
Post PSA Modernization (SSN 779)	1	2011	4	2011
Ship Authorization (SSN 786/787)	1	2011	1	2011
DT-IIIA1 (Arctic)	2	2011	2	2011
OT-IIIA1 (Arctic)	2	2011	2	2011
Post Shakedown Availability (PSA SSN 780)	2	2011	2	2012
Post PSA Modernization (SSN 780)	2	2011	2	2012
OT-IIIB (NPES)	2	2011	3	2011
Ship Delivery (SSN 781)	4	2011	4	2011
Ship Authorization (SSN 788/789)	1	2012	1	2012
DT-IIIA2 (DDS)	3	2012	4	2012
OT-IIIA2 (DDS)	3	2012	4	2012
Ship Delivery (SSN 782)	3	2012	3	2012
Post Shakedown Availability (PSA SSN 781)	2	2012	2	2013
Post PSA Modernization (SSN 781)	2	2012	2	2013
Post Shakedown Availability (PSA SSN 782)	1	2013	4	2013
Post PSA Modernization (SSN 782)	1	2013	4	2013
Ship Authorization (SSN 790/791)	1	2013	1	2013
Ship Delivery (SSN 783)	3	2013	3	2013
Ship Authorization (SSN 792)	1	2014	1	2014

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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 0604558N: <i>New Design SSN</i>	PROJECT 1950: <i>New Design SSN Combat Sys Dev</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Post Shakedown Availability (PSA SSN 783)	1	2014	1	2015
Post PSA Modernization (SSN 783)	1	2014	1	2015
Ship Delivery (SSN 784)	2	2014	2	2014
Block III FOT&E DT-III C (TBD)	3	2014	4	2015
Post Shakedown Availability (PSA SSN 784)	4	2014	2	2015
Ship Authorization (SSN 793/794)	1	2015	1	2015
Ship Delivery (SSN 785)	2	2015	2	2015
Block III FOT&E OT-III C (TBD)	4	2015	1	2016
Post Shakedown Availability (PSA SSN 785)	4	2015	2	2016
Ship Delivery (SSN 786)	1	2016	1	2016
Ship Authorization (SSN 795/796)	1	2016	1	2016
Post Shakedown Availability (SSN 786)	2	2016	4	2016
Ship Delivery (SSN 787)	3	2016	3	2016
Post Shakedown Availability (SSN 787)	4	2016	2	2017
Ship Delivery (SSN 788)	1	2017	1	2017
Ship Authorization (SSNs 797/798)	1	2017	1	2017
Post Shakedown Availability (SSN 788)	2	2017	4	2017
Ship Delivery (SSN 789)	3	2017	3	2017
Post Shakedown Availability (SSN 789)	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: <i>Research, Development, Test & Evaluation, Navy</i> BA 5: <i>Development & Demonstration (SDD)</i>				R-1 ITEM NOMENCLATURE PE 0604558N: <i>New Design SSN</i>				PROJECT 3062: <i>Submarine Multi-Mission Team Trainer</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
3062: <i>Submarine Multi-Mission Team Trainer</i>	5.418	2.990	2.729	-	2.729	2.794	2.852	2.901	2.948	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

To achieve desired submarine force readiness levels, it is necessary to construct highly sophisticated shore based Combat System Team Trainers capable of training personnel in all aspects of submarine approach, attack and surveillance operations in a controlled, simulated environment. The Combat Control System (CCS) MK1, CCS MK2, and AN/BYG-1, along with sonar systems AN/BSY-1, AN/BQQ-5, and AN/BQQ-10 are installed on SSN and SSGN Class submarines. These tactical systems are planned for future upgrades with the next hardware and software revisions which will provide enhanced war fighter capabilities. The Tactical Acoustic Rapid COTS (commercial-off-the-shelf) Insertion (ARCI) Phased upgrades are also being installed with future revisions. The Advanced Processing Builds (APB) and Technical Insertion (TI) sensors, which feed technology insertion into the CCS/Acoustic development, directly impact the trainers.

The Submarine Multi-Mission Team Trainer (SMMTT) supports operator, employment, strike, and Battle Group training for enlisted and officer pipelines. The SMMTT provides operators and combat teams the opportunity to train ashore, prior to, and between deployments. The shore based training provides a means of maintaining team proficiency in stand alone or in combined team mode prior to ship deployment.

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

	FY 2011	FY 2012	FY 2013
Title: Submarine Multi-Mission Team Trainer	5.418	2.990	2.729
Articles:	0	0	0
Description: To achieve desired submarine force readiness levels, it is necessary to construct highly sophisticated shore based Combat System Team Trainers capable of training personnel in all aspects of submarine approach, attack and surveillance operations in a controlled, simulated environment.			
FY 2011 Accomplishments: FY11 Develops implementation of latest Advanced Processor Build (APB), Technical Insertion (TI) and associated training displays. This effort includes new sensor developments and simulation to match advancements in tactical systems supported by SMMTT. This effort also accomplishes the integration and development of APB 09.			
FY 2012 Plans: FY12 Develops implementation of latest Advanced Processor Build (APB), Technical Insertion (TI) and associated training displays. This effort includes new sensor developments and simulations to match advancements in tactical systems supported by SMMTT. This effort also develops the APB and starts the new Low Cost Conformal Array (LCCA) sensor development.			
FY 2013 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy	DATE: February 2012
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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 0604558N: <i>New Design SSN</i>	PROJECT 3062: <i>Submarine Multi-Mission Team Trainer</i>
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2011	FY 2012	FY 2013
FY13 Develops implementation of latest Advanced Processor Build (APB), Technical Insertion (TI) and associated training displays. This effort includes new sensor developments and simulations to match advancements in tactical systems supported by SMMTT. This effort also integrates the APB into the SMMTT baseline along with completing and integrating the LCCA sensor.			
Accomplishments/Planned Programs Subtotals	5.418	2.990	2.729

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/5661: <i>Submarine Training Device Mods</i>	26.416	30.286	16.440	0.000	16.440	20.199	16.488	16.862	17.261	Continuing	Continuing

D. Acquisition Strategy

The SMMTT program software development is accounted for in this RDT&E line. All production kits are procured in OPN PE 0804731N BLI 566100, cost code TD009.

E. Performance Metrics

Within 90 days of introduction to the Fleet, this RDTEEN project shall develop required changes to the Control's & Display's Documentation and Interface Description Language (IDL) Interfaces for the initial development for new sensors that are required to simulate/stimulate that TI/APB for the AN/BQQ-5 and AN/BYG-1 in the Submarine Multi-Mission Team Trainer.

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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 0604558N: <i>New Design SSN</i>	PROJECT 3062: <i>Submarine Multi-Mission Team Trainer</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 0604558N: <i>New Design SSN</i>	PROJECT 3062: <i>Submarine Multi-Mission Team Trainer</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3062				
Interface Design Updates	1	2012	4	2017
Software Development Updates (SIM/STIM)	1	2012	4	2017
Software Builds	1	2012	4	2017
Advanced Processing Build (APB) Upgrades	1	2012	1	2017
Hard Ware Tech Insertion Updates	1	2012	1	2017
SSN 21 Software Development	1	2013	3	2014
SSN 21 Software Testing	2	2013	3	2014
SSN 21 EDM Delivery	4	2014	4	2014
TI-0x New Sensor Simulation Development	1	2012	4	2014
TI-0x New Sensor Simulation EDM Updates	1	2012	2	2014

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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 0604558N: <i>New Design SSN</i>	PROJECT 4500: <i>VIRGINIA Payload Module</i>
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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
4500: <i>VIRGINIA Payload Module</i>	-	-	99.868	-	99.868	149.732	199.542	199.426	149.496	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

This project encompasses Navy RDT&E efforts required to incorporate a modular design for future VIRGINIA Class Submarines (VCS) which integrates strike payload capacity for Tomahawk Land Attack and follow on missiles. The design is targeted for VCS Block V (FY19-23 ships).

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

	FY 2011	FY 2012	FY 2013
Title: VIRGINIA Payload Module	-	-	99.868
Articles:			0
FY 2013 Plans: Develop engineering changes to baseline design to incorporate VPM. Perform engineering analysis to evaluate the design changes to meet VCS requirements. Develop detailed schedule for design completion and construction integration.			
Accomplishments/Planned Programs Subtotals	-	-	99.868

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

N/A

D. Acquisition Strategy

The VIRGINIA Class Submarine Program has implemented Integrated Product and Process Development (IPPD). The traditional distinct phasing of the design process has been replaced with the continuous concurrent engineering IPPD process. The IPPD approach has facilitated a smoother transition from design to manufacturing and has reduced the number of changes typically encountered during construction of the lead and early follow-on ships. In September 1997, Congress passed a law allowing Electric Boat (EB) and Huntington Ingalls Newport News (HINN) to team for production of the first four VIRGINIA Class Submarines. Under the teaming agreement, EB remained the design yard for the VIRGINIA Class Submarine and HINN became a part of the IPPD process. The Program Office is managing two multi-year procurement contracts, one is for the FY04-08 ships and the most recent awarded in December 2008 for the FY09-13 ships. Developmental efforts will begin in FY13 and will be executed via current Lead Design Yard Agent contract with Electric Boat.

E. Performance Metrics

Completion of engineering changes to baseline to incorporate VPM design attributes.

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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 0604558N: <i>New Design SSN</i>	PROJECT 4500: <i>VIRGINIA Payload Module</i>

	FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017			
	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
Proj 4500																												
Top Level Requirements Set/Updated VPM Baseline																												
Ship Specifications																												
Rev A Diagrams																												
Major Arrangements																												
Detailed Design																												

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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 0604558N: <i>New Design SSN</i>	PROJECT 4500: <i>VIRGINIA Payload Module</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 4500				
Top Level Requirements Set/Updated VPM Baseline	1	2013	1	2013
Ship Specifications	1	2013	2	2014
Rev A Diagrams	1	2013	3	2014
Major Arrangements	1	2013	2	2015
Detailed Design	3	2014	3	2017

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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 0604558N: <i>New Design SSN</i>	PROJECT 9999: <i>Congressional Adds</i>
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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
9999: <i>Congressional Adds</i>	15.919	15.000	-	-	-	-	-	-	-	0.000	30.919
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

Congressional Adds.

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

	FY 2011	FY 2012
<i>Congressional Add:</i> SMALL BUSINESS TECHNOLOGY INSERTION	15.919	-
<i>FY 2011 Accomplishments:</i> N/A		
<i>Congressional Add:</i> New Design SSN SBIR (Cong)	-	15.000
<i>FY 2012 Plans:</i> N/A		
Congressional Adds Subtotals	15.919	15.000

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

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Congressional Adds.