

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: <div>June 2001</div>			
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4					R-1 ITEM NOMENCLATURE Submarine Tactical Warfare Systems/0603562N					
COST (\$ in Millions)	FY 2000	FY 2001	FY 2002							
Total PE Cost	4.352	4.317	5.405							
Advanced Sub. Spt. Equipment/F0770	2.141	2.444	3.328							
Sub. Special Ops. Spt. Devel./V1739	2.211	0.000	0.000							
Sub. Special Ops. Spt. Devel./S1739 *	0.000	1.873	2.077							
Quantity of RDT&E Articles	2	1	3							

* Note: Due to re-alignment of Program Executive Office, FY2000 funds are allocated under V1739 and FY2001 and beyond funds will be allocated under S1739.

A. (U) Mission Description and Budget Item Justification: The Submarine Tactical Warfare Systems program element is comprised of the Advanced Submarine Support Equipment Program (ASSEP) and the Submarine Special Operations Support Development Program. The overall objective is to improve submarine operational effectiveness through the development and implementation of advanced Research and Development (R&D) and Electronic Warfare Support Measures (ES) technologies. The goal of the ASSEP is to increase submarine operational effectiveness through advanced R&D of Mast Signature Reduction (MSR), Sensors (RF, Visual IR etc.) and the electronic warfare technologies to enhance stealth, threat warning, strike and tactical surveillance. A continuing need exists to improve submarine capabilities in the increasingly dense and sophisticated electromagnetic environment caused by the proliferation of complex radar, communications, and navigation equipment of potential adversaries. The Submarine Special Operations Support Development program responds to the increased threat of Naval activity in the Littorals and the continuing threat of submarine and surface ship activity in regions of the world through the development of advanced submarine R&D technology to provide improved operational capability in shallow water regions. Particular emphasis is placed in the areas of sonar operability and maintainability, Littoral operations, mine warfare, tactical surveillance, and other submarine support missions. Efforts include assessment of combat system effectiveness, development of Arctic shallow water specific improvements for existing sonars, development of class specific Arctic operational guidelines and the testing of ice-capable submarine support structures. This program also provides the framework for various R&D programs to conduct Test and Evaluation in shallow water and Arctic regions.

B. (U) Program Change Summary: (show total funding, schedule, and technical changes for the program element that have occurred since the last submission).

	FY 2000	FY 2001	FY 2002
FY 2001 President's Budget:	4.667	4.356	5.401
Appropriated Value:	4.667	4.356	
Adjustment to FY 2000/2001 Appropriated Value/			
FY 2001 President's Budget:	-0.315	-0.039	0.004
FY 2002 PRES Budget Submit:	4.352	4.317	5.405

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<p>(U) Change Summary Explanation:</p> <p>(U) Funding:</p> <p>The FY 2000 decrease of (\$-0.315M) is attributed to decreases of (-\$0.024M) for an Across the Board Reduction, (\$-0.071M) for Small Business Innovative Research (SBIR), (-0.220M) for various minor program adjustments. The FY2001 decrease of (\$0.039M) is attributed to a decrease of (-\$0.030M) for 0.7% pro-rata reduction and (\$ 0.09M) for a government-wide recission. The FY2002 increase is attributed to (\$0.004M) in minor pricing adjustments.</p> <p>(U) Schedule: Not applicable.</p> <p>(U) Technical: Not applicable.</p>		

R-1 SHOPPING LIST - Item No. 60

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 2 of 10)

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EXHIBIT R-2a, RDT&E Project Justification							DATE:			
							June 2001			
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER				PROJECT NAME AND NUMBER					
RDT&E, N/BA-4	Submarine Tactical Warfare Sys/0603562N				Advanced Submarine Support Equipment Program (ASSEP)/F0770					
COST (\$ in Millions)	FY 2000	FY 2001	FY 2002							
Project Cost	2.141	2.444	3.328							
RDT&E Articles Qty	0	0	1							

A. (U) Mission Description and Budget Item Justification: This program develops submarine ES equipment and image processing technology. A continuing need exists to improve submarine capabilities in these areas to enhance 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 and imaging to be effective in conducting the following mission areas: Joint Littoral Warfare, Joint Surveillance, Space and Electronic Warfare, Intelligence Collection, Maritime Protection and Joint Strike. Specific efforts include development of Mast Signature Reduction (MSR) techniques (visual, IR and RCS), Sensor Technology, and ESM Technology. The program is divided into three categories of projects MSR Technology Insertion Program (MSRTIP), Sensor Technology Insertions Program (STIP), and ES Technology Insertion Program (ESTIP). The MSRTIP evaluates the vulnerability of submarine masts, periscopes and sensors to visual, radar and infrared detection and evaluates the state of the art technology to implement periscope/mast engineering improvements to reduce the counter-detection threat. The STIP and ESMTIP programs develop submarine unique improvements to mast, periscope and hull mounted ES electromagnetic and electro-optic sensors based on emerging technologies that are available from DOD Exploratory Development Programs, industry Independent Research and Development, and other sources. Feasibility demonstration models (FDMs) are developed to provide a realistic method of evaluating the improvements, including deployment on submarines for testing. STIP projects include: Radio frequency (RF) extensions; RF bandwidth improvements; passive localization; upgrades to the Imaging Mast sensors and software; and advanced antenna arrays for beam steering and high resolution direction finding enhancements. ESTIP projects include: improvements to signal sorting and recognition methods to support classification and identification of ESM contacts encountered during Littoral operations; signal processing improvements for processing of low probability of intercept signals; voice/ language recognition and human/ machine interface (HMI) enhancements. All programs funded in this project are non- acquisition category programs in accordance with Non-Acquisition Program Definition Document (NAPDD) # 556-872-872E1. The test articles identified consist of critical components of FDM's that will be fully developed during engineering development into Engineering Development Models (EDM's).

R-1 SHOPPING LIST - Item No. 60

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 3 of 10)

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EXHIBIT R-2a, RDT&E Project Justification		DATE: June 2001
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Submarine Tactical Warfare Sys/0603562N	PROJECT NAME AND NUMBER Advanced Submarine Support Equipment Program (ASSEP)/F0770
<p>(U) Program Accomplishments and Plans:</p> <p>1. (U) FY 2000 Accomplishments:</p> <ul style="list-style-type: none"> - (U) (\$ 0.275) Continue RCSR techniques and materials investigation. - (U) (\$ 1.075) Continue STIP development of Passive Surveillance Radar, Photonics Imaging Enhancement/ Auto Target Recognition and Tracking (started in FY98) and Photonics/Type 18 Low Band DF. - (U) (\$ 0.284) Continue ESTIP development of Counter Detection and Range Assessment. - (U) (\$ 0.507) Initiate ESTIP development of Combat Control System (CCS) interface for SSN 688 and Integrated Electronic Support (ES) Workstation. <p>2. (U) FY 2001 Plans:</p> <ul style="list-style-type: none"> - (U) (\$ 0.280) Continue RCSR techniques and material investigation. - (U) (\$ 1.733) Continue STIP development of Passive Surveillance Radar, Photonics Imaging Enhancement/ Auto Target Recognition, Photonics/Type 18 Low Band DF and Advanced Shared Aperature Comms Antennas. - (U) (\$ 0.382) Continue ESTIP development of CCS Interface for SSN 688, Integrated ES Workstation and Counter Detection/Range Assessment. - (U) (\$ 0.049) Portion of extramural program reserved for Small Business Innovative research assessment in accordance with 15 USC 638. <p>3. (U) FY 2002 Plans:</p> <ul style="list-style-type: none"> - (U) (\$ 0.300) Continue RCSR techniques and material investigation. - (U) (\$ 1.147) Continue STIP development of Passive Surveillance Radar, Photonics Imaging Enhancement/ Auto Target Recognition, Photonics/Type 18 Low Band DF and Advanced Shared Aperature Comms Antennas. - (U) (\$ 0.290) Initiate STIP development of Submarine Offboard ESM Sensors. - (U) (\$ 0.555) Continue ESTIP development of CCS Interface for SSN 688, Integrated ES Workstation and Counter Detection/Range Assessment. - (U) (\$ 0.236) Initiate ESTIP development of Communications Signal Onboard Trainer. - (U) (\$ 0.800) Estimated cost of one set of Feasibility Development Model (FDM) components. 		

R-1 SHOPPING LIST - Item No. 60

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 4 of 10)

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EXHIBIT R-2a, RDT&E Project Justification		DATE: June 2001
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Submarine Tactical Warfare Sys/0603562N	PROJECT NAME AND NUMBER Advanced Submarine Support Equipment Program (ASSEP)/F0770
<p>B. (U) Other Program Funding Summary: Not applicable. (U)Related RDT&E: (U) PE 0604503N(Submarine System Equipment Development) (U) PE 0604558N(New Design SSN Development) (U) PE 0604777N(Navigation /ID Systems)</p> <p>C. (U) Acquisition Strategy: This project will optimize technology insertion using a build-test-build approach to support ES operational needs. Operational needs have been based on 1999 COMSUBLANT/COMSUBPAC Command Capability Issues (CCIs), Virginia Class SSN Operational Requirements Document objectives, a review, assessment and prioritization of Sensor and Processor efforts and SSN force level projections for SSN688/688I and SSN21 classes through FY2015. The STIP and ESMTIP efforts will develop submarine unique improvements to mast, periscope and hull mounted ESM electromagnetic and electro-optic sensors based on emerging technologies that are available from DOD Exploratory Development Programs, industry Independent Research and Development, and other sources. Feasibility Demonstration Models (FDMs) will be developed to provide a realistic method of evaluating the improvements, including deployment on submarines for testing.</p> <p>D. (U) Schedule Profile. See attached schedule.</p>		

R-1 SHOPPING LIST - Item No. 60

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 5 of 10)

UNCLASSIFIED

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Exhibit R-3 Cost Analysis (page 1)										DATE: June 2001			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			Sub Tactical Warfare Systems/0603562N				Advanced Submarine Support Equipment Program (ASSEP)/F0770						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 00 Cost	FY 00 Award Date	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date				
Primary Hardware Development													
Ancillary Hardware Development													
Systems Engineering	WR	NUWC Newport, RI	10.017	0.578	11/99	0.533	11/00	1.414	11/01				
Licenses													
Tooling													
GFE	N/A	N/A	0.000	0.000	N/A	0.000	N/A	0.000	Various				
Miscellaneous	Various	Various	8.057	1.316	Various	1.711	Various	1.728	Various				
Award Fees													
Subtotal Product Development			18.074	1.894		2.244		3.142					
Remarks:													
Development Support Equipment													
Software Development													
Training Development													
Integrated Logistics Support													
Configuration Management													
Engineering Technical Services	C/CPFF	GRCI, Mclean, Va.	0.931	0.058	11/99	0.030	11/00	0.030	11/01				
Technical Data													
GFE													
Subtotal Support			0.931	0.058		0.030		0.030					
Remarks:													

R-1 SHOPPING LIST - Item No. 60

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 6 of 10)

UNCLASSIFIED

CLASSIFICATION:

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Exhibit R-3 Cost Analysis (page 2)								DATE: June 2001				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			Sub Tactical Warfare Systems/0603562N			Advanced Submarine Support Equipment Program (ASSEP)/F0770						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 00 Cost	FY 00 Award Date	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date			
Developmental Test & Evaluation												
Operational Test & Evaluation												
Tooling												
GFE												
Subtotal T&E			0.000	0.000		0.000		0.000				
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Management Support Services	C/CPIF/CPA	Various	1.146	0.168	11/99	0.150	11/00	0.140	11/01			
Studies Analysis & Evaluations												
Travel	TO's	Various	0.145	0.021	10/99	0.020	10/00	0.016	10/01			
Labor (Research Personnel)												
Overhead												
Subtotal Management			1.291	0.189		0.170		0.156				
Remarks:												
Total Cost			20.296	2.141		2.444		3.328				
Remarks:												

R-1 SHOPPING LIST - Item No. 60

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 7 of 10)

UNCLASSIFIED

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification					DATE: June 2001				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N	PROGRAM ELEMENT NAME AND NUMBER Submarine Tactical Warfare Sys/0603562N				PROJECT NAME AND NUMBER Submarine Special Operations Support Development/V1739/S1739				
COST (\$ in Millions)	FY 2000	FY 2001	FY 2002						
Project Cost	2.211	1.873	2.077						
RDT&E Articles Qty	Arctic ex 2	Arctic ex 1	Arctic ex 2						

A. (U) Misison Description an Budget Item Justification: This program responds to the increased threat of Naval activity in the Littoral and continuing threat of submarine and surface ship activity in all regions of the world through the development of advanced submarine concepts. It places particular emphasis on submarine operability and mission support in unique environments. Efforts include assessment of combat system effectiveness, use of high frequency sonars in Arctic regions, testing of ice-capable submarine structures, and development of class specific Arctic shallow water operational guidelines. This program also provides the framework for various Research and Development (R&D) programs to conduct Test and Evaluation in the shallow water and Arctic regions.

(U) Program Accomplishments and Plans

1. (U) FY 2000 Accomplishments

- (U) (\$2.011) Conduct/Support SCICEX 1-00 and ICEX 1-00
- (U) (\$0.200) Perform Structural Analysis for SSN 21 and Virginia Class Submarines

2. (U) FY 2001 Plans

- (U) (\$1.824) Conduct/Support Ice Exercise 1-01
- (u) (\$0.049) Portion of extramural program reserved for Small Business Innovative research assessment in accordance with 15 USC 638.

3. (U) FY 2002 Plans

- (U) (\$1.977) Conduct/Support ICEX and ICEOPS operations
- (U) (\$0.100) Perform SSN774 Structural Analysis

R-1 SHOPPING LIST - Item No. 60

Exhibit R-2a, RDT&E Project Justification

(Exhibit R-2a, page 8 of 10)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-3 Cost Analysis (page 1)								DATE: June 2001				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N			Submarine Tactical Warfare Sys/0603562N			Submarine Special Operations Support Development/V1739/S1739						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 00 Cost	FY 00 Award Date	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date			
Primary Hardware Development												
Ancillary Hardware Development												
Systems Engineering	WR	NSWC Carderock	1.470	0.100	11/99			0.100				
Systems Engineering		EB Corp		0.010	11/99							
Systems Engineering		NSWC INDIAN HEAD		0.051	01/00			0.030				
Systems Engineering		SPAWAR				0.020	01/01					
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			1.470	0.161		0.020		0.130				
Remarks:												
Development Support Equipment												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Support			0.000	0.000		0.000		0.000				
Remarks:												

R-1 SHOPPING LIST - Item No. 60

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 9 of 10)

UNCLASSIFIED

CLASSIFICATION:

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Exhibit R-3 Cost Analysis (page 2)										DATE: June 2001		
APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT			PROJECT NAME AND NUMBER					
RDT&E, N				Submarine Tactical Warfare Sys/0603562N			Submarine Special Operations Support Development/V1739/S1739					
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 00 Cost	FY 00 Award Date	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date			
Developmental Test & Evaluation	WR	SUBDEVRONFive	8.425	1.887	11/99	1.703	11/00	1.797	11/01			
Developmental Test & Evaluation	WR	CMDR,3rd NAVCON BRIGATE	0.050	0.050	01/00			0.050	10/01			
Developmental Test & Evaluation	WR	CMDR,2nd NAVCON BRIGATE				0.050	01/01					
Operational Test & Evaluation												
Tooling												
GFE												
Subtotal T&E			8.475	1.937		1.753		1.847				
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support				0.128	11/99	0.090	11/00	0.090				
Travel				0.010	10/99	0.010		0.010				
Labor (Research Personnel)												
Overhead												
Subtotal Management			0.000	0.138		0.100		0.100				
Remarks:												
Total Cost			9.945	2.211		1.873		2.077				
Remarks:												

R-1 SHOPPING LIST - Item No. 60

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 10 of 10)

UNCLASSIFIED