CLASSIFICATION:	UNCLASSIFIED					
EXHIBIT R-2, RDT&E BUDGET ITEM JUSTIFICATION						DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**			R-1 ITEM NOMENCLATURE **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**			
COST (In Millions)	FY 2008	FY 2009	Baseline FY 2010	OCO FY 2010	TOTAL FY 2010	
Total PE Cost	152.499	150.686	551.836	9.000	560.836	
0223 / Sub Combat System Improvement (ADV)	51.551	46.824	52.697	0.000	52.697	
2033 / Adv Submarine System Development	80.719	57.390	74.408	9.000	83.408	
3197 / Undersea Superiority	0.000	36.818	37.214	0.000	37.214	
3220 / SBSD Advanced Submarine System Development	0.000	0.000	387.517	0.000	387.517	
9999 / Congressional Add	20.229	9.654	0.000	0.000	0.000	

A. MISSION DESCRIPTION:

This program element supports innovative research and development in submarine hull and combat systems technologies and the subsequent evaluation, demonstration, and validation for submarine platforms. It will increase the submarine technology base and provide subsystem design options not currently feasible. The program element also supports programs transitioning from Science and Technology (S&T), Defense Advanced Research Projects Agency (DARPA), Industry Research and Development, and Small Business Innovative Research (SBIR) projects.

Project Unit 0223:

The Advanced Submarine Combat Systems Development non-acquisition (NON-ACAT) program supports Navy Submarine Acoustic Superiority and Technology Insertion Initiatives through the application of advanced development and testing of sonar and tactical control systems improvements. This Project transitions technologies developed by Navy Technology bases, the private sector, Office of Naval Research (ONR), Future Naval Capabilities, and DARPA. The Project addresses technology challenges to improve tactical control in littoral and open ocean environments for a variety of operational missions including peacetime engagement, surveillance, battle space preparation, deterrence, regional sea denial, precision strike, task group support, and ground warfare support. Prototype hardware / software systems are developed to demonstrate technologically promising system concepts in laboratory and at-sea submarine environments. Specifically, the focus of the technology efforts will be Advanced Processing Build-Acoustic (APB-A), Advanced Processing Build-Tactical (APB-T), Advanced Processing Build - Imaging (APB-I), tactical control, and Advanced Sonar Arrays. APBs develop and demonstrate improvements to current and future sonar/combat control systems. The Advanced Sonar Arrays program develops and tests new sensors and demonstrates large array configuration. This Project is funded under demonstration and validation, as it develops and integrates hardware for experimental tests related to specific platform applications.

Project Unit 2033:

The Advanced Submarine Research and Development (R&D) Program is a non-acquisition program that develops, matures, and transitions Hull, Mechanical, and Electrical (HM&E) technologies from Science & Technology (S&T) to operational platforms, develops, and demonstrates submarine design and naval architecture products destined for backfit, forward fit, and/or future submarines, and operates unique R&D experimentation, modeling, and simulation facilities to enhance submarine stealth, maneuverability, capability, and affordability. The program is structured to support near term technology insertion to achieve VIRGINIA Class cost reductions and influence future submarine concepts and core

technologies. In support of Sea Power 21, Sea Trial experimentation supports the naval enterprises in identifying and prototyping capabilities and technologies that support the warfighter. Focus is on the Undersea Enterprise (USE), the Naval Network/FORCENET (NNFE), Naval Expeditionary Combat Enterprise (NECE), Surface Warfare Enterprise (SWE), and Special Operations Force Enterprise (SOFE). In addition to enterprise support, experimentation may identify, develop, integrate, and test Intelligence, Surveillance, and Reconnaissance (ISR) technologies and develop littoral precision strike capabilities that support the Overseas Contingency Operations (OCO). Experimentation and demonstration is conducted in a joint warfighting context with other services,(i.e. the U.S. Marines, U.S. Army, and the U.S. Air Force), to enable early assessment of warfighting capabilities, and to contribute to better technology selection decisions for potential incremental development. This program also supports Information Exchange Programs and joint project arrangements with the United Kingdom, Canada, and Australia.

Project Unit 2033 (OCO):
The project Scan Eagle operations from an SSGN intends to provide persistent, maritime and littoral network connectivity, surveillance and reconnaissance capabilities within localized mission areas. The Scan Eagle Unmanned Aerial Vehicle (UAV) is a multi-mission Intelligence, Surveillance, and Reconnaissance (ISR) system to support strike, signals intelligence, and communications relay while operating in direct collaboration with other deployed assets in OCO. The UAV will conduct localized open-ocean and littoral surveillance of targets as well as providing network connectivity for deployed unattended sensors. This UAV integration effort delivers launch, control, and recovery ability from a SSGN within an integrated joint ISR architecture, providing the information to the joint force and localized commanders in real time. This is a key role in providing the commander with a persistent, reliable picture of surface and ground threats while minimizing the need to put manned assets in harms way to execute surveillance and reconnaissance and Information Operation (IO) tasks.

Project Unit 3197:
The Undersea Superiority Project supports offboard Anti-Submarine Warfare (ASW) technologies selected by the Chief of Naval Operations (CNO) ASW Cross Functional Team for technologies that hold the potential for deployment and/or use by submarine platforms. Efforts associated with these technologies include design, development, integration and testing of future Undersea Superiority systems.

Project Unit 3220:
The objective of the Sea Based Strategic Deterrent (SBSD) Advanced Submarine System Development project is to design and prepare for construction of the replacement of the OHIO Class SSBN.

CLASSIFICATION:	UNCLASSIFIED	
EXHIBIT R-2, RDT&E BUDGET ITEM JUSTIFICATION (CONTINUATION)		DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	R-1 ITEM NOMENCLATURE **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**	

B. PROGRAM CHANGE SUMMARY:

Funding:	FY 2008	FY 2009	FY 2010
FY09 President's Budget	149.576	141.720	152.854
FY10 President's Budget	152.499	150.686	560.836
Total Adjustments	2.923	8.966	407.982
(U) Summary of Adjustments			
Congressional Rescissions	0.000	0.000	0.000
Congressional Adjustments	0.003	-0.410	0.000
SBIR/STTR/FTT Assessment	-1.565	0.000	0.000
Program Adjustments	4.485	9.516	412.055
Rate/Misc Adjustments	0.000	-0.140	-13.073
OCO Funds	0.000	0.000	9.000
Total	2.923	8.966	407.982

The program adjustments shown in FY10 reflect the creation of a new Project Unit (3220) dedicated to the development of a new Sea Based Strategic Deterrent.

CLASSIFICATION:	UNCLASSIFIED			
EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION				DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**			PROJECT NUMBER AND NAME **0223/Sub Combat System Improvement (ADV)**
COST (In Millions)	FY 2008	FY 2009	FY 2010	
Project Cost	51.551	46.824	52.697	
RDT&E Articles Qty	0	0	0	

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Project Unit 0223: The Advanced Submarine Combat Systems Development non-acquisition (Non-ACAT) program supports Navy Submarine Acoustic Superiority and Technology Insertion Initiatives by the application of advanced development and testing of sonar and tactical control systems improvements. This Project transitions technologies developed by Navy technology bases, the private sector, Office of Naval Research (ONR), Future Naval Capabilities, and DARPA. The Project addresses technology challenges to improve tactical control in littoral and open ocean environments for a variety of operational missions including peacetime engagement, surveillance, battle space preparation, deterrence, regional sea denial, precision strike, task group support, and ground warfare support. Prototype hardware / software systems are developed to demonstrate technologically promising system concepts in laboratory and at-sea submarine environments. Specifically, the focus of the technology efforts will be Advanced Processing Build-Acoustic (APB-A), Advanced Processing Build-Tactical (APB-T), Advanced Processing Build - Imaging (APB-I), tactical control, and Advanced Sonar Arrays. APBs develop and demonstrate improvements to current and future sonar/combat control systems. The Advanced Sonar Arrays program develops and tests new sensors and demonstrates large array configuration. This Project is funded under demonstration and validation, as it develops and integrates hardware for experimental tests related to specific platform applications.

CLASSIFICATION:	UNCLASSIFIED	
EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION		DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**	PROJECT NUMBER AND NAME **0223/Sub Combat System Improvement (ADV)**

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2008	FY 2009	FY 2010
Advanced Sonar System Processing	24.187	27.484	28.097
RDT&E Articles Quantity	0	0	0

APB(A)-07 transitioned to PMS401 for fleet introduction. FY08 APB(A) continued improvements in medium and high frequency active systems, automated vulnerability detectors, improved tracking and localization and enhanced target acoustic state estimation. Efforts for FY09 through FY10 will focus on automating systems operations, in support of reduced workload and manning, while continuing efforts on improving the acoustic contribution to ASW in the littorals. Primary improvements are planned for the Wide Aperture Array (WAA), Low Cost Conformal Array (LCCA), and 688 Class sphere array signal processing, contact followers, trackers, refined automation, ranging tools, search space reduction tools, environmental prediction, and monitoring and active systems. Signal processing for a new fat-line towed array will be developed. Efforts will continue to focus on more seamless integration of acoustic and on non-acoustic sensor information for tracking and command information.

	FY 2008	FY 2009	FY 2010
Advanced Tactical Control	13.864	11.000	16.000
RDT&E Articles Quantity	0	0	0

APB(T)-07 transitioned to PMS425 for fleet introduction. FY08 APB(T) continued improvements in Command Information Management, acoustic and non-acoustic contact association, and the initial steps required to automate combat systems operations, in support of work load and manning reductions. FY09 through FY10 efforts will continue on improving the tactical commander's ability to manage close in and high density scenarios through advanced target motion analysis, contact management, tactical scene rendering, uncertainty management, and close encounter decision management. Efforts will continue to focus on more seamless integration of acoustic and non acoustic sensor information for tracking and command information. Efforts will begin to focus on new automated tracking technologies to assists combat control technicians.

	FY 2008	FY 2009	FY 2010
Advanced Sensors	13.500	8.340	8.600
RDT&E Articles Quantity	0	0	0

The Advanced Sensor Systems program is developing improved, larger aperture sonars and digital acoustic communications systems in order to achieve acoustic superiority. Current projects include Low Cost Conformal Array (LCCA) and a modular High Frequency (HF) contact management sonar that could be mounted on submarine sails.

Large Vertical Array (LVA), a Conformal Acoustic Velocity Sonar (CAVES)-based Medium Frequency (MF) ASW sonar that may be either stand alone or combined with two other LVAs to form a Large Wide Aperture Array (LgWAA) for VIRGINIA Class forward-fit; Fiber-Optic CAVES (FOCAVES) sensors and processing; Advanced Towed Array Technology (ATAT) - provides Twin Line Towed Array (TLTA) Capability); and ACOMMs, a digital Acoustic Communications system for submarines and surface ships. Continuing development of ATAT and initiate TLTL array and handler Component Integration Tests (CITs); building and planning to install LVA ADM; continuing surface ship MF ACOMMS development. In FY09, will conduct CAVES LVA sea test and analysis on 688 platform; develop and test Rapid COTS Insertion Next Generation (RCI NextGen) for CAVES LVA sea test; begin development of LCCA light weight Advanced Development Model (ADM); continue working with IWS 5B to develop surface ship ACOMMS and resolving encrypted ACOMMS submarine solution. Will select between twin-line towed array and vector sensor towed array for ATAT. Additionally, will begin scoping work and studies on a future submarine sensor design. In FY10 will

support PMS450 with CAVES LVA installation and at-sea test on VIRGINIA platform; finish development of light weight LCCA ADM; finish development of encrypted ACOMMS submarine solution; finish lightweight LCCA development and fabricate ADM; finish development of encrypted ACOMMS submarine solution.

C. OTHER PROGRAM FUNDING SUMMARY:

Not applicable.

D. ACQUISITION STRATEGY:

Use competitively awarded contracts from Broad Agency Announcement (BAA) solicitations.

E. MAJOR PERFORMERS:

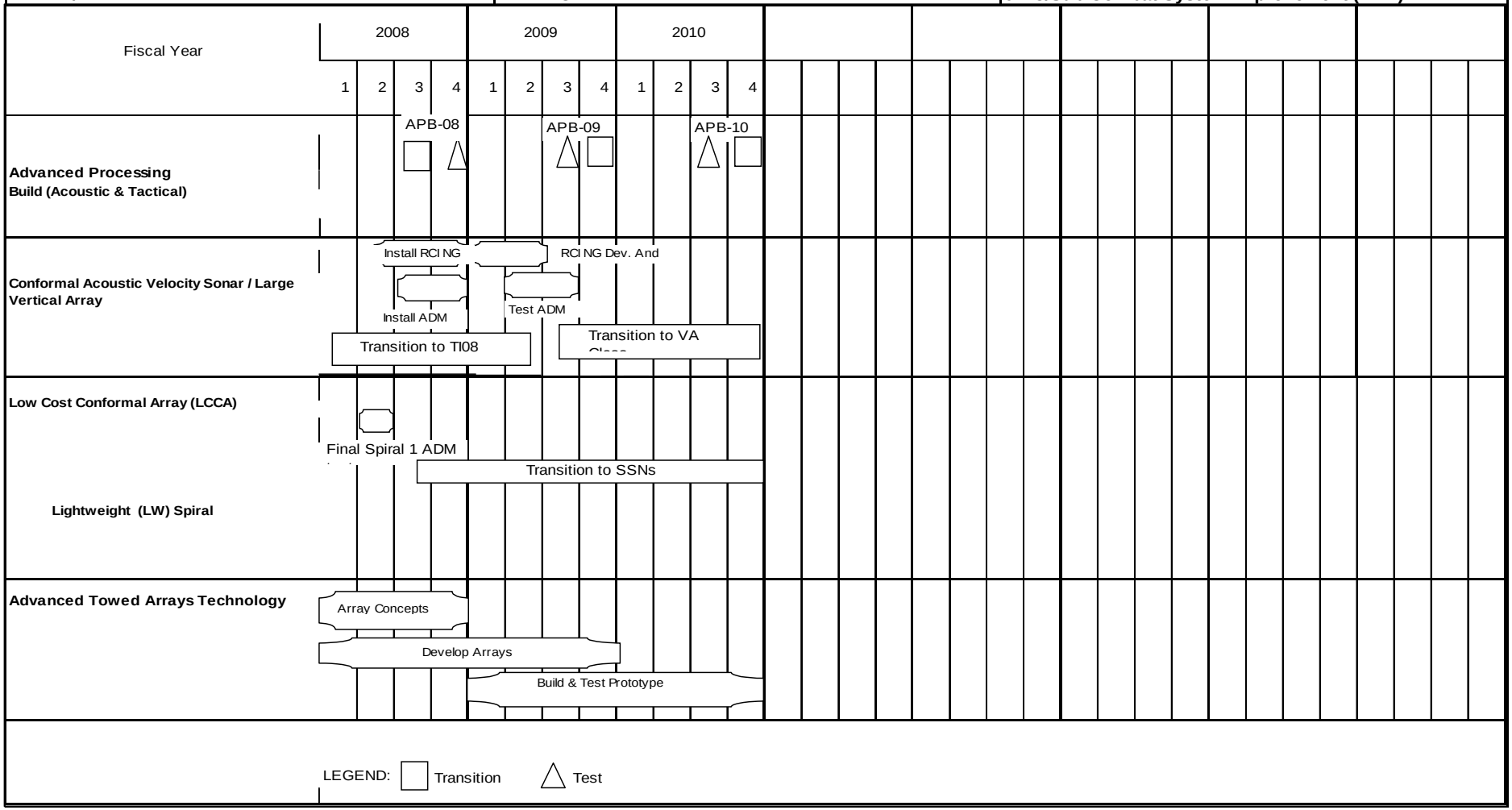
- Naval Undersea Warfare Center (NUWC), Newport, RI
- Naval Research Laboratory (NRL), Washington, DC.
- Naval Surface Warfare Center (NSWC), Carderock, MD.
- John Hopkins University/Applied Physics Lab (JHU/APL), Laurel, MD
- University of Texas/Applied Research Laboratory (UT/ARL), Austin, TX
- MITRE Corporation, McLean, VA
- Lincoln Laboratories, Cambridge, MA
- General Dynamic/Advanced Information Systems, Fairfax, VA
- Lockheed Martin, Manassas, VA
- Chesapeake Sciences, Millersville, MD
- Progeny Systems, Salt Lake City, UT

Note: All performers support APB(A), APB(T) and Sensors.

CLASSIFICATION:		UNCLASSIFIED										
EXHIBIT R-3, RDT&E PROJECT COST ANALYSIS									DATE May 2009			
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**		PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**					PROJECT NUMBER AND NAME **0223/Sub Combat System Improvement (ADV)**					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY Cost ($000)			FY 2009 Cost ($000)	FY 2009 Award Date	FY 2010 Cost ($000)	FY 2010 Award Date		Total Cost ($000)	Target Value of Contract
Product Development	WR	NUWC/Newport, RI	41.095			10.218	OCT-08	10.648	OCT-09			
Product Development	WR	NRL, DC	0.446			0.000		0.000				
Product Development	WR	NSWC/Carderock, MD	13.661			5.024	OCT-08	4.500	OCT-09			
Product Development	WR	NSWC/Dahlgren, VA	0.490			0.050	OCT-08	0.050	OCT-09			
Product Development	WR	ONI, DC	0.045			0.000		0.000				
Product Development	C/CPFF	NSMA, VA	5.170			1.000	NOV-08	1.524	NOV-09			
Product Development	WR	ONR, VA	1.925			0.730	DEC-08	0.800	DEC-09			
Product Development	WR	SSC/San Diego, CA	1.340			0.050	OCT-08	0.050	OCT-09			
Product Development	WR	COMSUBLANT, VA	0.340			0.100	OCT-08	0.125	OCT-09			
Product Development	WR	COMSUBPAC, HI	0.360			0.100	OCT-08	0.125	OCT-09			
Product Development	MIPR	U.S. Army/MITRE, NJ	2.800			0.000		0.000				
Product Development	MIPR	U.S. AFB/MIT Lincoln Labs, MA	5.384			1.890	DEC-08	2.000	NOV-09			
Product Development	C/CPFF	PSU/ARL, PA	0.390			0.000		0.000				
Product Development	C/CPFF	PSU/ARL, PA	1.100			0.200	DEC-08	0.250	DEC-09			
Product Development	C/CPFF	UT/ARL, TX	12.250			4.550	DEC-08	5.500	DEC-09			
Product Development	C/CPFF	JHU/APL, MD	28.903			6.660	DEC-08	7.100	DEC-09			
Product Development	C/CPFF	Lockheed Martin, VA	15.576			5.000	DEC-08	5.800	DEC-09			
Product Development	C/CPFF	Progeny, VA	1.957			0.200	DEC-08	0.350	DEC-09			
Product Development	C/CPFF	METRON, VA	2.858			0.600	DEC-08	0.800	DEC-09			
Product Development	C/CPFF	Alion Sciences, VA	1.867			1.417	DEC-08	1.400	DEC-09			
Product Development	C/CPFF	SEDNA, VA	2.164			0.500	DEC-08	0.500	DEC-09			
Product Development	C/CPFF	DSR/GD, VA	10.936			2.500	DEC-08	3.000	DEC-09			
Product Development	C/CPFF	Northrop Grumman, VA	0.400			0.000		0.000				
Product Development	WR	SPAWAR, CA	0.400			0.000		0.000				
Product Development	MIPR	U.S. Army Research Lab, MD	0.350			0.000		0.000				
Product Development	C/CPFF	SAIC, VA	0.500			1.000	DEC-08	1.500	DEC-09			
Product Development	C/CPFF	Adaptive Methods, VA	0.400			0.200	DEC-08	0.300	DEC-09			
Product Development	C/CPFF	AAC, NY	0.375			0.000		0.000				
Product Development	C/CPFF	GA Tech Research Institute, GA	2.120			0.150	DEC-08	0.300	DEC-09			

CLASSIFICATION:	UNCLASSIFIED											
EXHIBIT R-3, RDT&E PROJECT COST ANALYSIS									DATE May 2009			
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**		PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**				PROJECT NUMBER AND NAME **0223/Sub Combat System Improvement (ADV)**						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY Cost ($000)			FY 2009 Cost ($000)	FY 2009 Award Date	FY 2010 Cost ($000)	FY 2010 Award Date		Total Cost ($000)	Target Value of Contract
Product Development	C/CPFF	Multisensor Science, VA	0.150			0.150	DEC-08	0.200	DEC-09			
Product Development	MIPR	U.S. Army Research Lab, MD	0.650			0.300	DEC-08	0.300	DEC-09			
Product Development	C/CPFF	Chesapeake Science, MD	0.300			0.700	DEC-08	0.900	DEC-09			
Product Development	C/CPFF	Lockheed Martin, NY	3.000			2.000	JAN-09	3.000	DEC-09			
Subtotal Product Development			**159.702**			**45.289**		**51.022**				
Remarks:												
Program Management Support	C/CPFF	Stanley and Associates, VA	1.000			0.000		0.000				
Program Management Support	C/CPAF	BAE Systems, MD	4.335			1.460	DEC-08	1.600				
Program Management Support	C/CPFF	EG&G, VA	0.950			0.000		0.000				
Travel	WR	NAVSEA PEO IWS 5, DC	0.225			0.075	OCT-08	0.075				
Subtotal Management Services			**6.510**			**1.535**		**1.675**				
Remarks:												
Total Cost			**166.212**			**46.824**		**52.697**				

CLASSIFICATION:	UNCLASSIFIED	
EXHIBIT R-4, SCHEDULE PROFILE		DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**	PROJECT NUMBER AND NAME **0223/Sub Combat System Improvement (ADV)**



CLASSIFICATION:	UNCLASSIFIED						
EXHIBIT R-4a, SCHEDULE DETAIL					DATE May 2009		
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**			PROJECT NUMBER AND NAME **0223/Sub Combat System Improvement (ADV)**			
Schedule Profile	FY 2008	FY 2009	FY 2010				
Advanced Processing Builds (Acoustic/Tactical):							
APB-07 Sea Test	4Q						
Transition APB-07 to ARCI/BYG-1	3Q						
APB-09 Sea Test		3Q					
Transition APB-09 to ARCI/BYG-1		4Q					
APB-10 Shore Test			3Q				
Transition APB-10 to ARCI/BYG-1			4Q				
Conformal Acoustic Velocity Sonar/Large Vertical Array:							
Install RCI Next Gen	2Q-4Q						
Develop and Test RCI Next Gen		1Q-3Q					
Install ADM Array	3Q-4Q						
Test ADM array		2Q-3Q					
Transition to T108	1Q-4Q	1Q-2Q					
Transition to VIRGINIA Class		3Q-4Q	1Q-4Q				
Low Cost Conformal Array (LCCA):							
Final Spiral 1Test ADM Array	2Q						
Transition to SSNs	3Q-4Q	1Q-4Q	1Q-4Q				
Advanced Towed Array Technology:							
Refine TLTL Concepts	1Q-4Q						
Develop TLTL/VSTA Array Technologies	1Q-4Q	1Q-4Q	1Q				
Build & Test Prototype TLTL/VSTA Arrays		1Q-4Q	1Q-4Q				

CLASSIFICATION:	UNCLASSIFIED		
EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION			DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**		PROJECT NUMBER AND NAME **2033/Adv Submarine System Development**

COST (In Millions)	FY 2008	FY 2009	FY 2010
Project Cost	80.719	57.390	74.408
RDT&E Articles Qty	0	0	0

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Advanced Submarine Research and Development (R&D) Program is a non-acquisition program that develops, matures, and transitions Hull, Mechanical, and Electrical (HM&E) technologies from S&T to operational platforms, develops and demonstrates submarine design and naval architecture products destined for backfit, forward fit, and/or future submarines, and operates unique R&D experimentation, modeling, and simulation facilities to enhance submarine stealth, maneuverability, and affordability. The program is structured to support near term technology insertion to achieve VIRGINIA Class cost reduction and influence future submarine concepts and core technologies. In support of Sea Power 21, Sea Trial experimentation supports the naval enterprises in identifying and prototyping capabilities and technologies that support the warfighter. Focus is on the Undersea Enterprise (USE), the Naval Network/FORCENET Enterprise (NNFE), Naval Expeditionary Combat Enterprise (NECE), Surface Warfare Enterprise (SWE), and Special Operations Force Enterprise (SOFE). In addition to enterprise support, experimentation may identify, develop, integrate, and test Intelligence, Surveillance, and Reconnaissance (ISR) technologies and develop littoral precision strike capabilities that support the Overseas Contingency Operations (OCO). Experimentation and demonstration is conducted in a joint warfighting context with other services,(i.e. the U.S. Marines, U.S. Army, and the U.S. Air Force), to enable early assessment of warfighting capabilities, and to contribute to better technology selection decisions for potential incremental development. This program also supports Information Exchange Programs and potential joint project arrangements with the United Kingdom, Canada, and Australia.

CLASSIFICATION:	UNCLASSIFIED	
EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION		DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**	PROJECT NUMBER AND NAME **2033/Adv Submarine System Development**

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2008	FY 2009	FY 2010
Payloads and Sensors/Subtotal Cost	18.439	20.116	17.225
RDT&E Articles Quantity	0	0	0

Develop promising advanced technologies and/or concepts capable of revolutionizing submarine design, reducing cost, improving payload flexibility, increasing capability, reducing weight and space requirements, exploring alternative payload launch mechanisms, increasing reliability with concomitant decreases in required maintenance, and improving material strength. Develop payload demonstrations targeted at improving flexible ocean interface, Intelligence/Surveillance/Reconnaissance (ISR) requirements, and payload and launch retrieval methods from undersea platforms. Conduct Navy and joint SEA TRIALS that take the demonstrations to the Fleet in order to assess the operational value of the technologies and systems under consideration. The SEA TRIALS/experiments support examination and assessment of potential new Fleet capabilities based on the Sea Power 21 Pillars of SEA SHIELD, SEA BASING, SEA STRIKE, and FORCENET.

FY08 Accomplishments include the following: Prepared for FY09 demonstration of an underwater launch of an encapsulated All-Up Round (AUR) replica using a Short Burn Test Missile. Conducted an at-sea demonstration of the procedures developed and technologies selected under the Joint Test and Evaluation (JT&E) program Joint Command and Control for War on Terror Activities (JC2WTA). Conducted data analysis on Water Piercing Missile Launcher (WPML) test and conducted missile fly-out tests from a moving submerged translator platform. Provide SEA STALKER UUV capability to surface platform (DDG) by developing and testing the integration between the UUV and launching system. Serves as risk mitigation for SSGN demonstration.

FY09 Planned Accomplishments include the following: Redesign and rebuild test assets and complete the static underwater encapsulation tests at Aberdeen Test Center (ATC). Prepare for End-To-End lab set up at NUWC, Newport. Assess, refurbish, and test the equipment necessary for testing the capsule at periscope depth speeds at San Clemente Island (SCI) (Translation Testing). Conduct additional fly-out test from a moving submerged translator at higher cross current. Mature development of and test of a new launcher design with its own method of gas generation to aid water piercing. Provide SEA STALKER UUV capability to subsurface platform (SSGN) by developing and testing the integration between the UUV and launching system. Develop, test, and transition ISR technologies to support irregular warfare.

FY10 Planned Accomplishments include the following: For Small Missile Encapsulation (SME) conduct translation testing at SCI and complete analysis. Definitize WPML unique launcher design with gas generation and continue system engineering and safety tasks related to submarine integration. Conduct open ocean translator missile fly-out test. Develop, test, and transition ISR technologies to support irregular warfare.

	FY 2008	FY 2009	FY 2010
Stealth/Subtotal Cost	12.873	16.439	23.421
RDT&E Articles Quantity	0	0	0

Develop technologies and tools to increase the safety of submarines by recognizing and mitigating sources of noise, improving the probability of safe transit in the vicinity

of mine fields, ensuring that submarines can penetrate contested waters by reduced acoustic observables, and remaining undetected in the littorals. Develop technologies and tactics/techniques/procedures (TTPs) that will be integrated with existing naval assets to develop new or enhance existing warfighting concepts. Operate the Large Scale Vehicle (LSV 2) and the Intermediate Scale Measurement System (ISMS) to conduct large model experiments for submarines focusing on stealth, maneuvering and control, affordability, and operational effectiveness.

FY08 Accomplishments include the following: Continued LSV operations and maintained LSV and ISMS test ranges. Obtained relative model scale and full Alternating Current (AC) Electromagnetic Signature data to support development of propagation modeling techniques. Conducted hydro acoustic pressure testing of conformal array component test pieces utilizing newly developed materials to support qualification. Matured mine warfare Tactical Decision Aid (TDA) concepts to support future possible transition to Advanced Processing Build (APB) program. Completed comparison of coupled Reynolds Averaged Navier-Stokes/APL Wake Evolution Code (RANS/AWEC) wake signature prediction techniques to available model scale data. Completed initial signature assessment of future conformal array concepts. Developed plan to obtain full-scale wake signature data. Updated Submarine Stealth Planning Guide to reflect recent technology improvements.

FY09 Planned Accomplishments include the following: Continue Large Scale Vehicle operations and maintain LSV and ISMS test ranges. Develop coordinated integrated program plan with ONR and PMS450 to execute research and development related to flow-noise, future sonar concepts and structural acoustics. Perform concept design and fabrication of scale model Integrated Bow Conformal (IBC) structure utilizing newly developed castable polyurethane materials. Complete hydrostatic pressure testing of conformal array test articles using newly developed materials. Complete qualification testing on new conformal array material. Complete literature search to provide basis for development of multipurpose hull treatment materials for future platforms. Obtain relative full-scale data to support validation of modeling and analysis approaches related to AC Electromagnetic Signatures.

FY10 Planned Accomplishments include the following: Conduct LSV operations and maintain LSV and ISMS test ranges. Obtain relative full scale data to support validation of modeling techniques related to AC Signature propagation. Execute research and development related to flow-noise, future sonar concepts, and structural acoustics for ONR, PMS450, and future submarine programs. Complete manufacturing studies on new castable polyurethane materials to support future conformal array applications. Develop TTPs for integration and testing.

	FY 2008	FY 2009	FY 2010
Total Ownership/Affordability/Subtotal Cost	4.569	6.328	6.910
RDT&E Articles Quantity	0	0	0

Demonstrate technologies that have the potential to reduce total life cycle costs of the system by providing reduced construction costs, commonality of interfaces, longer life of parts, and/or lower maintenance requirements.

FY08 Accomplishments include the following: Initiated qualification testing on 10,000 and/or 20,000 in-lb 3-position rotary Electric Actuation Systems (EAS) Advanced Development Models (ADMs). Completed a Business Case Analysis (BCA) to replace 35 rotary 2 and 3 position hydraulic actuators with EASs. Completed a BCA to replace the

current Universal Modular Mast (UMM) hydraulic actuation system with an EAS. Initiated paper design of a UMM EAS. Completed a study to replace remaining hydraulic actuators with EAS in the sail and in the external hydraulics supply. Completed draft EAS performance specification for snorkel induction head valve, mast hoist system, and the radar in the sail. Performed EAS feasibility study of all SSBN hydraulic applications. Conducted engineering study of Common Electric Hull Penetrator (CEHP) design concepts. Conducted an engineering analysis and evaluation of laboratory scale trials and alternate chemistries for Carbon Dioxide (CO2) capture material to determine the optimum form of solid phase sorbent for an advanced CO2 removal system for submarine air purification. Completed report on SSN-690 (USS PHILADELPHIA) summarizing observations and recommendations from full-scale trial with modified damping configuration. Defined configuration for two modified SSN-668 platforms with modified Main Ballast Tank (MBT) treatment configurations. Obtained acoustic data on both platforms. Supported configuration of SSN-688I class submarine to address reduced maintenance requirements related to MBT Damping. Completed testing on VIRGINIA (VA) class Modular Integrated Deck Structures (MIDS) configuration with a cost reduction based damping configuration to support VA class cost reduction initiatives and database for future designs.

FY09 Planned Accomplishments include the following: Complete qualification testing on 10,000 and/or 20,000 in-lb 3-position rotary EAS ADMs. Plan and schedule for the at-sea retractable bow plane electric actuator demonstration. Initiate Temporary Alteration (TEMPALT) planning to demonstrate rotary EAS on an operational submarine. Conduct pop up and Intermediate Scale Measurement System tests to assess damping configuration. Complete UMM EAS design, Interface Control Drawings (ICDs), and build ADM. Complete CO2 scrubber sorbent material performance testing. Complete design and construction of a 1/10 th scale CO2 scrubber test unit for lab evaluation. Complete design of sorbent test cubes for shipboard testing. Complete BCA in support of implementing the new CO2 removal system. Complete report on trial of two SSN-688 class platforms with modified MBT Damping configurations to support reduction in maintenance requirements. Complete summary report on MIDS testing and associated analysis. Complete functional requirements, BCA, ICDs, arrangement studies and concept designs for replacing external hydraulic actuators with electric systems.

FY10 Planned Accomplishments include the following: Complete TEMPALT planning for an at-sea demonstration of rotary and UMM EAS. Acquire external EAS ADMs for test and evaluation. Build and lab test CO2 scrubber sorbent test cubes. Install test cubes for shipboard testing. Initiate design of full scale CO2 scrubber prototype system. Complete MBT Damping trial report on SSN-688I platform with modified configuration.

	FY 2008	FY 2009	FY 2010
Advanced Propulsion/Ship Concept Developments/Subtotal Cost	44.838	14.507	26.852
RDT&E Articles Quantity	0	0	0

Overcome selected technological barriers that are expected to have significant impact on submarine hull, mechanical, and electrical (HM&E) systems to enable design options for a submarine with VIRGINIA Class capability in three technical areas: Shaftless Propulsion, External Weapon Stow and Launch, and Radical Ship HM&E Infrastructure Reduction. Develop submarine alternative propulsion and stern configurations with potential to significantly reduce submarine acquisition cost. Demonstrate critical performance parameters via Appropriate Scale Demonstrators in realistic environmental conditions. Evaluate integration of technologies and approaches for cost reduction in future nuclear submarines. Develop understanding of ship concept studies and submarine cost drivers and model analysis. Develop and demonstrate technologies for a future SSBN in areas of hull and platform technologies, propulsors, ship control, electric actuation, sensors, and self defense. This work will apply to future submarine designs and will begin the long-lead concept work on the next undersea strategic deterrent platform, for which design work must begin in earnest early next decade. Conduct concept

studies and mission utility studies for variant submarine designs, including VIRGINIA derivatives. Develop a future undersea superiority system alternative to the reduced submarine program.

FY08 Accomplishments include the following: Completed component level TANGO BRAVO (TB) technology demonstrations. Demonstrated maneuvering and sea keeping aspects of Shaftless propulsion at small scale. Assessed Go/No Go for TB Phase 3 Shaftless Propulsion award. Completed load out demonstration and at-sea launch demonstration at depth of External Weapons Stow and Launch. Continued development of innovative technologies to support the undersea superiority initiative, Deep Water Active Detection System (DWADS), Reliable Acoustic Path (RAP) Line Array system, Shallow Water Array Processing (SWAP) system, Distributed Netted Sensors (DNS) Command Control and Communication system, Medium Frequency Acoustic Communications system, Deployable Autonomous Distributed System (DADS), and an ASW Command Common Tool Set. Continued studies, analysis and assessments of potential transformational submarine and ASW technologies. Conducted SBSD concept studies and technology trade studies to support Analysis of Alternatives (AoA) requirements development and R&D planning. Initiated planning for development of new technologies resulting from aforementioned studies. Performed Electromagnetic (EM) testing on Tango Bravo electric actuator at Groton, CT. Initiated electric actuator endurance test. Began partnership with DARPA on follow-on TB S3D project. Selected Submarine Shaftless Stern Demonstrator (S3D) vehicle platform and established performance requirements.

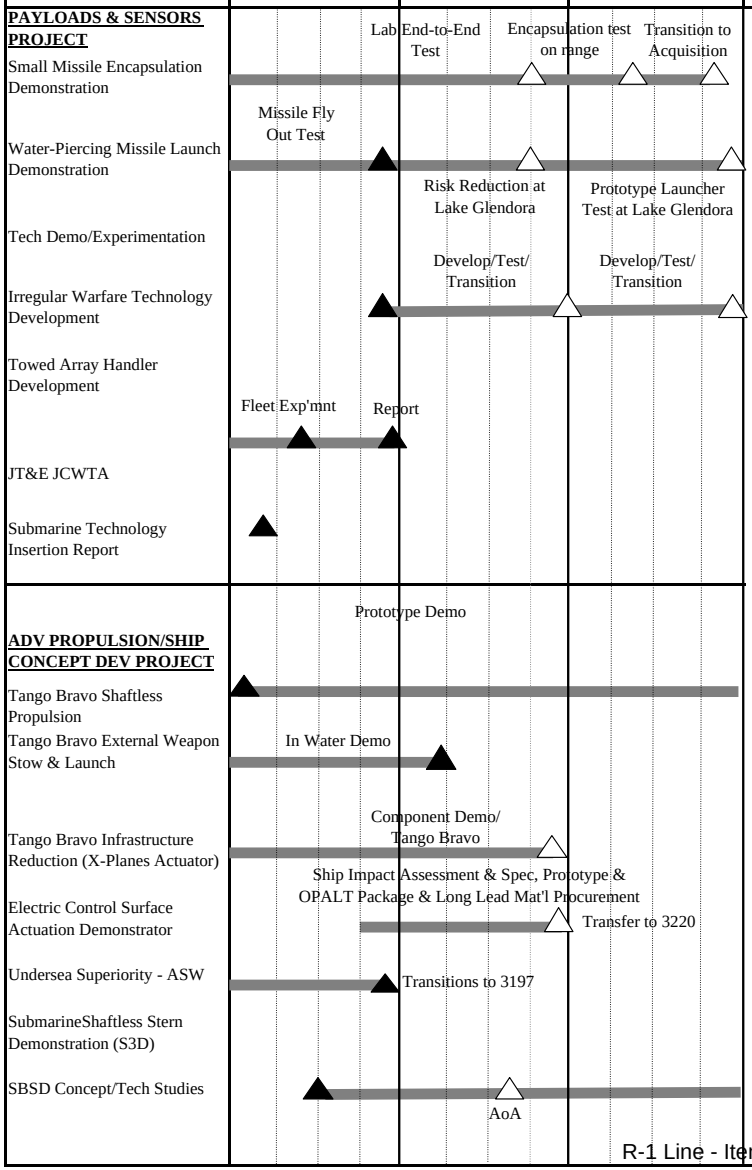
FY09 Planned Accomplishments include the following: Conduct TB demonstrations and acoustic modeling to reduce risk of proceeding to TB Shaftless Propulsion phase 3. Complete construction of shaftless demonstrator and commence demonstrating and performance testing. Complete External Weapons final report. Continue concept studies to support Sea Based Strategic Deterrent (SBSD) Analysis of Alternatives (AoA), requirements development and R&D planning. Complete the detail design of the Tango Bravo X-Planes electric actuator and ship control system modifications. Complete performance requirements, OPALT planning and procure long lead material for bow plane control surface electric actuator demonstration on SSN 774.

FY10 Planned Accomplishments include the following: Continue partnership with DARPA on follow-on TB S3D project. Continue concept studies to support Sea Based Strategic Deterrent (SBSD) requirements development and R&D planning. Complete demonstration and performance testing of TB Shaftless Propulsion prototype. Perform motor structural acoustic design and testing. Define vehicle interface and design modifications. Conduct radio control testing and hydro design model validation. Provide high-risk long lead-time procurements, Phase 2-3 cost estimate, and cost model update.

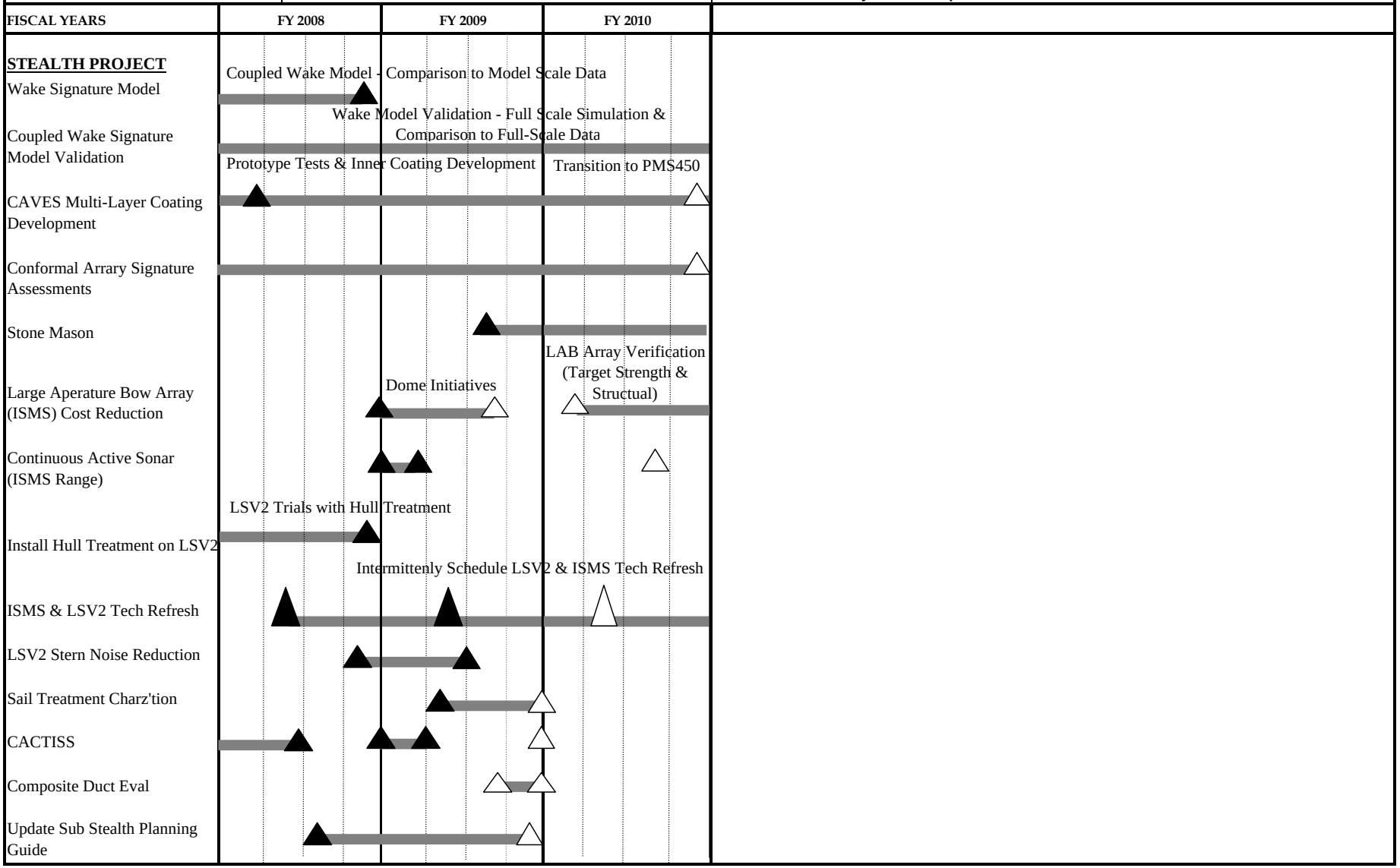
CLASSIFICATION:	UNCLASSIFIED											
EXHIBIT R-3, RDT&E PROJECT COST ANALYSIS									DATE May 2009			
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**		PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**					PROJECT NUMBER AND NAME **2033/Adv Submarine System Development**					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY Cost ($000)			FY 2009 Cost ($000)	FY 2009 Award Date	FY 2010 Cost ($000)	FY 2010 Award Date			
Product Development	SS/CPFF	NGSB Newport News, VA	1.553			0.529	VAR	1.000	VAR			
Product Development	WX	NSWC Dahlgren	0.000			1.320	VAR	3.920	VAR			
Product Development	WX	Kollmorgen, N. Hampton, MA	0.000			1.000	VAR	0.100	VAR			
Product Development	SS/CPFF	EB Groton, CT	3.763			6.202	VAR	1.000	VAR			
Prodcut Development	SS/CPFF	EB Groton, CT	0.000			0.000		15.510	VAR			
Product Development	SS/CPFF	Raytheon	10.355			4.182	VAR	1.517	VAR			
Product Development	WX	NSWC Bethesda, MD	24.794			17.171	VAR	18.634	VAR			
Product Development	SS/CPFF	ARL/PSU, State College,PA	0.956			1.931	VAR	1.500	VAR			
Product Development	SS/CPFF	UT/ARL, Austin TX	6.050			0.000		0.000				
Product Development	SS/CPFF	JHU/APL Laurel MD	14.834			0.220	VAR	0.100	VAR			
Product Development	Various	Various	19.912			0.370	VAR	7.857	VAR			
Product Development	WX	NUWC Newport, RI	10.526			4.471	VAR	11.510	VAR			
Product Development	RX	NUWC Newport, RI	22.971			5.368	VAR	0.000				
Product Development	WX	ONR, Arlington, VA	8.066			0.000		0.000				
Product Development	WX	Lockheed Martin	8.934			0.000		0.000				
Product Development	WX	SPAWAR San Diego CA	5.250			0.600	VAR	0.000				
Product Development	WX	SSP, Arlington VA	1.200			0.000		0.050	VAR			
Subtotal Product Development			**139.164**			**43.364**		**62.698**				
Remarks: Various/VAR is used to group multiple activities with small funding levels and when multiple award dates are planned.												
Contractor Engineering Support	SS/CPFF	Various	4.169			1.893	VAR	1.450	VAR			
Government Engineering Support	WX	Various	1.740			1.089	VAR	1.189	VAR			
Travel	WX	NAVSEA HQ	0.160			0.159	VAR	0.090	V			
Subtotal Support Costs			**6.069**			**3.141**		**2.729**				
Remarks: Various/VAR is used to group multiple activities with small funding levels and when multiple award dates are planned.												
Developmental Test & Evaluation	SS/CPFF	EB	0.600	0.000		1.771	VAR	1.456	VAR			

CLASSIFICATION:	UNCLASSIFIED											
EXHIBIT R-3, RDT&E PROJECT COST ANALYSIS									DATE May 2009			
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**		PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**				PROJECT NUMBER AND NAME **2033/Adv Submarine System Development**						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY Cost ($000)			FY 2009 Cost ($000)	FY 2009 Award Date	FY 2010 Cost ($000)	FY 2010 Award Date		Total Cost ($000)	Target Value of Contract
Developmental Test & Evaluation	SS/CPFF	Raytheon	6.710			1.394	VAR	1.000	VAR			
Developmental Test & Evaluation	WX	NAVAIR	1.395			0.635	VAR	0.000	VAR			
Developmental Test & Evaluation	Various	Various	1.745			0.919	VAR	2.572	VAR			
Developmental Test & Evaluation	WX	NUWC Newport	0.935			0.467	VAR	0.670	VAR			
Developmental Test & Evaluation	WX	NSWC Carderock	2.076			3.091	VAR	2.500	VAR			
Developmental Test & Evaluation	SS/CPFF	NGSB, Newport News VA	0.000			0.000	VAR	0.783	VAR			
Developmental Test & Evaluation	SS/CPFF	JHU/ARL, Laurel MD	0.000			0.005	VAR	0.000				
Developmental Test & Evaluation	SS/CPFF	ARL/PSU, State College PA	0.000			0.720	VAR	0.000				
Developmental Test & Evaluation	WX	NAVAIR, Pax River MD	0.000			0.563	VAR	0.000				
Developmental Test & Evaluation	WX	NSWC Dahlgren VA	0.000			1.320	VAR	0.000				
Subtotal Test and Evaluation			**13.461**			**10.885**		**8.981**				
Remarks: Various/VAR is used to group multiple activities with small funding levels and when multiple award dates are planned.												
Total Cost			**158.694**			**57.390**		**74.408**				

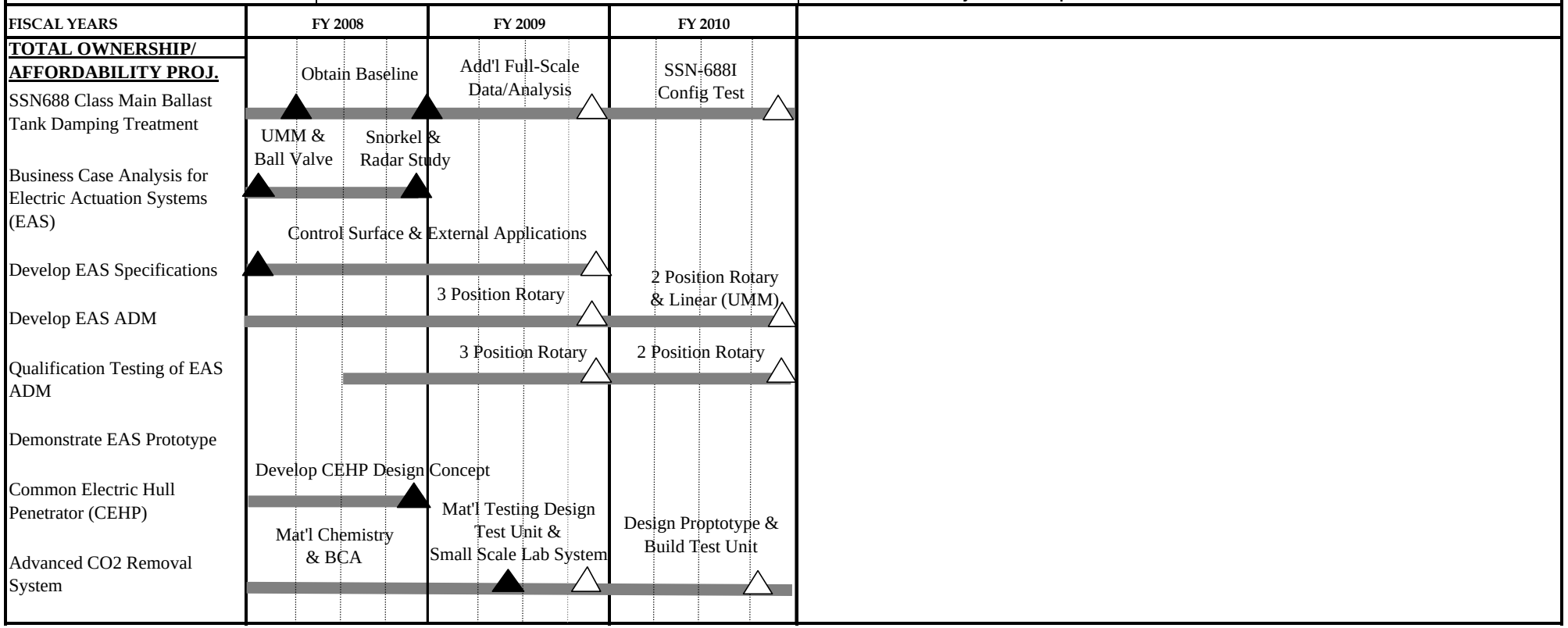
CLASSIFICATION:	UNCLASSIFIED	
EXHIBIT R-4, SCHEDULE PROFILE		DATE May 2009
APPROPRIATION/BUDGET ACTIVITY RDTEN/BA 4	PROGRAM ELEMENT NUMBER AND NAME 0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT	PROJECT NUMBER AND NAME 2033/Adv Submarine System Development Continued



CLASSIFICATION:	UNCLASSIFIED	
	EXHIBIT R-4, SCHEDULE PROFILE	DATE May 2009
APPROPRIATION/BUDGET ACTIVITY RDTEN/BA 4	PROGRAM ELEMENT NUMBER AND NAME 0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT	PROJECT NUMBER AND NAME 2033/Adv Submarine System Development Continued



CLASSIFICATION:	UNCLASSIFIED	
	EXHIBIT R-4, SCHEDULE PROFILE	DATE May 2009
APPROPRIATION/BUDGET ACTIVITY RDTEN/BA 4	PROGRAM ELEMENT NUMBER AND NAME 0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT	PROJECT NUMBER AND NAME 2033/Adv Submarine System Development



CLASSIFICATION:	UNCLASSIFIED						
EXHIBIT R-4a, SCHEDULE DETAIL					DATE May 2009		
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**			PROJECT NUMBER AND NAME **2033/Adv Submarine System Development**			
Schedule Profile	FY 2008	FY 2009	FY 2010				
Payloads & Sensors Project							
Small Missile Static Testing (ATC) and AUR/SBTM flyout	4Q	2Q					
Small Missile Encapsulation Full-Scale Translation Testing (SCI)		4Q	1Q				
Small Missile Encapsulation Final Report/Transition to Acquisition			4Q				
Water Piercing Missile Launch Fly Out Test	3Q-4Q						
Water Piercing Missile Launch Open Sea Confidence Test		3Q	3Q				
Water Piercing Missile Launch At-Sea Prep & Demo			4Q				
Irregular Warfare Technology Development	4Q	1Q-4Q	1Q-4Q				
JT&E JC2WTA - Fleet Experiment	2Q-4Q						
SUBTech Report	1Q						
Adv. Propulsion/Ship Concept Development Project							
Tango Bravo Shaftless Propulsion	1Q-4Q	1Q-4Q	1Q-4Q				
Tango Bravo External Weapon Stow & Launch	1Q-4Q	1Q					
Tango Bravo Infrastructure Reduction	1Q-4Q	1Q-4Q					
Electric Control Surface Actuation Demo		1Q-4Q					
Undersea Superiority - ASW	1Q-4Q						
SBSD Concept/Tech Studies	2Q-4Q	1Q-4Q	1Q-4Q				
Stealth Project							
Wake Signature Prediction Capability	1Q-4Q						
Wake Signature Tool Validation	1Q-4Q	1Q-4Q	1Q-4Q				
CAVES Multi-Layer Coating Development	1Q-4Q	1Q-4Q	1Q-4Q				
Conformal Array Signature Assessment	1Q-4Q	1Q-4Q	1Q-4Q				
Tactical Decision Aid Interface Development & Testing	1Q-4Q	1Q-4Q					
Large Aperture Bow Array Cost Reduction	4Q	1Q-3Q	1Q-4Q				
Continuous Active Sonar	4Q	1Q	3Q				
Install Hull Treatment on LSV2	1Q-4Q						
LSV2 & ISMS Technology refresh	2Q	2Q	2Q				
LSV2 Stern Noise Reduction	4Q	1Q-2Q					
Sail Treatment Characterization		1Q-4Q					
CACTISS	1Q-2Q; 4Q	1Q; 4Q					

CLASSIFICATION:	UNCLASSIFIED						
EXHIBIT R-4a, SCHEDULE DETAIL (CONTINUATION)					DATE May 2009		
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**			PROJECT NUMBER AND NAME **2033/Adv Submarine System Development**			
Schedule Profile	FY 2008	FY 2009	FY 2010				
Composite Duct Eval, LSV2 (VIRGINIA Cost Savings)		3Q-4Q					
Stone Mason		3Q-4Q	1Q-4Q				
Update Submarine Stealth Planning Guide (SPG)	3Q-4Q	1Q-4Q					
Total Ownership/Affordability Project							
Business Case Analysis for EAS	1Q-4Q						
Develop EAS Specifications	1Q-4Q	1Q-4Q					
Develop EAS ADM's	1Q-4Q	1Q-4Q	1Q-4Q				
Qualification Testing of EAS ADMs	2Q-4Q	1Q-4Q	1Q-4Q				
Initiate/Complete shore-based testing/validation on 8 ADMs	1Q-4Q	1Q-4Q	1Q-4Q				
SSN-688 Class Main Ballast Tank Damping Treatment	1Q-4Q	1Q-4Q	1Q-4Q				
Advanced CO2 Removal System	1Q-4Q	1Q-4Q	1Q-4Q				
Develop Common Hull Penetrator (CEHP) Design Concept	1Q-4Q						

CLASSIFICATION:	UNCLASSIFIED	
EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION		DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**	PROJECT NUMBER AND NAME **2033/Overseas Contingency Operations**

COST (In Millions)	FY 2008	FY 2009	FY 2010
Project Cost	0.000	0.000	9.000
RDT&E Articles Qty	0	0	0

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The project Scan Eagle operations from an SSGN intends to provide persistent, maritime and littoral network connectivity, surveillance and reconnaissance capabilities within localized mission areas. The Scan Eagle Unmanned Aerial Vehicle (UAV) is a multi-mission Intelligence, Surveillance, and Reconnaissance (ISR) system to support strike, signals intelligence, and communications relay while operating in direct collaboration with other deployed assets in OCO. The UAV will conduct localized open-ocean and littoral surveillance of targets as well as providing network connectivity for deployed unattended sensors. This UAV integration effort delivers launch, control, and recovery ability from a SSGN within an integrated joint ISR architecture, providing the information to the joint force and localized commanders in real time. This is a key role in providing the commander with a persistent, reliable picture of surface and ground threats while minimizing the need to put manned assets in harms way to execute surveillance and reconnaissance and Information Operation (IO) tasks.

Develop the modifications for an SSGN Payload tube for over the Horizon ISR capability with enhanced endurance and payloads in support of OCO. The design and integration of an autonomous integrated controller, Scan Eagle launcher, and recoverysystem into SSGN payload tube. The stowage module will be modified to support the required physical interfaces to support the modified scan eagle launcher and recovery mast, and the packaged scan eagle UAV and supporting payloads. The accomplishments are in design a mechanism to support the the extension of the retrieval mast integration interfaced to the platforms decks, modification of the launcher to decrease weight and footprint, and repackaging of the Scan Eagle equipment and payload to physically interface to the wet stowage module for storage and maintenance prior to a surfaced deployment. The activity will design, test, and demonstrate the components and culminate an at-sea demonstration and deployment in the fourth quarter of FY10.

B. ACCOMPLISHMENT/PLANNED PROGRAMS:

FY10 Planned Accomplishments include the following: Conduct integration of Scan Eagle Unmanned Aerial System (UAS) into a SSGN payload tube stowage module. Command and control Scan Eagle through an integrated SSGN based system with real time communications with UAV and networked sensors. Conduct modification of Scan Eagle Launcher system and recovery system integrated to SSGN deck and stowage module. Conduct risk mitigation demonstration and in theatre demonstration.

C. OTHER PROGRAM FUNDING SUMMARY 2033 Adv Submarine System Development:

Not applicable.

D. ACQUISITION STRATEGY:

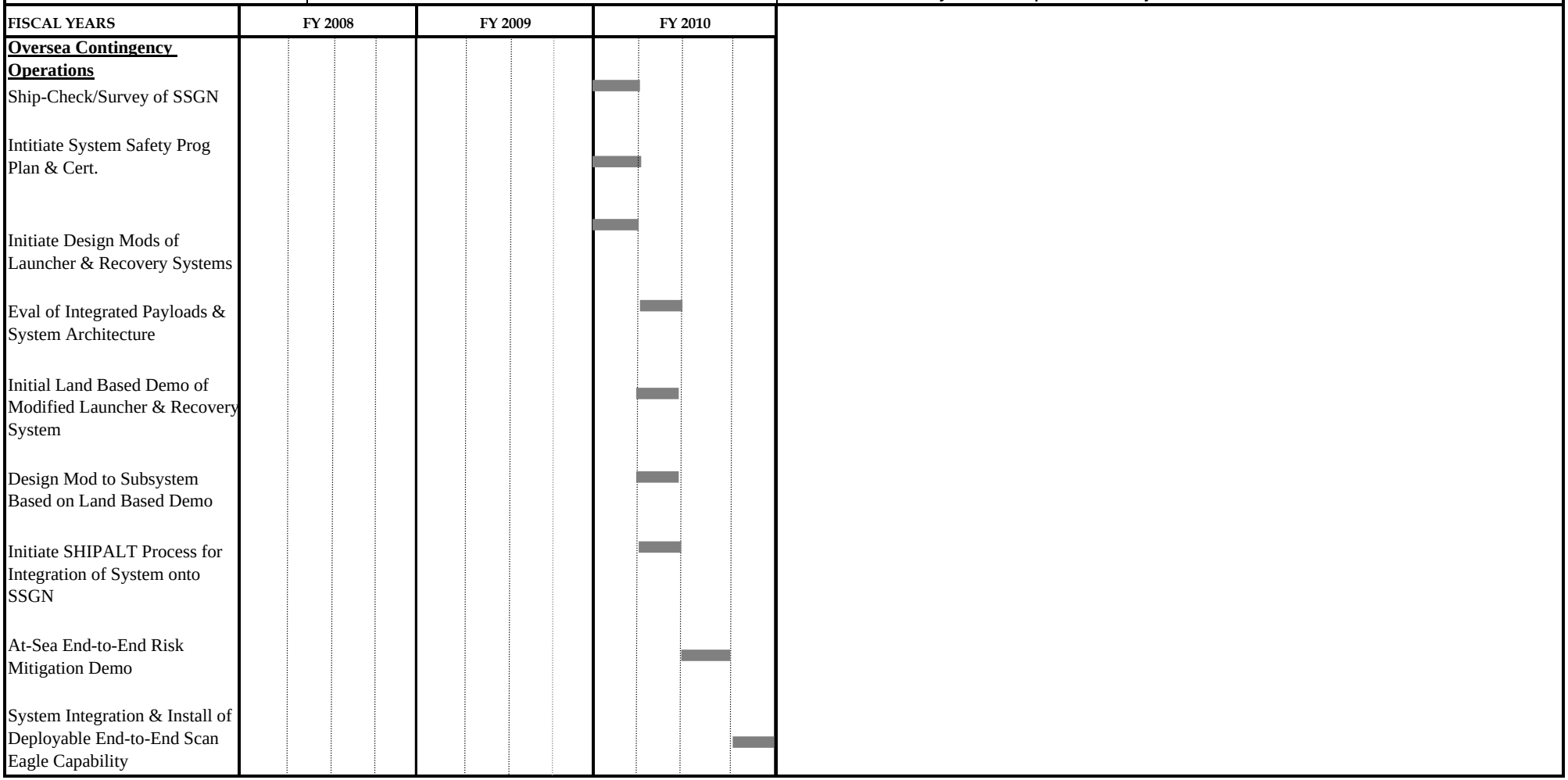
Use existing contract vehicles

E. MAJOR PERFORMERS:

NUWC Newport, RI
Electric Boat Corp., Groton, CT
Oceaneering, Chesapeake, VA
NSWC Dahlgren, VA
Boeing, St. Louis MO

CLASSIFICATION:	UNCLASSIFIED											
EXHIBIT R-3, RDT&E PROJECT COST ANALYSIS									DATE May 2009			
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**		PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**				PROJECT NUMBER AND NAME **2033/Adv Submarine System Development OCO Project**						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY Cost ($000)			FY 2009 Cost ($000)	FY 2009 Award Date	FY 2010 Cost ($000)	FY 2010 Award Date		Total Cost ($000)	Target Value of Contract
Product Development	WX	NUWC Newport, RI	0.000			0.000		0.500	VAR		0.500	0.000
Product Development	SS/CPFF	EB Groton, CT	0.000			0.000		1.250	VAR		1.250	0.000
Product Development	SS/CPFF	Oceaneering, Chesapeake, VA	0.000			0.000		2.250	VAR		2.250	0.000
Product Development	WX	NSWC Dahlgren, VA	0.000			0.000		0.500	VAR		0.500	0.000
Product Development	SS/CPFF	Boeing, St. Louis, MO	0.000			0.000		4.000	VAR		4.000	0.000
Product Development	WX	VARIOUS	0.000			0.000		0.500	VAR		0.500	0.000
Subtotal Product Development			**0.000**			**0.000**		**9.000**			**9.000**	**0.000**
Remarks: Various/VAR is used to group multiple activities with small funding levels and when multiple award dates are planned.												
Total Cost			**0.000**			**0.000**		**9.000**			**9.000**	**0.000**

CLASSIFICATION:	UNCLASSIFIED	
	EXHIBIT R-4, SCHEDULE PROFILE	DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**	PROJECT NUMBER AND NAME **2033/Adv Submarine System Development OCO Project**



CLASSIFICATION:	UNCLASSIFIED						
EXHIBIT R-4a, SCHEDULE DETAIL					DATE May 2009		
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**			PROJECT NUMBER AND NAME **2033/Adv Submarine System Development OCO Project**			
Schedule Profile	FY 2008	FY 2009	FY 2010				
Ship Check/Survey of SSGN			1Q				
Initiate System Safety Program Plan & Certification			1Q				
Initiate Design Modification of Launcher & Recovery Systems			1Q				
Evaluation of Integrated Payloads & System Architecture			2Q				
Initial Land Based Demonstration of Modified Launcher & Recovery Systems			2Q				
Design Modification to Subsystems Based on Land Based Demonstration			2Q				
Initiate SHIPALT Process for Integration of System onto SSGN			2Q				
At-Sea End-to-End Risk Mitigation Demonstration			3Q				
System Integration & Installation of Deployable End-to-End Scan Eagle Capability			4Q				

CLASSIFICATION:	UNCLASSIFIED			
EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION				DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**			PROJECT NUMBER AND NAME **3197/Undersea Superiority**
COST (In Millions)	FY 2008	FY 2009	FY 2010	
Project Cost	0.000	36.818	37.214	
RDT&E Articles Qty	0	0	0	

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Project Unit 3197: This Project supports Navy Undersea Superiority through the application of advanced development and testing of organic and offboard sonar and tactical control systems. This Project transitions technologies developed by Navy technology bases, the private sector, ONR, Future Naval Capabilities, and DARPA. This non-acquisition Project addresses technology challenges to improve ASW in littoral and open ocean environments for a variety of operational missions by relevant tactical ASW capabilities. Prototype hardware / software systems are developed to demonstrate technologically promising system concepts in laboratory and at-sea submarine environments. Technologies are selected by the Chief of Naval Operation's (CNO) ASW Initiative which was established to support the CNO's vision to "fundamentally change the way ASW is currently conducted to render the enemy submarine irrelevant against US and coalition forces". It matures promising undersea warfare technologies via a spiral development methodology, establishes military utility through sea testing and self assessment, and supports transition to production as merited by results.

CLASSIFICATION:	UNCLASSIFIED	
EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION		DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**	PROJECT NUMBER AND NAME **3197/Undersea Superiority**

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2008	FY 2009	FY 2010
Undersea Superiority	0.000	36.818	37.214
RDT&E Articles Quantity	0	0	0

FY09 through FY10 planned accomplishments include the following: Efforts will transition from funding under Project 2033 in FY08 to Project 3197 in FY09. Continue development of Deep Water Active Detection System (DWADS), Reliable Acoustic Path (RAP) Line Array system, Shallow Water Array Processing (SWAP) system, and Deployable Autonomous Distributed System (DADS) to include development, integration, prototyping, land based and at-sea testing of Advanced Development Models (ADMs) and conduct of Military Utility Assessments (MUAs). Development of Distributed netted Sensors Control and Communications capabilities will be included in DWADS and RAP efforts. Continue studies, analysis and assessments of potential transformational ASW technologies. Initiate planning for development of new technologies resulting from aforementioned studies.

C. OTHER PROGRAM FUNDING SUMMARY:

Not applicable.

D. ACQUISITION STRATEGY:

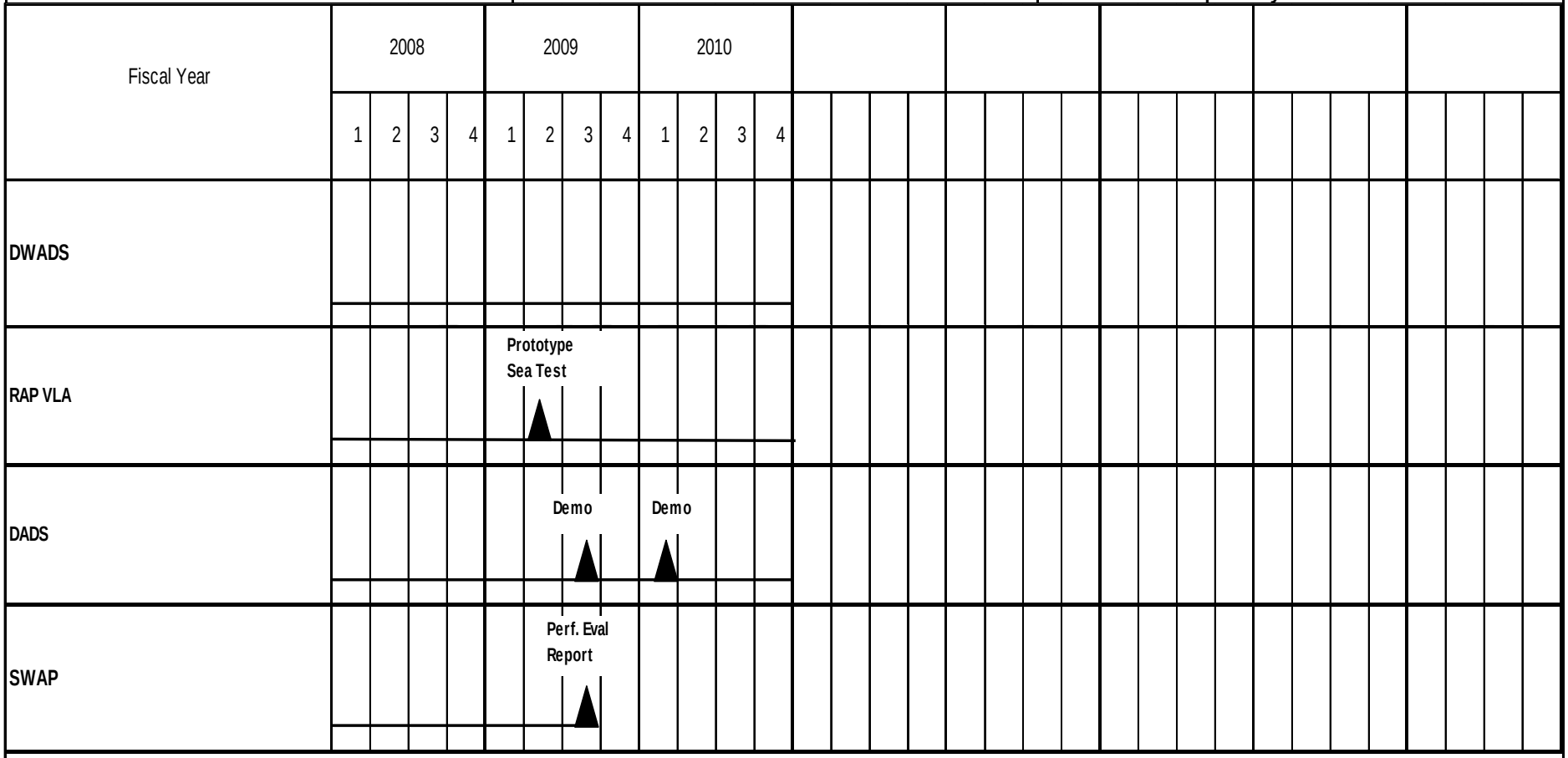
Use competitively awarded contracts from Broad Agency Announcement (BAA) solicitations.

E. MAJOR PERFORMERS:

- Naval Undersea Warfare Center (NUWC), Newport, RI
- John Hopkins University/Applied Physics Lab (JHU/APL), Laurel, MD
- University of Texas/Applied Research Laboratory (UT/ARL), Austin, TX
- Lockheed Martin, Manassas, VA
- Lockheed Martin, San Diego, CA

CLASSIFICATION:		UNCLASSIFIED										
EXHIBIT R-3, RDT&E PROJECT COST ANALYSIS									DATE May 2009			
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**		PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**					PROJECT NUMBER AND NAME **3197/Undersea Superiority**					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY Cost ($000)			FY 2009 Cost ($000)	FY 2009 Award Date	FY 2010 Cost ($000)	FY 2010 Award Date		Total Cost ($000)	Target Value of Contract
Product Development	WR	ONR, VA	0.000			2.000	NOV-08	2.100	NOV-09			
Product Development	WR	NUWC/Newport, RI	0.000			1.220	OCT-08	1.250	OCT-09			
Product Development	WR	Marine Acoustics Inc., NC	0.000			1.200	DEC-08	1.500	DEC-09			
Product Development	MIPR	U.S. AFB/MIT Lincoln Labs, MA	0.000			1.100	NOV-08	1.200	NOV-09			
Product Development	C/CPFF	JHU/APL, MD	0.000			5.400	DEC-08	5.500	DEC-09			
Product Development	C/CPFF	Lockheed Martin, VA	0.000			7.743	DEC-08	7.444	DEC-09			
Product Development	C/CPFF	SEDNA, VA	0.000			0.650	DEC-08	0.600	DEC-09			
Product Development	C/CPFF	SAIC, VA	0.000			0.720	DEC-08	0.700	DEC-09			
Subtotal Product Development			**0.000**			**20.033**		**20.294**				
Remarks:												
Test and Evaluation	WR	SPAWAR, San Diego, CA	0.000			0.800	OCT-08	0.825	OCT-09			
Test and Evaluation	WR	NUWC/Newport, RI	0.000			3.050	OCT-08	3.100	OCT-09			
Test and Evaluation	C/CPFF	JHU/APL, MD	0.000			2.600	DEC-08	2.500	DEC-09			
Test and Evaluation	C/CPFF	UT/ARL, TX	0.000			6.600	DEC-08	6.635	DEC-09			
Test and Evaluation	MIPR	U.S. AFB/MIT Lincoln Labs, MA	0.000			0.125	DEC-08	0.150	DEC-09			
Test and Evaluation	WR	Various, Various	0.000			3.200	DEC-08	3.300	DEC-09			
Subtotal Test and Evaluation			**0.000**			**16.375**		**16.510**				
Remarks: Note: "Various" is used in instances where multiple small (less than $1M) contracts are being utilized.												
Program Management Support	C/CPAF	BAE SYSTEMS, MD	0.000			0.400	DEC-08	0.400	DEC-09			
Travel	WR	NAVSEA PEO IWS 5, DC	0.000			0.010	OCT-08	0.010	OCT-09			
Subtotal Management Services			**0.000**			**0.410**		**0.410**				
Remarks:												
Total Cost			**0.000**			**36.818**		**37.214**				

CLASSIFICATION:	UNCLASSIFIED	
EXHIBIT R-4, SCHEDULE PROFILE		DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**	PROJECT NUMBER AND NAME **3197/Undersea Superiority**



Note: Previous to FY 09 this effort was funded via Project 2033.

CLASSIFICATION:	UNCLASSIFIED						
EXHIBIT R-4a, SCHEDULE DETAIL					DATE May 2009		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME			PROJECT NUMBER AND NAME			
RDTEN/BA 4	**0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**			**3197/Undersea Superiority**			
Schedule Profile	FY 2008	FY 2009	FY 2010				
Reliable Acoustic Path Vertical Line Array (RAP VLA):							
Prototype Sea Test		1Q					
ADM Sea Test							
Military Utility Assessment (MUA)							
Deployable Autonomous Distributed System (DADS):							
Technology Demonstration		3Q	1Q				
Shallow Water Array Processing (SWAP):							
Performance Evaluation Report		3Q					

CLASSIFICATION:	UNCLASSIFIED						
EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION					DATE May 2009		
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**				PROJECT NUMBER AND NAME **3220/SBSD Advanced Submarine System**		
COST (In Millions)	FY 2008	FY 2009	FY 2010				
Project Cost	0.000	0.000	387.517				
RDT&E Articles Qty	0	0	0				

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The funding in this project will support the following key activities that are imperative for a successful ship acquisition needed for replacing the OHIO Class SSBN.
Those activities are:

1. Design and development of a missile compartment, its launch complex and strategic support systems to meet US strategic requirements and on a schedule that meets the President's direction (NOV 06) to support the United Kingdom (UK) in the replacement of its strategic deterrent, the VANGUARD Class SSBN.
2. Concept and System Definition for other portions of the ship (other than missile compartment) in order to maintain US synchronization with the missile compartment design efforts, which will provide a balanced and integrated US submarine design within US schedule requirements.
3. Development of advanced submarine platform technologies providing capabilities needed to preserve platform operational effectiveness and minimize the life cycle cost over its service life.

Activities planned for FY10 include the design of a missile compartment meeting both Navy's requirements, maturing enabling technologies; and development of a new launcher system providing adaptability and flexibility throughout the ship's life. Ship development efforts include important pre-construction activities such as studies of ship requirements, investigation of technology options, improvement and validation of performance prediction tools, and improvement of design tools. Platform technology development will address technologies that must be mature at or near the start of ship design. For certain technologies, such as the propulsor and electric actuation, development must begin in FY10 in order to attain the high level of maturity shown through experience to be essential for controlling cost and schedule risk throughout ship design and construction.

CLASSIFICATION:	UNCLASSIFIED	
EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION		DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**	PROJECT NUMBER AND NAME **3220/SBSD Advanced Submarine System Development**

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2008	FY 2009	FY 2010
Accomplishments/Effort/Subtotal Cost	0.000	0.000	387.517
RDT&E Articles Quantity	0	0	0

SBSD Prototyping and Concept and System Definition

Planned FY10 Accomplishments include the following: Conduct trade studies, initiate concept and system definition efforts, and initiate technology demonstrations in the areas of propulsors, hull and platform technologies, electric actuation, and ship control. For missile compartment and strategic weapon system, begin design of the missile compartment along with development of an adaptable launch complex along with scale model and full scale prototyping as appropriate.

C. OTHER PROGRAM FUNDING SUMMARY:

Not applicable.

D. ACQUISITION STRATEGY:

The OHIO Class replacement will use a variety of acquisition strategies. The missile compartment must be designed and developed earlier than other parts of the ship in order to support the expressed intent of the President to support the UK in development of its own Successor SSBN program. It also preserves the potential for a common US-UK missile compartment, which would maximize the benefit of the ongoing US-UK partnership in strategic deterrence. Concept and System Definition efforts will be performed primarily by the US submarine shipyards. R&D efforts will be performed by Navy laboratories, shipyards, private industry, and University Affiliated Research Centers, as appropriate.

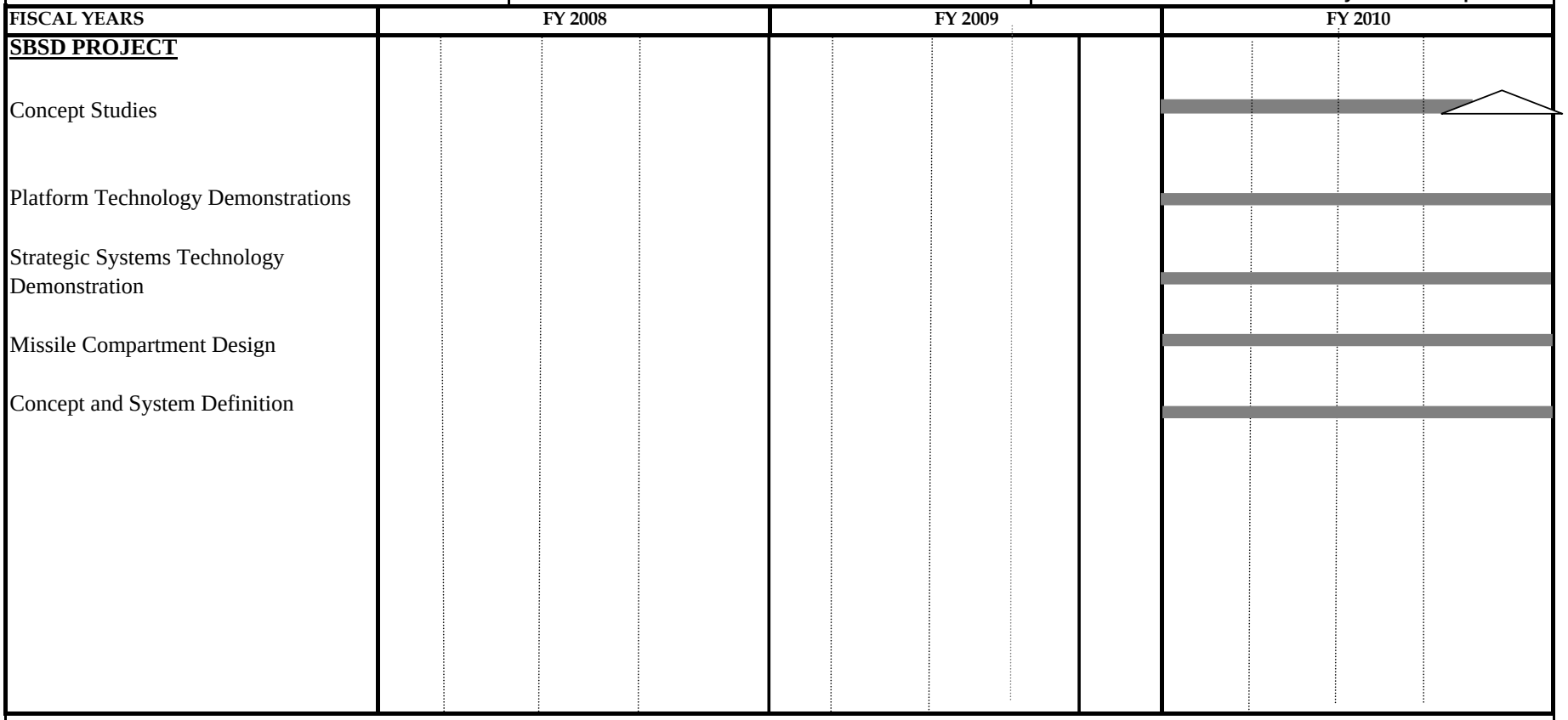
E. MAJOR PERFORMERS:

General Dynamics, Electric Boat Corp., Groton CT
Northrop Grumman Newport News Shipbuilding, Newport News VA
ARL Penn State, State College PA
Naval Surface Warfare Center, Carderock MD
Naval Undersea Warfare Center, Newport RI
Northrop Grumman Marine Systems, Sunnyvale, CA
Lockheed Martin Missiles and Space, Bethesda, MD
Draper Laboratories, Cambridge, MA

CLASSIFICATION:		UNCLASSIFIED										
EXHIBIT R-3, RDT&E PROJECT COST ANALYSIS									DATE May 2009			
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**		PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**				PROJECT NUMBER AND NAME **3220/SBSD Advanced Submarine System Development**						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY Cost ($000)			FY 2009 Cost ($000)	FY 2009 Award Date	FY 2010 Cost ($000)	FY 2010 Award Date		Total Cost ($000)	Target Value of Contract
Contractor Test and Evaluation Support	VAR	Various	0.000			0.000		1.000	VAR			
Government Test and Evaluation Support	WR	Various	0.000			0.000		1.000	VAR			
Travel	WR	NAVSEA HQ	0.000			0.000		0.100	OCT-09			
Subtotal Test and Evaluation			**0.000**			**0.000**		**2.100**				
Remarks: Note: Various is used for multiple activities with different award dates.												
Contractor Management Support	VAR	Various	0.000			0.000		8.000	VAR			
Government Management Support	WR	Various	0.000			0.000		10.000	VAR			
Travel	WR	NAVSEA HQ	0.000			0.000		0.200	OCT-09			
Subtotal Management Services			**0.000**			**0.000**		**18.200**				
Remarks: Note: Various is used for multiple activities with different award dates.												
Product Development	SS/CPIF	Ship Design Contractor	0.000			0.000		30.000	JAN-10			
Product Development	WR	NSWC Carderock MD	0.000			0.000		25.000	VAR			
Product Development	SS/CPFF	ARL PSU, State College PA	0.000			0.000		2.000	VAR			
Product Development	SS/CPIF	EB, Groton CT	0.000			0.000		32.500	VAR			
Product Development	SS/CPIF	NGSB, Newport News VA	0.000			0.000		26.700	VAR			
Product Development	SS/CPIF	NGMS, Sunnyvale CA	0.000			0.000		55.000	VAR			
Product Development	WR	NUWC Newport, RI	0.000			0.000		4.000	VAR			
Product Development	TBD	Missile Comp Design Contractor	0.000			0.000		130.000	JAN-10			
Product Development	WR	JHU-APL, Laurel MD	0.000			0.000		4.500	VAR			
Product Development	SS/CPIF	Missile Launch Sys Contractor	0.000			0.000		35.000	VAR			
Product Development	SS/CPIF	Draper Labs, Cambridge MA	0.000			0.000		5.000	VAR			
Product Development	SS/CPIF	Lockheed Martin Missiles and Space, Bethesda MD	0.000			0.000		15.000	VAR			
Product Development	VAR	Various	0.000			0.000		2.517	VAR			
Subtotal Product Development			**0.000**			**0.000**		**367.217**				
Remarks:												

CLASSIFICATION:	UNCLASSIFIED										
EXHIBIT R-3, RDT&E PROJECT COST ANALYSIS								DATE May 2009			
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**		PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**				PROJECT NUMBER AND NAME **3220/SBSD Advanced Submarine System Development**					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY Cost ($000)			FY 2009 Cost ($000)	FY 2009 Award Date	FY 2010 Cost ($000)	FY 2010 Award Date		Total Cost ($000)	Target Value of Contract
Note: Various is used for multiple activities with different award dates.												
Subtotal Support Costs			**0.000**			**0.000**		**0.000**				
Remarks:												
Total Cost			**0.000**			**0.000**		**387.517**				

CLASSIFICATION:	UNCLASSIFIED	
EXHIBIT R-4, SCHEDULE PROFILE		DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**	PROJECT NUMBER AND NAME **3220/SBSD Advanced Submarine System Development**



CLASSIFICATION:	UNCLASSIFIED						
EXHIBIT R-4a, SCHEDULE DETAIL					DATE May 2009		
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**			PROJECT NUMBER AND NAME **3220/SBSD Advanced Submarine System Development**			
Schedule Profile	FY 2008	FY 2009	FY 2010				
Concept Studies			1Q-4Q				
Platform Technology Demonstrations			1Q-4Q				
Strategic Systems Technology Demonstrations			1Q-4Q				
Missile Compartment Design			1Q-4Q				
Concept and System Definition			1Q-4Q				

CLASSIFICATION:	UNCLASSIFIED		
EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION			DATE May 2009
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDTEN/BA 4	**0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**	**9999/Congressional Add**	

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2008	FY 2009	FY 2010
0223A/Fiber Optic Conformal Acoustic Velocity Sensor (FOCAVES)	0.000	1.995	0.000
RDT&E Articles Quantity	0	0	0

Funds will be used to accelerate development of Fiber Optic Conformal Acoustic Velocity Sensor (FOCAVES) technology for the next generation SSN (Virginia Block IV) and the follow-on Strategic Based Sea Deterrent (next generation Ballistic Missile Submarine).

	FY 2008	FY 2009	FY 2010
9987N/Large Displacement UUV at Sea Launch & Recovery	3.000	0.000	0.000
RDT&E Articles Quantity	0	0	0

Funding will be used to define, document and provide interfaces, modular support equipment, and launch & recovery documentation for rapid affordable integration of Large Displacement UUVs and undersea payloads into SSGN Large Tubes. Land based facilities and in-water tests will be executed to demonstrate modular integration techniques and procedures. Payload interfaces and modular integration approach will maximize compatibility for potential use on other submarine classes.

	FY 2008	FY 2009	FY 2010
9B70A/Acoustic Materials for Integral Bow Conformal Array	0.972	0.000	0.000
RDT&E Articles Quantity	0	0	0

This funding will support research and development into the design and configuration of acoustic materials to support Integrated Bow Conformal Array concepts.

	FY 2008	FY 2009	FY 2010
9B71A/CISRT Enabling Materials Technology	2.314	0.000	0.000
RDT&E Articles Quantity	0	0	0

Funds will be used to develop the practical closure system utilizing shape memory or piezoelectric materials to secure payloads from salt water and sea pressure, which would be a significant technology enabler that would allow a wide variety of unmanned off board systems to be deployed. This effort includes systems engineering/analysis, test fixture development, design/development of subscale test items and evaluation testing.

	FY 2008	FY 2009	FY 2010
9B72A/Controllable Shock Absorber for Advanced Submarines	1.749	0.000	0.000
RDT&E Articles Quantity	0	0	0

This funding will be used to perform research and development associated with a controllable shock mitigation device for future submarine designs. This effort includes analysis, testing and evaluation of candidate concepts.

	FY 2008	FY 2009	FY 2010
9B73A/Low Cost Laser Module Assembly for High Frequency Fiber Optics	0.965	1.596	0.000
RDT&E Articles Quantity	0	0	0

Funds will be used to develop and evaluate promising laser interrogation technologies for a common towed array fiber optic receiver that is lower cost, more insensitive to

vibration, and more reliable than in current underwater fiber optic acoustic sensor systems. Service needs lower cost, more insensitive to vibration, and more reliable laser solutions for fiber optic towed array receivers.

	FY 2008	FY 2009	FY 2010
9B74A/Navy Submarine Hydraulic Oil Recycling and Waste Reduction	0.968	0.000	0.000
RDT&E Articles Quantity	0	0	0

This funding will support continuation of a Small Business Innovation Research (SBIR) project (N03-073) to develop an innovative high performance and high efficiency membrane hydraulic & lube oil filter. Plus-Up resources will fund a Phase II Base and Phase II Option Research and Development (R&D) effort.

	FY 2008	FY 2009	FY 2010
9B75A/Submarine Artificial-Intelligence (AI) Based Combat System Kernal	2.314	0.000	0.000
RDT&E Articles Quantity	0	0	0

Funds will be used to refine both the Process and Implementation aspects of the AI-based Mission-Focused Command Decision Support Module (MFCDSM) as an important component of the Combat System of the Future; to demonstrate several specific spirals; and to facilitate transitioning a basic capability to the fleet.

	FY 2008	FY 2009	FY 2010
9B76A/Twinline Thinline Submarine Towed Array	3.085	0.000	0.000
RDT&E Articles Quantity	0	0	0

Funds will be used to continue the development of a submarine twinline thinline towed array capability to support Navy plans for an in-water demonstration in FY09. Service needs a twinline thinline towed array capability to provide a cost effective means to achieve significant improvements in Submarine ASW detection, fire control and self defense capabilities. The Add will be used to complete the design of the TLTL TA systems and initiate long lead procurements for material items.

	FY 2008	FY 2009	FY 2010
9B77A/Undersea Launched Missile Studies (ULMS)	4.862	3.190	0.000
RDT&E Articles Quantity	0	0	0

This funding will used to conduct concept studies for a follow-on platform to the OHIO Class submarine and to perform analyses and trade studies to identify necessary R&D to begin in FY 09 and beyond.

	FY 2008	FY 2009	FY 2010
9D33A/Acoustic Research Detachment Large Scale Vehicle	0.000	0.479	0.000
RDT&E Articles Quantity	0	0	0

This funding facilitates the installation of a new fiber optic cable to provide for remote data collection and recording, remote vehicle command and control, and reduced deployment costs.

	FY 2008	FY 2009	FY 2010
9D34A/Submarine Fatline Vector Sensor Towed Array (VSTA)	0.000	0.798	0.000
RDT&E Articles Quantity	0	0	0

CLASSIFICATION:	UNCLASSIFIED	
EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION (CONTINUATION)		DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	PROGRAM ELEMENT NUMBER AND NAME **0603561N/ADVANCED SUBMARINE SYSTEM DEVELOPMENT**	PROJECT NUMBER AND NAME **9999/Congressional Add**

Funds will be used to support the Navy's Sea Power 21 Anti-Submarine Warfare (ASW) mission objectives via the development and demonstration of a VSTA which will provide improved gain and better Target Motion Analysis (TMA). Improvements will include steering in the direction of interfering sources, and instantaneously resolving right-left ambiguity of a single line array without the need for ship maneuvering.

	FY 2008	FY 2009	FY 2010
9D35A/Submarine Littoral Defense System	0.000	1.596	0.000
RDT&E Articles Quantity	0	0	0

This funding will be used to conduct as much of the San Clemente Island test objectives as possible in the following priority: Translation Testing, End-to-End System Demonstration, and Surface Target testing using AIM-9X Block II will Lock-On After Launch (LOAL) functionality.