CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2006**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**					R-1 ITEM NOMENCLATURE Advanced Submarine System Development/0603561N			
COST ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost		**89.790**	**159.531**	**140.432**	**158.361**	**164.053**	**164.759**	**144.597**
Adv. Sub. Systems Development/2033		**41.641**	**79.208**	**85.354**	**98.456**	**117.308**	**116.258**	**92.807**
Adv. Sub. Combat Sys. Dev/0223		**43.587**	**61.223**	**55.078**	**59.905**	**46.745**	**48.501**	**51.790**
Fiber Optic Multi-Line Towed Array/9189		**1.560**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
MK 48 ADCAP Torpedo Improve/9039		**2.032**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Speciality Optical Fiber w/ Embedded Sensors/9526		**0.970**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Issue 9999 - Congressional Adds		**0.000**	**19.100**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

Defense Emergency Response Funds (DERF) Funds: N/A

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

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 Future Naval Capabilities (FNC's).

Project Unit 2033: The Advanced Submarine Research and Development (R&D) Program is a non-ACAT program that transitions Hull, Mechanical, and Electrical (HM&E) technologies from Science and Technology (S&T) to platforms, develops 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 VIRGINIA Class technology insertion, future submarine concepts, and core technologies. Focus is on the four SEA POWER 21 warfighting pillars, SEA BASE, SEA SHIELD, FORCENET, and SEA STRIKE. Focus is also on SEA TRIAL. SEA TRIALS emphasize warfighting capabilities in the areas of Anti-Submarine Warfare, Mine Countermeasures, Strike Warfare, and Counter Weapons of Mass Destruction. Payloads and Sensors demonstrations and SEA TRIALS conducted in a joint warfighting context with other services, i.e. the U.S. Marines, U.S. Army, and the U.S. Air Force, enable early assessment of warfighting capabilities contributing to better technology selection decisions for potential spiral development. This program also supports Information Exchange Programs with the United Kingdom and Canada.

Congress included the following changes to the FY05 President's Budget in the FY05 Defense Appropriation Act: +$5.000M for Payloads and Sensors, +$1.400M for Advanced Composite Structure Programs, +$2.100M for MK-48 ADCAP torpedo improvement program, +$1.600M for Fiber Optic TB-16 Towed Array, +$1.000M for Improved Tactical Control in submarine Systems, +$2.000M for Special Optical Fiber with Embedded Sensors, and -$5.000M for Development and Demonstration of UUV in Submarine Operations.

Congress included the following changes to the FY06 President's Budget in the FY06 Defense Appropriations Act: -$20.000M for Undersea Superiority System, +$2.600M for Experimental Research Transformation Submersible Studies, +$3.000M for Inner and Outer Decoupler Materials for Hull Arrays, +$1.000M for SSN Navigation Enhancement Module, and +$2.500M for Submarine Tactical Monitor (SubTaM) and +$10.000M for SSGN /UUV Integration Program.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: **February 2006**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**	R-1 ITEM NOMENCLATURE Advanced Submarine System Development/0603561N

Project Unit 0223: The Advanced Submarine Combat Systems Development non-acquisition (Non-ACAT) program supports the Navy Submarine Acoustic Superiority and Technology Insertion Initiatives by the application of advanced development and testing of sonar and combat control systems improvements. This program element transitions technologies developed by Navy technology bases, the private sector, Office of Naval Research (ONR), Future Naval Capabilities and the Defense Advanced Research Projects Agency. The program addresses technology challenges to improve tactical control in littoral and open ocean environments for a variety of operational missions including peacetime engagement, surveillance, battlespace 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) and Advanced Processing Build-Tactical (APB-T) tactical control and Advanced Hull Arrays. APB's develop and demonstrate improvements to current and future sonar/combat control systems. Program is funded under demonstration and validation because it develops and integrates hardware for experimental test related to specific platform applications.

Project Unit 9039 is congressional add to develop MK48 ADCAP torpedo improvements.

Project Unit 9189 is congressional add to develop Fiber Optic Mulit-Line Towed Array.

Project Unit 9526 is congressional add to develop Specialty Optical Fiber with Embedded Sensors improvements.

Project Unit 9999 is comprised of FY06 congressional adds for Experimental Research Transformation Submersible Studies, Inner and Outer Decoupler Materials for Hull Arrays, Submarine Tactical Monitor (SubTaM), and SSN Navigation Enhancement Module.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2006**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME PE0603561N Advanced Submarine System Development				PROJECT NUMBER AND NAME 2033/Advanced Submarine Systems Development			
COST ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
2033/Adv. Sub. Systems Development		**41.641**	**79.208**	**85.354**	**98.456**	**117.308**	**116.258**	**92.807**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This program 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 Future Naval Capabilities (FNC's).

Project Unit 2033: The Advanced Submarine Research and Development (R&D) Program is a non-ACAT program that transitions Hull, Mechanical, and Electrical (HM&E) technologies from Science and Technology (S&T) to platforms, develops 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 VIRGINIA Class technology insertion, future submarine concepts, and core technologies. Focus is on the four SEA POWER 21 warfighting pillars, SEA BASE, SEA SHIELD, FORCENET, and SEA STRIKE. Focus is also on SEA TRIAL. SEA TRIALS emphasize warfighting capabilities in the areas of Anti-Submarine Warfare, Mine Countermeasures, Strike Warfare, and Counter Weapons of Mass Destruction. Payloads and Sensors demonstrations and SEA TRIALS conducted in a joint warfighting context with other services, i.e. the U.S. Marines, U.S. Army, and the U.S. Air Force, enable early assessment of warfighting capabilities contributing to better technology selection decisions for potential spiral development. This program also supports Information Exchange Programs with the United Kingdom and Canada.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2006**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine System Development	2033/Advanced Submarine Systems Development

B. Accomplishments/Planned Program

		FY 05	FY06	FY07
Payloads and Sensors/Subtotal Cost		17.800	23.421	17.416
RDT&E Articles Quantity				

Develop promising technologies and/or concepts capable of revolutionizing submarine design, improving payload flexibility, 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 universal encapsulation methods from undersea platforms. Conduct 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.

FY05 Accomplishments include the following: Prepared for land-based vertical launch of an encapsulated small missile. Completed SILENT HAMMER SEA TRIAL Experiment to explore how a network of forces consisting of Special Operations Forces sea based on an SSGN can fill joint gaps (ISR and Time Sensitive Strike). Joint Force Commander and staff embarked on the SSGN successfully ran complex operation with connectivity provided by a Battle Management Center. Completed Military Utility Assessment of technologies used in the SEA TRIAL. Completed contingency Energy Storage System (ESS) preliminary and final design for the Rotary Electromagnetic Launcher (REML). Completed Engineering Development Model (EDM) REML Launch Motor design and released the Launch Motor engineering drawing for bids. Completed the REML sub-scale motor power converter integration test. Constructed full-scale representative Composite Advanced Sail section and test apparatus to be used in FY06 static and fatigue strength tests, validated fatigue and flaw analytic methodology on scale components, fully characterized alternate (Vetron) material, and completed Advanced Sail shape ice breakthrough load test and analysis. Completed a report to Congress on "Submarine Technology Insertion."

FY06 Planned Accomplishments include the following: Conducted land-based vertical launch of a small missile in Nov 05. Use results of the land-based vertical launch of a small missile to develop universal launch technologies for encapsulated sea-based launch of Unmanned Aerial Vehicles or any small missile. Complete the REML ESS advanced concepts safety and performance test. REML launch motor delivered and start full-scale integration testing. Perform full-scale static and fatigue test of representative full-scale Composite Advanced Sail section and validate against analytical techniques, perform shock test of foam filler material. Perform impact test to determine residual strength of composite structural components. Update report to Congress on "Submarine Technology Insertion."

FY07 Planned Accomplishments include the following: Prepare for underwater launch of an encapsulated small missile or UAV from an universal capsule. Complete REML full-scale integration test and conduct full-scale concept demonstration test. Develop final design guidance for designing non-pressure hull structural components from composite materials. Update report to Congress on "Submarine Technology Insertion."

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2006**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine System Development	2033/Advanced Submarine Systems Development

B. Accomplishments/Planned Program

		FY 05	FY06	FY07
Stealth/Subtotal Cost		13.361	16.504	11.308
RDT&E Articles Quantity				

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. Operate the Large Scale Vehicles (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.

FY05 Accomplishments include the following:
Conducted six Large Scale Vehicle (LSV2) underway operations for characterization. Conducted forward-scatter measurements with Directional Frequency Analysis & Recording (DIFAR) sensors for ONR and PSU-ARL projects, utilizing the Intermediate Scale Measurement System (ISMS) Range and PIKE submarine model. Utilized the ISMS transmit array to provide acoustic tones for underway operational and calibration tests during 2 TB-16 towed array tests. Completed level one and initiated level two qualification testing of Conformal Acoustic Velocity Sonar (CAVES) outer decoupler material.

FY06 Planned Accomplishments include the following: Continue Large Scale Vehicle operations and maintain LSV and ISMS test ranges. Complete level two qualification testing of CAVES outer decoupler material. Initiate development of CAVES inner decoupler material. Design a scale model of a naval vessel for use in alternating current electromagnetic signature (AC EM) mitigation development. Conduct acoustic imaging analysis of SSN-23 external flow noise. Develop interface requirements for tactical decision aid for mine susceptibility.

FY07 Planned Accomplishments include the following: Continue Large Scale Vehicle operations and maintain LSV and ISMS test ranges. Fabricate the scale model naval vessel for AC EM signature testing. Initiate testing of an electromagnetic tactical decision aid design interface. Complete CAVES outer decoupler level three and inner decoupler level one qualification. Conduct acoustic imaging analysis of SSBN flow noise.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2006**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine System Development	2033/Advanced Submarine Systems Development

B. Accomplishments/Planned Program (Cont.)

		FY 05	FY06	FY07
Total Ownership/Affordability/Subtotal Cost		0.353	1.708	1.323
RDT&E Articles Quantity				

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

FY05 Accomplishments: Completed Business Case Analysis for implementing Electric Actuation Systems (EAS) on submarines. Procured EAS Engineering Development Model (EDM) for test purposes.

FY06 Planned Accomplishments: Complete qualification & integration testing of the EAS EDM. Procure a second design EAS EDM and complete qualification & integration testing. Design and fabricate external damping treatments for the free-flood area. Perform free-flood acoustic test on damping material.

FY07 Planned Accomplishments: Conduct free-flood area damping material pop up test.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2006**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine System Development	2033/Advanced Submarine Systems Development

B. Accomplishments/Planned Program (Cont.)

		FY 05	FY06	FY07
Advanced Propulsion/Ship Concept Development/Subtotal Costs		10.127	37.575	55.307
RDT&E Articles Quantity				

Overcome selected technological barriers that are expected to have significant impact on submarine hull, maintenance and electrical (HM&E) systems to enable design options for a submarine with VIRGINIA Class capability in five technical areas: Shaftless Propulsion, External Weapon Stow and Launch, Hull Adaptable Sonar Array, Radical Ship (HM&E) Infrastructure Reduction and Reduced Crew/Automated Attack Center. Develop and demonstrate promising and innovative maneuvering-related concepts and methods to improve maneuvering performance in the littoral and ability to deliver payloads. Develop submarine alternative propulsion and stern configurations with potential to significantly reduce submarine acquisition cost. Demonstrate maneuvering, stealth, and other 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. Advances making submarines more affordable can be leveraged from FY05/06 tasks, which evaluate cost reduction ideas with ship impact assessments. 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.

FY05 Accomplishments include the following: Completed source selection and awarded contracts for Phase 1 of TANGO BRAVO efforts in the thrusts of Shaftless Propulsion, External Weapons Store and Launch, and Radical Ship Infrastructure Reduction. Efforts in these areas commenced in FY05 and Phase 1 will conclude in FY06.

FY06/07 Planned Accomplishments include the following: Conceptual design, analysis and component-level or small-scale demonstrations of TANGO BRAVO technologies. Conduct independent studies to inform NAVY on the costs, benefits, and risks associated with sustaining nuclear submarine design capabilities. Identify submarine construction drivers and improved submarine cost models. Develop improved definition of technologies and approaches for cost reduction in current and future nuclear submarines.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2006**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine System Development	2033/Advanced Submarine Systems Development

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2005	FY 2006	FY2007
FY06 President's Controls	39.058	100.728	147.742
FY07 OSD Controls	41.641	79.208	85.354
Total Adjustments	2.583	-21.520	-62.388
Summary of Adjustments			
Distribute Undersea superiority system add			-56.000
Small Business Innovative Research	-0.387		
Department of Energy Transfer	-0.030		
BTR for Undersea Dominance	3.000		
Distribute Undersea superiority system add			
Contract Support Reduction			-6.425
NWCF Civpers Efficiencies			-0.383
N7 Respread of Contractor			-0.110
Inflation			0.407
Civpers Pay Raise Rate			0.123
Sec. 8026(f): Federally Funding		-0.008	
Sec. 8125: Revised Economic		-0.459	
Congressional Reduction to undersea superiority system		-20.000	
Congressional Action 1% Reduction		-1.053	
Subtotal	2.583	-21.520	-62.388

Schedule: not applicable.

Technical: not applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2006**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine System Developmen	2033/Advanced Submarine Systems Development

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Complete	Total Cost
Not applicable.									

E. ACQUISITION STRATEGY:

Award follow-on sole source conform studies contracts to Electric Boat (EB) and Northrup Grumman Newport News (NGNN).

F. MAJOR PERFORMERS:

Newport News Shipbuild, Newport News, Va R&D Support	12/04	10/05	11/06
Electric Boat Corp., Groton, CT. R&D support	12/04	10/05	11/06
Naval Surf Warfare Ctr, Carderock, MD. R&D support	10/04	10/05	10/06
Naval Undersea Warfare Ctr, Newport, R.I. R&D support	10/04	10/05	10/06
Raytheon, Portsmouth, RI		12/05	12/06

CLASSIFICATION:

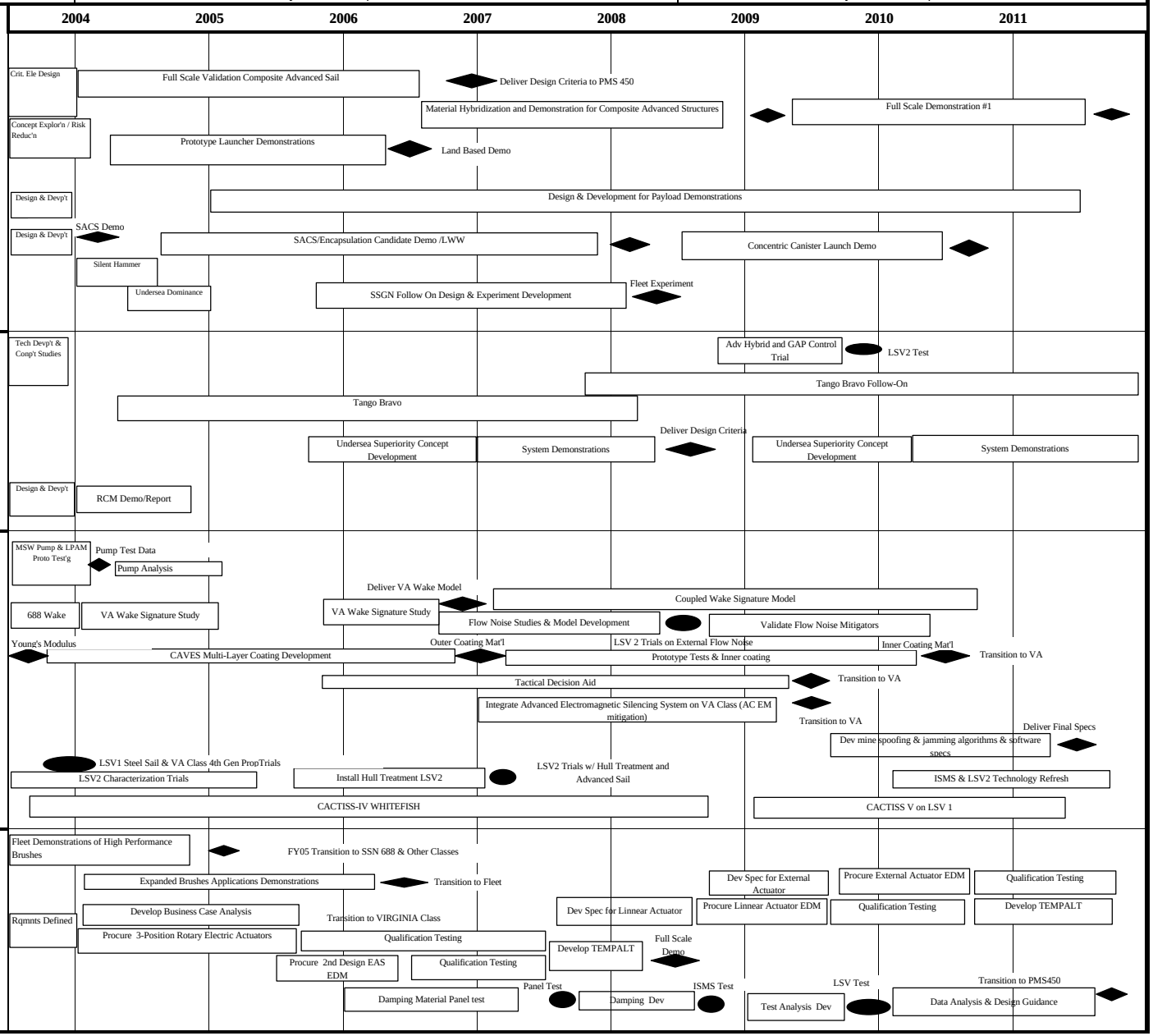
Exhibit R-3 Cost Analysis (page 1)								DATE:						
								February 2006						
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT				PROJECT NAME AND NUMBER								
RDT&E, N/BA-4		PE0603561N Advanced Submarine System Developmen				2033/Advanced Submarine Systems Development								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY05 Cost	FY 05 Award Date	FY06 Cost	FY 06 Award Date	FY07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Targ Value of Contract
Product Development	S/CPFF	EB Groton, CT	0.000			2.940	Various					0.000	2.940	
Product Development	S/CPFF	NNS Newport News, VA	24.821			0.401	Various	0.070	10/05			0.000	25.292	44.671
Product Development	S/CPFF	NNS Newport News, VA	0.000					0.235	04/06	1.905	12/06	TBD	TBD	TBD
Product Development	S/CPFF	EB Groton, CT	80.515			0.872	Various	0.348	10/05			0.000	81.735	83.560
Product Development	S/CPFF	EB Groton, CT	0.000					21.969	04/06	34.441	12/06	TBD	TBD	TBD
Product Development	S/CPFF	Raytheon	0.000					4.559	02/06	4.285	12/06	TBD	TBD	
Product Development	WR	NSWC Bethesda, MD	252.079			14.697	Various	18.389	Various	11.911	10/06	CONT.	CONT.	
Product Development	S/CPFF	ARL/PSU, State College,PA	36.415			0.418	Various	0.406	02/06	0.435	12/06	CONT.	CONT.	
Product Development	S/CPFF	Noesis	5.448			0.234	Various					0.000	5.682	5.682
Product Development	Various	Various	178.249			3.624	Various	11.023	Various	6.015	Various	CONT.	CONT.	
Product Development	WX	NUWC Newport	1.115			1.956	Various	1.148	Various	0.915	10/06	CONT.	CONT.	
Product Development	RX	NUWC Newport	0.000			9.350	Various	10.750	Various	14.750	12/06	CONT.	CONT.	
Subtotal Product Development			578.642			34.492		68.897		74.657				
Remarks:														
Development Support Equipment													0.000	
Software Development													0.000	
Training Development													0.000	
Integrated Logistics Support													0.000	
Configuration Management													0.000	
Technical Data													0.000	
GFE													0.000	
Subtotal Support						0.000		0.000		0.000		0.000	0.000	
Remarks:														

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE:		**February 2006**				
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT				PROJECT NAME AND NUMBER								
RDT&E, N/BA-4		PE0603561N Advanced Submarine System Developmen				2033/Advanced Submarine Systems Development								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY05 Cost	FY05 Award Date	FY06 Cost	FY06 Award Date	FY07 Cost	FY07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & E	S/CPFF	Raytheon	12.560			1.224	Various					0.000	13.784	
Developmental Test & E	S/CPFF	Raytheon	0.000			0.931	06/05	4.000	02/06	5.000	12/06	TBD	TBD	
Developmental Test & E	S/CPFF	Lockheed Martin	5.500			1.094	Various					0.000	6.594	
Developmental Test & E	Various	Various	3.477			0.140	Various	2.909	Various	2.047	Various	CONT.	CONT.	
Developmental Test & E	S/CPFF	MIT Lincoln Lab	0.600			0.171	Various					0.000	0.771	
Developmental Test & E	WX	NUWC Newport	0.650					0.237	Various	0.433	10/06	CONT.	CONT.	
Developmental Test & E	S/CPFF	JHU/APL	0.459			0.065	02/05					0.000	0.524	
Subtotal T&E			23.246			3.625		7.146		7.480				
Remarks:														
Contractor Engineering Su	CPFF	Various	4.593			1.899	11/04	1.849	11/05	1.891	11/06		CONT.	
Government Engineering S	WR	Various	2.698			1.575	10/04	1.256	10/05	1.266	10/06		CONT.	
Travel			0.282			0.050	10/04	0.060	10/05	0.060	10/06		CONT.	
Subtotal Management			7.573			3.524		3.165		3.217				
Remarks:														
Total Cost			609.461	0.000		41.641		79.208		85.354				

CLASSIFICATION:

EXHIBIT R4, Schedule Profile		DATE: **February 2006**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME PE0603561N Advanced Submarine System Development	PROJECT NUMBER AND NAME 2033/Advanced Submarine Systems Development



Legend ◆ Milestone/Major Event ● Trials

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2006**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT PE0603561N Advanced Submarine System Development				PROJECT NUMBER AND NAME 2033/Advanced Submarine Systems Development			
Schedule Profile		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Payloads & Sensors								
Fabricate and demo full scale composite Adv. Sail prototype		1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q					
Complete Comp. Adv. Sail development, transition to VA class				1Q				
Comp.Adv. Structures complete design criteria/req. doc./testing				1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q		
Full Scale Demo of Composite Structures						3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q
Rotary Electromagnetic Launcher Land Based Demo			4Q	1Q				
SILENT HAMMER SEA TRIAL		1Q						
UNDERSEA DOMINANCE 04 SEA TRIAL		1Q						
SACS Demonstrations		1Q						
Advanced Payload Demonstrations Design & Development		1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q
Encapsulation Demonstrations				4Q		4Q		
SSGN Follow On Fleet Experiment					1Q,2Q,3Q,4Q			
Advanced Propulsion/Ship Concept Development								
Improved Advanced Hybrid & Gap Control LSV II Trial							1Q, 2Q	
Joint Navy/DARPA Tango Bravo		1Q, 2Q, 3Q, 4Q	1Q, 2Q, 3Q, 4Q	1Q, 2Q, 3Q, 4Q	1Q, 2Q, 3Q, 4Q			
Tango Bravo Follow-On					1Q, 2Q, 3Q, 4Q	1Q, 2Q, 3Q, 4Q	1Q, 2Q, 3Q, 4Q	1Q, 2Q, 3Q, 4Q
Undersea Superiority			1Q, 2Q, 3Q, 4Q	1Q, 2Q, 3Q, 4Q	1Q, 2Q, 3Q, 4Q	1Q, 2Q, 3Q, 4Q	1Q, 2Q, 3Q, 4Q	1Q, 2Q, 3Q, 4Q

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2006**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT PE0603561N Advanced Submarine System Development				PROJECT NUMBER AND NAME 2033/Advanced Submarine Systems Development			
Schedule Profile		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Stealth								
VA Wake Signature Study			2Q, 3Q ,4Q					
Deliver VA Wake Signature Model			4Q					
Coupled Wake Signature Model Development				1Q, 2Q, 3Q, 4Q	1Q, 2Q, 3Q, 4Q	1Q, 2Q, 3Q, 4Q	1Q, 2Q, 3Q, 4Q	
LSV2 Trials on External Flow Noise					3Q, 4Q			
CAVES Multi-Layer Coating Development		1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q				
New Coating Material				2Q			3Q	
Prototype Tests for Outer Material and Dev Inner Material				3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q	
Tactical Decision Aid Interface Development & Testing			1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q		
EM Silencing Evaluate & Integrate Advanced Sys on VA Class				3Q,4Q	1Q,2Q,3Q,4Q	3Q		
LSV2 acoustic characterization trial		1Q,2Q,3Q,4Q	1Q					
LSV2 RAV install hull treatment on pressure hull and sail			2Q, 3Q, 4Q	1Q,2Q				
Complete VA advanced sail trials, LSV2				3Q,4Q				
VIRGINIA Aft Flow Noise trial, LSV2					3Q,4Q			
LSV2 Technology refresh							3Q,4Q	1Q, 2Q, 3Q
Technology refresh of Intermediate Scale Meas. System							3Q,4Q	1Q, 2Q, 3Q
Total Ownership/Affordability								
Comp. Adv. Metal Brushes transition to PMS 392			3Q					
Business Case Analysis for Electric Actuation System (EAS)		1Q,2Q,3Q,4Q	1Q					
Conduct qualification testing & evaluation of prototype EAS			1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q			1Q,2Q,3Q,4Q	1Q,2Q,3Q
Conduct full scale demonstration					4Q			4Q
Develop Free-Flood Area Damping Material			1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	2Q, 3Q			
Damping Material Panel Test					1Q			
Test on Intermediate Scale Measurement System					4Q			
Large Scale Test of Damping Material							3Q	

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2006**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603561N/Advanced Submarine System Development				PROJECT NUMBER AND NAME 0223/Submarine Combat System Improv (Adv)			
COST ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0223/Adv. Submarine Combat Sys. Improv.		**43.587**	**61.223**	**55.078**	**59.905**	**46.745**	**48.501**	**51.790**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This program supports innovative research and development in submarine 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 available.

Project Unit 0223: The Advanced Submarine Combat Systems Development non-acquisition (Non-ACAT) program supports the Navy Submarine Acoustic Superiority and Technology Insertion Initiatives by the application of advanced development and testing of sonar and combat control systems improvements. This program element transitions technologies developed by Navy technology bases, the private sector, Office of Naval Research (ONR), Future Naval Capabilities and the Defense Advanced Research Projects Agency. The program addresses technology challenges to improve tactical control in littoral and open ocean environments for a variety of operational missions including peacetime engagement, surveillance, battlespace 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), tactical control and Advanced Sonar Arrays. APB's develop and demonstrate improvements to current and future sonar/combat control systems. Advanced Sonar Arrays develops new sensors and demonstration large array configuration. Program is funded under demonstration and validation because it develops and integrates hardware for experimental test related to specific platform applications.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2006**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603561N/Advanced Submarine System Development	0223/Submarine Combat System Improv (Adv)

B. Accomplishments/Planned Program

		FY 2005	FY 2006	FY 2007
Advanced Sonar System Processing/Subtotal Cost		27.087	35.223	29.178
RDT&E Articles Quantity				

Advanced Processing Build-Acoustic (APB-A) transitioned to PMS401 for fleet introduction in FY 04. FY 05 APB(A) has continued improvements in sonar detection and classification via improved algorithms and automation for towed arrays, . Recent efforts were focused on Acoustic Contact Correlation and improved integration with Tactical Control to enhance close aboard situational awareness and a contact avoidance functionality. These enhancements will continue to be refined over the near term in concert with a special focus on expanding INtelligent Preparation of the Battlespace including HF Active close aboard capabilities, Precision Underwater Mapping functionality, improved sonar planning and environmental monitoring, as well as processing enhancements for Sphere Arrays. Efforts for FY06 and FY07 will focus on improving the acoustic contribution to ASW in the littorals. Primary improvements are planned for thin-line towed array signal processing, precision tracking and refined automation. Signal processing for the TB-29 Towed Array will be redesigned to improve noise discrimination in shallow water environments and to enhance array shape estimation techniques to improve contact holding through maneuvers. A new integrated precision tracker is being developed as well as additional automation focused on SSK detection and shallow water noise suppression .

		FY 2005	FY 2006	FY 2007
Advanced Tactical Control/Subtotal Cost		8.000	12.000	12.000
RDT&E Articles Quantity				

Advanced Processing Build-Tactical (APB-T) transitioned to PMS425 for fleet introduction in FY 04. FY 05 APB(T) focused on improving tactical employment and operational guidance for the advanced algortihms in teh Tactical Control System. Future efforts will focus on enhancing functionality through refined all source data fusion algorithms and in improving the tactical commander's ability to manage close in and high density scenarios through advanced target motion analysis, contact management, tactical scene rendering, sensor performance prediction models, search planning, uncertainty management, acoustic and non-acoustic vulnerability management, close encounter decision management, and automation. In FY 05 began advanced processing techniques in data fusion and state estimation leveraged from ONR/DARPA. FY06 will focus on improving state estimation and tactical display sharing across subsystems. FY07 will focus on integrating non-acoustic sensor data such as imaging and radar into tactical contact management algorithms. Automation will be introduced to reduce operator work load through increased surface and subsurface target recognition in tactical scene rendering plots. Automated route planning aides to improve covertness and contact management will be addressed. Command level information management and new display sharing across subsystems will also be pursued

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2006**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603561N/Advanced Submarine System Development	0223/Submarine Combat System Improv (Adv)

B. Accomplishments/Planned Program

		FY 2005	FY 2006	FY 2007
Advanced Sensors/Subtotal Cost		8.500	14.000	13.900
RDT&E Articles Quantity				

The Advanced Sensor Systems project is developing improved, larger aperture sonars and digital acoustic communications systems in order to acheive acoustic superiority over potential threat submarines. Current projects include: Low Cost Conformal Array (LCCA), a modular HF contact management sonar that could be mounted on submarine sails; Large Vertical Array (LVA), a CAVES-based MF ASW sonar that may be either stand alone, or may be combined with two other LVAs to form a Large Wide Aperture Array for VIRGINIA forward-fit; the Fiber-Optic TB-16 towed array; Twin Line Towed Array; and ACOMMs, a digital acoustic communications system for submarines and surface ships.In FY05, prepare for installation of LCCA Advanced Development Model (ADM) on an SSN 688I class submarine as a single side array; complete testing of the Fiber Optic TB-16 towed array; resume the CAVES LVA project (including refining ADM design, conducting engineering testing); and initiate MF ACOMMS transition to the fleet. In FY 06 install and test the LCCA ADM; begin development of the LCCA Engineering Development Model (EDM) and Twin Line concept studies and demonstrations; build and test an LVA mockup; and develop improved MF ACOMMS performance. In FY07, continue development of a twin line system; coordinate with PMS 401 on development of the LCCA EDM; begin fabrication of the LVA ADM; develop low heat, small footprint, high processing power electronics for LCCA and Rapid COTS Insertion; and complete MF ACOMMS surface ship development and test.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2006**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine Systems Development	0223/Advanced Submarine Systems Development/0603561N

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2005	FY 2006	FY 2007
FY 2006 President's Budget Controls	44.474	62.225	60.990
FY2007 Pesident's Budget Controls	43.587	61.223	55.078
Total Adjustments	-0.887	-1.002	-5.912
Summary of Adjustments			
PPBS Baseline-PB-06			-5.702
Contract Support Reduction			-0.738
NWCF Civpers Efficiencies			2.878
N7 Respread of Contract Support			-2.700
Small Business Innovation Rese	-0.805		
Inflation			0.271
Civpers Pay Raise Rate			0.079
Sec. 8026(f): Federally Funded		-0.068	
Sec. 8125: Revised Economic As		-0.283	
Congressional Action 1% Reduction		-0.651	
Department of Energy Transfer	-0.034		
Cancelled Accounts Liabilities	-0.048		
Subtotal	-0.887	-1.002	-5.912

Schedule: N/A

Technical: N/A

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603561N/Advanced Submarine System Development	0223/Submarine Combat System Improv (Adv)

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Complete	Total Cost

Not applicable.

E. ACQUISITION STRATEGY: * Plan to use competitively awarded contracts from Broad Agency Announcement (BAA) solicitations.

F. MAJOR PERFORMERS: **

Naval Undersea Warfare Center, Newport, R.I. R&D support. Naval Research Laboratory, Washington, DC. Naval Surface Warfare Center, Carderock, MD. R&D Support. John Hopkins University/Applied Physics Lab, Laurel, MD R&D support. Applied Research Lab., The University of Texas, Austin, TX. R&D Support. MITRE Corporation, McLean, VA R&D Support. Lincoln Lab, Cambridge, MA R&D Support. General Dynamic/Advanced Information Systems, Fairfax, VA. R&D Support. Lockheed Martin, Manassas, VA R&D Support. Raytheon, Portsmouth, RI R&D Support. (All performers support APB (A) and APB(T).

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1) | DATE: **February 2006**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N / BA-4**

PROGRAM ELEMENT: 0603561N/Advanced Submarine System Development

PROJECT NUMBER AND NAME: 0223/Submarine Combat System Improv (Adv)

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development	WR	NUWC Newport, RI	77.036			12.775	10/04	15.526	10/05	14.473	10/06	CONT.	CONT.	
Product Development	RCP	NUWC Newport, RI	1.000										1.000	
Product Development	WR	NRL/Washington	5.039			0.000	10/04	0.656	10/05	0.656	10/06	CONT.	CONT.	
Product Development	RCP	NRL/Washington	0.490										0.490	
Product Development	WR	NSWC Carderock, MD	10.511			1.665	10/05	2.705	10/05	2.000	10/06		CONT.	
Product Development	RCP	NSWC Carderock, MD	0.036							2.000	10/06		CONT.	
Product Development	WR	NSWC Dahlgren	0.258			0.080	10/04	0.080	10/05	0.080	10/06	CONT.	CONT.	
Product Development	PD	ONI, Washington	3.685			1.007	12/04	1.007	12/05	0.900	12/06	CONT.	CONT.	
Product Development	C/CPFF	Lockheed Martin, VA	19.576			1.304	12/04	3.466	12/05	3.818	12/06	CONT.	CONT.	
Product Development	C/CPFF	BAE, NH	3.402										3.402	
Product Development	RCP	NSMA	0.855			0.180	11/04	0.180	11/05	0.180	11/06	CONT.	CONT.	
Product Development	MIPR	U.S. Army/MITRE	7.740			1.185	12/04	1.800	12/05	1.800	12/06	CONT.	CONT.	
Product Development	MIPR	U.S. Air Force/MIT Lincoln Labs	6.820			1.244	12/04	1.744	12/05	1.744	12/06	CONT.	CONT.	
Product Development	RCP	ONR/MCCI	2.800										2.800	
Product Development	MIPR	METRON	2.165			1.508	12/04	1.508	12/05	1.508	12/06	CONT.	CONT.	
Product Development	C/CPFF	Progeny, VA	2.290			0.237	12/04	0.237	12/05	0.237	12/06	CONT.	CONT.	
Product Development	C/CPFF	BBN, VA	2.836										2.836	
Product Development	RCP	ONR/GTRI	2.050			0.000		0.250	12/05	0.500	12/06	CONT.	CONT.	
Product Development	SS/CPFF	APL/JHU, MD	35.451			7.839	12/04	10.339	12/05	9.839	12/06	CONT.	CONT.	
Product Development	SS/CPFF	APL/UW, WA	0.225			0.050	12/04	0.050	12/05	0.050	12/06	CONT.	CONT.	
Product Development	SS/CPFF	ARL/UT, TX	25.987			3.601	12/04	4.601	12/05	4.001	12/06	CONT.	CONT.	
Product Development	SS/CPFF	ARL/PSU, PA	1.875			0.207	12/04	0.350	12/05	0.350	12/06	CONT.	CONT.	
Product Development	MD	ARL/PSU, PA	1.050			0.000	01/05	0.150	01/06	0.150	01/06	CONT.	CONT.	
Product Development	WR	NAVAIR PAX/NSWC Indian H	0.170			0.030	10/04	0.030	10/05	0.030	10/06	CONT.	CONT.	
Product Development	WR	SPWAR, CA	0.713				10/04	0.140	10/05	0.140	10/06	CONT.	CONT.	
Product Development	PD	SPWAR, CA	1.036			0.400	10/04	0.400	10/05	0.400	10/06	CONT.	CONT.	
Product Development	C/CPFF	DSR, VA	18.204			2.149	10/04	8.504	10/05	4.448	10/06	CONT.	CONT.	
Product Development	WR	COMSUBLANT	0.395			0.178	10/04	0.100	10/05	0.100	10/06	CONT.	CONT.	
Product Development	C/CPFF	Electric Boat, CT	5.603										5.603	
Product Development	CPFF	Lockheed Martin	2.250			1.889	12/04	1.590	12/05	2.420	10/06	CONT.	CONT.	
Product Development	MIPR	DARPA, VA	21.600										21.600	
Product Development	Various	Various	2.645										2.645	
Product Development	C/CPFF	Northrop Grumman	1.100					0.400	12/05	0.600	12/06		CONT.	
SBIRs / BAAs	C/CPFF	Various	6.500			4.184	Various	3.385	Various	0.079	Various	CONT.	CONT.	
Advanced Towed Array BAA	C/CPFF	Lockheed Martin, NY	1.315										1.315	
Subtotal Product Development			274.708			41.712		59.198		52.503		CONT.	CONT.	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2006**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	PROJECT NUMBER AND NAME
RDT&E, N /BA-4	0603561N/Advanced Submarine System Development	0223/Submarine Combat System Improv (Adv)

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Development Test & Evaluation	S/CPFF	NOESIS	6.000										6.000	
Development Test & Evaluation	S/CPFF	EB Groton, CT	0.600										0.600	
Development Test & Evaluation	S/CPFF	NNS Norfolk, VA	0.700										0.700	
Development Test & Evaluation	S/CPFF	NSWC Bethesda, MD	0.700										0.700	
Subtotal Support			8.000			0.000		0.000		0.000		0.000	8.000	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 3)

DATE: **February 2006**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603561N/Advanced Submarine System Development	0223/Submarine Combat System Improv (Adv)

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NUWC Newport, RI	2.693							0.500			CONT.	
Developmental Test & Evaluation	C/CPFF	RAYTHEON	4.211										4.211	
Operational Test & Evaluation														
Live Fire Test & Evaluation														
Test Assets														
Tooling														
GFE														
Award Fees														
Subtotal T&E			6.904			0.000		0.000		0.500			4.211	

Remarks:

Contractor Engineering Support														
Government Engineering Support														
Program Management Support	C/CPFF	Integrated Product Dec, CT	0.450										0.450	
Program Management Support	C/CPFF	Stanley Associates, VA	5.388			1.000	12/04	1.000	12/05	1.000	12/06	CONT.	CONT.	
Program Management Support	C/CPFF	Various	1.440			0.800	12/04	0.950	12/05	1.000	12/06	CONT.	CONT.	
Program Management Support	C/CPFF	EG&G	1.787										1.787	
Program Management Support	C/CPFF	Anteon Corporation	0.198										0.198	
Travel			0.350			0.075		0.075		0.075		CONT.	CONT.	
Transportation														
SBIR Assessment														
Subtotal Management			9.613			1.875		2.025		2.075		CONT.	CONT.	

Remarks:

Total Cost			299.225			43.587		61.223		55.078		CONT.	CONT.	

Remarks:

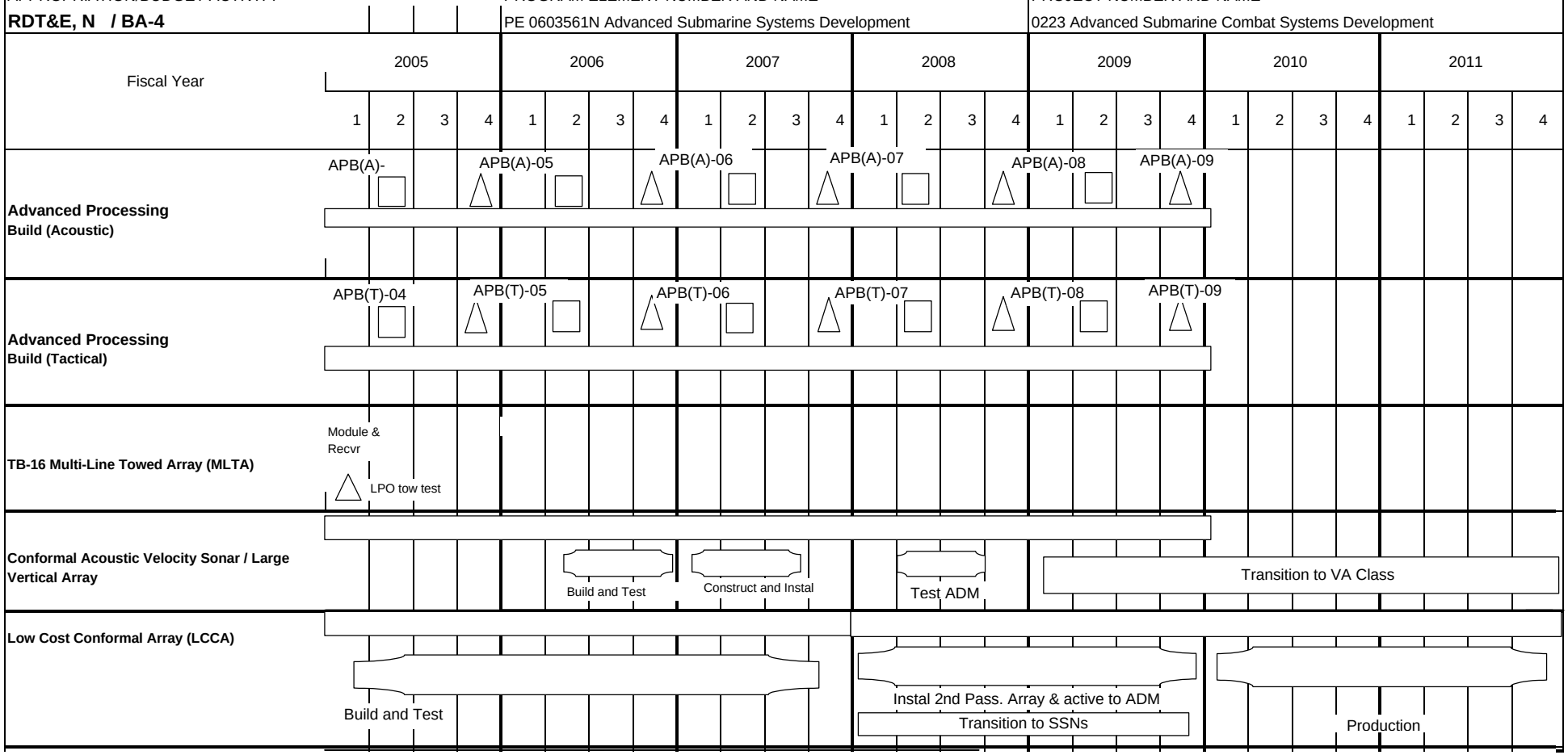
CLASSIFICATION: **UNCLASSIFIED**

EXHIBIT R4, Schedule Profile | DATE: **February 2006**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N / BA-4**

PROGRAM ELEMENT NUMBER AND NAME: PE 0603561N Advanced Submarine Systems Development

PROJECT NUMBER AND NAME: 0223 Advanced Submarine Combat Systems Development



R-1 SHOPPING LIST - Item No. 46

* Not required for Budget Activities 1, 2, 3, and 6

S ☐ Transition

Note: For APB 04 only, decision to transition based on laboratory vs Sea Test.

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2006**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E BA-4**	PROGRAM ELEMENT PE 0603561N Advanced Submarine Systems Developmen				PROJECT NUMBER AND NAME 0223 Advanced Submarine Combat Systems Development			
Schedule Profile		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Advanced Processing Builds (Acoustic)								
Transition APB-03 to ARCI								
APB(A)-04 Laboratory Test								
Transition APB-04 to ARCI		2Q						
APB(A)-05 Sea Test		4Q						
Transition APB-05 to ARCI			2Q					
APB(A)-06 Sea Test			4Q					
Transition APB-06 to ARCI				2Q				
APB(A)-07 Sea Test				4Q				
Transition APB-07 to ARCI					2Q			
APB(A)-08 Sea Test					4Q			
Transition APB-08 to ARCI						2Q		
APB(A)-09 Sea Test						4Q		
Transition APB-09 to ARCI								
Advanced Processing Builds (Tactical)								
Transition APB(T)-03 to CCS								
APB(T)-04 LabTest								
Transition to CCS		2Q						
APB(T)-05 Sea Test		4Q						
Transition to CCS			2Q					
APB(T)-06 Sea Test			4Q					
Transition to CCS				2Q				
APB(T)-07 Sea Test				4Q				
Transition to CCS					2Q			
APB(T)-08 Sea Test					4Q			
Transition to CCS						2Q		
APB(T)-09 Sea Test						4Q		
Transition to CCS								

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2006**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E BA-4**		PROGRAM ELEMENT PE 0603561N Advanced Submarine Systems Developmen			PROJECT NUMBER AND NAME 0223 Advanced Submarine Combat Systems Development			
Schedule Profile		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
TB-16 Multi-Line Towed Array (MLTA)								
24-channel acoustic module LPO self noise & shakedown test								
96-channel acoustic module and receiver intergration								
96-channel system test								
96-channel system LPO tow test		1Q						
Conformal Acoustic Velocity Sonar/Large Vertical Array								
Begin detail design, advanced procurement		1Q-4Q						
Construct and install array			1Q-4Q	1Q-4Q	1Q-4Q			
Test ADM					1Q-4Q	1Q-4Q		
Transition to VA Class						1Q-4Q	1Q-4Q	
Low Cost Conformal Array (LCCA)								
Build and test single ADM array		1Q-4Q						
Install 2nd Passive Array and add active staves to ADM and		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q			
Transition to SSNs				1Q-4Q	1Q-4Q	1Q-4Q		
Production (Note: continues to FY16)							1Q-4Q	1Q-4Q

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2006**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine System Developmen	9999 Congressional Plus-Ups : VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06			
9812N				
Experimental Research Transformational Submersibl	2.600			

The Congressional add will provide for the initial studies, engineering, design, prototyping, test and evaluation, and certification of a transformational submersible using cutting edge commercial technologies with a focus on affordable portability, modularity, reduction of vehicle size, manning and annual operational support cost. The Experimental Research Transformation Submersible (XRTS) will support mission criteria and be affordable using commercial (COTS) based materials and equipment.

	FY 06			
9813N				
Inner & Outer Decoupler Materials for Hull Array	3.000			

Develop inner and outer decoupler materials to support the development and future application of large conformal arrays on submarines while maintaining or improving ship's stealth performance. The Congressional add will be used for the development, test, evaluation, and qualification of outer decoupler materials to support large conformal arrays such as the Conformal Velocity Sonar (CAVES) Large Vertical Array (LVA) and large Wide Aperture Array (lgWAA) concepts. Analysis will be performed to determine cost effective approaches for developing novel conformal array inner decouplers. Preliminary designs will be developed and supported by laboratory performance testing at small scale.

	FY 06			
9814N				
SSN Navigation Enhancement Module	1.000			

Navy intends to utilize the funds provided by Congress to enhance the accuracy of the AN/WSN-7A Inertial Navigation System by improving computer codes using new algorithms to take advantage of available geophysical data.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2006**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine System Developmen	9999 Congressional Plus-Ups : VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06			
9815N				
Submarine Tactical Monitor (SubTaM)	2.500			

The Congressional add will be used to examine technology to continuously monitor own ship vulnerability to detection by enemy sensors and weapons and provide real time input to existing tactical analysis and display systems.

	FY 06			

	FY 06			