

CLASSIFICATION:

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EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION , NAVY/ BA-5				R-1 ITEM NOMENCLATURE 0604503N/Submarine Systems Equipment Development			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	96.865	106.048	94.839	113.241	123.616	101.222	110.525
0775/Submarine Support Equipment	1.357	1.384	1.699	1.378	1.407	1.441	1.474
0219/Submarine Sonar Improvements	44.034	53.518	58.078	63.383	66.253	62.943	75.051
0742/Submarine Integrated Antenna Systems	23.916	24.579	18.606	32.051	41.839	27.484	25.018
1411/Submarine Tactical Communications Systems	7.428	14.567	16.456	16.429	14.117	9.354	8.982
9999/Congressional Adds	20.130	12.000					

Defense Emergency Responses Funds (DERF) Funds: NOT APPLICABLE

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Submarine Support Equipment Program develops and improves submarine Electronic Warfare Support (EWS) techniques, components, equipment, and systems that will increase submarine operational effectiveness, safety of ship, and survivability in the increasingly dense and sophisticated electromagnetic environment caused by the proliferation of complex radar, communications, and navigation equipment of potential adversaries. Improvements are necessary for submarine EWS to be operationally effective in the following mission areas: Joint Littoral Warfare, Joint Surveillance, Space and Electronic Warfare and Intelligence Collection, Maritime Protection, and Joint Strike.

The Submarine Sonar Improvement Program delivers block updates to Sonar Systems installed on SSN 688, 688I, 21, TRIDENT and SSGN Class Submarines to maintain clear acoustic, tactical and operational superiority over submarine and surface combatants in all scenarios through detection, classification, localization and contact following. Current developments are focused on supporting Littoral Warfare, Regional Sea Denial, Battle Group Support, Diesel Submarine Detection, Surveillance, and Peacetime Engagement.

The Submarine Integrated Antenna Systems project develops the antennas needed to communicate in networks such as Ultra High Frequency Satellite Communications, Extremely Low Frequency (ELF), Extremely High Frequency (EHF), Super High Frequency and Global Positioning System. Hardware developments include: (a) mast-mounted systems; (b) buoyant cable

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Exhibit R-2, RDTEN Budget Item Justification
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EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2005	
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE	
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY /		BA-5	0604503N/ Submarine Systems Equipment Development
B. (U) Program Change Summary:			
Funding: For BLIs 0775/0219/0742/1411		FY 2005	FY 2006
Previous President's Budget: (FY 06 Pres Controls)		74.485	95.499
FY07 President's Budget		76.735	94.048
Total Adjustments		2.250	-1.451
			-16.668
Summary of Adjustments			
Issue Number			
F0219	Small Business Innovation Rese	60070	-0.558
	Dept. of Energy Transfer	74501	-0.031
	Execution Realignment by Fund	90001	4.287
	Trusted Foundry (OSD-14)	61228	0.055
	Contract Support Reduction	51002	
	NWCF Civpers Efficiencies	51051	-3.479
	Delay procurement and development	51075	-0.241
	N7 Respread of Contractor Support	51078	-3.400
	Vxx Shortfall	52036	1.754
	PBD 604 Inflation	61956	-10.400
	PB07 Fuel Price Adjustments	61967	0.326
	PBD606 CIVPERS Pay Raise	62069	0.135
	Sec. 8125: Revised Economic As.	62428	0.040
	Congressional Action 1% Reduction	63206	-0.247
			-0.568
742	Small Business Innovation Research	-0.349	
	Federal Technology Transfer Tax	-0.007	
	Department of Energy Transfer	-0.019	
	Miscellaneous Navy Adjustments	-1.014	
	Nuclear Physical Security (OSD-09)	0.005	
	Trusted Foundry (OSD-14)	0.026	
	NWCF Civpers Efficiencies		-0.110
	PBD 604 Inflation		0.082
	PB07 Fuel Price Adjustment		0.115
	Civpers Pay Raise		0.027
	Federally Funded Research	-0.114	0.000
	Revised Economic Assumptions	-0.018	0.000
	Congressional Action 1% Reduction	-0.261	0.000
1411	Small Business Innovation Research (SBIR)	-0.049	
	Department of Energy Transfer	-0.006	
	Nuclear Physical Security (OSD-9)	0.002	
	Trusted Foundry (OSD-14)	0.015	
	Miscellaneous Navy Adjustments	-0.107	
	Contract Support Reduction		-1.566
	NWCF Civpers Efficiencies		-0.063
	PBD 604 Inflation		0.080
	Sec 8125 Revised Economic Assumptions	-0.067	
	Civpers Pay Raise Rate Change	0.000	0.023
	Congressional Action 1% Reduction	-0.155	0.000
0775	Dept. of Energy Transfer	-0.001	
	Trusted Foundry (OSD-14)	0.001	
	Inflation		0.008
	Civpers Pay raise		
	Revised Economic	-0.006	
	Congressional 1% reduction	-0.015	
	PBD 606 Pay Raise Rate		0.001
	Total Changes	2.250	-1.451
			-16.668

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Exhibit R-2, RDTE Budget Item Justification

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EXHIBIT R-2a, RDT&E Project Justification							DATE:		
							February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5		PROGRAM ELEMENT NUMBER AND NAME 0604503N/Submarine System Equipment Development			PROJECT NUMBER AND NAME 0775/Submarine Support Equipment				
COST (\$ in Millions)			FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost			1.357	1.384	1.699	1.378	1.407	1.441	1.474
RDT&E Articles Qty									
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program develops and improves techniques, components, equipment, and systems that will increase submarine operational effectiveness, safety of ship, and survivability in the increasingly dense and sophisticated electromagnetic environment caused by the proliferation of complex radar, communications, and navigation equipment of potential adversaries. Improvements are necessary for Submarine Electronic Warfare Support (ES) systems to be operationally effective in the following mission areas: Joint Littoral Warfare; Joint Surveillance, Space and Electronic Warfare and Intelligence Collection; Maritime Protection; and Joint Strike. Efforts include: (1) Integration of the technology developed and transitioned from the Advanced Submarine Support Equipment Program (ASSEP), project F0770 into the tactical ES system; (2) Resolution of software trouble reports during technology updates, from fleet feedback reports, and Submarine Warfare Federated Tactical System (SWFTS)/Non Proplusion Electronic System (NPES) Tactical Local Area Network (TACLAN) migrations; (3) Integration, test, and installation of COTS technology for system enhancements.</p> <p>The program supports three submarine mission support categories; Threat Warning/Self Protection; Situational Awareness; and Intelligence, Surveillance and Reconnaissance (ISR). Threat Warning/Self Protection projects evaluate the vulnerability of submarine masts, periscopes and sensors to visual, radar, and infrared detection. It also evaluates state of the art technology to implement periscope/mast and engineering improvements into the tactical ES system, ie AN/BLQ-10 to reduce counter detection threats. Both Situational Awareness and ISR projects develop submarine unique improvements based on emerging technologies that are available from DOD exploratory development programs and other sources.</p> <p>Threat Warning/Self Protection sub-projects include: Low Probability of Intercept (LPI) Receiver and AN/BLQ-10 software enhancements.</p> <p>Situational Awareness sub-projects include: Embedded National Tactical Receiver (ENTR), Integration of GALE, and Multifunction Modular Mast (MMM) Antenna</p> <p>ISR sub-projects include: Advanced EW Tuners and MMM Antenna..</p> <p>RDTE Funding line supports the entire AN/BLQ-10 ES procurement program. Average FY OPN and SCN hardware procurement yearly funds are \$80M.</p>									

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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-5

0604503N/Submarine System Equipment Development

0775/Submarine Support Equipment

B. Accomplishments/Planned Program

		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		1.357		
RDT&E Articles Quantity				

Conduct Test of Specific Emitter Identification, Automatic Contact Correlation, and LPI Receiver
NPES and SWFTS software baseline changes.
IA and RM C&A
Research and resolve AN/BLQ-10 SPRs.
ESM software enhancements.
Integrate ENTR/GALE into AN/BLQ-10.
LPI Development and Integration into AN/BLQ-10
Support development of MMM Antenna and new classified capabilities

		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost			1.384	
RDT&E Articles Quantity				

NPES and SWFTS software baseline changes.
Research and resolve AN/BLQ-10 SPRs.
ESM software enhancements.
At-Sea Test and Deployment of ENTR/GALE with AN/BLQ-10.
Support development of MMM Antenna.
Plan and support AN/BLQ-10(V)1 ES Virginia Class DT/OT

		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost				1.699
RDT&E Articles Quantity				

NPES software and SWFTS baseline changes.
Research and resolve AN/BLQ-10 SPRs.
ESM software enhancements.
Support development of MMM Antenna.
Support AN/BLQ-10(V)1 ES Virginia Class DT/OT
LPI Receiver Spiral 1 Development and Integration.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604503N/Submarine System Equipment Development	PROJECT NUMBER AND NAME 0775/Submarine Support Equipment	
C. PROGRAM CHANGE SUMMARY:			
Funding:			
Previous President's Budget: (FY 06 Pres Budget Controls)	FY 2005	FY 2006	FY 2007
	1.357	1.405	1.690
FY 07 President's Budget Controls:	1.357	1.384	1.699
Total Adjustments	0.000	-0.021	0.009
Schedule:			
Technical:			

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D. OTHER PROGRAM FUNDING SUMMARY:									
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
OPN Line 256000									
ML003 SSEP Special Purpose Equipment	0.265	0.27	0.275	0.28	0.285	0.291	0.297	Continuing	Continuing
ML007 ICADF	9.079	17.490	6.448	17.327	16.689	12.142	-	Complete	79.175
ML008 ICADF Antenna	10.529	15.770	9.580	17.047	19.833	22.714	23.123	Continuing	Continuing
ML009 APB-EW	1.452	0.150	0.282	0.648	1.178	1.087	1.246	Continuing	Continuing
ML010 Tech Refresh Upgrades	2.093	0.160	0.306	0.801	1.226	1.131	1.296	Continuing	Continuing
ML013 ESM IMA Support	0.041	0.182	0.186	0.190	0.193	0.197	0.201	Continuing	Continuing
ML015 AN/BLQ-10(V) SSN ES Backfit System	35.650	45.682	44.878	45.261	52.630	46.962	13.494	Continuing	Continuing
ML016 AN/BLQ-10(V) SSBN ES Systems	-	-	-	-	-	6.248	38.244	Continuing	Continuing
ML017 AN/BLQ-10 Field Change Kits	6.958	3.292	6.010	6.783	3.717	5.084	16.460	Continuing	Continuing
MLCA1 AN/BLQ-10(V) Tech Refresh	7.000	3.150	-						
SCN LI 201300									
PE 0204287N	19.327	19.752	20.320	20.824	21.240	21.665	22.098	Continuing	145.226
Partial (AN/BLQ-10 ES Only)									
Related RDT&E:									
(U) PE 0603562N/Submarine Tactical Warfare System/F0770 Advanced Submarine Support Equipment Program (ASSEP)									
E. ACQUISITION STRATEGY:									
AN/BLQ-10 (V) ES System - Procurements are executed/managed in accordance with the Acquisition Strategy Report (Rev 3) for AN/BLQ-10(V) ES System dtd 10/10/00 and the Acquisition Plan (Rev 5) for AN/BLQ-10(V) ES System dtd 6/30/04.									
F. MAJOR PERFORMERS:									
Lockheed-Martin, Syracuse, NY - AN/BLQ-10 system developer and End-to-End Integrator									
NUWC, Newport, RI - EW Library developer, AN/BLQ-10 systems engineering, TEMPALT development, integration support, DT/OT support, ISEA, and TDA.									

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Exhibit R-3 Cost Analysis (page 1)						DATE: February 2006						
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5			PROGRAM ELEMENT 0604503N/Submarine System Equipment Development			PROJECT NUMBER AND NAME 0775/Submarine Support Equipment						
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
AN/BLQ-10 ES Product Improvement	CPFF	Lockheed Syracuse, NY		0.430	03/05	0.446	02/06	0.671	03/07	CONT	CONT	NA
Systems Engineering and Test Support	WR	NUWC Newport, RI		0.417	11/04	0.475	11/05	0.546	11/06	CONT	CONT	N/A
Miscellaneous	VARIOUS	VARIOUS		0.024	Numerous	0.000	11/05	0.018	11/06	CONT	CONT	N/A
Subtotal Product Development			0.000	0.871		0.921		1.235		CONT	CONT	N/A
Remarks:												
Software Development											0.000	NA
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
Engineering Technical Services	CPIF	AT&T GSI, Vienna VA		0.250	11/04	0.250	11/05	0.213	11/06	CONT	CONT	NA
GFE											0.000	
Subtotal Support			0.000	0.250		0.250		0.213		CONT	CONT	
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)								DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5			PROGRAM ELEMENT 0604503N/Submarine System Equipment Development					PROJECT NUMBER AND NAME 0775/Submarine Support Equipment				
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											0.000	
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Management Support Services											0.000	
Travel				0.150	11/04	0.150	11/05	0.150	11/06	CONT	CONT	
Labor (Research Personnel)											0.000	
SBIR Assessment				0.086		0.056		0.101		CONT	CONT	
Subtotal Management				0.236		0.213		0.251		CONT	CONT	
Remarks:												
Total Cost			0.000	1.357		1.384		1.699		CONT	CONT	
Remarks:												

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Exhibit R-2, RDTEB Budget Item Justification
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EXHIBIT R-4, RDT&E Schedule Profile				DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-5		PROGRAM ELEMENT NAME AND NUMBER 0604503N/Submarine Sys Equip Development			PROJECT NAME AND NUMBER 0775/Submarine Support Equipment		
SSEP F0775 SCHEDULE	FY05	FY06	FY07	FY08	FY09	FY10	FY11
Specific Emitter ID/Auto Contact Correlation and Virginia Class DT/OT	DT/OT △		Virginia DT/OT △				
AN/BLQ-10 Baseline SWFTS and NPES Changes, SPR Resolution, and Software Enhancements	S/W Update △	S/W Update △	S/W Update △	S/W Update △	S/W Update △	S/W Update △	S/W Update △
Low Probability of Intercept (LPI) Receiver	Integration △		Spiral 1 △	Spiral 2 △			
Enhanced National Tactical Receiver (ENTR)/GALE	Integration △	At Sea Test △					
Advanced EW Tuners					Research △	Testing △	Downselect & Integration △
Multifunction Modular Mast (MMM) Antenna	Specification △	Integration △		Spiral 1 △		Spiral 2 △	

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Exhibit R-2, RD TEN Budget Item Justification
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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5		PROGRAM ELEMENT NUMBER AND NAME 0604503N/Submarine Systems Equipment Development			PROJECT NUMBER AND NAME 0219/Submarine Sonar Improvement				
COST (\$ in Millions)			FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011
Project Cost			44.034	53.518	58.078	63.383	66.253	62.943	75.051
RDT&E Articles Qty									

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program delivers block updates to Sonar Systems installed on SSN 688, 688I, 21, SSGN and TRIDENT Class Submarines to maintain clear acoustical, tactical and operational superiority over submarine and surface combatants in all scenarios through detection, classification, localization and contact following. Current developments, detailed below, are focused on supporting Littoral Warfare, Regional Sea Denial, Battle Group Support, Diesel Submarine Detection, Surveillance, and Peacetime Engagement. Acoustics Rapid COTS Insertion (A-RCI) is a multi-phased, evolutionary development effort geared toward addressing Acoustic Superiority issues through the rapid introduction of interim development products applicable to SSN 688, 688I Flight, SSN21, SSGN and SSBN 726 Class Submarines. A-RCI Phases I and II introduce towed array processing improvements; A-RCI Phase III introduces spherical array processing improvements. The AN/BSY-1 High Frequency Upgrade is a stand-alone program which will be introduced as A-RCI Phase IV for SSN 688I and Seawolf Class only. As part of CNO N772's plan to maintain acoustic superiority for In-Service Submarines a joint cooperative effort with NAVSEA (SEA 93, ASTO) to deliver annual Advanced Processing Builds (APBs). The capabilities in the APBs will be integrated as part of A-RCI certified systems. This effort, known as the N772 Business Plan funds the APB integration efforts with the Multi-Purpose Processor as well as the AN/BQQ-10 Sonar system beginning in FY02. This budget submit also reflects development of the Total Ship Monitoring System, Active Intercept and Ranging as well as Acoustic Intelligence (ACINT 21) capabilities to be introduced into the Fleet. Precision Bottom Mapping transition, integration and testing began in FY01.

Towed system's development efforts provide increased operational capabilities and reliability improvements to maintain a clear acoustical, tactical, and operational superiority over submarine and surface combatants. These efforts include development of a Fiber Optic Thinline Towed Array, (TB-33) for increased reliability, and the Next Generation Fatline Towed Array (TB-34) and Hull Mounted array which provide improved Littoral Operaitonal capability. The Mission Tailored Towed Array (MTTA) is a variant of the TB-29A/FOTL array which will improve acoustic sensor performance in littoral and open ocean environments. The mission tailored TB-29A/FOTL array will be re-configurable in aperture and length based on the mission to be performed and will expand frequency coverage via a high frequency aperture(s).

AN/BSY-2 efforts are focused on ARCI-(V)5 development which implements ARCI Phases II-IV in the Seawolf Class submarines.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604503N/Submarine Systems Equipment Development	PROJECT NUMBER AND NAME 0219/Submarine Sonar Improvement																	
B. Accomplishments/Planned Program																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"></td> <td style="width: 30%;"></td> <td style="width: 20%; text-align: center;">FY 05</td> <td style="width: 20%; text-align: center;">FY 06</td> <td style="width: 20%; text-align: center;">FY07</td> </tr> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td></td> <td style="text-align: center;">14.612</td> <td style="text-align: center;">14.106</td> <td style="text-align: center;">14.562</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>							FY 05	FY 06	FY07	Accomplishments/Effort/Subtotal Cost		14.612	14.106	14.562	RDT&E Articles Quantity				
		FY 05	FY 06	FY07															
Accomplishments/Effort/Subtotal Cost		14.612	14.106	14.562															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;"> APB Productionization Completed A-RCI OpEval in FY03. Received A-RCI MSIII decision authority in FY04. Continue Advanced Processing Build (APB) Sea Testing, Integration and Certification. This effort is primarily the transition of APB software from development to A-RCI for integration and test, and formal certification. APB sea tests scheduled for FY05 and FY06. </div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"></td> <td style="width: 30%;"></td> <td style="width: 20%; text-align: center;">FY 05</td> <td style="width: 20%; text-align: center;">FY 06</td> <td style="width: 20%; text-align: center;">FY07</td> </tr> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td></td> <td style="text-align: center;">20.592</td> <td style="text-align: center;">27.759</td> <td style="text-align: center;">35.790</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>							FY 05	FY 06	FY07	Accomplishments/Effort/Subtotal Cost		20.592	27.759	35.790	RDT&E Articles Quantity				
		FY 05	FY 06	FY07															
Accomplishments/Effort/Subtotal Cost		20.592	27.759	35.790															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;"> Integration and Testing. Awarded new contracts to Lockheed Martin and General Dynamics in FY04 for continued A-RCI and MPP development, integration and test. Continued Integration and testing to support the introduction of Advanced Processing Builds to be installed on SSN 688I, SSN 688, SSBN 730, SSN 21, and SSGN 726 and VA Class. </div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"></td> <td style="width: 30%;"></td> <td style="width: 20%; text-align: center;">FY 05</td> <td style="width: 20%; text-align: center;">FY 06</td> <td style="width: 20%; text-align: center;">FY07</td> </tr> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td></td> <td style="text-align: center;">3.320</td> <td style="text-align: center;">0.900</td> <td></td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>							FY 05	FY 06	FY07	Accomplishments/Effort/Subtotal Cost		3.320	0.900		RDT&E Articles Quantity				
		FY 05	FY 06	FY07															
Accomplishments/Effort/Subtotal Cost		3.320	0.900																
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;"> BQS-15A EC20 Merges the BQS-15 EC-18 array with A-RCI processing displays. FY05 - fund the development, integration and testing associated with upgrading the existing outboard receiver, internal array components and Unit 6 Display Console. FY06 - Complete development, integration and testing of the BQS-15A EC-20. </div>																			

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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604503N/Submarine Systems Equipment Development	PROJECT NUMBER AND NAME 0219/Submarine Sonar Improvement																	
B. Accomplishments/Planned Program (Cont.)																			
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		FY 05	FY 06	FY 07															
Accomplishments/Effort/Subtotal Cost				2.000															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">HF Precision Imaging Active Sonar Begin development efforts for HF Precision Imaging Active Sonar in FY07.</div>																			
<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"><table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 25%;"></th><th style="width: 25%;"></th><th style="width: 20%; text-align: center;">FY 05</th><th style="width: 20%; text-align: center;">FY 06</th><th style="width: 10%; text-align: center;">FY 07</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td style="text-align: center;">0.146</td><td style="text-align: center;">0.300</td><td></td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table></div>							FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost		0.146	0.300		RDT&E Articles Quantity				
		FY 05	FY 06	FY 07															
Accomplishments/Effort/Subtotal Cost		0.146	0.300																
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;">The development of the Next Generation Fatline Towed Array provides improvement in littoral water operations and increased frequency coverage. Began development efforts for the Next Generation Fatline Towed Array in FY04. Continue development efforts in FY05. Conduct design readiness review , complete EDM integration and assembly efforts. Complete development and conduct early operational assessment in FY06.</div>																			
R-1 SHOPPING LIST - Item No. 109																			

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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006																															
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604503N/Submarine Systems Equipment Development	PROJECT NUMBER AND NAME 0219/Submarine Sonar Improvement																																
<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">6</div> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"><thead><tr><th style="width: 30%;"></th><th style="width: 10%;"></th><th style="width: 20%;">FY 05</th><th style="width: 20%;">FY 06</th><th style="width: 20%;">FY 07</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td style="text-align: center;">5.364</td><td style="text-align: center;">4.453</td><td style="text-align: center;">5.726</td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">Affordable Towed Array Technology (ATAT) development provides more affordable and reliable thinline arrays using fiber optic technology. FY04 - Continue development of Affordable Towed Array Technology (ATAT, Fiber Optic Array, TB-33). Conduct PDR. FY05 - Continue ATAT development and conduct CDR. FY06 - Continue development of ATAT and begin EDM fabrication. FY07 - Continue development of ATAT, complete EDM fabrication and begin at sea operational assessment.</div> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"><thead><tr><th style="width: 30%;"></th><th style="width: 10%;"></th><th style="width: 20%;">FY 05</th><th style="width: 20%;">FY 06</th><th style="width: 20%;">FY 07</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td></td><td style="text-align: center;">6.000</td><td></td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table> <div style="border: 1px solid black; padding: 5px;">Mission Tailorable Towed Array (MTTA) development provides mission dependent variant of thinline arrays to improve sensor performance in littoral environment while maintaining open ocean capability. FY06- Complete development of mission dependent variant of thinline arrays.</div>							FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost		5.364	4.453	5.726	RDT&E Articles Quantity							FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost			6.000		RDT&E Articles Quantity				
		FY 05	FY 06	FY 07																														
Accomplishments/Effort/Subtotal Cost		5.364	4.453	5.726																														
RDT&E Articles Quantity																																		
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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604503N/Submarine Systems Equipment Development	PROJECT NUMBER AND NAME 0219/Submarine Sonar Improvement	

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2005	FY 2006	FY 2007
Previous President's Budget: (FY06 Pres Controls)	40.281	54.333	73.343
FY07 President's Budget	44.034	53.518	58.078
Total Adjustments	3.753	-0.815	-15.265
Summary of Adjustments			
Issue			
Small Business Innovation Rese	60070	-0.558	
Dept. of Energy Transfer	74501	-0.031	
Execution Realignment by Fund	90001	4.287	
Trusted Foundry (OSD-14)	61228	0.055	
Contract Support Reduction	51002		-3.479
NWCF Civpers Efficiencies	51051		-0.241
Delay procurement and development	51075		-3.400
N7 Respread of Contractor Support	51078		1.754
Vxx Shortfall	52036		-10.400
PBD 604 Inflation	61956		0.326
PB07 Fuel Price Adjustments	61967		0.135
PBD606 CIVPERS Pay Raise	62069		0.040
Sec. 8125: Revised Economic As.	62428	-0.247	
Congressional Action 1% Reduction	63206	-0.568	
Subtotal	3.753	-0.815	-15.265

Schedule:

The A-RCI and TB-29 TECHEVAL/OPEVAL completed in FY03. Both programs obtained approval to proceed with the FY04 Production Buys in the MDA (Milestone Decision Authority) Review held in October 2003. Milestone III authority for A-RCI was received in February 2004.

Technical:

Not applicable

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5		PROGRAM ELEMENT NUMBER AND NAME 0604503N/Submarine Systems Equipment Development			PROJECT NUMBER AND NAME 0219/Submarine Sonar Improvements				

D. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
OPN BLI 214700 SSN Acoustics	185.372	190.098	223.214	260.745	227.085	235.699	255.048	Continuing	Continuing
OPN BLI 214705 SSN Acoustics Installation	43.976	41.514	61.682	75.852	77.184	72.813	39.109	Continuing	Continuing
Total	229.348	231.612	284.896	336.597	304.269	308.512	294.157		

E. ACQUISITION STRATEGY:

A-RCI utilizes an open architecture and Commercial Off-the-Shelf products in support of new and upgraded sonar systems. A follow-on development and production sole source cost plus award fee contract was awarded to Lockheed Martin Federal Systems and General Dynamics, Advanced Information Systems in December 2003. Program Review with Milestone Decision Authority was conducted in October 2003 granting approval for the FY04 production option. MS III authority for A-RCI was received in February 2004.

Towed Systems is the development of a highly reliable and more affordable Fiber Optic Thinline variant towed array which uses fiber optic sensor technology for data collection and moves all outboard electronics from the array to inboard the submarine where they can be easily maintained. Cost savings in array production will be gained by using automated production techniques and significantly reducing or eliminating the "hand touch" labor common to today 's towed array production methods because of the number of different electronics that must be wired together to achieve the acoustics capabilities necessary to meet today's and tomorrow threats. This development is being accomplished under a Phase III SBIR. In FY04 Towed Systems will award multiple competitive contracts for the development of a Fatline Towed Array which will provide better littoral operations and ranging. The Low Cost Conformal Array (LCCA) will transition from ASTO in FY07 with a competitive contract being awarded for the EDM development.

F. MAJOR PERFORMERS:

Lockheed Martin Corporation, Naval Electronics and Surveillance Systems-Undersea Systems; Manassas, Virginia - Provides primary hardware development, software integration and systems engineering support for Advanced Processor Builds for SSN 688, 688 I, 21 and Virginia Class submarine sonar systems. Contract awards projected for October each fiscal year.

General Dynamics, Advanced Information Systems; Fairfax, Virginia - Provides primary software development for SSN688, 688I, 21 and Virginia Class submarine sonar systems. Contract awards projected for October each fiscal year.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604503N/Submarine Systems Equipment Development	PROJECT NUMBER AND NAME 0219/Submarine Sonar Improvements
<p>F. Major Performers (cont'd)</p> <p>Naval Undersea Warfare Center, Newport, Rhode Island - Provides systems engineering support for SSN688, 688I, 21 and Virginia Class submarine sonar systems. Work Requests to be issued October each fiscal year.</p> <p>Chesapeake Science Corporation, Millersville, Maryland: Provides primary hardware development, software integration and systems engineering support for the Affordable Towed Array Technology Initiatives. Contract awards projected for October each fiscal year.</p>		

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)						DATE: February 2006						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT		PROJECT NUMBER AND NAME							
RDT&E, N / BA-5			0604503N/Submarine System		0219/Submarine Sonar Improvement							
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
Primary Hardware Development	Various	Lockheed Martin (Omnibus)	14.187								14.187	
Primary Hardware Development	Various	Chesapeake Sciences	15.074	4.004	10/04	4.284	10/05	4.399	10/06		27.761	
Primary Hardware Development	SS/CPAF	LMC, Manassas, VA	128.677	15.119	11/04	18.583	11/05	23.773	11/06		186.152	
Ancillary Hardware Development	SS/CP	ARL University of Texas	2.738	2.402	12/04	2.600	12/05	2.600	12/06		10.340	
		Newport News		0.044		0.037		.048			0.129	
Systems Engineering	WX	NUWC, Newport R.I.	95.270	4.876	10/04	5.201	10/05	5.253	10/06		110.600	
		NUWC, Newport R.I. (MTTA)				4.620						
Systems Engineering	SS/CPAF	LMC, Syracuse N.Y.	5.763								5.763	
Systems Engineering	Various	Various	12.220		10/04	0.087	10/05				12.307	
Software Development	SS/CP	Progeny Systems	4.981	2.200	11/04	2.200	11/05	2.200	11/06		11.581	
Systems Engineering	WX	NSWC, Carderock MD	3.146	1.100	10/04	1.445	10/05	1.445	10/06		7.136	
Systems Engineering	SS/CP	John Hopkins APL	3.051	3.100	12/04	3.780	12/05	3.78	12/06		13.711	
Hardware/Software Development	Various	SBIR's	1.303	0.075	10/04	0.075	12/05	.075	12/06		1.528	
Award Fees	SS/CPAF	LMC, Syracuse N.Y.	0.495								0.495	
Miscellaneous	Various	Various	9.402								9.402	
Systems Engineering	WX	NSWC, Crane, IN	0.076	0.078	10/04	0.080	10/05	.085	10/06		0.319	
Hardware/Software Development	C/CPIF	TBD		0.146	10/04	0.000	10/05	0.000	10/06		0.146	
Systems Engineering	WX	Naval Research Lab (NRL)	0.390	0.233	10/04	0.199	10/05	0.256	10/06		1.078	
											0.000	
											0.000	
Subtotal Product Development			296.773	33.377		43.191		43.914		0.000	412.635	
Remarks:												

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 18 of 60)

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February 2006

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 19 of 60)

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY RDTE&E, N / BA-5			PROGRAM ELEMENT 0604503N/Submarine System		PROJECT NUMBER AND NAME 0219/Submarine Sonar Improvement							
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 & Evaluation											0.000	
Operational Test & Evaluation	WX	OPTEVFOR	1.051	0.468	10/04	0.663	10/05	.368	10/06		2.550	
Developmental/Operational T&E	Various	Various	6.118								6.118	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			7.169	0.468		0.663		.368		0.000	8.668	
Remarks:												
Contractor Engineering Support											0.000	
Management Support Services	Various	Various	3.514	0.675	11/04	0.675	11/05	.675	11/06		4.864	
Program Management Support	SS/CP	Mitre	0.523								0.523	
Travel	PD	NAVSEA	0.175	0.275	11/04	0.275	11/05	.285	11/06		0.725	
Transportation											0.000	
SBIR Assessment											0.000	
Subtotal Management			4.212	0.950		0.950		.960		0.000	6.112	
Remarks:												
Total Cost			414.402	44.034		53.518		58.078		0.000	458.436	
Remarks:												

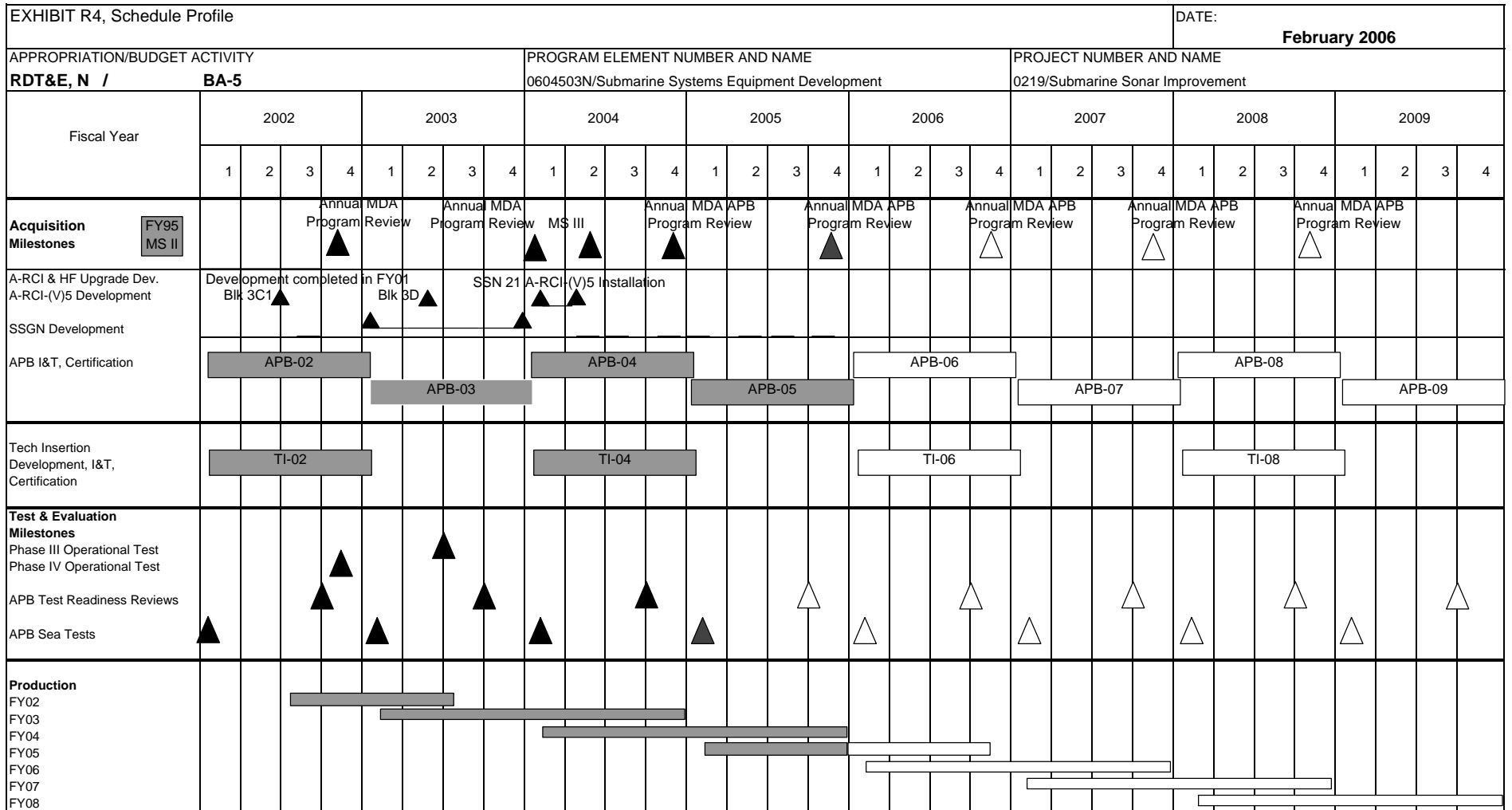
R-1 SHOPPING LIST - Item No. 109

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Exhibit R-2, RDTE Budget Item Justification
(Exhibit R-2, page 20 of 60)

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CLASSIFICATION:



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CLASSIFICATION:

[illegible]

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 22 of 60)

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CLASSIFICATION:

EXHIBIT R4, Schedule Profile																								DATE:											
Next Generation Fatline Development																								February 2006											
APPROPRIATION/BUDGET ACTIVITY												PROGRAM ELEMENT NUMBER AND NAME												PROJECT NUMBER AND NAME											
RDT&E, N / BA-5												0604503N: SSN-688 and Trident Modernization												0219: Submarine Sonar Improvement											
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009						
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4			
Acquisition Milestones																																			
Next Generation Fatline Development																																			
Production Representative Delivery																																			
Test & Evaluation Milestones																																			
Lake Test																																			
Sub Demo																																			
Operational Test																																			
Procurement																																			
Production Contract																																			
Deliveries																																			

R-1 SHOPPING LIST - Item No. 109

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

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 23 of 60)

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 24 of 60)

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CLASSIFICATION:

EXHIBIT R4, Schedule Profile																								DATE:				February 2006				
APPROPRIATION/BUDGET ACTIVITY										PROGRAM ELEMENT NUMBER AND NAME										PROJECT NUMBER AND NAME												
RDT&E, N / BA-5										0604503N: SSN-688 and Trident Modernization										0219: Submarine Sonar Improvement												
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Acquisition Milestones																																
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Procurement Production Contract																																
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R-1 SHOPPING LIST - Item No. 109

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Exhibit R-2, RD TEN Budget Item Justification

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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5	PROGRAM ELEMENT NUMBER AND NAME Program Element (PE) No. and Name	PROJECT NUMBER AND NAME Project Unit (PU) No. and Name: Congressional Plus-Ups : VARIOUS																	
CONGRESSIONAL PLUS-UPS:																			
<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 25%;"></td><td style="width: 10%; text-align: center;">FY 06</td><td style="width: 15%;"></td><td style="width: 15%;"></td><td style="width: 35%;"></td></tr><tr><td>9384C</td><td></td><td></td><td></td><td></td></tr><tr><td>Littoral Tactical Array System (LTAS)</td><td style="text-align: center;">1.000</td><td></td><td></td><td></td></tr></table> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"><p>Provide a brief description of the Congressional Plus-Up.</p><p>The LTAS program provides for transformational application of Commercial-Off-The-Shelf (COTS) Towed Array sensor technologies and Open Architecture (OA) processing techniques.</p><ul style="list-style-type: none">· Perform test-bed validation and verification of the NextGen Fatline Towed Array· Validate in-situ tactical littoral operations and performance· Perform at-sea Operational Testing of various prototype NextGen Fatline Towed Arrays</div>						FY 06				9384C					Littoral Tactical Array System (LTAS)	1.000			
	FY 06																		
9384C																			
Littoral Tactical Array System (LTAS)	1.000																		
<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 25%;"></td><td style="width: 10%; text-align: center;">FY 06</td><td style="width: 15%;"></td><td style="width: 15%;"></td><td style="width: 35%;"></td></tr><tr><td>9384C</td><td></td><td></td><td></td><td></td></tr><tr><td>Multi-Use Littoral TB-23 Towed Array</td><td style="text-align: center;">1.000</td><td></td><td></td><td></td></tr></table> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"><p>Provide a brief description of the Congressional Plus-Up.</p><p>The Multi-Use Littoral TB-23 Towed Array development effort will leverage the existing TB-23 array design to provide a mission re-configurable capability for littoral or deep-water submarine missions. The proposed array would retain the proven and cost effective components of the current TB-23 array while leveraging cost savings and commonality with the newest Navy arrays (MFTA, TB-29A) in addressing obsolescence issues and enhanced capabilities.</p></div>						FY 06				9384C					Multi-Use Littoral TB-23 Towed Array	1.000			
	FY 06																		
9384C																			
Multi-Use Littoral TB-23 Towed Array	1.000																		
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	FY 06																		
9384C																			
Affordable Towed Array Construction	1.500																		

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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5	PROGRAM ELEMENT NUMBER AND NAME Program Element (PE) No. and Name	PROJECT NUMBER AND NAME Project Unit (PU) No. and Name: Congressional Plus-Ups : VARIOUS																	
CONGRESSIONAL PLUS-UPS:																			
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	FY 06																		
9840N																			
Improved Submarine Towed Array Reliability	2.500																		
<div style="border: 1px solid black; padding: 5px; min-height: 60px;"><p>Provide a brief description of the Congressional Plus-Up.</p><p>Improved Submarine Towed Array Reliability development provides procurement of Towed Array Handler reliability improvements such as the Capstan Wrap Reduction Modification and Control/Indicator unit upgrades which reduce stress on the towed array, improving reliability and availability of the array.</p></div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 25%;"></td><td style="width: 15%; text-align: center;">FY 06</td><td style="width: 15%;"></td><td style="width: 15%;"></td><td style="width: 30%;"></td></tr><tr><td>9841N</td><td></td><td></td><td></td><td></td></tr><tr><td>SONAR Advanced Optical Co-Processor (SOAC)</td><td style="text-align: center;">1.200</td><td></td><td></td><td></td></tr></table>						FY 06				9841N					SONAR Advanced Optical Co-Processor (SOAC)	1.200			
	FY 06																		
9841N																			
SONAR Advanced Optical Co-Processor (SOAC)	1.200																		
<div style="border: 1px solid black; padding: 5px; min-height: 60px;"><p>Provide a brief description of the Congressional Plus-Up.</p></div>																			

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 28 of 60)

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CLASSIFICATION:								
EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY /				BA 5		R-1 ITEM NOMENCLATURE PE: 0604503N TITLE: Submarine Systems Equipment Development		
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost		31.344	43.946	35.062	48.480	55.956	36.838	34.000
0742/Submarine Antenna Integrated System		23.916	24.579	18.606	32.051	41.839	27.484	25.018
1411/Submarine Tactical Communications System		7.428	14.567	16.456	16.429	14.117	9.354	8.982
1950C/Common Submarine Radio Room		0.000	1.000	0.000	0.000	0.000	0.000	0.000
9842N/Submarine Launched Expendable Communications		0.000	1.800	0.000	0.000	0.000	0.000	0.000
9843N/Submarine-Enabling Airborne Data Exchange		0.000	2.000	0.000	0.000	0.000	0.000	0.000
Quantity of RDT&E Articles								
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Submarine Support Equipment Program develops and improves submarine Electronic Warfare Support (ES) techniques and components, equipment, and systems that will increase submarine operational effectiveness in the increasingly dense and sophisticated electromagnetic environment caused by the proliferation of complex radar, communications, and navigation equipment of potential adversaries. Improvements are necessary for submarine ES to be effective in conducting the following mission areas: Joint Littoral Warfare, Joint Surveillance, Space and Electronic Warfare and Intelligence Collection, Maritime Protection, and Joint Strike.</p>								

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UNCLASSIFIED

Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 29 of 60)

UNCLASSIFIED

CLASSIFICATION:								
EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5		PROGRAM ELEMENT NUMBER AND NAME PE 0604503N Title: SSN 688 & Trident Modernization				PROJECT NUMBER AND NAME 0742 Submarine Integrated Antenna System		
COST (\$ in Millions)			FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Project Cost								
Project Cost			23.916	24.579	18.606	32.051	41.839	27.484
RDT&E Articles Qty								
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>The Submarine Integrated Antenna System (SIAS) project (0742) provides for the development and testing of submarine antennas designed to meet emerging submarine communications requirements of: (a) Improved frequency coverage and data rate capabilities of submarine antennas and their interface to the External Communications System (ECS), (b) Improved submarine antenna performance and data rate while the submarine is operating at speed and depth, (c) Antenna compatibility with new waveforms and receiver equipment, (d) Improved stealth capability of existing and future antennas and (e) Improved antenna design to reduce Total Ownership Cost. This project funds research and development for submarine antennas including (1) PrePlanned Product Improvement (P3I) efforts to existing antennas including Outboard Electronics-538/BRC (OE-538/BRC) Multi-Function Antenna improved Ultra High Frequency (IUHF) gain, Radio Frequency Distribution and Control System (RFDACS) efforts and the OE-562 Submarine High Data Rate (SubHDR) system development of X-band and Super High Frequency SHF) K-band capabilities, (2) Development of new antenna systems including Advanced High Data Rate Antenna (AdvHDR) and (3) Communication at Speed and Depth (CSD) design efforts. These efforts will provide Ship Submersible Nuclear (SSN), Ship Submersible Ballistic Nuclear (SSBN) and Ship Submersible Guided Nuclear (SSGN) platforms with an improved communications capability while operating at speed and depth thus enhancing operational flexibility and maintaining stealth in Littoral mission applications.</p> <p>U) JUSTIFICATION FOR BUDGET ACTIVITY:</p> <p>This program is funded under ENGINEERING AND MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.</p>								

R-1 SHOPPING LIST - Item No. 109

UNCLASSIFIED

Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 30 of 60)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 5	PROGRAM ELEMENT NUMBER AND NAME 0604503N SSN 688 & Trident Modernization	PROJECT NUMBER AND NAME 0742 Submarine Integrated Antenna System																	
(U) B. Accomplishments/Planned Program																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"></td> <td style="width: 30%;"></td> <td style="width: 20%; text-align: center;">FY 05</td> <td style="width: 20%; text-align: center;">FY 06</td> <td style="width: 20%; text-align: center;">FY 07</td> </tr> <tr> <td>Advanced HDR/SubHDR P-3I</td> <td></td> <td style="text-align: center;">13.937</td> <td style="text-align: center;">15.032</td> <td style="text-align: center;">8.064</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>							FY 05	FY 06	FY 07	Advanced HDR/SubHDR P-3I		13.937	15.032	8.064	RDT&E Articles Quantity				
		FY 05	FY 06	FY 07															
Advanced HDR/SubHDR P-3I		13.937	15.032	8.064															
RDT&E Articles Quantity																			
<p>FY05: Continued development of Super High Frequency Follow-On Terminal (SHF FOT) to accommodate SHF capability and meet the high priority fleet requirement to provide a secondary global Internet Protocol (IP) connectivity. Developed prototype unit, initial logistics development and testing requirements. (\$10.478) Began FOT modification development for simultaneous Global Broadcast System (GBS) and Extremely High Frequency (EHF) functionality (GBS Open Loop Point Mod and Antenna Position Unit (APU) Power Supply Upgrade). (\$3.459) FY06: Continue FOT modification development for SHF functionality and Software Communication Architecture (SCA) compliance (\$14.633) Commence program planning and generation of acquisition documentation for AdvHDR (\$3.399) FY07: Complete SHF FOT development/test and SCA compliance (\$1.258). Commence APU Power Supply Upgrade and Mast Flood Protection P3I for SubHDR (\$1.842). Commence development of systems engineering, detailed specification documentation, and the Engineering Development Model (EDM) antenna mast assembly, source selection, award of contract and conduct risk reduction and technology insertion investigations for AdvHDR \$4.964).</p>																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"></td> <td style="width: 30%;"></td> <td style="width: 20%; text-align: center;">FY 05</td> <td style="width: 20%; text-align: center;">FY 06</td> <td style="width: 20%; text-align: center;">FY 07</td> </tr> <tr> <td>Comms at Speed and Depth</td> <td></td> <td style="text-align: center;">5.132</td> <td style="text-align: center;">4.532</td> <td style="text-align: center;">4.984</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>							FY 05	FY 06	FY 07	Comms at Speed and Depth		5.132	4.532	4.984	RDT&E Articles Quantity				
		FY 05	FY 06	FY 07															
Comms at Speed and Depth		5.132	4.532	4.984															
RDT&E Articles Quantity																			
<p>FY05: Performed Analysis of Alternatives (AoA), technical risk reduction studies, and initiated systems engineering, environmental impact analysis, and generation of acquisition documentation for Comms at Speed and Depth (CSD) systems. Commenced development of Increment 1 (Expendable Buoys) and performed sea tests of Acoustic/Radio Frequency (RF) Gateway buoy technology demo prototypes (\$3.242). Initiated technical development of interface, requirements, installation, and environmental test plan documentation package to enable installation of the United States/United Kingdom (US/UK) Recoverable Tethered Fibre Optic (RTOF) non-expendable buoy (\$1.890). FY06: Continue to perform technology development and sea testing; a portion of this effort includes cost sharing with Office of Naval Research (ONR). Obtain approval of requirements documentation and develop pre-acquisition documentation for the overall Comms at Speed and Depth program. (\$2.121) Complete technical development of documentation package for RTOF submarine installation. Award contract for RTOF installation. Award contract for RTOF installation aboard US Navy submarine and initiate development of installation plan (\$2.411). FY07: Continue cost share technology development with ONR. Execute at-sea developmental testing for Expendable Buoys. Obtain approved Capability Development Document (CDD) and Milestone B decision for the Non-Expendable Solutions (NES) (Increment II). (\$3.466). Install RTOF system aboard OHIO Class submarine, provide technical oversight to sea test, remove RTOF system, and restore original capability to submarine (\$1.518).</p>																			

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Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 31 of 60)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 5	PROGRAM ELEMENT NUMBER AND NAME 0604503N SSN 688 & Trident Modernization	PROJECT NUMBER AND NAME 0742 Submarine Integrated Antenna System																	
(U) B. Accomplishments/Planned Program																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"></td> <td style="width: 30%;"></td> <td style="width: 20%; text-align: center;">FY 05</td> <td style="width: 20%; text-align: center;">FY 06</td> <td style="width: 20%; text-align: center;">FY 07</td> </tr> <tr> <td>Antenna Transition Engineering</td> <td></td> <td style="text-align: center;">4.847</td> <td style="text-align: center;">5.015</td> <td style="text-align: center;">5.558</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>							FY 05	FY 06	FY 07	Antenna Transition Engineering		4.847	5.015	5.558	RDT&E Articles Quantity				
		FY 05	FY 06	FY 07															
Antenna Transition Engineering		4.847	5.015	5.558															
RDT&E Articles Quantity																			
<p>FY05: Continued to provide emerging requirements and Satellite communications Database/Link analysis for other development programs (i.e. Iridium Enhanced Module Satellite Service (Iridium EMSS), Wideband Gapfiller System (WGS), Advanced Extremely High Frequency (EHF), and Wideband Commercial (\$1.071). Continued Preplanned Product Improvement (P3I) investigations and development efforts for legacy antenna systems (\$1.478). Continued concept engineering, new technology evaluations and assessments in support of current and future submarine antenna applications (\$2.298). FY06: Continue to provide emerging requirements and Satellite communications Database/Link analysis for other development programs (i.e. Mobile User Objective System/Advanced Narrowband System (MUOS/ANS), Iridium EMSS, WGS, Advanced EHF, and Wideband Commercial (\$1.446). Continue P3I investigations and development efforts for legacy antenna systems (\$1.326). Continue concept engineering, new technology evaluations and assessments in support of current and future submarine antenna applications (\$2.243) FY07: Continue to provide emerging requirements and Satellite communications Database/Link analysis for other development programs (i.e. MUOS/ANS, Iridium EMSS, WGS, Advanced EHF, and Wideband Commercial (\$1.138). Continue P3I investigations and development efforts for legacy antenna systems (\$1.726). Continue concept engineering, new technology evaluations and assessments in support of current and future submarine antenna applications (\$2.694)</p>																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"></td> <td style="width: 30%;"></td> <td style="width: 20%; text-align: center;">FY 05</td> <td style="width: 20%; text-align: center;">FY 06</td> <td style="width: 20%; text-align: center;">FY 07</td> </tr> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td></td> <td style="text-align: center;">0.000</td> <td style="text-align: center;">0.000</td> <td style="text-align: center;">0.000</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>							FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost		0.000	0.000	0.000	RDT&E Articles Quantity				
		FY 05	FY 06	FY 07															
Accomplishments/Effort/Subtotal Cost		0.000	0.000	0.000															
RDT&E Articles Quantity																			

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 5	PROGRAM ELEMENT NUMBER AND NAME 0604503N SSN 688 & Trident Modernization	PROJECT NUMBER AND NAME 0742 Submarine Integrated Antenna System

(U) C. PROGRAM CHANGE SUMMARY:

	FY 2005	FY 2006	FY 2007
(U) Funding:			
FY06 President's Budget	25.274	24.972	18.492
FY07 President's Budget	23.916	24.579	18.606
Total Adjustments	-1.358	-0.393	0.114
Summary of Adjustments * Include Issue No. & Cong. Language Sec. if applicable			
Small Business Innovation Research	-0.349		
Federal Technology Transfer Tax	-0.007		
Department of Energy Transfer	-0.019		
Miscellaneous Navy Adjustments	-1.014		
Nuclear Physical Security (OSD-09)	0.005		
Trusted Foundry (OSD-14)	0.026		
NWCF Civpers Efficiencies			-0.110
PBD 604 Inflation			0.082
PB07 Fuel Price Adjustment			0.115
Civpers Pay Raise			0.027
Federally Funded Research		-0.114	0.000
Revised Economic Assumptions		-0.018	0.000
Congressional Action 1% Reduction		-0.261	0.000
Subtotal	-1.358	-0.393	0.114

(U) Schedule:

SubHDR FOT/SHF Initial Operating Capability (IOC) rephased from 2nd qtr FY06 to 4th qtr FY07.

K-band no longer applicable to SubHDR due to antenna development being ahead of requirement for Unmanned Aerial Vehicle (UAV) connectivity.

(U) Technical:

Not Applicable

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 33 of 60)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5		PROGRAM ELEMENT NUMBER AND NAME 0604503N SSN 688 & Trident Modernization			PROJECT NUMBER AND NAME 0742 Submarine Integrated Antenna System					
(U) D. OTHER PROGRAM FUNDING SUMMARY:										
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>	
3130 Submarine Communications	61.744	81.062	47.316	42.739	28.924	46.885	69.392	Continue	Continue	
Related RDT&E: PE 0602232N Space and Electronic Warfare (SEW) Technology PE 0303109N Satellite Communications - Provides for the EHF transmitter and receiver that utilized the antenna developed under this program.										
(U) E. ACQUISITION STRATEGY: *										
Program Milestones: FY 2008 1Q Comms at Speed and Depth Milestone C (MS-C) for Increment I; FY2007 3Q Adv HDR MS-B T&E Milestones: Contract Milestones:										
* Not required for Budget Activities 1,2,3, and 6										

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UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:												
Exhibit R-3 Cost Analysis (page 1)									DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5			PROGRAM ELEMENT 0604503N SSN 688 & Trident Modernization			PROJECT NUMBER AND NAME 0742 Submarine Integrated Antenna System						
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
Digital Interface Dev (HDR)	CPAF	Raytheon, Marlboro, MA	3.545								3.545	3.545
Hardware Dev (HDR/Adv HDR)	WX	NUWC, Newport, RI	7.674	0.000		1.411		0.000			9.085	0.000
Hardware Dev (HDR SHF/FOT)	TBD	Raytheon, Marlboro, MA	1.717	8.615	TBD	4.300	TBD	1.069		Cont	Cont	16.863
Hardware Dev (Trans Eng)	CPAF	Sippican Marion, MA	1.410							Cont	Cont	1.410
Systems Engineering (Comms)	TBD	TBD		1.705		3.669		4.514				
Systems Engineering (HDR/AdvHDR)	TBD	TBD		0.000		5.395		1.846				
System Engineering (HDR/AdvHDR)	WX	NUWC, Newport, RI	6.215	4.150		1.261		3.307			14.933	0.000
System Engineering (Trans Eng)	WX	NUWC, Newport, RI	4.731	4.956		4.238		4.192			18.117	
Systems Engineering (Comms)	WX	NUWC, Newport, RI	0.000	2.805		2.896		2.399		Cont	8.100	0.000
Subtotal Product Development			25.292	22.231		23.170		17.327		0.000	88.020	0.000
Remarks:												
Development Support											0.000	0.000
Software Development	WX	NUWC, Newport, RI	0.739								0.739	0.000
Training Development											0.000	0.000
Integrated Logistics Support	Various	Various	0.530	0.599		0.438		0.441			2.008	0.000
Configuration Management											0.000	0.000
Technical Data											0.000	0.000
GFE											0.000	0.000
Subtotal Support			1.269	0.599		0.438		0.441		0.000	2.747	0.000
Remarks:												

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 35 of 60)

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CLASSIFICATION:												
Exhibit R-3 Cost Analysis (page 2)									DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5			PROGRAM ELEMENT 0604503N SSN 688 & Trident Modernization			PROJECT NUMBER AND NAME 0742 Submarine Integrated Antenna System						
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											0.000	0.000
Operational Test & Evaluation											0.000	0.000
Developmental/Operational T&E	Various	Various	1.167	0.100							1.267	0.000
Test Assets											0.000	0.000
Tooling											0.000	0.000
GFE											0.000	0.000
Subtotal T&E			1.167	0.100		0.000		0.000		0.000	1.267	0.000
Remarks:												
Contractor Engineering Support											0.000	0.000
Government Engineering Support											0.000	0.000
Program Management Support	Various	Various	1.595	0.986		0.971		0.838			4.390	0.000
Travel											0.000	0.000
Subtotal Management			1.595	0.986		0.971		0.838		0.000	4.390	0.000
Remarks:												
Total Cost			29.323	23.916		24.579		18.606		0.000	96.424	0.000
Remarks:												

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 36 of 60)

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R4, Schedule Profile														DATE: February 2006														
APPROPRIATION/BUDGET ACTIVITY														PROJECT NUMBER AND NAME														
RDT&E, N / PE: 0604503N TITLE: SSN 688 & TRIDENT MODERNIZATION														0742 Submarine Integrated Antenna System														
Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition (SubHDR) Milestones												☆																
				FOT/SHF CDR								FOT/SHF IOC																
Prototype Phase												FOT/SHF PRR																
System Development																												
EDM Delivery																												
Software Delivery																												
Test & Evaluation Milestones																												
Development Test																												
Technical Evaluation																												
Operational Evaluation																												
Production Milestones																												
LRIP Production Start-up																												
LRIP Production Delivery																												
Full Rate Production Start-up (ECP drawer)																												
Full Rate Production Delivery																												

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EXHIBIT R-2, RDT&E Budget Item No. 109

Exhibit R-2, RDT&E Budget Item Justification

(Exhibit R-2, page 37 of 60)

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

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&BA-5		PROGRAM ELEMENT PE: 0604503N TITLE: SSN 688 & TRIDENT MODERNIZATION			PROJECT NUMBER AND NAME 0742 Submarine Integrated Antenna System			
Schedule Profile (SubHDR)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
FOT/SHF Critical Design Review (CDR)		4Q						
FOT/SHF Eng Dev Model (EDM)				1Q				
FOT/SHF Developmental Testing (DT)				3Q				
FOT/SHF Technical Evaluation (TECHEVAL)				3Q				
FOT/SHF Operational Evaluation (OPEVAL)				4Q				
FOT/SHF Software Delivery				3Q				
FOT/SHF Preproduction Readiness Review (PRR)				3Q				
FOT/SHF Low Rate Production (LRIP) Start-up								
FOT/SHF Low Rate Production (LRIP) delivery				2Q				
FOT/SHF Full Rate Production (FRP) Start-up					1Q			
FOT/SHF Full Rate Production (FRP) First Delivery						1Q		
FOT/SHF IOC				4Q				

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 38 of 60)

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CLASSIFICATION:

EXHIBIT R4, Schedule Profile																DATE:				February 2006											
APPROPRIATION/BUDGET / PROGRAM ELEMENT NUMBER AND NAME												PROJECT NUMBER AND NAME																			
RDT&E, N / BA5				PE: 0604305N TITLE: SSN 688 & TRIDENT MODERNIZATION												0742 Submarine Integrated Antenna System															
Fiscal Year	2005				2006				2007				2008				2009				2010			2011							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	1	2	3	4				
Acquisition (AdvHDR) Milestones					ACQUISITION PLANNING & DOCUMENTATION						MS B △							DRR △									MS C △				
Requirements											CDD △																CPD △				
System Development											SDR △		PDR △			CDR △															
Engineering Dev. Model											EDM DEVELOPMENT																				
Deliveries									SOURCE SELECTION										Lab 1 △		Lab 2 △				Lab 3 △						
Development Test																		TRR △ □		DT-IIA □		DT-IIB □			DT-IIC □						

R-1 SHOPPING LIST - Item No. 109

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

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA5	PROGRAM ELEMENT PE: 0604305N TITLE: SSN 688 & TRIDENT MODERNIZATION				PROJECT NUMBER AND NAME 0742 Submarine Integrated Antenna System				
Schedule Profile (AdvHDR)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
Acquisition Planning & Documentation			1Q-4Q						
Approval of Capability Development Document (CDD)				3Q					
Milestone B Decision (MS B)				3Q					
Source Selection				1Q-3Q					
Engineering Development Model Development				3Q--	1Q--	1Q--	1Q--	1Q--	
System Design Review (SDR)				4Q					
Preliminary Design Review (PDR)					2Q				
Critical Design Review (CDR)						1Q			
Design Readiness Review (DRR)						2Q			
Test Readiness Review (TRR)						3Q			
Eng Dev Model (EDM) - Lab 1 Delivery						3Q			
Development Test DT-IIA						3Q-4Q			
Eng Dev Model (EDM) - Lab 2 Delivery							2Q		
Development Test DT-IIB							2Q-3Q		
Eng Dev Model (EDM) - Lab 3 Delivery								2Q	
Development Test DT-IIC								2Q-3Q	
Approval of Capability Production Document (CPD)								3Q	
Milestone C (MS C) Decision								4Q	

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UNCLASSIFIED

Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 40 of 60)

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R4, Schedule Profile														DATE: February 2006															
APPROPRIATION/BUDGET		PROGRAM ELEMENT NUMBER AND NAME																PROJECT NUMBER AND NAME											
RDT&E, N / BA5		PE: 0604305N TITLE: SSN 688 & TRIDENT MODERNIZATION																0742 Submarine Integrated Antenna System											
Fiscal Year	2005				2006				2007				2008				2009				2010				2011				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
Acquisition (Comms) Milestones																													
Technology Development & Requirements																													
System Development Increment I																													
System Development Increment II																													
Engineering Dev. Model Increment II																													
Deliveries																													
DT/OT Increment I																													
DT/OT Increment II																													
Production Milestones																													
LRIP																													
FRP																													
Deliveries																													
RTOF Tech Demo (US/UK)																													

R-1 SHOPPING LIST - Item No. 1

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification

(Exhibit R-2, page 41 of 60)

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

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT				PROJECT NUMBER AND NAME			
RDT&E, N / BA5	PE: 0604305N TITLE: SSN 688 & TRIDENT MODERNIZATION				0742 Submarine Integrated Antenna System			
Schedule Profile (Comms)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
Technolgy Development	1Q--	2Q						
Approval of Initial Capability Document (ICD)	1Q--							
RTOF Test Planning & Engineering	1Q--	1Q--						
Analysis of Alternatives	2Q-	1Q						
Approval of Capability Development Document (CDD)		2Q						
Milestone B Decision (MS B)		2Q						
EDM Development for Increment I		2Q--	1Q--					
RTOF Install, Test, & Restore			1Q-4Q					
System Design Review (SDR) for Increment I		3Q						
Preliminary Design Review (PDR) for Increment I		4Q						
Critical Design Review (CDR) for Increment I			4Q					
Approval of CDD for Increment II			4Q					
Design Readiness Review (DRR) for Increment I				1Q				
EDM Development for Increment II				1Q--	1Q--	1Q--	1Q	
Test Readiness Review (TRR) for Increment I				1Q				
System Design Review (SDR) for Increment II				1Q				
Eng Dev Model (EDM) - Lab 1 Delivery for Increment I				2Q				
Development Test DT-IIA for Increment I				2Q-3Q				
Preliminary Design Review (PDR) for Increment II				3Q				
Eng Dev Model (EDM) - Lab 2 Delivery for Increment I				4Q				
Development Test DT-IIB for Increment I				4Q				
Approval of Capability Production Document (CPD) (Inc. I)				4Q				
Milestone C (MS C) Decision for Increment I				4Q				
Low-Rate Initial Production (LRIP) for Increment I					1Q-2Q			
Operational Testing (OT-IIA) for Increment I					3Q			
Critical Design Review (CDR) for Increment II					3Q			
Initial Operational Capability (IOC) for Increment I					4Q			
Full Rate Production Decision for Increment I						1Q		
Test Readiness Review (TRR) for Increment II						1Q		
Development Test DT-IIA for Increment II						2Q-3Q		
Eng Dev Model (EDM) - Lab 1 Delivery for Increment II						3Q		
Development Test DT-IIB for Increment II						4Q		
Eng Dev Model (EDM) - Lab 2 Delivery for Increment II							1Q	
Approval of CPD for Increment II							1Q	
Milestone C (MS C) Decision for Increment II							2Q	
Low-Rate Initial Production (LRIP) for Increment II							2Q-4Q	
Operational Testing (OT-IIA) for Increment II							4Q	

R-1 SHOPPING LIST - Item No. 109

UNCLASSIFIED

Exhibit R-2, RDTEN Budget Item Justification

(Exhibit R-2, page 42 of 60)

UNCLASSIFIED

CLASSIFICATION:								
EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5		PROGRAM ELEMENT NUMBER AND NAME PE 0604503N Title: SSN 688 & Trident Modernization				PROJECT NUMBER AND NAME 1411 Submarine Tactical Communications System		
COST (\$ in Millions)			FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Project Cost			7.428	14.567	16.456	16.429	14.117	9.354
RDT&E Articles Qty								
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>The Submarine Tactical Communications System project (1411) provides submarines with communications systems designed to: (a) enhance data throughput through automation and integrated network management; (b) convert to ForceNet and tactical data networks, (c) provide submarines Internet Protocol (IP) connectivity; (d) be interoperable with other joint U.S. and combined allied military networks; and (e) improve reliability, maintainability, and availability. This is accomplished by providing the submarine with a properly integrated mix of fully interoperable Navy standard and Commercial Off-The-Shelf (COTS) communication equipment covering a wide range of frequencies and modes. The Common Submarine Radio Room (CSRR) integrates COTS and Government Off-The-Shelf (GOTS) components into a single radio room configuration for all classes of submarines. CSRR will leverage the development of VIRGINIA Class Exterior Communications System (ECS) which includes Open Systems Architecture (OSA) design. The project provides for the development of a single Land-Based Integration Test Facility that consolidates existing Land -Based Testing Facilities into one facility supporting all classes of submarines. This project funds the development of a replacement Simulation/Stimulation (SIM/STIM) suite to support testing and training requirements. The project includes system engineering efforts associated with demonstration of new technology which will allow the submarine to connect to the Global Information Gig (GiG) and participate in strike group, as well as joint operations. The new technology will ensure the submarine's continued ability to participate in Network-Centric Warfare and exploit its inherent stealth capabilities in support of the joint and combined fight to achieve total battlespace dominance.</p> <p>U) JUSTIFICATION FOR BUDGET ACTIVITY:</p> <p>This program is funded under SYSTEMS DEVELOPMENT and DEMONSTRATION because it encompasses development and demonstration of new end-items prior to production approval decision.</p>								

R-1 SHOPPING LIST - Item No. 109

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604503N SSN 688 & TRIDENT MODERNIZATION	PROJECT NUMBER AND NAME 1411 Submarine Tactical Communications System																	
(U) B. Accomplishments/Planned Program																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;">Common Submarine Radio Room (CSRR)/</td> <td style="width: 10%;"></td> <td style="width: 15%;">FY05</td> <td style="width: 15%;">FY06</td> <td style="width: 20%;">FY07</td> </tr> <tr> <td>Submarine Communications Support System (SCSS)</td> <td></td> <td>6.609</td> <td>13.724</td> <td>15.629</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>					Common Submarine Radio Room (CSRR)/		FY05	FY06	FY07	Submarine Communications Support System (SCSS)		6.609	13.724	15.629	RDT&E Articles Quantity				
Common Submarine Radio Room (CSRR)/		FY05	FY06	FY07															
Submarine Communications Support System (SCSS)		6.609	13.724	15.629															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 10px;"> <p>FY05 Accomplishments: Performed system engineering/design development for 688 Class SCSS modernization (\$.351). Completed CSRR integration and test support for OHIO class submarines (\$4.798). Continued Information Security (INFOSEC) certification of all classes CSRR and commence Information Assurance (IA) recertification of legacy 688 class radio rooms (\$.760) Commenced Engineering Change Proposal (ECP) development supporting Integration Test Facility (ITF) (\$.700). FY06: Continue system engineering/design development for 688 SCSS modernization (\$.300). Commence system engineering and development of Multi Purpose Reconfigurable Training System (MRTS) (\$2.238). Continue Information Assurance (IA) and Information Security (INFOSEC) certification of all classes CSRR and continue IA recertification of legacy 688 class radio rooms (\$.776) Commence system engineering, design development testing, software design development supporting CSRR modernization (\$10.410) FY07: Continue system engineering/design development for 688 SCSS modernization (\$.306). Continue system engineering and development of Multi Purpose Reconfigurable Training System (MRTS) (\$1.738). Continue IA and continue INFOSEC certification of all classes CSRR and continue IA recertification of legacy 688 class radio rooms (\$.792) Continue system engineering, test plan design development, software development, Integrated Logistics product development and curricula development for CSRR modernization (\$4.909). Commence design/integration engineering, development testing, Follow-on Test and Evaluation support, software development and Subschool curricula development in support of unique 688 class CSRR requirements (\$6.214). Commence unique 688 class software development (\$1.670).</p> </div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;"></td> <td style="width: 10%;"></td> <td style="width: 15%;">FY05</td> <td style="width: 15%;">FY06</td> <td style="width: 20%;">FY07</td> </tr> <tr> <td>BCA OPCON architecture</td> <td></td> <td>0.819</td> <td>0.843</td> <td>0.827</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>							FY05	FY06	FY07	BCA OPCON architecture		0.819	0.843	0.827	RDT&E Articles Quantity				
		FY05	FY06	FY07															
BCA OPCON architecture		0.819	0.843	0.827															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 10px;"> <p>FY05 Accomplishments: Continued system engineering supporting Broadcast Authority Control/Operational Control (BCA/OPCON) architecture (\$.819). FY06: Continue system engineering supporting BCA/OPCON architecture (\$.843). FY07: Continue system engineering supporting BCA/OPCON architecture (\$.827).</p> </div>																			

R-1 SHOPPING LIST - Item No. 109

UNCLASSIFIED

Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 44 of 60)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604503N SSN 688 & TRIDENT MODERNIZATION	PROJECT NUMBER AND NAME 1411 Submarine Tactical Communications System		

(U) C. PROGRAM CHANGE SUMMARY:

	FY 2005	FY 2006	FY2007
(U) Funding:			
FY06 President's Budget	7.573	14.789	17.982
FY07 President's Budget	7.428	14.567	16.456
Total Adjustments	-0.145	-0.222	-1.526
Summary of Adjustments			
Small Business Innovation Research (SBIR)	-0.049		
Department of Energy Transfer	-0.006		
Nuclear Physical Security (OSD-9)	0.002		
Trusted Foundry (OSD-14)	0.015		
Miscellaneous Navy Adjustments	-0.107		
Contract Support Reduction			-1.566
NWCF Civpers Efficiencies			-0.063
PBD 604 Inflation			0.080
Sec 8125 Revised Economic Assumptions		-0.067	
Civpers Pay Raise Rate Change		0.000	0.023
Congressional Action 1% Reduction		-0.155	0.000
Subtotal	-0.145	-0.222	-1.526

(U) Schedule:

CSRR program Milestone C 3rd Qtr FY05.

(U) Technical:

Not Applicable

R-1 SHOPPING LIST - Item No. 109

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 45 of 60)

UNCLASSIFIED

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 / BA5			0604503N SSN 688 & TRIDENT MODERNIZATION			1411 Submarine Tactical Communications System				
(U) D. OTHER PROGRAM FUNDING SUMMARY:										
<u>Line Item No. & Name</u>		<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY2011</u>	To <u>Complete</u>	Total <u>Cost</u>
3130000 Submarine Communications		31.991	38.967	45.039	49.327	57.536	80.262	109.629	Continue	Continue
<p>Related RDT&E:</p> <p>PE 0602232N Space and Electronic Warfare (SEW) Technology</p> <p>PE 0204163N Fleet Communications</p>										
(U) E. ACQUISITION STRATEGY: *										
<p>SCSS provides the system engineering and integration for the N77/N6 narrowband and wideband modernization plans on SSN 688 Class Submarines.</p> <p>CSRR redesignated from Acquisition Category (ACAT) III to ACAT II per Assistant Secretary of Navy for Research, Development, and Acquisition (ASN (RD&A)) memorandum dated 19 April 2005.</p> <p>CSRR transforms SSN 688, SSBN 726 and SSN 21 Class radio room from suites of class-specific, closed system equipment to a common design which incorporates Open System Architecture (OSA) communications equipment. CSRR will: leverage off VIRGINIA Class Exterior Communication System (ECS) design, use VIRGINIA Class ECS control and management software, apply a systems approach to design and implementation of Joint Maritime Communication System (JMCOMS), and maximize use of COTS products and emerging technologies.</p> <p>Program Milestones: FY 2005 CSRR 3Q-MS-C</p> <p>T&E Milestones: FY 2007 SSBN CSRR 1Q Technical Evaluation (TECHEVAL), FY 2007 SSBN CSRR 2Q Operational Evaluation (OPEVAL)</p>										
<p>* Not required for Budget Activities 1,2,3, and 6</p> <p>** Required for DON and OSD submit only.</p>										

R-1 SHOPPING LIST - Item No. 109

UNCLASSIFIED

Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 46 of 60)

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-5			0604503N SSN 688 & TRIDENT MODERNIZATION			1411 Submarine Tactical Communications System						
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
Primary Hardware Development											0.000	
Hardware Development*	CPFF	SSC-SD/NUWC Newport, RI	2.776								Continuing	Continuing
Hardware Development**	CPFF	SSCs/NUWC Newport, RI	0.211							Continuing	Continuing	Continuing
MCS Development	Various	Motorola, misc labs	10.214		Various							
H/W Development Facilities	Various	NUWC Newport, RI										
Software Development	CPFFWX	SSC-SD San Diego, CA	2.068					0.140	TBD	Continuing	Continuing	
Software Development	WX	NUWC Newport, RI	5.498					2.909	TBD	Continuing	Continuing	Continuing
MRTS Development	CFCC	NAVAIR, Orlando		0.000	TBD	2.238					2.238	2.238
Systems Engineering	Various	Misc Labs	11.448	0.315		3.164		4.789			19.716	Continuing
Systems Eng/Design 688 Class	Various	Misc Labs		0.000		4.674		5.146				
Site Platform Integration/Certification	Various	NUWC Newport, RI	4.794	4.634		0.748		1.853			12.029	
BCA/OPCON architecture	WX	NUWC Newport, RI	0.856	0.819		0.858		0.819			3.352	
Subtotal Product Development			37.865	5.768		11.682		15.656		Continuing	Continuing	Continuing
Remarks: * SCSS Development for SSN 688 Class submarines **CSRR Development for OHIO Class submarines												
Development Support												
Software Development (CSRR)	CPAF	Lockheed Martin Tech Sys	8.793								8.793	8.793
Integrated Logistics Support (IETM)	WX	NUWC Newport, RI	0.300								0.300	0.300
Software Engineering	WX	SSC-SD San Diego, CA	0.653			0.500					0.500	0.500
Configuration Management												
INFOSEC/IA Certification	CPFF	Merdan/SSC SD	0.906	0.760							1.666	1.666
Studies & Analyses											0.000	0.000
GFE											0.000	0.000
Award Fees											0.000	0.000
Subtotal Support			10.652	0.760		0.500		0.000		0.000	11.912	11.912
Remarks: *Supports the development of the Multi-Link Training Simulator replacement												

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDTE&E, N / BA-5			PROGRAM ELEMENT 0604503N SSN 688 & TRIDENT MODERNIZATION			PROJECT NUMBER AND NAME 1411 Submarine Tactical Communications System						
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											0.000	
Operational Test & Evaluation											0.000	
Developmental/Operational T&E	Various	Various	4.530	0.000		1.635		0.000			6.165	Continuing
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			4.530	0.000		1.635		0.000		Continuing	Continuing	Continuing
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support	Various	Various	4.590	0.900	Various	0.750	Various	0.800	Various	Continuing	Continuing	Continuing
Travel											0.000	
Transportation											0.000	
SBIR Assessment											0.000	
Subtotal Management			4.590	0.900		0.750		0.800		Continuing	Continuing	Continuing
Remarks:												
Total Cost			57.637	7.428		14.567		16.456		Continuing	Continuing	Continuing
Remarks:												

R-1 SHOPPING LIST - Item No. 109

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Exhibit R-2, RDTE Budget Item Justification
(Exhibit R-2, page 48 of 60)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R4, Schedule Profile																								DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA5								PROGRAM ELEMENT NUMBER AND NAME PE: 0604503N TITLE: SSN 688 & TRIDENT MODERNIZATION								PROJECT NUMBER AND NAME 1411 Submarine Tactical Communications System												
Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	5	6	7	8	9	10	11	12
Acquisition (CSRR) Milestones			MS C ▲								IOC ☆																	
Software System Development	CDR SSS	FAT ▲▲																										
Software Interim Delivery #1 Fleet SW Delivery	ITF ITF						Fleet △																					
Test & Evaluation Milestones		SEAWOLF DT-C1A1		▲	SSN 22 TECHEVAL		△	△	SSN 22 OPEVAL																			
Development Test						SSBN TECHEVAL		△	△	SSBN OPEVAL											LA TECHEVAL		△	△	LA OPEVAL			
Operational Test						SSGN TECHEVAL		△	△	SSGN OPEVAL				SEAWOLF FOT&E	△	SSBN FOT&E	△	SSGN FOT&E	△									
Production Milestones		LRIP					LRIP																					
LRIP			▲				△																					
FRP											FRP △																	
Deliveries			LRIP			LRIP					LRIP																	

R-1 SHOPPING LIST - Item No. 109

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

UNCLASSIFIED

Exhibit R-2, RDTEEN Budget Item Justification
(Exhibit R-2, page 49 of 60)

UNCLASSIFIED

CLASSIFICATION:

[illegible]

R-1 SHOPPING LIST - Item No. 109

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:								
EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5		PROGRAM ELEMENT NUMBER AND NAME PE 0604503N Title: SSN 688 & Trident Modernization				PROJECT NUMBER AND NAME 1950C Common Submarine Radio Room		
COST (\$ in Millions)			FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Project Cost			0.000	1.000	0.000	0.000	0.000	0.000
RDT&E Articles Qty								
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>The Common Submarine Radio Room (CSRR) integrates COTS and GOTS components into a single radio room configuration for all classes of submarines. CSRR will leverage the development of VIRGINIA Class Exterior Communications System (ECS) which includes Open Systems Architecture (OSA) design. The project provides for the development of a single Land-Based Integration Test Facility that consolidates existing Land -Based Testing Facilities into one facility supporting all classes of submarines. This project funds the development of a replacement Simulation/Stimulation (SIM/STIM) suite to support testing and training requirements. The project includes system engineering efforts associated with demonstration of new technology which will allow the submarine to connect to the Global Information Gig (GiG) and participate in strike group, as well as joint operations. The new technology will ensure the submarine's continued ability to participate in Network-Centric Warfare and exploit its inherent stealth capabilities in support of the joint and combined fight to achieve total battlespace dominance.</p> <p>U) JUSTIFICATION FOR BUDGET ACTIVITY:</p> <p>This program is funded under SYSTEMS DEVELOPMENT and DEMONSTRATION because it encompasses development and demonstration of new end-items prior to production approval decision.</p>								

R-1 SHOPPING LIST - Item No. 109

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604503N SSN 688 & TRIDENT MODERNIZATION	PROJECT NUMBER AND NAME 1950C Common Submarine Radio Room																	
(U) B. Accomplishments/Planned Program																			
<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 30%;">Common Submarine Radio Room (CSRR)/</td><td style="width: 15%;"></td><td style="width: 15%;">FY05</td><td style="width: 15%;">FY06</td><td style="width: 15%;">FY07</td></tr><tr><td>Submarine Communications Support System (SCSS)</td><td></td><td>0.000</td><td>1.000</td><td>0.000</td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></table>					Common Submarine Radio Room (CSRR)/		FY05	FY06	FY07	Submarine Communications Support System (SCSS)		0.000	1.000	0.000	RDT&E Articles Quantity				
Common Submarine Radio Room (CSRR)/		FY05	FY06	FY07															
Submarine Communications Support System (SCSS)		0.000	1.000	0.000															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; min-height: 200px; margin-top: 10px;"><p>FY06 Accomplishments: Develop changes to CSRR architecture to address obsolescence in the operating system, specifically the Solaris and Versa-Module-Eurocard (VME) UltraSPARC Themis processor and associated hardware as governed by the Q-70 program.</p></div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 30%; height: 20px;"></td><td style="width: 15%;"></td><td style="width: 15%;"></td><td style="width: 15%;"></td><td style="width: 15%;"></td></tr><tr><td style="height: 20px;"></td><td></td><td></td><td></td><td></td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></table> <div style="border: 1px solid black; height: 80px; margin-top: 10px;"></div>															RDT&E Articles Quantity				
RDT&E Articles Quantity																			

R-1 SHOPPING LIST - Item No. 109

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604503N SSN 688 & TRIDENT MODERNIZATION	PROJECT NUMBER AND NAME 1950C Common Submarine Radio Room	
(U) C. PROGRAM CHANGE SUMMARY:			
(U) Funding:	FY 2005	FY 2006	FY2007
FY06 President's Budget	0.000	0.000	0.000
FY07 President's Budget	0.000	1.000	0.000
Total Adjustments	0.000	1.000	0.000
Summary of Adjustments			
Issue 62574 Common Submarine Radio Room	<u>0.000</u>	<u>1.000</u>	<u>0.000</u>
Subtotal	0.000	1.000	0.000
(U) Schedule:			
Contract Award 4Q FY06.			
Software Delivery 3Q FY07.			
(U) Technical:			
Not Applicable			

R-1 SHOPPING LIST - Item No. 109

UNCLASSIFIED

UNCLASSIFIED

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 / BA5		0604503N SSN 688 & TRIDENT MODERNIZATION			1950C Common Submarine Radio Room				
(U) D. OTHER PROGRAM FUNDING SUMMARY:									
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY2011</u>	To <u>Complete</u>	Total <u>Cost</u>
3130000 Submarine Communications	31.991	38.967	45.039	49.327	57.536	80.262	109.629	Continue	Continue
Related RDT&E: PE 0602232N Space and Electronic Warfare (SEW) Technology PE 0204163N Fleet Communications									
(U) E. ACQUISITION STRATEGY: *									
CSRR redesignated from ACAT III to ACAT II per ASN (RD&A) memorandum dated 19 April 2005. CSRR transforms SSN 688, SSBN 726 and SSN 21 Class radio room from suites of class-specific, closed system equipment to a common design that incorporates OSA communications equipment. CSRR will: leverage off VIRGINIA Class ECS design, use VIRGINIA Class ECS control and management software, apply a systems approach to design and implementation of JMCOMS, and maximize use of COTS products and emerging technologies.									
Program Milestones: T&E Milestones:									
* Not required for Budget Activities 1,2,3, and 6 ** Required for DON and OSD submit only.									

R-1 SHOPPING LIST - Item No. 109

UNCLASSIFIED

Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 54 of 60)

UNCLASSIFIED

CLASSIFICATION:								
EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5		PROGRAM ELEMENT NUMBER AND NAME PE 0604503N Title: SSN 688 & Trident Modernization				PROJECT NUMBER AND NAME 9842N Submarine Launched Expendable Communications		
COST (\$ in Millions)			FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Project Cost		Project Cost		1.800				
RDT&E Articles Qty								
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>The Navy is currently investing in new technologies to provide communications to submarines operating at speed and depth. Submarine Communications at Speed and Depth (CSD) extends the principles of FORCEnet below the ocean surface to provide the submarine force with two-way networked connectivity when operating submerged, and within operationally acceptable timelines. The goal of CSD is to increase the effectiveness of submarines in support of Navy, Joint, and Coalition warfighters by enabling two-way communications and Network Centric Warfare while preserving their unique stealth posture. This increased capability is expected to provide improved connectivity to submarines during missions such as coordinated Anti-Submarine Warfare (ASW), supporting Special Operations Forces, coordinated Strike, and Intelligence, Surveillance & Reconnaissance (ISR) collections.</p> <p>The Mission Reconfigurable Expendable Buoy System (MREBS) will enable a two-way global satellite communications capability when the submarine is operating over a broad speed/depth envelope. This has been identified by Chief of Naval Operations (CNO) N77 (Undersea Warfare) as a high priority capability, and this technical concept was recommended for acquisition by the CSD Analysis of Alternatives (AoA) performed in 2005. In addition, MREBS could be the basis for future evolutionary acquisition in the CSD program, since it enables the integration of other communications payloads and sensors utilizing a reconfigurable package rather than requiring a complete redesign for each future capability.</p> <p>U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING AND MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.</p>								

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 5	PROGRAM ELEMENT NUMBER AND NAME 0604503N SSN 688 & Trident Modernization	PROJECT NUMBER AND NAME 9842N Submarine Launched Expendable Communications																	
(U) B. Accomplishments/Planned Program																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 15%;"></th><th style="width: 15%;">FY 05</th><th style="width: 15%;">FY 06</th><th style="width: 15%;">FY 07</th></tr></thead><tbody><tr><td>Advanced HDR/SubHDR P-3I</td><td></td><td></td><td>1.800</td><td></td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>							FY 05	FY 06	FY 07	Advanced HDR/SubHDR P-3I			1.800		RDT&E Articles Quantity				
		FY 05	FY 06	FY 07															
Advanced HDR/SubHDR P-3I			1.800																
RDT&E Articles Quantity																			
<div style="border: 1px solid black; min-height: 150px; margin-top: 10px;">FY06: Develop a Mission Reconfigurable Expendable Buoy System (MRBS) to accommodate critical, below periscope depth communication and sensing needs.</div>																			

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(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2005	FY 2006	FY 2007
FY06 President's Budget		0.000	
FY07 President's Budget		<u>1.800</u>	
Total Adjustments	0.000	1.800	0.000
Summary of Adjustments * Include Issue No. & Cong. Language Sec. if applicable			
Issue 62776 Submarine Launched Expendable Communications		<u>1.800</u>	
Subtotal	0.000	1.800	0.000

(U) Schedule:

(U) Technical:
Not Applicable

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 57 of 60)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5			PROGRAM ELEMENT NUMBER AND NAME 0604503N SSN 688 & Trident Modernization			PROJECT NUMBER AND NAME 9842N Submarine Launched Expendable Communications				
(U) D. OTHER PROGRAM FUNDING SUMMARY:										
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>	
3130 Submarine Communications	0.000	0.000	0.000	0.000	3.492	16.074	12.011	Continue	Continue	
Related RDT&E: PE 0602232N Space and Electronic Warfare (SEW) Technology PE 0303109N Satellite Communications - Provides for the EHF transmitter and receiver that utilized the antenna developed under this program.										
(U) E. ACQUISITION STRATEGY: *										
Program Milestones: T&E Milestones: Contract Milestones:										
* Not required for Budget Activities 1,2,3, and 6										

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 58 of 60)

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CLASSIFICATION:								
EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5		PROGRAM ELEMENT NUMBER AND NAME PE 0604503N Title: SSN 688 & Trident Modernization			PROJECT NUMBER AND NAME 9843N Submarine-Enabling Airborne Data Exchange (SEADEEP)			
COST (\$ in Millions)			FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Project Cost Project Cost				2.000				
RDT&E Articles Qty								
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>Provide Navy RDT&E funding to build an adaptive communication signal processor for the Submarine-Enabling Airborne Data Exchange (SEADEEP) at-sea demonstration. Because submarine communication depth and data rate for SEADEEP are limited by both the environment and time of day, coding and communications signal processing which can dynamically adapt to the propagation channel conditions can provide significant performance improvement and enhance operational utility. This program will develop an advanced communications signal processor that will employ concatenated coding to maximize link performance without adding additional laser power or increasing receiver aperture. In addition, this processor will optimize available average laser power and laser pulse repetition characteristics to maximize performance in adverse conditions. Advanced coding and decoding techniques will improve the detection of unequal energy laser pulses without any additional parity bits or symbols. This is especially important for the dynamic SEADEEP optical communications link to maintain optimum link parameters under the fast changing propagation channel conditions. The impact of this communications signal processing approach is to provide improved communications link performance, which also can be used to lower overall system cost through design simplification. This SEADEEP adaptive communications processor would be integrated into the SEADEEP ONR technology deliverables (airborne and submarine transceivers) for use during the at-sea demonstration (FY08-09).</p> <p>U) JUSTIFICATION FOR BUDGET ACTIVITY:</p> <p>This program is funded under ENGINEERING AND MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.</p>								

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		FY 05	FY 06	FY 07															
SEADEEP			2.000																
RDT&E Articles Quantity																			
<div style="border: 1px solid black; min-height: 150px; margin-top: 10px;">FY06: Develop the communications signal processor electronics and software (source code) and related documentation.</div>																			

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