EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2004	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**					R-1 ITEM NOMENCLATURE Advanced Submarine Systems Development/0603561N			
COST ($ in Millions)		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost		**126.891**	**92.539**	**81.160**	**117.311**	**116.065**	**138.838**	**136.507**
Adv. Sub. Systems Development/2033		**46.835**	**54.687**	**38.155**	**53.571**	**51.758**	**64.128**	**75.719**
Electromechanical Actuator Dev/9188		**0.951**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Rotary Electromagnetic Torpedo Launcher/9191		**0.951**	**0.988**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Adv. Sub. Combat Sys. Dev/0223		**69.490**	**26.877**	**43.005**	**63.740**	**64.307**	**74.710**	**60.788**
Fiber Optic Multi-Line Towed Array/9189		**2.380**	**5.834**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Universal Gravity Module/9190		**0.951**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
MK 48 ADCAP Torpedo Improve/9039		**5.333**	**4.153**	**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 performs three functions: it is the fundamental transition point for Hull, Mechanical and Electrical (HM&E) technologies from Science and Technology (S&T) to platforms, it is the starting point for serious submarine platform design & naval architecture products, and it is the sponsor to operate unique R&D experimentation, modeling and simulation facilities. Focus is on the three warfighting pillars of SEA POWER 21 (SEA BASE, SEA SHIELD, SEA STRIKE) and SEA TRIAL, including capabilities to gain and sustain battle force access, develop and share knowledge, deter conflict, counter weapons of mass destruction and project power with surprise. It is a non-acquisition (non-ACAT) program. The program also supports two Information Exchange Programs with the United Kingdom, (one on submarine electromagnetic silencing and the second on submarine platform equipment, systems, and hull technology). The program transitions technologies developed by Navy technology bases, the private sector, and the Defense Advanced Research Projects Agency (DARPA). This program is structured to support near term VIRGINIA Class technology insertion and future submarine concepts and core technologies. Advanced systems developed under this program have potential for backfit into existing classes of submarines, supporting emerging requirements, and systems technology insertion into future submarine designs. This program sponsors advanced submarine design development and concepts that can radically transform the design architecture of future submarines. This program operates autonomous quarter scale submarines (Large Scale Vehicles) to provide test capability for propulsor, acoustic and non-acoustic signature reduction, remote vehicle R&D, and large scale hydrodynamic experimentation; operates the Hydrodynamic/Hydroacoustic Technology Center to enhance the Navy's ability to accurately, computationally predict hydrodynamic and hydroacoustic performance of submerged bodies; and operates and supports the Navy's Intermediate Scale Measurement System in Bayview Idaho. This program also supports submarine payloads and sensors demonstrations and execution of Sea Trial events and Sea Trial coordination/integration into a joint warfighting context with other services such as the U.S. Marine Corp, U.S. Army, and the U.S. Air Force. These Sea Trials will focus on warfighting capabilities in the areas of Anti-Submarine Warfare, Mine Countermeasure, Strike Warfare, and Counter Weapons of Mass Destruction. By conducting these Limited Object Experiments (LOEs), the warfighting capabilities are assessed sooner for potential entry in a spiral development. Congress has appropriated the following FY04 Congressional Plus-Up funding: $2.500M for Advanced Composite Sail Phase II, $7.400M for High Performance Metal Fiber Brushes, $10.000M for Submarine Payloads and Sensors, and $10.000M for Advanced Submarine Technology.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: **February 2004**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**	R-1 ITEM NOMENCLATURE Advanced Submarine Systems 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. 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 authorized by Congress to develop MK48 ADCAP torpedo improvements.

Project Unit 9189 is authorized by Congress to develop Fiber Optic Mulit-Line Towed Array.

Project Unit 9191 is authorized by Congress to develop Rotary Electromagnetic Torpedo Launcher.

R-1 SHOPPING LIST - Item No. 46

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2004**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME PE0603561N Advanced Submarine Systems Development				PROJECT NUMBER AND NAME 2033/Advanced Submarine Systems Development			
COST ($ in Millions)		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		**46.835**	**54.687**	**38.155**	**53.571**	**51.758**	**64.128**	**75.719**
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 performs three functions: it is the fundamental transition point for Hull, Mechanical and Electrical (HM&E) technologies from Science and Technology (S&T) to platforms, it is the starting point for serious submarine platform design & naval architecture products, and it is the sponsor to operate unique R&D experimentation, modeling and simulation facilities. Focus is on the three warfighting pillars of SEA POWER 21 (SEA BASE, SEA SHIELD, SEA STRIKE) and SEA TRIAL, including capabilities to gain and sustain battle force access, develop and share knowledge, deter conflict, counter weapons of mass destruction and project power with surprise. It is a non-acquisition (non-ACAT) program. The program also supports two Information Exchange Programs with the United Kingdom, (one on submarine electromagnetic silencing and the second on submarine platform equipment, systems, and hull technology). The program transitions technologies developed by Navy technology bases, the private sector, and the Defense Advanced Research Projects Agency (DARPA). This program is structured to support near term VIRGINIA Class technology insertion and future submarine concepts and core technologies. Advanced systems developed under this program have potential for backfit into existing classes of submarines, supporting emerging requirements, and systems technology insertion into future submarine designs. This program sponsors advanced submarine design development and concepts that can radically transform the design architecture of future submarines. This program operates autonomous quarter scale submarines (Large Scale Vehicles) to provide test capability for propulsor, acoustic and non-acoustic signature reduction, remote vehicle R&D, and large scale hydrodynamic experimentation; operates the Hydrodynamic/Hydroacoustic Technology Center to enhance the Navy's ability to accurately, computationally predict hydrodynamic and hydroacoustic performance of submerged bodies; and operates and supports the Navy's Intermediate Scale Measurement System in Bayview Idaho. This program also supports submarine payloads and sensors demonstrations and execution of Sea Trial events and Sea Trial coordination/integration into a joint warfighting context with other services such as the U.S. Marine Corp, U.S. Army, and the U.S. Air Force. These Sea Trials will focus on warfighting capabilities in the areas of Anti-Submarine Warfare, Mine Countermeasure, Strike Warfare, and Counter Weapons of Mass Destruction. By conducting these Limited Object Experiments (LOEs), the warfighting capabilities are assessed sooner for potential entry in a spiral development. Congress has appropriated the following FY04 Congressional Plus-Up funding: $2.500M for Advanced Composite Sail Phase II, $7.400M for High Performance Metal Fiber Brushes, $10.000M for Submarine Payloads and Sensors, and $10.000M for Advanced Submarine Technology.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2004
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine Systems Development	2033/Advanced Submarine Systems Development

B. Accomplishments/Planned Program

		FY 03	FY 04	FY 05
Payload Technologies/Subtotal Cost		7.259	6.762	6.703
RDT&E Articles Quantity				

Test and evaluate a minimum of two electric actuation prototype systems for three different representative hydraulic system applications. Determine if Science &Technology, R&D, or design changes are required for prototypes to meet established performance requirements. Retest modified actuation designs and select best design for full scale demonstration. Perform initial planning to implement a Temporary Alternation (TEMPALT) on a VIRGINIA Class submarine hull. Conduct Rapid Prototyping of Electromagnetic Launch Concept to drive MK 21 turbine pump with permanent magnet motor in lieu of air motor. Demonstrate full scale Electromagnetic Launch Prototype at the Naval Undersea Warfare Center using the launch test facility. Complete test and evaluation of composite advanced structures for Composite Advanced Sail (CAS). Target CAS insertion onto FY06 (may delay to FY08) authorized VIRGINIA ship, supports payload modularity. Deliver Validated Composite Materials Design Criteria and Requirements (DC&R) needed to design an Advanced Sail Shape for VIRGINIA Class and Advanced structures for other applications. FY 03 accomplishments include measurement of material parameters, development of test and measurement methods, and subscale item testing. Planned accomplishments for FY04-05 are to complete development of analytic modeling techniques for fatigue and shock loading, and validation of critical design elements. FY04 includes a Congressional Plus-Up for CAS of $2.500M which will allow procurement of full scale critical elements, and expanded shock modeling and validation.

		FY 03	FY 04	FY 05
Payloads and Sensors/Subtotal Cost		4.127	20.000	8.000
RDT&E Articles Quantity				

A series of demonstrations will be conducted with realistic payload, sensor and platform concepts adaptable enough to apply to a wide variety of future war-fighting needs. The concepts were selected to enable insertion of advanced technologies. Government and Industry consortia are executing four demonstrations involving the Broaching Universal Buoyant Launcher (BUBL), the Flexible Payload Module (FPM), the Stealthy Affordable Capsule System (SACS), and Intelligence, Surveillance, Reconnaissance, and Targeting Acquisition (ISR&TA) Processing. BUBL demonstration completion was deferred from FY03 to conduct the at-Sea SSGN GIANT SHADOW Limited Objective Experiment that was successfully completed in FY03. FY05 funding will be used to conduct the follow on experiment, Silent Hammer. These experiments demonstrate and test special operations forces, weapons, sensors, and communications deployment from an SSGN as part of a joint forces operation, including launch and control of Unmanned Underwater Vehicles and Unmanned Aerial Vehicles and networked with other joint assets to complete a mission. Future experiments will demonstrate and test integrated undersea technologies in joint force antisubmarine warfare (ASW) and mine countermeasure operations. The BUBL demo will be deferred to FY06. FY04 includes a Congressional Plus-Up of $10.000M for Advanced Submarine Technology (AST), and $10.000M for Payloads & Sensors. The AST funds will support the planning, and development and execution of Assured Access Equipments which will examine advanced concepts and technologies for the Sea Power 21 Vision and Pillars, and Acoustic Rapid COTS Insertion (ARCI). The Payloads & Sensors funds will allow continuation of design and development efforts of several Component Advanced Development (CAD) demonstrations, which focus on platform interface module and universal encapsulation technologies.

		FY 03	FY 04	FY 05
Distributed Propulsion/Subtotal Cost		12.025	5.872	4.656
RDT&E Articles Quantity				

Continue R&D to support submarine alternative propulsion and stern configurations with potential to reduce submarine cost and increase payload capacity. Demonstrate maneuvering, stealth and other critical performance parameters via Appropriate Scale Demonstrators in realistic environmental conditions. Complete R&D and large scale demonstration required to mature the Improved Advanced Hybrid Propulsor and associated technologies for the VIRGINIA Class. The Improved Advanced Hybrid Propulsor addresses a pressing Integrated Logistics Support (ILS) concern (reduction of propulsor changeout time from ~8 months to 2 months). Demonstrate Gap Control Technology at large scale vehicle (on LSV-2 Cutthroat) as culmination of technology transition from the Defense Advanced Research Projects Agency (DARPA). FY03/FY04 accomplishments include delivery of Distributed Pump and Jet Propulsion (DPJP) concept designs, completion of Main Seawater Pump pipe loop test, various concept studies, and gap actuation requirements and designs. The initial hydrodynamic design of the Improved Advanced Hybrid propulsor was also completed.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine Systems Developmen	Advanced Submarine Systems Development/2033

B. Accomplishments/Planned Program (Cont.)

		FY 03	FY 04	FY 05
Stealth/Subtotal Cost		14.870	11.830	17.412
RDT&E Articles Quantity				

Deliver an expanded Acoustic Piping Model for emerging fleet issues with warm water littoral missions. Validate the model on the Intermediate Scale Measurement System (ISMS) and leverage data from VIRGINIA (SSN-774) trial data. Provide acoustic/fluid characterization data and analysis for Distributed Propulsion Development. Validate advanced hull coating concept for Conformal Acoustic Velocity Sensor (CAVES) arrays and resolve ship design integration issues with the coating tiles for potential VIRGINIA Class insertion. Conduct full scale and model scale testing. Develop engineering and application concepts for future material technologies and design features to address future platform needs in Payload Interface Modules (PIMs) and Distributed Propulsion Systems. Identify submarine flow noise sources and mitigation concepts. Leverage from SEAWOLF Class Flow Noise Reduction research. Examine wake signatures against potential future threats. Conduct Large Scale Vehicle operations to evaluate advanced propulsor concepts, advanced sail concepts, and reduce radiated noise signature for SEAWOLF and VIRGINIA Class vessels, Evaluate vessel maneuvering performance. Evaluate the structural acoustic, and radiated signature implications of piping and overboard discharge designs. FY03/FY04 accomplishments include completion of overboard discard test on the Navy ISMS, 25 successful Large Scale Vehicle (LSV) acoustic trials at Lake Pend Orielle, Idaho, for the VIRGINIA Class Steel Sail construction and testing of second LSV, and testing of ONR sponsored Conformal Active Sonar System (CACTISS) on the ISMS.

		FY 03	FY 04	FY 05
Maneuvering & Control/Subtotal Cost		7.084	1.518	1.114
RDT&E Articles Quantity				

Design and build quarter scale Advanced Control Surface Actuation System (ACSAS) for demonstration on Large Scale Vehicle (LSV) 2 or other vehicle (proposed Distributed Propulsion Demonstrator) in out years. This system is a tab-assisted control surface utilizing Shape Memory Alloy (SMA) technology and electric power. The demonstration will show improved low-speed maneuvering performance potential at reduced design costs without using traditional steering and diving hardware and hydraulics. This technology leverages previous tab-assisted control concept development work under Defense Advanced Research Projects Agency and Office of Naval Research programs, follow-on NAVSEA water tunnel tests, and small-scale vehicle tests . Conduct Hydrodynamic and Hydroacoustic analysis for Distributed Propulsion Concepts. Predict both stealth and maneuvering performance for control surfaces, hull shapes, and propulsors in turns and steady state. FY03/FY04 accomplishments include development of an improved design and analysis software tool, functional design of the ACSAS/Flexible Tab Assisted Control (FlexTAC) for the Radio Control Model Experiment, completion of design practices manual for Submarine Maneuvering and LSV-2 Hydrodynamic and Hydroacoustic "Quick Look" Characteristic Trials.

		FY 03	FY 04	FY 05
Total Ownership/Affordability/Subtotal Cost		1.470	8.705	0.270
RDT&E Articles Quantity				

High Performance Brush Technology Program objective is to reduce fleet maintenance burden by providing Form, Fit and Function replacement for Carbon Brushes in Electric motors and motor generator sets. Major accomplishment in FY03 demonstrated at-sea performance of High performance brushes in AC end of 500 KW MG set on USS ALBUQUERQUE. Plans for FY04-05 include landbased and at-sea demonstration of High Performance Brushes on DC end of 500 KW MG Sets, develop lower cost alternatives for rotor protection, and train and certify a west coast shipyard capability to back-fit the 500 KW SHIPALT. FY04 includes a Congressional Plus-Up of $7.400M which will be used to expand application to other motors and generators. Efforts will also address scaling up prototype manufacturing processes to production rate processes.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine Systems Development	2033/Advanced Submarine Systems Development/0603561N

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2003	FY 2004	FY 2005
President's Budget: FY 2004 President's Controls	47.655	25.404	77.011
FY 2005 President's Controls	46.835	54.687	38.155
Total Adjustments	-0.820	29.283	-38.856
Summary of Adjustments			
ADV Sub Tech/SSN Tech Insert Adjustments			-50.000
Advanced Sub Tech-Sonar/Combat System Adjustment			12.000
Advanced Composite Sail Phase II		2.500	
Advanced Metal Fiber Brushes		7.400	
Advanced Submarine Technology		10.000	
Submarine Payloads and Sensors Program		10.000	
Business Process Reform		-0.146	
FY03 SBIR	-0.698		
BSO Adjustments	-0.122		
FFRDC Reduction		-0.001	
Manpower Reduction			-0.347
NWCF Rates			-0.386
PBD 604 Non Purchase Inflation			-0.123
Efficiencies/Revised Econ Assumptions		-0.470	
Subtotal	-0.820	29.283	-38.856

Schedule: not applicable.
Technical: not applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine Systems Developme	Advanced Submarine Systems Development/2033

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost

Not applicable.

E. ACQUISITION STRATEGY:

Competitively awarded contracts from Broad Agency Announcement (BAA) solicitations.

F. MAJOR PERFORMERS:

Newport News Shipbuild, Newport News, Va R&D Support	12/03	12/04	12/05
Electric Boat Corp., Groton, CT. R&D support	12/03	12/04	12/05
Noesis, Inc., Manassas, Va. Fiber Brush R&D	12/03	12/04	12/05
Naval Surf Warfare Ctr, Carderock, MD. R&D support	12/03	12/04	12/05
Naval Undersea Warfare Ctr, Newport, R.I. R&D support	12/03	12/04	12/05
Penn State University/AR Lab, State College, PA	12/03	12/04	12/05
John Hopkins/APL, Laurel, MD R&D support	12/03	12/04	12/05
Raytheon, Portsmouth, RI		12/04	12/05
Lockheed Martin, Manassas, VA		12/04	12/05

R-1 SHOPPING LIST - Item No. 46

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2004**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-4**		PROGRAM ELEMENT PE0603561N Advanced Submarine Systems Developmen				PROJECT NAME AND NUMBER Advanced Submarine Systems Development/2033						
Cost Categories (Tailor to WBS, or System Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Targ Value of Contract
Product Development	S/CPFF	NNS Newport News, VA	59.587	1.449	12/02	0.833	12/03	0.833	12/04	0.000	62.702	67.224
Product Development	S/CPIF	NNS Newport News, VA	23.032	1.187	12/02	0.504	12/03	0.245	12/04	17.216	42.184	43.665
Product Development	S/CPFF	EB Groton, CT	75.890	3.147	12/02	1.202	12/03	1.318	12/04	2.003	83.560	83.560
Product Development	WR	NSWC Bethesda, MD	210.477	25.416	10/02	18.193	10/03	21.231	10/04	CONT.	CONT.	
Product Development	S/CPFF	ARL/PSU, State College,PA	30.060	4.968	12/02	3.177	12/03	2.027	12/04	CONT.	CONT.	
Product Development	S/CPFF	Noesis	5.583	1.416	12/02	7.975	12/03				14.974	9.504
Product Development	Various	Various	95.681	1.787	Various	3.103	Various	1.973	Various			
Product Development	CPFF	BAE/SPA	2.097	0.975	12/02	0.876	12/03	1.078	12/04			
Product Development	S/CPFF	Raytheon		0.971	12/02	1.785		1.100	12/04			
Product Development	S/CPFF	Lockheed Martin		0.185	12/02	4.700		1.100	12/04			
Subtotal Product Development			502.407	41.502		42.348		30.905				

Remarks:

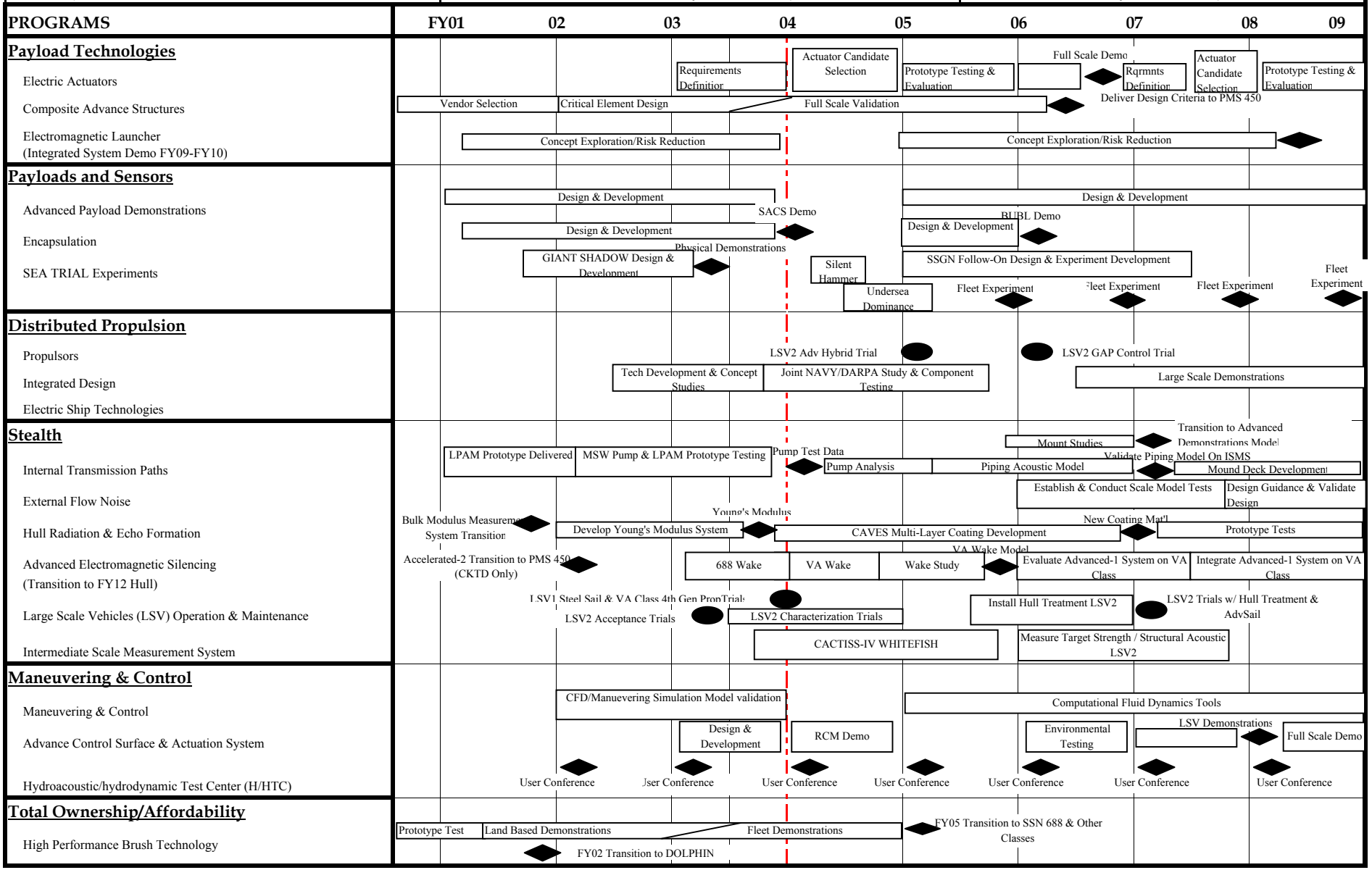
Development Support Equipment											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	

Remarks:

Exhibit R-3 Cost Analysis (page 2)												DATE: February 2004
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-4**			PROGRAM ELEMENT PE0603561N Advanced Submarine Systems Development			PROJECT NAME AND NUMBER Advanced Submarine Systems Development/2033						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY05 Cost	FY05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	S/CPFF	Raytheon	7.670	1.890	12/02	1.800	12/03	2.400	12/04			
Developmental Test & Evaluation	S/CPFF	Lockheed Martin	0.000	0.400		4.700	12/03	2.400	12/04			
Developmental Test & Evaluation	Various	Various	0.000	0.640	10/02	4.015	12/03	0.950	10/04			
Subtotal T&E			7.670	2.930		10.515		5.750				
Remarks:												
Contractor Engineering Support	CPFF	Various	2.497	0.771	12/02	0.859	12/03	0.990	12/04		CONT.	
Government Engineering Support	WR	Various	1.000	1.592	10/02	0.925	10/03	0.470	10/04		CONT.	
Travel			0.215	0.040	11/02	0.040	11/03	0.040	11/04		CONT.	
Subtotal Management			3.712	2.403		1.824		1.500				
Remarks:												
Total Cost			513.789	46.835		54.687		38.155				

CLASSIFICATION:

EXHIBIT R4, Schedule Profile		DATE: **February 2004**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME PE0603561N Advanced Submarine Systems Development	PROJECT NUMBER AND NAME Advanced Submarine Systems Development/S2033



Legend ◆ Milestone/Major Event ● Trails | Point of Reference

R-1 SHOPPING LIST - Item No. 46

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: February 2004			
APPROPRIATION/BUDGET ACTIVITY **RDT&E BA-4**	PROGRAM ELEMENT PE0603561N Advanced Submarine Systems Development				PROJECT NUMBER AND NAME Advanced Submarine Systems Development/S2033			
Schedule Profile		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Payload Technologies								
Select electric actuation system candidates		4Q						
Conduct prototype benchmark testing & evaluation				4Q				
Conduct full scale demonstration						1Q		
Establish follow-on electric actuator performance requirements						2Q		
Select second set of electric actuation system candidates							2Q	
Fabricate and demo full scale composite Adv. Sail prototype			1Q					
Comp.Adv. Structures complete design criteria and req. document					3Q			
Complete Comp. Adv. Sail development, transition to VA class					3Q			
Payloads & Sensors								
Advanced Payload Demonstrations Design & Development		4Q		1Q,2Q,3Q,4Q				4Q
Encapsulation Design & Development		4Q						
GIANT SHADOW Experiments Physical Demonstration		3Q						
Silent Hammer			3Q					
Undersea Dominance			4Q	1Q, 2Q				
BUBL Capsule Physical Demonstration					1Q			
SSGN Follow-on Design & Experiment					2Q	2Q	2Q	2Q
Distributed Propulsion								
Initiate propulsor advanced design developments		2Q						
Begin hardware manufacture for Improved Advanced Hybrid		4Q						
Complete manufacture of Improved Advanced Hybrid				2Q				
Improved Advanced Hybrid LSV II Trial				2Q, 3Q				
Transition propulsor component technology to VA class				2Q				
Complete HIREP Evaluation of Gap Control			1Q, 2Q					
Begin hardware manufacture for Gap Control LSV Evaluation			3Q					
Complete Gap Control LSV II Hardware					4Q			
Gap Control LSV II Trial						1Q		
Distributed Pump and Jet Submarine Concept Study		1Q, 2Q, 3Q, 4Q	1Q, 2Q, 3Q	2Q, 3Q, 4Q				
Perform Initial Distributed Propulsion Development		2Q, 3Q, 4Q	1Q	3Q, 4Q	1Q, 2Q, 3Q, 4Q			
Begin hardware manufacture for DPJP Demonstrator						1Q		
DPJP Demonstrator Evaluations							3Q, 4Q	

R-1 SHOPPING LIST - Item No. 46

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2004**		
APPROPRIATION/BUDGET ACTIVITY **RDT& BA-4**	PROGRAM ELEMENT PE0603561N Advanced Submarine Systems Development				PROJECT NUMBER AND NAME Advanced Submarine Systems Development/2033			
Schedule Profile		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Stealth								
ITP MSW Pump & LPAM Prototype Testing		2Q,3Q,4Q						
ITP Piping Acoustic Model				2Q, 3Q, 4Q	1Q,2Q,3Q,4Q			
ITP Validate Piping Model on ISMS						1Q		
ITP Mound Deck Development						2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q
ITP Mount Studies				4Q	1Q,2Q,3Q,4Q			
ITP Transition to Advanced Demonstrations Model						1Q		
External Flow Noise 688 Wake		2Q, 3Q, 4Q						
External Flow Noise Wake Study				1Q, 2Q, 3Q				
External Flow Noise VA Wake Model				4Q				
External Flow Noise Establish & Conduct Scale Model Testing					1Q,2Q,3Q,4Q	1Q, 2Q, 3Q		
External Flow Noise Design Guidance & Validate Design						4Q	1Q, 2Q, 3Q,4Q	1Q
HR&EF Develop Young's Modulus System		1Q, 2Q, 3Q						
HR&EF Deliver Young's Modulus		4Q						
HR&EF CAVES Multi-Layer Development				1Q,2Q,3Q,4Q	1Q, 2Q, 3Q			
HR&EF New Coating Material					4Q			
HR&EF Prototype Tests						1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q
Adv EM Silencing Evaluate Advanced-1 System on VA Class					1Q,2Q,3Q,4Q	1Q, 2Q		
Adv EM Silencing Integrate Advacned-1 System on VA Class						3Q, 4Q	1Q,2Q,3Q,4Q	1Q
Troubleshoot SEAWOLF acoustic issues LSV 1		1Q,2Q,3Q,4Q						
Accept delivery of LSV 2 to Navy		1Q						
SEAWOLF steel sail trail, LSV 1		1Q, 2Q, 3Q, 4Q	1Q, 2Q					
LSV evaluation of propulsor component improvements			3Q					
LSV 2 hydrodynamic performance trial			2Q					
LSV 2 maneuvering characterization trial			3Q,4Q	3Q,4Q	3Q			
LSV 2 SSN 774 support				2Q				
LSV 2 RAV install hull treatment on pressure hull and sail					1Q,2Q			
Complete "no sail" trials, LSV 1		2Q						
Procure new LSV 2 battery		3Q				1Q		
Initiate VA advanced sea trials, LSV 2			3Q					
Complete VA advanced sail trials, LSV 2						3Q		
LSV 2 RAV install, new LSV 2 battery			4Q				4Q	
LSV 2 ODAS refresh				1Q,2Q				
Technology refresh of Intermediate Scale Meas. System						1Q,2Q		

R-1 SHOPPING LIST - Item No. 46

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2004**			
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT PE0603561N Advanced Submarine Systems Development				PROJECT NUMBER AND NAME Advanced Submarine Systems Development/2033			
Schedule Profile		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Maneuvering & Control								
Complete Maneuvering & Control Modeling Validation tools			1Q					
Complete Maneuvering & Control CFD tools								2Q
Complete design & development of ACSAS		4Q						
Conduct RCM demonstration			4Q					
Complete environmental testing					4Q			
Conduct LSV demonstration							1Q	
Conduct full scale demonstration								1Q
Demo Adv. Maneuvering & Control concepts on LSV 2			2Q					
Planned replacement of class/unclass comp. serv. @ HTC					4Q			
Total Ownership/Affordability								
Demo commutator operation for Adv. Brush - full scale			1Q					
Comp. Adv. Metal Brushes transition to PMS 392				3Q				

R-1 SHOPPING LIST - Item No. 46

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2004**	
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		**69.490**	**26.877**	**43.005**	**63.740**	**64.307**	**74.710**	**60.788**
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 Future Naval Capabilities and 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). APB's develop and demonstrate improvements to current and future sonar/combat control systems. Program office supports international information exchange agreements. Program is funded under demonstration and validation because it develops and integrates hardware for experimental test related to platform applications.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
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 03	FY 04	FY 05
Advanced Sonar System Processing/Subtotal Cost		21.490	18.377	26.005
RDT&E Articles Quantity				

Advanced Processing Build-Acoustic (APB-A) has continued improvements in sonar detection and classification via improved algorithms and automation for the thin line towed arrays, is implementing the intial Precision Underwater Mapping functionality, improved sonar planning and environmental monitoring and initiated processing enhancements for the Hull and Sphere Arrays. Future efforts will focus on improved High Frequency Active capabilites, and enhanced processing capabilities for the Sphere, Hull and TB-16 Arrays as well as test equipment upgrades.

		FY 03	FY 04	FY 05
Advanced Tactical Control/Subtotal Cost		10.000	8.500	8.000
RDT&E Articles Quantity				

Advanced Processing Build-Tactical (APB-T) delivered the first automated Close Encounter Management tool-set for submarine combatants. Future efforts will focus on enhancing this 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, automation. In FY 05 start advanced processing techniques in data fusion and state estimation leveraged from ONR/DARPA as well as test equipment upgrades.

		FY 03	FY 04	FY 05
Advanced Hull Arrays/Subtotal Cost		9.800	0.000	9.000
RDT&E Articles Quantity				

The Advanced Hull Arrays project is developing improved, larger aperture sonars in order to restore acoustic superiority over potential threat submarines. The end products will be large aperture sail, flank and bow array Advanced Development Models (ADMs). Efforts continue development and testing of a Conformal Acoustic Velocity Sonar (CAVES) Large Vertical Array (LVA) for ultimate transition to VIRGINIA Class. In FY 05, commence Second Low Cost Conformal Array (SLCCA) with active capability and start improvements to a Sail Window Conformal Array (SWCA) ADM both of which support collision avoidance and mine detection.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
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 03	FY 04	FY 05
High Frequency Sonar Program/Subtotal Cost		2.800	0.000	0.000
RDT&E Articles Quantity				

The High Frequency Sonar Program develops products to support Battlespace Preparation and Anti-Submarine Warfare. These include advanced Computer Aided Detection (CAD) for Precision Underwater Mapping (PUMA), Computer Aided Classification (CAC) and Low Probability of Intercept and Adaptive Clutter Suppression capabilities for Advanced Submarine Warfare (ASW). Deliverables will be PUMA and ASW CAC source code for incorporation into APB. In FY 05.

		FY 03	FY 04	FY 05
Multi-Line Towed Array Test & Evaluation/Subtotal Cost		0.900	0.000	0.000
RDT&E Articles Quantity				

Evaluated single line array self noise at Lake Pend Oreille (LPO) test. Evaluated 3 different VIM configurations at lake test. Completed 3 line array design and fabrication. The Multi-Line Towed Array Test & Evaluation program conduct 3-line sea test on Research Vehicle and submarine, perform data analysis, and initiate transition to Engineering Development Model (EDM) development. In FY 05, start advanced develoment of next generation submarine towed array concepts leveraging innovative mechanical, fiber optic and other sensor technologies.

		FY 03	FY 04	FY 05
Payloads/Senors Program/Subtotal Cost		16.500	0.000	0.000
RDT&E Articles Quantity				

Payloads/Sensors Program - Two industry consortia (Team 2020 and the Forward Pass Consortium) are executing five demonstrations in the component development phase of this effort. Additionally the consortia will continue an industry technology incubator effort aimed at defining new start demonstrations to be selected in FY-03. The team 2020 demonstrations started late in FY-01 and complete by FY-04 are the Flexible Payload Module (FPM), Stealthy Affordable Capsule System (SACS), Processing, and Small UAV (SUAV). Team Forward Pass will execute the Broaching Universal Buoyant Launcher (BUBL) demonstration with the same schedule. For FY-03, interim testing will be conducted for all demonstrations started in FY-01. In FY 05, start up new technology demonstrations.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
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 03	FY 04	FY 05
Advanced Sonar System Processing/Subtotal Cost		0.000	0.000	0.000
RDT&E Articles Quantity				

Fiber Optic Technology Transition - Risk reduction to assure smooth transition of Fiber Optic Towed Array technology to the Fiber Optic TB-29 program.

		FY 03	FY 04	FY 05
Adv. Sub. Systems Dev./Subtotal Cost		8.000	0.000	0.000
RDT&E Articles Quantity				

BRUSH - metal fiber brush and brush holder design suitable for transition to a program to install them on fleet SSMG sets.

SAIL - Further development of damage prediction techniques for transient events by developing and validating models that predict damage development in thick section composites.

		FY 03	FY 04	FY 05
Subtotal Cost				
RDT&E Articles Quantity				

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
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 2003	FY 2004	FY 2005
President's Budget: FY 2004 President Controls	71.092	27.340	81.584
FY2005 President's Controls	69.490	26.877	43.005
Total Adjustments	-1.602	-0.463	-38.579
Summary of Adjustments			
Misc adjustments			-38.000
FY2003 SBIR (dtd 5-5-03)	-1.474		
BSO Adjustment	-0.147		
SPAWAR Service Cost Center Adjustment		-0.002	-0.003
Management Improvement		-0.072	
FFRDC Reduction		-0.157	
Efficiencies/Revis		-0.232	
NWCF Rates			-0.055
MANPOWER			-0.241
Manpower CAAS Spread			-0.151
PBD 426 Rates			0.011
PBD 604 Inflation			-0.115
PBD 604 Non Purchase Inflation			-0.025
Business Process Reform (Sec. 8100) Adjustment	0.006		
Economic Assumptions (Sec. 8135) Adjustment	0.010		
IT Cost Growth (Sec. 8109)	0.003		
Subtotal	-1.602	-0.463	-38.579

Schedule:

Not Applicable.

Technical:

Not Applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
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)

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	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. Digital Systems Resource, 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).

R-1 SHOPPING LIST - Item No. 46

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1) | DATE: **February 2004**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N / BA-4** | PROGRAM ELEMENT: 0603561N/Advanced Submarine System Development | PROJECT NUMBER AND NAME: S0223/Submarine Combat System Improv (Adv)

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development	WR	NUWC Newport, RI	52.017	16.244	10/02	7.175	10/03	10.135	10/04	CONT.	CONT.	
Product Development	RCP	NUWC Newport, RI	1.000								1.000	
Product Development	WR	NRL/Washington	3.900	0.800	10/02	0.339	10/03	0.656	10/04	CONT.	CONT.	
Product Development	RCP	NRL/Washington	0.490								0.490	
Product Development	WR	NSWC Carderock, MD	9.359	1.152	10/02					CONT.	CONT.	
Product Development	RCP	NSWC Carderock, MD	0.036								0.036	
Product Development	WR	NSWC Dahlgren	0.128	0.050	10/02	0.080	10/03	0.080	10/04	CONT.	CONT.	
Product Development	PD	ONI, Washington	1.885	0.900	12/02	0.900	12/03	0.900	12/04	CONT.	CONT.	
Product Development	C/CPFF	Lockheed-Martin,VA	9.621	9.757	12/02	0.798	12/03	0.800	12/04	CONT.	CONT.	
Product Development	C/CPFF	Sanders Assoc. (L-M),NH	2.652	0.750	12/02					CONT.	CONT.	
Product Development	RCP	NSMA	0.495	0.180	11/02	0.180	12/03	0.180	11/04	CONT.	CONT.	
Product Development	MIPR	U.S. Army/MITRE	5.240	1.300	12/02	1.200	12/03	1.800	12/04	CONT.	CONT.	
Product Development	MIPR	U.S. Air Force/MIT Lincoln Labs	4.120	1.500	12/02	1.200	12/03	1.000	12/04	CONT.	CONT.	
Product Development	RCP	ONR/MCCI	2.800								2.800	
Product Development	MIPR	METRON	1.050	0.600	12/02	0.500	12/03	1.000	12/04	CONT.	CONT.	
Product Development	C/CPFF	Progeny, VA	1.650	0.440	12/02					CONT.	CONT.	
Product Development	C/CPFF	BBN, VA	2.309	0.927	12/02					CONT.	CONT.	
Product Development	RCP	ONR/GTRI	2.050								2.050	
Product Development	SS/CPFF	APL/JHU, MD	22.901	7.200	01/03	7.200	01/04	7.200	12/04	CONT.	CONT.	
Product Development	SS/CPFF	APL/UW, WA	0.125	0.050	12/02	0.050	12/03	0.050	12/04	CONT.	CONT.	
Product Development	SS/CPFF	ARL/UT, TX	18.143	5.794	12/02	1.200	12/03	1.500	12/04	CONT.	CONT.	
Product Development	SS/CPFF	ARL/PSU, PA	1.525	0.350	12/02	0.000		0.350	12/04	CONT.	CONT.	
Product Development	MD	ARL/PSU, PA	0.692	0.150	01/03	0.150	01/04	0.150	01/05	CONT.	CONT.	
Product Development	WR	NAVAIR PAX/NSWC Indian H	0.110	0.030	10/02	0.030	10/03	0.030	10/04	CONT.	CONT.	
Product Development	WR	SPWAR, CA	0.500	0.140	10/02	0.140	10/03	0.140	10/04	CONT.	CONT.	
Product Development	PD	SPWAR, CA	0.738	0.250	10/02	0.200	10/03	0.400	10/04	CONT.	CONT.	
Product Development	C/CPFF	DSR, VA	13.300	3.750	12/02	2.516	12/03	4.120	10/04	CONT.	CONT.	
Product Development	WR	COMSUBLANT	0.195	0.100	10/02	0.100	10/03	0.100	10/04	CONT.	CONT.	
Product Development	C/CPFF	Electric Boat, CT	5.603								5.603	
Product Development	CPFF	ORINCON	0.000	1.250	12/02	1.000	12/03	1.000	12/04	CONT.	CONT.	
Product Development	MIPR	DARPA, VA	21.600								21.600	
Product Development	Various	Various	2.645	0.000		0.000		0.162	Various	CONT.	CONT.	
Product Development	C/CPFF	Northrop Grumman	0.000	1.100	02/03					CONT.	CONT.	
SBIRs / BAAs	C/CPFF	Various	5.625	0.875	Various	0.000		10.177	Various	CONT.	CONT.	
Advanced Towed Array BAA	C/CPFF	Lockheed Martin, NY	1.315								1.315	
Subtotal Product Development			195.819	55.639		24.958		41.930		CONT.	CONT.	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2004**				
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 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Development Test & Evaluation	S/CPFF	NOESIS		6.000	02/03	0.000		0.000			6.000	
Development Test & Evaluation	S/CPFF	EB Groton, CT		0.600	02/03	0.000		0.000			0.600	
Development Test & Evaluation	S/CPFF	NNS Norfolk, VA		0.700	02/03	0.000		0.000			0.700	
Development Test & Evaluation	S/CPFF	NSWC Bethesda, MD		0.700	07/03	0.000		0.000			0.700	
Subtotal Support			0.000	8.000		0.000		0.000		0.000	8.000	

Remarks:

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CLASSIFICATION:

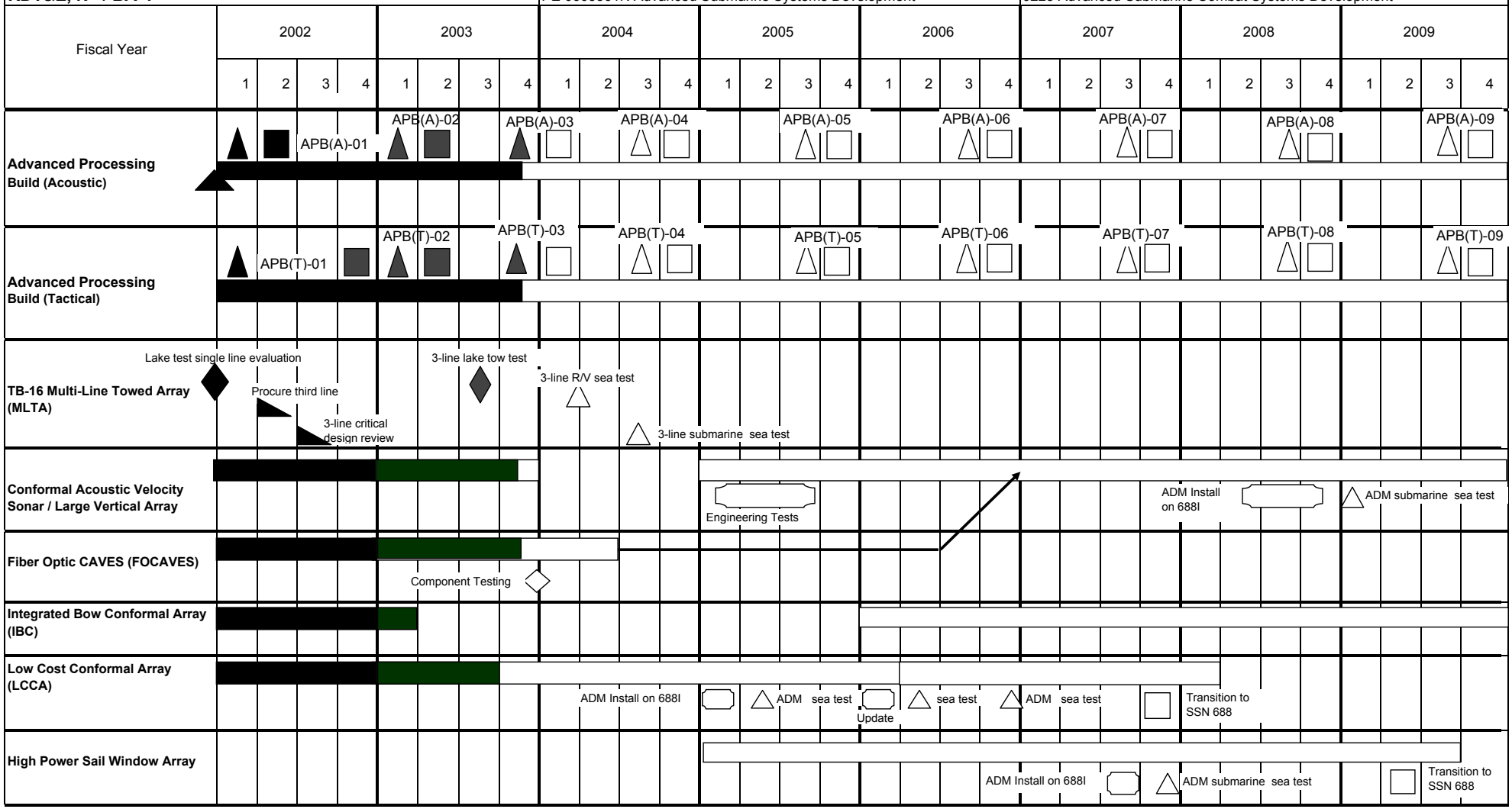
Exhibit R-3 Cost Analysis (page 3)								DATE: **February 2004**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603561N/Advanced Submarine System Development			PROJECT NUMBER AND NAME 0223/Submarine Combat System Improv (Adv)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NUWC Newport, RI	0.750	1.943	10/02						2.693	
Developmental Test & Evaluation	C/CPFF	RAYTHEON	2.011	2.200	12/02						4.211	
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			2.761	4.143		0.000		0.000			6.904	
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	2.999	1.389	12/02	1.000	12/03	1.000	12/04	CONT.	CONT.	
Program Management Support	C/CPFF	Various	0.200	0.244	12/02	0.844	12/03	0.000	12/04	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			0.200	0.075		0.075		0.075		CONT.	CONT.	
Transportation												
SBIR Assessment												
Subtotal Management			5.834	1.708		1.919		1.075		CONT.	CONT.	
Remarks:												
Total Cost			204.414	69.490		26.877		43.005		CONT.	CONT.	
Remarks:												

EXHIBIT R4, Schedule Profile | DATE: February 2004

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



LEGEND:

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

△ Sea Test

□ Transition

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CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2004**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E BA-4**	PROGRAM ELEMENT PE 0603561N Advanced Submarine Systems Developmer				PROJECT NUMBER AND NAME 0223 Advanced Submarine Combat Systems Development			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Advanced Processing Builds (Acoustic)								
APB(A)-01 Sea Test	1Q							
Transition APB-01 to ARCI	2Q							
APB(A)-02 Sea Test including HFSP		1Q						
Transition APB-02 to ARCI		2Q						
APB(A)-03 Sea Test		4Q						
Transition APB-03 to ARCI			1Q					
APB(A)-04 Sea Test			3Q					
Transition APB-04 to ARCI			4Q					
APB(A)-05 Sea Test				3Q				
Transition APB-05 to ARCI				4Q				
APB(A)-06 Sea Test					3Q			
Transition APB-06 to ARCI					4Q			
APB(A)-07 Sea Test						3Q		
Transition APB-07 to ARCI						4Q		
APB(A)-08 Sea Test							3Q	
Transition APB-08 to ARCI							4Q	
APB(A)-09 Sea Test								3Q
Transition APB-09 to ARCI								4Q
Advanced Processing Builds (Tactical)								
APB(T)-01: Sea Test.	1Q							
Transition to CCS	4Q							
APB(T)-02 Sea Test		1Q						
Transition to CCS		2Q						
APB(T)-03 Sea Test		4Q						
Transition to CCS			1Q					
APB(T)-04 Sea Test			3Q					
Transition to CCS			4Q					
APB(T)-05 Sea Test				3Q				
Transition to CCS				4Q				
APB(T)-06 Sea Test					3Q			
Transition to CCS					4Q			
APB(T)-07 Sea Test						3Q		
Transition to CCS						4Q		
APB(T)-08 Sea Test							3Q	
Transition to CCS							4Q	
APB(T)-09 Sea Test								3Q
Transition to CCS								4Q

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CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2004**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E BA-4**	PROGRAM ELEMENT PE 0603561N Advanced Submarine Systems Developmer				PROJECT NUMBER AND NAME 0223 Advanced Submarine Combat Systems Development			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
TB-16 Multi-Line Towed Array (MLTA)								
Lake test single line evaluation	1Q							
Procure third line	2Q							
Three-line critical design review	3Q							
Three-line lake tow test		3Q						
Three-line R/V sea test			1Q					
Three-line submarine sea test			3Q					
Conformal Acoustic Velocity Sonar / Large Vertical Array (LVA)								
Engineering Tests				1Q-3Q				
ADM Install on 688I							2Q-4Q	
ADM Submarine Sea Test								1Q
Fiber Optic CAVES (FOCAVES)								
Component Testing		4Q						
Integrated Bow Conformal Array (IBC)		1Q			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Low Cost Conformal Array (LCCA)	1Q-4Q							
ADM Install on 688I				1Q				
ADM Sea Test				2Q				
Update					1Q			
ADM Sea Test					2Q			
ADM Sea Test					4Q			
Transition to SSN 688I						4Q		
High Power Sail Window Array								
ADM Install on 688I						3Q		
ADM Sea Test						4Q		
Transition to SSN 688								2Q

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