Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Navy										DATE: February 2010	
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*				R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*							
COST ($ in Millions)	**FY 2009 Actual**	**FY 2010 Estimate**	**FY 2011 Base Estimate**	**FY 2011 OCO Estimate**	**FY 2011 Total Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
Total Program Element	184.071	184.338	155.489	0.000	155.489	151.536	144.605	147.231	161.716	Continuing	Continuing
1947: *New Design SSN HM&E*	120.468	117.540	113.711	0.000	113.711	111.279	103.984	105.692	119.314	Continuing	Continuing
1950: *New Design SSN Combat Sys Dev*	37.902	32.123	36.318	0.000	36.318	37.076	37.737	38.590	39.390	Continuing	Continuing
3062: *Submarine Multi-Mission Team Trainer*	2.762	4.401	5.460	0.000	5.460	3.181	2.884	2.949	3.012	Continuing	Continuing
9999: *Congressional Adds*	22.939	30.274	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	139.639

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.

(U) Project 3062: The Submarine Multi-Mission Team Trainer (SMMTT) funded in this RDT&E line provides the architectural foundation to replace all MIL Standard hardware with commercial emulation hardware, and rehost existing proprietary based software into COTS software systems, therefore enabling platform independence and wide area network
capability. The use of open architecture trainer systems allows for the continuous growth of functional flexibility, ultimately leading to employment training conducted for any submarine combat system.

(U) Project 9999: FY09 Congressional Plus-Ups include; Small Business Technology Insertion, Submarine Automated Test and Retest (ATRT), ASW Enhancements, Highly Corrosive Resistant Alloy Joining for Nuclear Components, and Large Scale Demonstraion Item for VIRGINIA Class. FY10 Congressional Plus-Ups include;

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Navy	DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0604558N: *New Design SSN*

Advanced Manufacturing for Submarine Bow Domes and Rubber Boots, Mold In Place Coating Development for Submarine Fleet, Common Command Control System Module, Submarine Automated Test and Retest (ATRT), and Small Business Technology Insertion.

B. Program Change Summary ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	189.714	154.756	0.000	0.000	0.000
Current President's Budget	184.071	184.338	155.489	0.000	155.489
Total Adjustments	-5.643	29.582	155.489	0.000	155.489
• Congressional General Reductions		-0.768			
• Congressional Directed Reductions		0.000			
• Congressional Rescissions	0.000	-0.050			
• Congressional Adds		30.400			
• Congressional Directed Transfers		0.000			
• Reprogrammings	-1.300	0.000			
• SBIR/STTR Transfer	-4.343	0.000			
• Program Adjustments	0.000	0.000	155.489	0.000	155.489

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2009	FY 2010
Project: 9999: *Congressional Adds*		
Congressional Add: *Advanced Manufacturing for Sumbarine Bow Domes and Rubber Boots*	0.000	1.593
Congressional Add: *Common Command and Control System Module*	0.000	4.780
Congressional Add: *Mold in Place Coating Development for the Submarine Fleet*	0.000	1.992
Congressional Add: *Large Scale Demonstration Item For Virginia Class*	1.795	0.000
Congressional Add: *SMALL BUSINESS TECHNOLOGY INSERTION*	15.957	19.917
Congressional Add: *Highly Corrosive-Resistant Alloy Joining for Nucle*	0.798	0.000
Congressional Add: *Submarine Automated Test and Re-Test (ATRT)*	1.995	1.992
Congressional Add: *ASW Enhancements*	2.394	0.000
Congressional Add Subtotals for Project: 9999	22.939	30.274

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Navy	DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0604558N: *New Design SSN*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2009	FY 2010
Congressional Add Totals for all Projects	22.939	30.274

Change Summary Explanation

Technical: Not applicable.

Schedule: Not applicable.

FY11 from previous President's Budget is shown as zero because no FY11-15 data was presented in President's Budget 2010.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 1947: *New Design SSN HM&E*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
1947: *New Design SSN HM&E*	120.468	117.540	113.711	0.000	113.711	111.279	103.984	105.692	119.314	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 and combat systems. Technology developments, training, and logistics for developmental items, and VIRGINIA Class test & evaluation are included. This project is essential for pursuit of high priority Reduced Total Ownership Cost (RTOC) initiatives while achieving balanced platform 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, as a rule, be applicable to the Ohio Replacement Program (ORP). 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. In the future, products from the DARPA TANGO/BRAVO Submarine technology program may transition to prototyping and/or applicability on VIRGINIA hulls.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
New Design SSN HM&E	104.512	107.015	103.061	0.000	103.061
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 and combat systems. Technology developments, training, and logistics for developmental items, and VIRGINIA Class test & evaluation are included. This project is essential for pursuit of high priority Reduced Total Ownership Cost (RTOC) initiatives while achieving balanced platform 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, as a rule, be applicable to the Ohio Replacement Program (ORP). New technologies are being transitioned from industry and government					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 1947: *New Design SSN HM&E*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
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. In the future, products from the DARPA TANGO/BRAVO Submarine technology program may transition to prototyping and/or applicability on VIRGINIA hulls. *FY 2009 Accomplishments:* FY09 Accomplishments: Continued design, manufacturing, qualification testing, and logistics documentation of prototype technologies and components such as impressed current cathodic protection. Continued system verification studies, tests, and analyses in support of ship design including for example signature, hydrodynamics, materials, and survivability analyses and tests. Provided Integrated Product and Process Development (IPPD) Design/Build team support at shipyards, Navy laboratories and in-house. Continued to support ship design and construction efforts with engineering evaluations and ship integration assessments for emergent ship design and systems development issues. Continued block upgrades of Ship Control Algorithms and software. Completed shock qualification certification of large penetration components. Completed control algorithm improvements for the Turbine Generator (TG) set bearings. Initiated developments responding to SSN774 OPEVAL and TECHEVAL findings. Continued software development for Advanced Electromagnetic Silencing capability. Continued development, demonstration, and design implementation of multiple Block III Cost Reduction technologies including, for example, Large Area Bow Array, payload tubes, vendor supplied reverse osmosis, low cost sound isolation coupling, and reduced cost integrated low pressure electrolyzer and transition of Office of Naval Research Manufacturing Technology Program manufacturing process developments. Continued risk reduction design and testing of Flank Array concept. Initiated Block IV Reduced Total Ownership Costs (RTOC); i.e., Sonar Trade Studies and Business Case Analyses, Design for Affordability (DFA) Plan Development, and VIRGINIA Class Maintenance Plan Improvement.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 1947: *New Design SSN HM&E*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2010 Plans: FY10 Plan: Continue block upgrades of Ship Control Algorithms and software. Continue developments responding to SSN774 OPEVAL and TECHEVAL findings. Continue software development for Advanced Electromagnetic Silencing capability. Continue development, demonstration, and design implementation of multiple Block III Cost Reduction technologies including, for example, Large Area Bow Array, payload tubes, vendor supplied reverse osmosis, low cost sound isolation coupling, and reduced cost integrated low pressure electrolyzer and transition of Office of Naval Research Manufacturing Technology Program manufacturing process developments. Develop detailed plan for Block IV Cost Reduced Total Ownership Costs (RTOC). Initiate design and model scale evaluation of Common Low Cost Sail. Implement Flank Array technology insertion plan for Block IV including Engineering Design Modules (EDM's). *FY 2011 Base Plans:* FY11 Plan: Continue developments responding to SSN774 OPEVAL and TECHEVAL findings. Complete software development for Advanced Electromagnetic Silencing capability. Acquire initial at-sea data. Complete prototype development testing for VIRGINIA Payload Tube and Large Aperture Bow Array. Continue design and development of multiple components and technologies including, for example, Large Area Bow Array, payload tubes, vendor supplied reverse osmosis, low cost sound isolation coupling, and reduced cost integrated low pressure electrolyzer incorporation into the Block III design. Continue transition of products from the Office of Naval Research Manufacturing Technology Program. Continue development of concepts and technologies for Block IV Reduced Total Ownership Cost (RTOC). Initiate detail design of Flank arrays for Block IV Implementation. Initiate Obsolescence Redesign for Block IV.					
TEST AND EVALUATION 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	15.359	10.525	10.650	0.000	10.650

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
by virtue of improvements in ship and combat systems. Technology developments, training, and logistics for developmental items, and VIRGINIA Class test & evaluation are included. This project is essential for pursuit of high priority Reduced Total Ownership Cost (RTOC) initiatives while achieving balanced platform 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, as a rule, be applicable to the Ohio Replacement Program (ORP). 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. In the future, products from the DARPA TANGO/BRAVO Submarine technology program may transition to prototyping and/or applicability on VIRGINIA hulls.					
FY 2009 Accomplishments: FY09 Accomplishments: Completed Live Fire Test and Evaluation (LFT&E), TECHEVAL and OPEVAL testing, analysis, and reporting in support of Milestone III decision. Continued analysis of acoustic trials data, development of Final Operational Test and Evaluation (FOT&E) requirements and testing plans, and issue a TEMP revision. Initiated Arctic developmental and operational testing. Continued development of FOT&E requirements and testing plans for Technology Insertion (TI-08).					
FY 2010 Plans: FY10 Plan: Complete Arctic developmental and operational testing, analysis and reporting. Perform Dry Deck Shelter (DDS) developmental and operational testing, analysis, and reporting. Initiate TI-08 developmental and operational testing. Perform secure search rate operational and developmental testing. Continue development of FOT&E requirements and testing plans for Block III efforts.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 1947: *New Design SSN HM&E*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 Base Plans: FY11 Plan: Complete TI-08 development and operational testing, analysis, and reporting. Continue development of FOT&E requirements and testing plans for Block III efforts.					
DAWDF *FY 2009 Accomplishments:* N/A	0.597	0.000	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals	120.468	117.540	113.711	0.000	113.711

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• SCN/2013: *VA CL*	3,573.127	3,957.409	5,132.688	0.000	5,132.688	4,730.396	4,778.041	6,127.475	6,301.397	21,384.245	82,939.403
• O&M,N/0204283N: *Submarine Opps & Safety*	44.910	53.013	59.092	0.000	59.092	58.930	58.665	59.762	60.854	Continuing	Continuing
• OPN/0942: *VA CL Support Equipment*	189.336	93.385	132.039	0.000	132.039	139.878	159.468	64.681	62.741	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) 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 NGNN 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.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 1947: *New Design SSN HM&E*

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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 1947: *New Design SSN HM&E*

Product Development ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Component Development1	C/TBD	Electric Boat Groton, CT	150.484	35.067	Nov 2009	65.552	Nov 2010	0.000		65.552	306.534	557.637	557.637
Component Development	PO	Supervisor of Shipbuilding Groton, CT	51.135	5.947	Jan 2010	0.117	Jan 2011	0.000		0.117	0.000	57.199	57.199
Component Development	WR	NSWC Carderock, MD	563.093	28.223	Nov 2009	14.286	Nov 2010	0.000		14.286	48.139	653.741	653.741
Component Development	WR	NUWC Newport, RI	100.905	6.019	Nov 2009	4.970	Nov 2010	0.000		4.970	13.901	125.795	125.795
Miscellaneous	Various/ Various	Various Various	43.234	2.000	Jan 2010	3.071	Dec 2010	0.000		3.071	0.455	48.760	48.760
Component Development2	C/TBD	Electric Boat Groton, CT	22.964	0.000		0.000		0.000		0.000	0.000	22.964	22.964
Component Development3	C/CPFF	Lockheed Martin Syracuse, NY	2.070	0.000		0.000		0.000		0.000	0.000	2.070	2.070
Component Development4	C/CPFF	Lockheed Martin Syracuse, NY	14.643	4.800	Dec 2009	2.200	Dec 2010	0.000		2.200	0.000	21.643	21.643
Component Development5	C/TBD	Electric Boat Groton, CT	22.597	23.459	Dec 2009	11.648	Dec 2010	0.000		11.648	3.105	60.809	60.809
		Subtotal	971.125	105.515		101.844		0.000		101.844	372.134	1,550.618	1,550.618

Remarks

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 1947: *New Design SSN HM&E*

Test and Evaluation ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	C/TBD	Electric Boat Groton, CT	0.899	0.000		0.000		0.000		0.000	0.000	0.899	0.899
Test and Evaluation	WR	NSWC Carderock, MD	88.693	1.714	Nov 2009	1.597	Nov 2010	0.000		1.597	18.787	110.791	110.791
Test and Evaluation	WR	NUWC Newport, RI	97.408	5.686	Nov 2009	5.289	Nov 2010	0.000		5.289	44.783	153.166	153.166
Test and Evaluation	C/CPAF	SEAPORT D7019 Rockville, MD	18.417	0.470	Nov 2009	0.490	Nov 2010	0.000		0.490	1.100	20.477	20.477
Test and Evaluation	C/TBD	Progeny 06C6256 VA	2.856	0.585	Dec 2009	0.604	Dec 2010	0.000		0.604	3.500	7.545	7.545
Test and Evaluation	PO	COMOPTEVFOR PD	10.288	1.700	Nov 2009	2.300	Nov 2010	0.000		2.300	15.045	29.333	29.333
Test and Evaluation	C/Various	Miscellaneous Various	11.842	0.300	Nov 2009	0.300	Nov 2010	0.000		0.300	6.850	19.292	19.292
Test and Evaluation	WR	NSWC Dahlgren, VA	0.245	0.070	Nov 2009	0.070	Nov 2010	0.000		0.070	0.000	0.385	0.385
		Subtotal	230.648	10.525		10.650		0.000		10.650	90.065	341.888	341.888

Remarks

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 1947: *New Design SSN HM&E*

Management Services ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Engineering Support	C/CPAF	SEAPORT D7019 Rockville, MD	18.025	1.500	Nov 2009	1.217	Nov 2010	0.000		1.217	2.524	23.266	23.266
Travel	PO	var Not Specified	1.919	0.000		0.000		0.000		0.000	0.000	1.919	1.919
DAWDF	Various/ Various	var Not Specified	0.597	0.000		0.000		0.000		0.000	0.000	0.597	0.597
		Subtotal	20.541	1.500		1.217		0.000		1.217	2.524	25.782	25.782

Remarks

	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1,222.314	117.540		113.711		0.000		113.711	464.723	1,918.288	1,918.288

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0604558N: *New Design SSN*	**PROJECT** 1947: *New Design SSN HM&E*

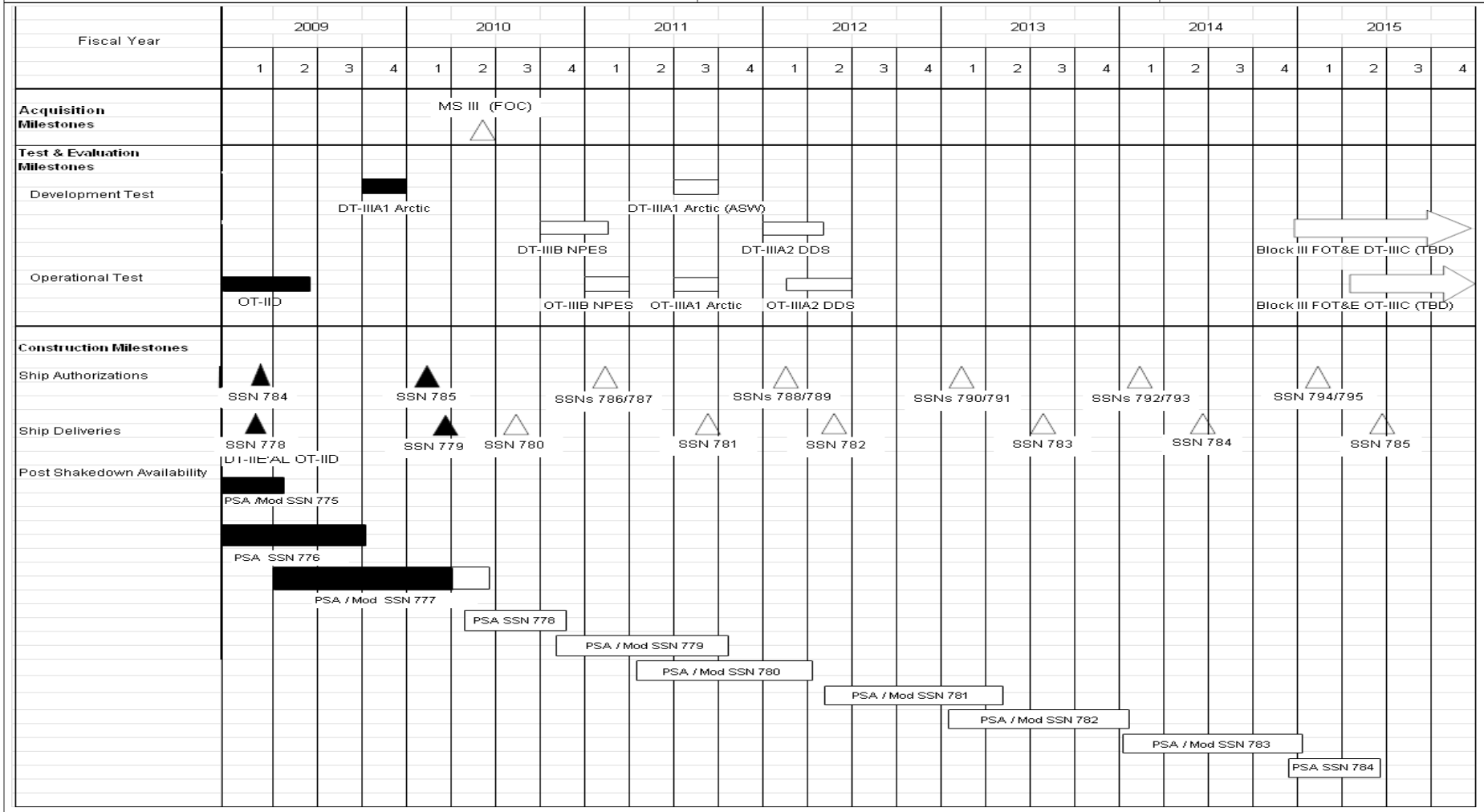

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 1947: *New Design SSN HM&E*

Schedule Details

	Start		End	
Event	Quarter	Year	Quarter	Year
Ship Authorization (SSN 784)	1	2009	1	2009
Post PSA Modernization (SSN 775)	1	2009	2	2009
Post Shakedown Availability (PSA SSN 776)	1	2009	3	2009
Post PSA Modernization (SSN 776)	1	2009	3	2009
Post Shakedown Availability (PSA SSN 777)	2	2009	2	2010
Post PSA Modernization (SSN 777)	2	2009	2	2010
DT-IIIA1 (Arctic)	4	2009	4	2009
Ship Authorization (SSN 785)	1	2010	1	2010
Ship Delivery (SSN 779)	1	2010	1	2010
Milestone III (MSIII)	2	2010	2	2010
Full Operational Capability (FOC)	2	2010	2	2010
Post Shakedown Availability (PSA SSN 778)	2	2010	4	2010
Ship Delivery (SSN 780)	3	2010	3	2010
Post Shakedown Availability (SSN 779)	4	2010	4	2011
Post PSA Modernization (SSN 779)	4	2010	4	2011
DT-IIIB (NPES)	4	2010	1	2011
OT-IIIB (NPES)	1	2011	1	2011
Ship Authorization (SSN 786/787)	1	2011	1	2011

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 1947: *New Design SSN HM&E*

	Start		End	
Event	Quarter	Year	Quarter	Year
Post Shakedown Availability (PSA SSN 780)	2	2011	2	2012
Post PSA Modernization (SSN 780)	2	2011	2	2012
Ship Delivery (SSN 781)	3	2011	3	2011
OT-IIIA1 (Arctic)	3	2011	3	2011
Ship Authorization (SSNs 788/789)	1	2012	1	2012
DT-IIIA2 (DDS)	1	2012	2	2012
OT-IIIA2 (DDS)	1	2012	2	2012
Ship Delivery (SSN 782)	2	2012	2	2012
Post Shakedown Availability (PSA SSN 781)	2	2012	2	2013
Post PSA Modernization (SSN 781)	2	2012	2	2013
Ship Authorization (SSNs 790/791)	1	2013	1	2013
Post Shakedown Availability (SSN 782)	1	2013	1	2014
Post PSA Modernization (SSN 782)	1	2013	1	2014
Ship Delivery (SSN 783)	3	2013	3	2013
Ship Authorization (SSNs 792/793)	1	2014	1	2014
Post Shakedown Availability (SSN 783)	1	2014	1	2015
Post PSA Modernization (SSN 783)	1	2014	1	2015
Ship Delivery (SSN784)	2	2014	2	2014
Post Shakedown Availability (SSN 784)	4	2014	2	2015
Ship Authorization (SSNs 794-795)	1	2015	1	2015

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 1947: *New Design SSN HM&E*

	Start		End	
Event	Quarter	Year	Quarter	Year
Ship Delivery (SSN 785)	2	2015	2	2015

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 1950: *New Design SSN Combat Sys Dev*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
1950: *New Design SSN Combat Sys Dev*	37.902	32.123	36.318	0.000	36.318	37.076	37.737	38.590	39.390	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

A. (U) Mission Description and Budget Item Justification: (U) This project encompasses the top level systems development, test and integration into the ship of the VIRGINIA Class Submarine C3I System (formerly referred to as Combat Systems), which includes multiple subsystems. The scope of the system is expanded from Sonar and Combat Control
subsystems to include AN/BLQ-10 Electronic Support (ES) 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.

(U) 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.

(U) 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.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0604558N: *New Design SSN*	**PROJECT** 1950: *New Design SSN Combat Sys Dev*

(U) 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.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Sonar Combat Control and Architecture Subsystems	11.554	17.393	19.443	0.000	19.443
FY 2009 Accomplishments: FY09 Accomplishments: Completed Live Fire Test and Evaluation (LFT&E), TECHEVAL and OPEVAL testing, analysis, and reporting in support of Milestone III decision. Continued analysis of acoustic trials data, development of Final Operational Test and Evaluation (FOT&E) requirements and testing plans, and issue a TEMP revision. Initiated Arctic developmental and operational testing. Continued development of FOT&E requirements and testing plans for Technology Insertion (TI-08). *FY 2010 Plans:* FY10 Plan: Continue the development of S/CC/A System Improvements to maintain VIRGINIA Class Commonality to backfit fleet. *FY 2011 Base Plans:* FY11 Plan: Continue the development of S/CC/A System Improvements to maintain VIRGINIA Class Commonality to backfit fleet.					
C3I Systems Engineering	26.153	14.730	16.875	0.000	16.875
This project encompasses the top level systems development, test and integration into the ship of the VIRGINIA Class Submarine C3I System (formerly referred to as Combat Systems), which includes multiple subsystems. The scope of the system is expanded from Sonar and Combat Control subsystems to include AN/BLQ-10 Electronic Support (ES) Measures, Exterior Communications,					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 1950: *New Design SSN Combat Sys Dev*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
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. *FY 2009 Accomplishments:* FY09 Accomplishments: Completed development of high priority ship safety/self-protect and mission specific deficiencies identified during integration and lead ship sea test efforts including DT and OT events. Continued the development of System Level and other subsystem Improvements to maintain VIRGINIA Class Commonality to backfit fleet. *FY 2010 Plans:* FY10 Plan: Continue the development of System Level and other subsystem Improvements to maintain VIRGINIA Class Commonality to backfit fleet. *FY 2011 Base Plans:* FY11 Plan: Continue the development of System Level and other subsystem Improvements to maintain VIRGINIA Class Commonality to backfit fleet.					
DAWDF *FY 2009 Accomplishments:* N/A	0.195	0.000	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals	37.902	32.123	36.318	0.000	36.318

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 1950: *New Design SSN Combat Sys Dev*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• SCN/2013: *VA CL*	3,573.127	3,957.409	5,132.688	0.000	5,132.688	4,730.396	4,778.041	6,127.475	6,301.397	21,384.245	82,939.403
• O&M,N/0204283N: *Enter Other Funding Description.*	44.910	53.013	59.092	0.000	59.092	58.930	58.665	59.762	60.854	0.000	395.226
• OPN/0942: *VA CL Support Equipment*	189.336	93.385	132.039	0.000	132.039	139.888	159.468	64.681	62.741	0.000	841.538

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) 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 NGNN 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 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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 1950: *New Design SSN Combat Sys Dev*

Product Development ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PTR Corrections	Various/ TBD	Various TBD	30.088	0.000		0.000		0.000		0.000	0.000	30.088	30.088
Unique Virginia Class Improvements	Various/ TBD	Various TBD	8.854	10.491	Nov 2009	13.254	Nov 2010	0.000		13.254	55.098	87.697	87.697
Advanced Display Sys (AN/UYQ-70)	SS/CPIF	Lockheed St. Paul, MN	30.086	1.019	Nov 2009	1.038	Nov 2010	0.000		1.038	13.712	45.855	45.855
Photonics	C/CPIF	Kollmorgen Northampton, MA	39.688	1.300	May 2010	1.500	May 2011	0.000		1.500	3.610	46.098	46.098
Electronic Support Measures	C/FFP	Lockheed Syracuse, NY	38.067	0.000		0.000		0.000		0.000	6.410	44.477	44.477
Platform Integration	SS/CPFF	Electric Boat Groton, CT	43.276	1.100	Nov 2009	1.200	Nov 2010	0.000		1.200	10.523	56.099	56.099
Technology Refreshment	Various/ Various	Various TBD	20.355	0.000		0.000		0.000		0.000	0.000	20.355	20.355
Technical Direction Agent	WR	NUWC Newport, RI	257.505	8.000	Jan 2010	8.000	Jan 2011	0.000		8.000	11.158	284.663	284.663
Technology Refreshment/Info. Assurance	C/CPFF	Progeny Systems Manassas, VA	28.986	1.200	Nov 2009	1.500	Nov 2010	0.000		1.500	3.710	35.396	35.396
Systems Engineering	WR	NSWC Carderock, MD	7.923	0.720	Nov 2009	0.800	Nov 2010	0.000		0.800	0.000	9.443	9.443
Systems Engineering	WR	SSC Charleston, SC	5.046	0.500	Nov 2009	0.500	Nov 2010	0.000		0.500	2.300	8.346	8.346
Systems Engineering	WR	NUWC Keyport, WA	10.053	0.200	Nov 2009	0.225	Nov 2010	0.000		0.225	7.387	17.865	17.865

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 1950: *New Design SSN Combat Sys Dev*	

Product Development ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Miscellaneous	Various/ Various	Various TBD	115.552	5.243		5.801		0.000		5.801	24.550	151.146	151.146
		Subtotal	635.479	29.773		33.818		0.000		33.818	138.458	837.528	837.528

Remarks

Test and Evaluation ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Various	Various/ Various	Various TBD	6.212	0.000		0.000		0.000		0.000	0.000	6.212	6.212
		Subtotal	6.212	0.000		0.000		0.000		0.000	0.000	6.212	6.212

Remarks

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 1950: *New Design SSN Combat Sys Dev*

Management Services ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Support Services/ETS	C/CPAF	EG&G Rockville, MD	16.921	2.350	Dec 2009	2.500	Dec 2010	0.000		2.500	14.335	36.106	36.106
DAWDF	Various/ Various	Various Various	0.195	0.000		0.000		0.000		0.000	0.000	0.195	0.195
		Subtotal	17.116	2.350		2.500		0.000		2.500	14.335	36.301	36.301

Remarks

	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	658.807	32.123		36.318		0.000		36.318	152.793	880.041	880.041

Remarks

Exhibit R-4, **RDT&E Schedule Profile:** PB 2011 Navy		**DATE:** February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0604558N: *New Design SSN*	**PROJECT** 1950: *New Design SSN Combat Sys Dev*

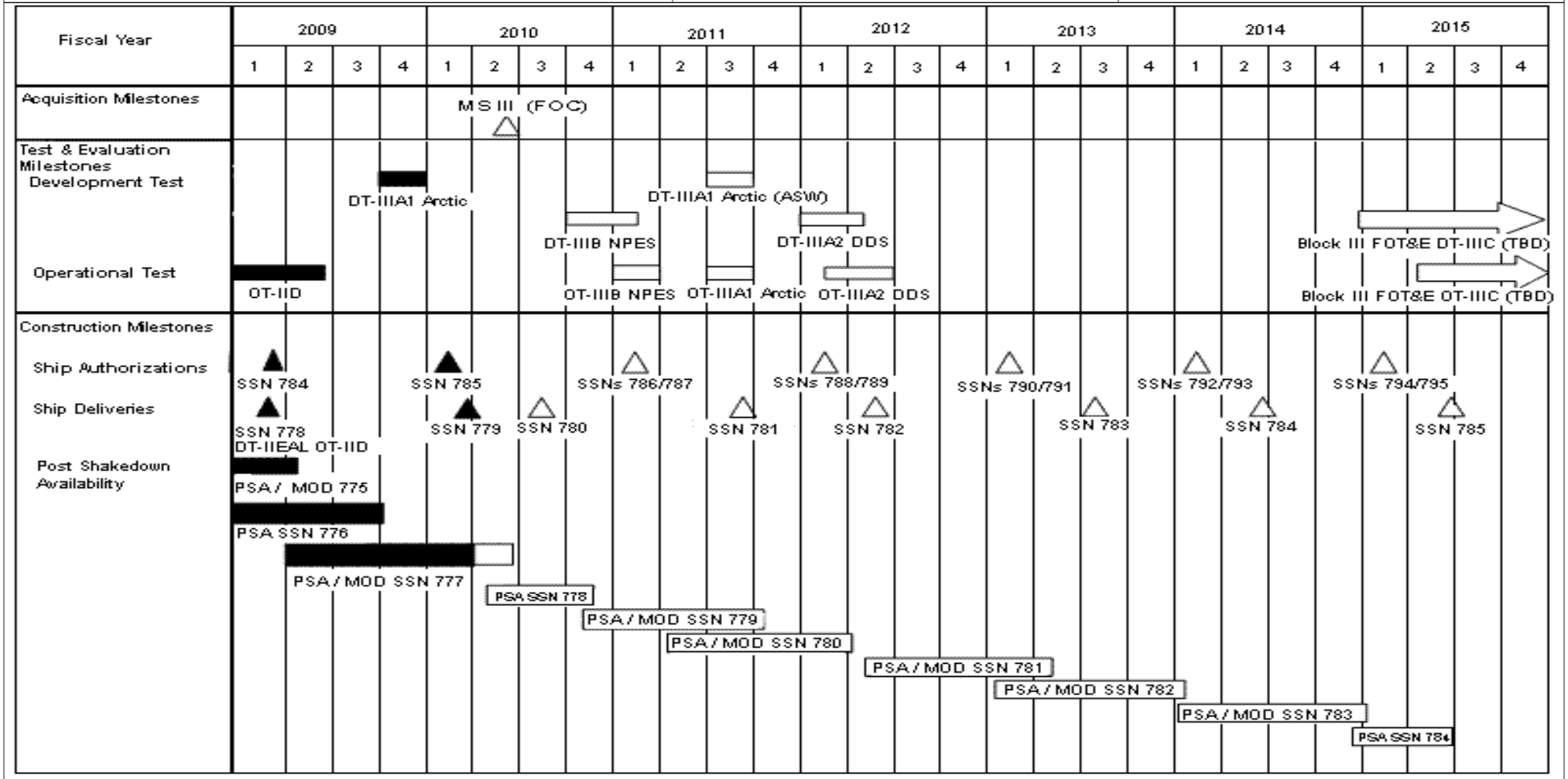

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 1950: *New Design SSN Combat Sys Dev*

Schedule Details

	Start		End	
Event	Quarter	Year	Quarter	Year
Ship Authorization (SSN 784)	1	2009	1	2009
Post PSA Modernization (SSN 775)	1	2009	2	2009
Post Shakedown Availability (PSA SSN 776)	1	2009	3	2009
Post PSA Modernization (SSN 776)	1	2009	3	2009
Post Shakedown Availability (PSA SSN 777)	2	2009	2	2010
Post PSA Modernization (SSN 777)	2	2009	2	2010
DT-IIIA1 (Arctic)	4	2009	4	2009
Ship Authorization (SSN 785)	1	2010	1	2010
Ship Delivery (SSN 779)	1	2010	1	2010
Milestone III (MSIII)	2	2010	2	2010
Full Operational Capability (FOC)	2	2010	2	2010
Post Shakedown Availability (PSA SSN 778)	2	2010	4	2010
Ship Delivery (SSN 780)	3	2010	3	2010
Post Shakedown Availability (SSN 779)	4	2010	4	2011
Post PSA Modernization (SSN 779)	4	2010	4	2011
DT-IIIB (NPES)	4	2010	1	2011
OT-IIIB (NPES)	1	2011	1	2011
Ship Authorization (SSN 786/787)	1	2011	1	2011

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 1950: *New Design SSN Combat Sys Dev*

	Start		End	
Event	Quarter	Year	Quarter	Year
Post Shakedown Availability (PSA SSN 780)	2	2011	2	2012
Post PSA Modernization (SSN 780)	2	2011	2	2012
Ship Delivery (SSN 781)	3	2011	3	2011
OT-IIIA1 (Arctic)	3	2011	3	2011
Ship Authorization (SSNs 788/789)	1	2012	1	2012
DT-IIIA2 (DDS)	1	2012	2	2012
OT-IIIA2 (DDS)	1	2012	2	2012
Ship Delivery (SSN 782)	2	2012	2	2012
Post Shakedown Availability (PSA SSN 781)	2	2012	2	2013
Post PSA Modernization (SSN 781)	2	2012	2	2013
Ship Authorization (SSNs 790/791)	1	2013	1	2013
Post Shakedown Availability (SSN 782)	1	2013	1	2014
Post PSA Modernization (SSN 782)	1	2013	1	2014
Ship Delivery (SSN 783)	3	2013	3	2013
Ship Authorization (SSNs 792/793)	1	2014	1	2014
Post Shakedown Availability (SSN 783)	1	2014	1	2015
Post PSA Modernization (SSN 783)	1	2014	1	2015
Ship Delivery (SSN784)	2	2014	2	2014
Post Shakedown Availability (SSN 784)	4	2014	2	2015
Ship Authorization (SSNs 794-795)	1	2015	1	2015

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 1950: *New Design SSN Combat Sys Dev*

	Start		End	
Event	Quarter	Year	Quarter	Year
Ship Delivery (SSN 785)	2	2015	2	2015

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 3062: *Submarine Multi-Mission Team Trainer*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
3062: *Submarine Multi-Mission Team Trainer*	2.762	4.401	5.460	0.000	5.460	3.181	2.884	2.949	3.012	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 providesoperators 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 Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Submarine Multi-Mission Team Trainer	2.748	4.401	5.460	0.000	5.460
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.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 3062: *Submarine Multi-Mission Team Trainer*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: FY09 Developed implementation of latest Advanced Processor Build (APB), Technical Insertion (TI) and associated training displays. *FY 2010 Plans:* FY10 Develops implementation of latest Advanced Processor Build (APB), Technical Insertion (TI) and associated training displays. This effort also includes new sensor developments and simulation to match advancements in tactical systems supported by SMMTT. *FY 2011 Base Plans:* FY10 Develops implementation of latest Advanced Processor Build (APB), Technical Insertion (TI) and associated training displays. This effort also includes new sensor developments and simulation to match advancements in tactical systems supported by SMMTT.					
Defense Acquisition Workforce *FY 2009 Accomplishments:* DAWDF	0.014	0.000	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals	2.762	4.401	5.460	0.000	5.460

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• OPN/566100: *Submarine Training Device Mods*	27.413	17.313	26.603	0.000	26.603	30.727	16.767	17.103	17.443	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.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0604558N: *New Design SSN*	**PROJECT** 3062: *Submarine Multi-Mission Team Trainer*

E. Performance Metrics

Within 90 days of introduction to the Fleet, this RDTEN 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.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 3062: *Submarine Multi-Mission Team Trainer*

Product Development ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Component Development	Reqn	NSWC/CD Bethesda, MD	10.940	4.001	Dec 2009	5.060	Dec 2010	0.000		5.060	10.426	30.427	30.427
Component Development	C/CPFF	ARL UT Austin	0.755	0.400	Jan 2010	0.400	Jan 2011	0.000		0.400	1.600	3.155	3.155
		Subtotal	11.695	4.401		5.460		0.000		5.460	12.026	33.582	33.582

Remarks

	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	11.695	4.401		5.460		0.000		5.460	12.026	33.582	33.582

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0604558N: *New Design SSN*	**PROJECT** 3062: *Submarine Multi-Mission Team Trainer*

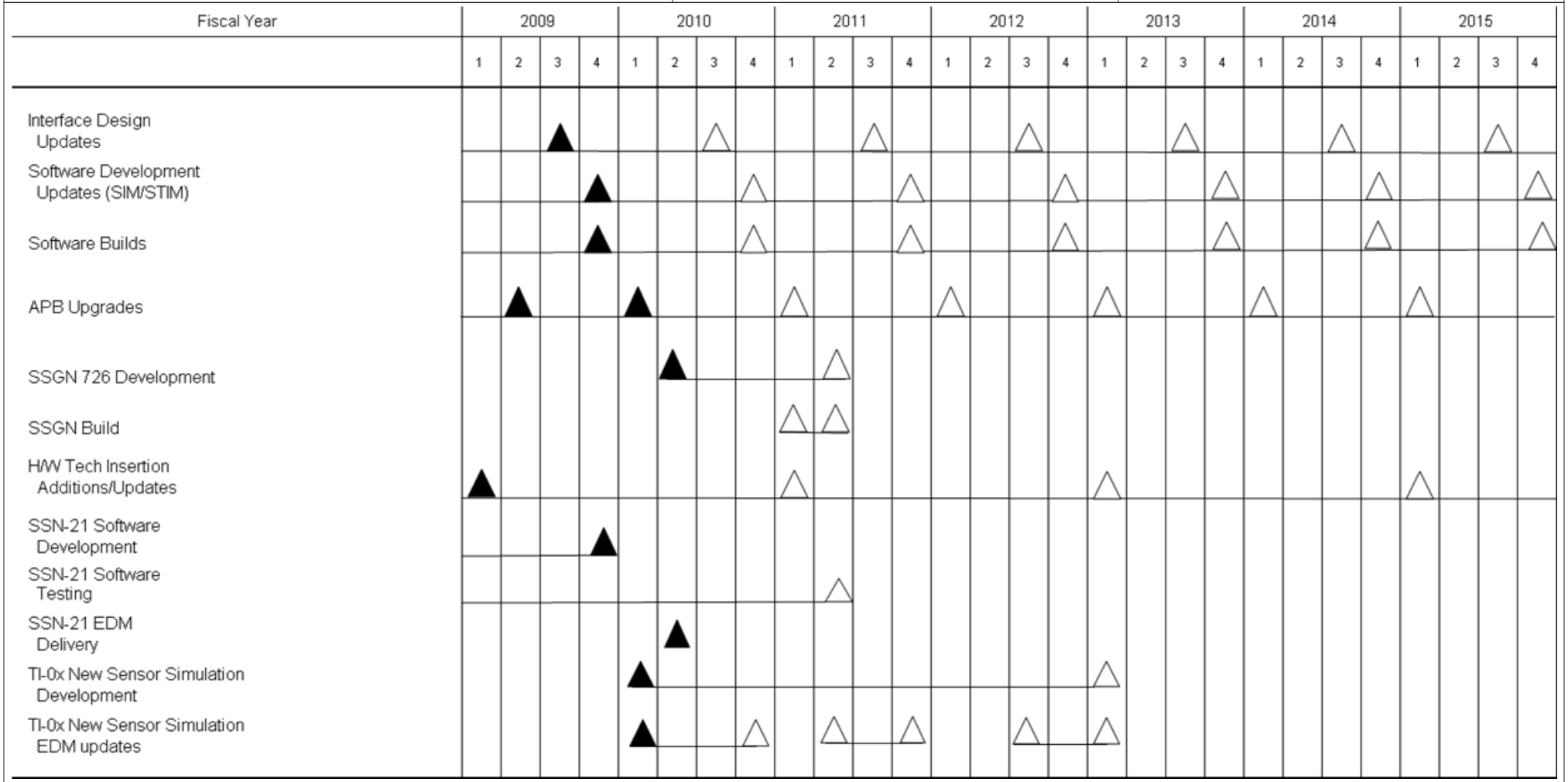

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 3062: *Submarine Multi-Mission Team Trainer*

Schedule Details

	Start		End	
Event	Quarter	Year	Quarter	Year
Interface Design Updates	3	2009	3	2015
Software Development Updates (SIM/STIM)	4	2009	4	2015
Software Builds	4	2009	4	2015
Advanced Processing Build (APB) Upgrades	2	2009	1	2015
SSGN 726 Development	2	2010	2	2011
SSGN Build	1	2011	2	2011
Hard Ware Tech Insertion Updates	1	2009	1	2015
SSN 21 Software Development	1	2009	4	2009
SSN 21 Software Testing	1	2009	2	2011
SSN 21 EDM Delivery	2	2010	2	2010
TI-0x New Sensor Simulation Development	1	2010	1	2013
TI-0x New Sensor Simulation EDM Updates	1	2010	1	2013

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 9999: *Congressional Adds*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
9999: *Congressional Adds*	22.939	30.274	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	139.639
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 Program ($ in Millions)

	FY 2009	FY 2010
Congressional Add: Advanced Manufacturing for Sumbarine Bow Domes and Rubber Boots *FY 2010 Plans:* Develop manufacturing processes for bow domes w/o autoclave	0.000	1.593
Congressional Add: Common Command and Control System Module *FY 2010 Plans:* Develop a Common Command and Control System Module for submarines that is less costly and facilitates more efficient upgrades / changes and use of personnel.	0.000	4.780
Congressional Add: Mold in Place Coating Development for the Submarine Fleet *FY 2010 Plans:* Development of Mold-In-Place (or Cast-In-Place) technology for composite bow domes.	0.000	1.992
Congressional Add: Large Scale Demonstration Item For Virginia Class	1.795	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 9999: *Congressional Adds*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010
FY 2009 Accomplishments: Complete efforts associated with manufacturing a composite bow dome with the objective of establishing an alternate source for submarine bow domes.		
Congressional Add: SMALL BUSINESS TECHNOLOGY INSERTION *FY 2009 Accomplishments:* Research and development efforts for fresh, creative, and innovative solutions to the Navy's requirements for high risk/high reward components of submarine combat system development. Various combat system component technology insertions/upgrades (torpedo, photonics, navigation data distribution, etc.) to reduce the cost of ship acquisition. *FY 2010 Plans:* Research and development efforts for fresh, creative, and innovative solutions to the Navy's requirements for high risk/high reward components of submarine combat system development. Various combat system component technology insertions/upgrades (torpedo, photonics, navigation data distribution, etc.) to reduce the cost of ship acquisition.	15.957	19.917
Congressional Add: Highly Corrosive-Resistant Alloy Joining for Nucle *FY 2009 Accomplishments:* Highly Corrosive-Resist Alloy Joining for Nuclear Applications Assist the Naval Nuclear Propulsion Program Laboratory in developing a system for packaging and sealing nuclear material in highly corrosion-resistant alloy cans for disposal.	0.798	0.000
Congressional Add: Submarine Automated Test and Re-Test (ATRT)	1.995	1.992

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604558N: *New Design SSN*	PROJECT 9999: *Congressional Adds*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010
FY 2009 Accomplishments: Submarine Automated Test and Re-Test (ATRT) Develop an application to use Automated Test and Re-Test (ATRT) technology in testing of submarine systems. *FY 2010 Plans:* Submarine Automated Test and Re-Test (ATRT) Develop an application to use Automated Test and Re-Test (ATRT) technology in testing of submarine systems.		
Congressional Add: ASW Enhancements *FY 2009 Accomplishments:* Conduct analyses to support high priority performance issues with the outboard sonar sensors needed for ship safety/self protect. Consider engineering required for the migration of the Acoustic-Rapid COTS Insertion (ARCI) inboard processing to align with the (backfit) TI-10 baseline.	2.394	0.000
Congressional Adds Subtotals	22.939	30.274

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Congressional Adds.