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EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2000			
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4					R-1 ITEM NOMENCLATURE Program Element (PE) Name and No. Submarine Tactical Warfare Systems/0603562N					
COST (\$ in Millions)		FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Total PE Cost		3.893	4.643	4.356	5.401	5.685	5.816	5.921	CONT.	CONT.
Advanced Sub. Spt. Equipment/F0770		1.896	2.318	2.466	3.331	3.444	3.529	3.588	CONT.	CONT.
Sub. Special Ops. Spt. Devel./V1739		1.997	2.325	1.890	2.070	2.241	2.287	2.333	CONT.	CONT.
Quantity of RDT&E Articles		3	2	2	3	3	2	2	CONT.	CONT.
<p>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 Support Measures (ESM) technologies. The goal of the ASSEP is to increase submarine operational effectiveness through advanced R&D of Radar Cross Section Reduction (RCSR), Sensors (RF, Photonics Mast, 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.</p> <p>B. (U) Program Change Summary: (show total funding, schedule, and technical changes for the program element that have occurred since the last submission).</p>										
					FY 1999	FY 2000	FY 2001			
FY 2000 President's Budget:					4.676	4.667	4.330			
Appropriated Value:					4676	4.667				
Adjustment to FY 1999/2000 Appropriated Value/					-0.783	-0.024	0.026			
FY 2000 President's Budget:										
FY 2001 PRES Budget Submit:					3.893	4.643	4.356			

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APPROPRIATION/BUDGET ACTIVITY

RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4

R-1 ITEM NOMENCLATURE

Program Element (PE) Name and No. Submarine Tactical Warfare Systems/0603562N

(U) Change Summary Explanation:

(U) Funding:

FY99 adjustments are due to a SBIR transfer (-\$0.090), minor program adjustments of (-\$0.630), Congressional Undistributed Reductions (-\$0.159) Inflation Savings Reduction (-\$0.21).

FY00 funding decrease is due to Across the Board reductions (-\$0.24), and \$.071M of the extramural program is reserved for SBIR assessment IAW 15USC 638.

FY01 funding decrease is due to General Administrative reduction (-\$0.20), NWCF Rate increase (\$0.076), outsourcing adjustment (\$0.24), CEWG reduction (-\$0.14), NUWC Reduction (-\$0.04), minor program adjustments of (-\$0.105), Nonpay Purchase Inflation reduction (-\$0.30).

(U) Schedule: As a result of the DD 1002 update reduction in FY1999 the Imaging Auto Recognition and Tracking and Counter Detection/Range Assessment hardware design have been delayed one year to FY00.

(U) Technical: Not applicable.

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2000			
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					
COST (\$ in Millions)		FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Project Cost		1.896	2.318	2.466	3.331	3.444	3.529	3.588	CONT.	CONT.
RDT&E Articles Qty		2	0	1	1	2	0	1	CONT.	CONT.

A. (U) Mission Description and Budget Item Justification: This program develops submarine ESM 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 ESM 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: Radar Cross Section Reduction (RCSR) Techniques, Sensor Technology Insertion Program (STIP), and ESM Technology Insertion Program (ESMTIP). The RCSR evaluates the vulnerability of submarine masts, periscopes and sensors to radar and infrared threats and evaluates the state of the art in radar absorbent material, resulting in potential 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 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) 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. ESMTIP 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).

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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
<p>(U) Program Accomplishments and Plans:</p> <p>1. (U) FY 1999 Accomplishments:</p> <ul style="list-style-type: none">- (U) (\$ 0.275) Continued Radar Cross Section Reduction (RCSR) techniques and materials investigation.- (U) (\$ 1.049) Continued STIP development of Passive Localization.- (U) (\$ 0.572) Initiated STIP and Electronic Support Measures Technology Insertion Program (ESMTIP) development of Photonics/Type 18 Low Band Direction Finding (DF) and Counter Detection and Range Assessment software development.- (U) The estimated total cost of the two sets of Feasibility Demonstration Models (FDM) components initiated during this fiscal year is \$0.8M. <p>2. (U) FY 2000 Plans:</p> <ul style="list-style-type: none">- (U) (\$ 0.275) Continue RCSR techniques and materials investigation.- (U) (\$ 1.243) Continue STIP development of Passive Localization, Imaging (Photonics) Auto Target Recognition and Tracking(started in FY98) and Photonics/Type 18 Low Band DF.- (U) (\$ 0.284) Continue ESMTIP development of Counter Detection and Range Assessment.- (U) (\$ 0.516) Initiate ESMTIP development of Combat Control System (CCS) interface for SSN 688 and Integrated Electronic Support (ES) Workstation. <p>3. (U) FY 2001 Plans:</p> <ul style="list-style-type: none">- (U) (\$ 0.283) Continue RCSR techniques and material investigation.- (U) (\$ 1.049) Continue STIP development of Passive Localization, Imaging (Photonics) Auto Target Recognition and Tracking and Photonics/Type 18 Low Band.- (U) (\$ 0.221) Initiate STIP development of Advanced Shared Aperature Comms Antennas.- (U) (\$ 0.913) Continue ESMTIP development of CCS Interface for SSN 688, Integrated ES Workstation and Counter Detection/Range Assessment.- (U) The estimated total cost of the one set of FDM components initiated during this fiscal year is \$0.8M		

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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 1998 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>		

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ASSEP Schedules

Revised 5/27/99

	FY99	FY00	FY01	FY02	FY03	FY04	FY05
Mast Radar Cross-Section Reduction		Signature Phase	Over Water Test	Next Gen Signature Study		Deliver FDM	
Sensor Technology Insertion Projects (STIPs)							
Passive Ranging Ranging		Performance Spec	Deliver FDM	At-Sea Testing			
Imaging Auto Recognition and Track		Performance Spec	Deliver Track S/W	Deliver Recog S/W	At-Sea Testing		
BVS-1/EWR Frequency Coverage Extension				Performance Spec		Deliver FDM	
Advanced Shared Aperture Comms Antennas			Concept Study	Design/Int Spec			
Photonics/Type 18 Low Band Radar DF	Concept Formulation	Performance Spec	Contract Award		Deliver FDM		
Submarine Offboard Vehicle ESM Sensor				Concept Formulation	Performance Spec	Contract Award	
ESM Technology Insertion Projects (ESMTIPs)							
Counter Detection/Range Assessment	Concept Definition	Test Bed Assy	Fleet Eval	At-Sea Testing	Final ECP		
CCS Interface for SSN 688		Interface Spec		S/W Test		Land-Based Testing	
Integrated ES Workstation		Interface Spec		S/W Delivery		Fleet Evaluation	
Communications Signal Onboard Trainer				Design Concept			

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2000				
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 99 Cost	FY 99 Award Date	FY 00 Cost	FY 00 Award Date	FY 01 Cost	FY 01 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development											CONT.	
LIDAR Warning Receiver	C/CPIF	JHU/APL Laurel, MD	3.100	0.000	N/A	0.000	N/A	0.000	N/A	0.000	3.100	3.100
											CONT.	
Ancillary Hardware Development											0.000	
Systems Engineering	WR	NUWC Newport, RI	9.300	0.717	11/98	1.445	11/99	1.676	11/00	CONT.	CONT.	N/A
Licenses											0.000	
Tooling											0.000	
GFE	N/A	N/A	0.000	0.000	N/A	0.000	N/A	0.000	Various	N/A	N/A	N/A
Miscellaneous	Various	Various	7.072	0.985	Various	0.627	Various	0.556	Various	CONT.	CONT.	N/A
Award Fees											0.000	
Subtotal Product Development			19.472	1.702		2.072		2.232		0.000	25.478	
Remarks:												
Development Support Equipment											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Engineering Technical Services	Various	Various	0.900	0.031	11/98	0.058	11/99	0.060	11/00	CONT.	CONT.	N/A
Technical Data											0.000	
GFE											0.000	
Subtotal Support			0.900	0.031		0.058		0.060		0.000	1.049	
Remarks:												

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Exhibit R-3, Project Cost Analysis
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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2000		
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 99 Cost	FY 99 Award Date	FY 00 Cost	FY 00 Award Date	FY 01 Cost	FY 01 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Tooling											0.000	
GFE											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	
Program Management Support											0.000	
Management Support Services	C/CP/IF/CP	Various	1.000	0.146	11/98	0.173	11/99	0.158	11/00	CONT.	CONT.	N/A
Studies Analysis & Evaluations	MIPR	Mitre, Mclean, Va	0.800	0.000	N/A	0.000	N/A	0.000	N/A	0.000	0.800	0.800
Travel	TO's	Various	0.128	0.017	10/98	0.015	10/99	0.016	10/00	CONT.	0.176	CONT.
Labor (Research Personnel)											0.000	
Overhead											0.000	
Subtotal Management			1.928	0.163		0.188		0.174		0.000	2.453	CONT.
Remarks:												
Total Cost			22.300	1.896		2.318		2.466		CONT.	CONT.	
Remarks:												

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N							PROGRAM ELEMENT NAME AND NUMBER Submarine Tactical Warfare Systems/P.E. 060				PROJECT NAME AND NUMBER Submarine Special Operations Support Development/V1739			
COST (\$ in Millions)		FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost				
Project Cost		1.997	2.325	1.890	2.070	2.241	2.287	2.333	CONT	CONT				
RDT&E Articles Qty		Arctic ex 1	Arctic ex 2	Arctic ex 1	Arctic ex 2	Arctic ex 1	Arctic ex 2	Arctic ex 1	CONT	CONT				
<p>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 throught 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.</p> <p>(U) Program Accomplishments and Plans</p> <ol style="list-style-type: none"> 1. (U) FY 1999 Plans <ul style="list-style-type: none"> - (U) (\$1.997) Conduct/Support an Arctic Science Exercise (SCICEX), Ice Exerccice (ICEX) 1-99 and Ice Operation (ICEOPS) 1-99, and plan for ICEX 1-00. 2. (U) FY 2000 Plans <ul style="list-style-type: none"> - (U) (\$2.125) Conduct/Support SCICEX 1-00 and ICEX 1-00 - (U) (\$0.200) Perform Structual Analysis for SSN 21 and Virginia Class Submarines 3. (U) FY 2001 Plans <ul style="list-style-type: none"> - (U) (\$1.890) Conduct/Support Ice Exercise 1-01 and Ice Camp Operations 														

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PROGRAM ELEMENT NAME AND NUMBER

PROJECT NAME AND NUMBER

RDT&E, N

Submarine Tactical Warfare Systems/P.E. 060

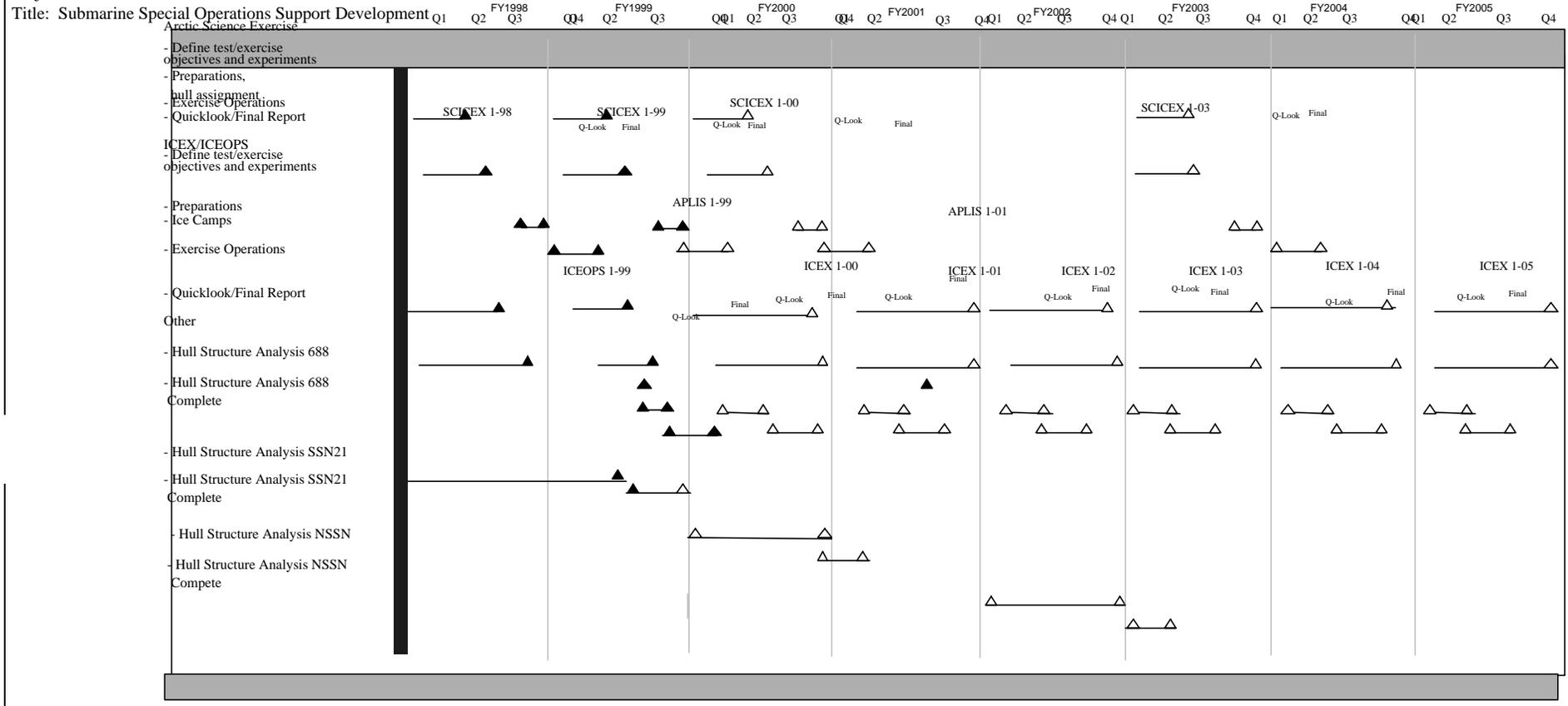
Submarine Special Operations Support Development/V1739

Program Element: 0603562N

Project Number: V1739

Title: Submarine Special Operations Support Development

Schedule Profile



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APPROPRIATION/BUDGET ACTIVITY RDT&E, N	PROGRAM ELEMENT Submarine Tactical Warfare Systems/P.E. 06	PROJECT NAME AND NUMBER Submarine Special Operations Support Development/V1739
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Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 99 Cost	FY 99 Award Date	FY 00 Cost	FY 00 Award Date	FY 01 Cost	FY 01 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development											0.000	
Ancillary Hardware Development											0.000	
Systems Engineering	WR	NSWC Carderock	1.300	0.170	11/98	0.200	11/99				1.670	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			1.300	0.170		0.200		0.000		0.000	1.670	

Remarks:

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

Remarks:

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2000		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NAME AND NUMBER					
RDT&E, N			Submarine Tactical Warfare Systems/P.E. 06035				Submarine Special Operations Support Development/V1739					
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 99 Cost	FY 99 Award Date	FY 00 Cost	FY 00 Award Date	FY 01 Cost	FY 01 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	SUBDEVRON Five	6.700	1.725	11/98	1.928	11/99	1.734	11/00	Cont.	12.087	Cont.
Developmental Test & Evaluation	WR	CMDR,3rd NAVCON BRIGATE	0.050	0.050	10/98	0.050	10/99	0.050	10/00	Cont.	Cont.	Cont.
Operational Test & Evaluation											0.000	
Tooling											0.000	
GFE											0.000	
Subtotal T&E			6.750	1.775		1.978		1.784		0.000	12.287	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support				0.042	11/98	0.137	11/99	0.096		Cont.	0.275	Cont.
Travel				0.010	10/98	0.010	10/99	0.010		Cont.	0.030	Cont.
Labor (Research Personnel)											0.000	
Overhead											0.000	
Subtotal Management			0.000	0.052		0.147		0.106		0.000	0.305	
Remarks:												
Total Cost			6.750	1.997		2.325		1.890				
Remarks:												

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