

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4					R-1 ITEM NOMENCLATURE 0603713N/Ocean Engineering Technology Development			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	15.173	14.920	18.180	14.917	5.163	6.590	6.715	6.840
S0099/Deep Submergence Biomedical Development	3.587	3.766	3.030	3.291	3.384	4.086	4.163	4.241
S0394/Shallow Depth Diving Equipment	11.586	11.154	15.150	11.626	1.779	2.504	2.552	2.599
Defense Emergency Response Funds (DERF) Funds: N/A.								
A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Developments in this program will enable the U.S. Navy to overcome deficiencies that constrain underwater operations in the areas of search, location, rescue, recovery, salvage, construction, and protection of offshore assets. This program develops medical technology, diver life support equipment, and the vehicles, systems, tools and procedures to permit manned underwater operations.								

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603713N/Ocean Engineering Technology Development			PROJECT NUMBER AND NAME S0099/Deep Submergence Biomedical Development			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	3.587	3.766	3.030	3.291	3.384	4.086	4.163	4.241
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Develops advanced biomedical and bioengineering technology for enhancing medical and life support for submarine escape and rescue; and for diver safety and effectiveness; supports deeper, longer, and more flexible dives. Deliverables for DISSUB (disabled submarine) include: medical procedures for submarine escape and rescue (including new Submarine Rescue Diving and Recompression System (SRDRS)), life support parameters, medical procedures for life support, exposure guidance for atmospheric contaminants, non-chemical CO2 scrubbing, prevention and treatment of decompression illness, and senior survivor expert decision system. Deliverables for diver enhancement include: exposure guidance for diver underwater continuous noise, impulse noise, and underwater blast, exposure guidance for oxygen breathing, collection of operational diving depth/time profiles to predict decompression risk, and enhanced underwater swimming efficiency. Requirements: NAPDD #587-873, Deep Submergence Biomedical Development, 23 November 1999.

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<div style="border: 1px solid black; padding: 5px;"> Diver Health and Safety Research: Pulmonary oxygen toxicity risk algorithm. Procedures for assessing and mitigating risk for diving in contaminated water. Procedure to determine remaining CO2 scrubber duration. Development of advanced insulation garments for diver thermal protection. Develop final guidance for warm water diving. Continue collection of operational dive profiles for advanced modeling. Submarine ballast tank air quality survey. Novel methods for diver thermal protection. Improve resistance to O2 toxicity. Diver anthropometry. Chemical hardening of diving equipment. Predictive index of visual and auditory O2 toxicity. Guidelines for flying after diving. Guidelines for infra- and ultra-sound diver exposure. Develop an advanced diver thermal model. Guidelines for ballast tank diving. Protective gear for diver noise exposure. Electronic collection of operational dive data. </div>																			
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<div style="border: 1px solid black; padding: 5px;"> Submarine Rescue: Decompression procedures for pressurized SRDRS operators. Use of perfluorocarbons to accelerate decompression in submarine rescue. Adjunctive therapies for treating DISSUB survivors. Guidance for food, water, clothing, medical supplies to enhance survival of submarine crews awaiting rescue. Flexible computer generated decompression schedules for wide range of conditions in a DISSUB. Develop DISSUB triage procedures. DISSUB survival trial. Develop oxygen metabolizer for closed vehicles. Accelerate decompression by negative pressure breathing. Treatment guidance for decompression sickness and arterial gas embolism in submarine escape and rescue. Interventions for toxicological problems with rescued submariners. Minimizing decompression sickness and arterial gas embolism with Submarine Escape and Immersion Suit (SEIS) training. Use of pharmacologic agents to reduce decompression risk in submarine rescuees. </div>																			
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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603713N/Ocean Engineering Technology Development	PROJECT NUMBER AND NAME S0099/Deep Submergence Biomedical Development		

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	3.723	3.851	3.937	4.009
Current BES/President's Budget (FY04 President Controls)	3.587	3.766	3.030	3.291
Total Adjustments	-0.136	-0.085	-0.907	-0.718
Summary of Adjustments				
63983 Section 8123: Management Refo	-0.033			
66445 Post-Production R&D Continuati			-0.463	-0.580
66458 Sec. 313, PL 107-206: Revised	-0.008			
66788 FY02 BTR (July-02)	-0.074			
67290 Business Process Reform (SEC.		-0.015		
67291 Economic Assumptions (SEC. 813)	-0.010	-0.022		
67446 IT Cost Growth (SEC. 8109)		-0.007		
69270 FY02 Actuals (30-Sept)	-0.011			
69772 Non-S&T R&D Offset			-0.323	
69833 PBD203 ACTD offsets			-0.052	-0.067
69976 Inflation Savings		-0.041		
70073 Purchase Infl			-0.053	
70078 Nonpay Inflation			-0.016	
70231 FY05/09 Inflation				-0.071
Subtotal	-0.103	-0.085	-0.907	-0.718

Schedule:

Not Applicable

Technical:

Not Applicable

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D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
Not Applicable										

E. ACQUISITION STRATEGY: *

Integrated thrust area teams (e.g. decompression research) are established with university, commercial and in-house Navy lab to jointly execute biomedical R&D; peer review of research proposals accomplished by independent Technical Advisory Board; annual review of progress by Executive Review Board (CNO/NAVSEA/ONR/BUMED); program management by 0-6 Medical Dept Officer; contracting by competitive process using BAA and leveraging ONR capabilities.

F. MAJOR PERFORMERS: **

Navy Experimental Diving Unit (NEDU) (Oct/each FY) is the center for manned diving biomedical research and development for the Navy. All Navy manned diving research facilities were consolidated at NEDU during the last BRAC.

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COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	11.586	11.154	15.150	11.626	1.779	2.504	2.552	2.599
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This project is to develop systems to support submarine escape and rescue missions, and conventional diver operations. Diver operations include ship husbandry, salvage/recovery, and submarine rescue operations to support national, as well as, Navy needs around the world. Modern certifiable diving systems that ensure diver safety and allow maximum work efficiency will replace currently antiquated systems. Efforts are currently (through FY 05) focused on the Submarine Rescue Diving and Recompression System (SRDRS) to provide a new rapidly deployed emergency submarine rescue capability. SRDRS will fill the gap created by the decommissioning of USS PIGEON (ASR 21) and USS ORTOLAN (ASR 22) and provide a new capability of pressurized transportation of rescuees from a stricken submarine directly to the decompression system eliminating the requirement for Deep Submergence Rescue Vehicles, Mother Submarines and Submarine Rescue Chambers. SRDRS is to include an air transportable rapid assessment/underwater work system, a decompression chamber system and a pressurized rescue module. The SRDRS will provide a global rapid response capability to support submarine rescue missions with an increase in capability at a fraction of the cost of the currently available systems.

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Exhibit R-2a, RD TEN Project Justification
(Exhibit R-2a, page 8 of 16)

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY RDTE&E, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME 0603713N/Ocean Engineering Technology Development			PROJECT NUMBER AND NAME S0394/Shallow Depth Diving Equipment			

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
Not Applicable										

E. ACQUISITION STRATEGY: *

The Atmospheric Diving Suit (ADS) Segment of the SRDRS is a Non-Developmental Item (NDI) which was procured via a sole source contract. The Submarine Rescue System (SRS) segment of the SRDRS is largely based on the use of Commercial-Off-the-Shelf (COTS) technology and maximum use of Non-Developmental Items (NDI). The SRS segment is being procured using performance based specifications. The SRS contracts were awarded competitively and were based on technical capability and cost considerations (best value). Program Management of SRDRS is accomplished through the use of SEA 00C leadership of an Integrated Product Team (IPT). The Prototype system will provide full operational capability and no additional procurement is planned. The system is designed to be Government Owned/Commercially Operated (GO/CO).

F. MAJOR PERFORMERS: **

Oceaneering International is providing systems engineering and integration support for the SRS through a Veterans Administration contract. Oceanworks, Inc. is the detailed designer and fabrication of the Pressurized Rescue Module. Global Phillips Cartner is providing fabrication and integration of the SRDRS mission support equipment.

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2003			
APPROPRIATION/BUDGET ACTIVITY RD&E, N / BA-4			PROGRAM ELEMENT 0603713N/Ocean Engineering Technology Development				PROJECT NUMBER AND NAME S0099/Deep Submergence Biomedical Development						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
Developmental Test & Evaluation	WX	NEDU	18.293	2.408	12/02	2.826		3.070		Continuous	26.597		
	CPIF	OceanWorks		1.171	11/02						1.171	1.171	
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			18.293	3.579		2.826		3.070		0.000	27.768		
Remarks:													
Contractor Engineering Support											0.000		
Government Engineering Support											0.000		
Program Management Support	IPA		0.102								0.102		
Travel			0.018	0.022		0.022		0.024		Continuous	0.086		
Labor (Research Personnel)											0.000		
SBIR Assessment			0.093	0.165		0.182		0.197			0.637		
Subtotal Management			0.213	0.187		0.204		0.221		0.000	0.825		
Remarks:													
Total Cost			18.506	3.766		3.030		3.291		0.000	28.593		
Remarks:													

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: February 2003				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603713N/Ocean Engineering Technology Development			S0394/Shallow Depth Diving Equipment						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR	NSWC-CSS	20.089								20.089	
	CPAF	Oceaneering	9.078								9.078	
	WX	NFESC	3.240	0.137	Dec-02						3.377	
	CPAF	GPC	6.714	1.456	Nov-02						8.170	
	CPIF	Oceanworks	11.968	6.981	Nov-02						18.949	
	Various	Miscellaneous	2.435			8.741		6.128			17.304	
Ancillary Hardware Development											0.000	
Aircraft Integration											0.000	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering	CPAF	Oceaneering	8.253								8.253	
	MIPR	VA	3.213	1.250	Dec-02	3.100		2.000			9.563	
											0.000	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees	CPAF	Oceaneering	1.234								1.234	
	CPAF	GPC	0.254	0.044	Nov-02						0.298	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Product Development			66.478	9.868		11.841		8.128		0.000	96.315	
Remarks:												

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Exhibit R-3, Project Cost Analysis
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Exhibit R-3, Project Cost Analysis
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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603713N/Ocean Engineering Technology Development			S0394/Shallow Depth Diving Equipment						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	Various	Miscellaneous	1.093	0.220	11/02	0.300		0.300			1.913	
Operational Test & Evaluation			0.020	0.050		0.100		0.500			0.670	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			1.113	0.270		0.400		0.800		0.000	2.583	
Remarks:												
Contractor Engineering Support	Various	Miscellaneous	1.225	0.250		0.250		0.250			1.975	
Government Engineering Support	WR	NFESC	0.416								0.416	
	MIPR	DOI	1.161								1.161	
	WX	PSNSY		0.011							0.011	
	Various	Miscellaneous	0.347	0.066		0.750		0.750			1.913	
Program Management Support	Various	Miscellaneous	0.329	0.100		0.100		0.100			0.629	
Travel			0.365	0.100		0.100		0.100			0.665	
Transportation											0.000	
*SBIR Assessment			0.300	0.489		0.909		0.698			2.396	
Subtotal Management			4.143	1.016		2.109		1.898		0.000	9.166	
Remarks:												
Total Cost			74.371	11.154		15.150		11.626		0.000	112.301	
Remarks: *SBIR Assessment includes other extramural program assessments FY 02-05. PY only includes some (\$300K) of the non-SBIR extramural program expenses from FY 02 still listed in program controls.												

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

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

Exhibit R-4, Schedule Profile
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CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY RDT&BA-4	PROGRAM ELEMENT 0603713N/Ocean Engineering Technology Development				PROJECT NUMBER AND NAME S0394/Shallow Depth Diving Equipment			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Prototype Phase								
System Design Review (SDR)								
Milestone II (MSII)								
Contract Preparation								
Software Specification Review (SSR)								
Preliminary Design Review (PDR)								
System Development								
Critical Design Review (CDR) - PRM		3Q						
Quality Design and Build								
Test Readiness Review (TRR)								
Developmental Testing (DT-IIA2)		1Q-2Q						
Eng Dev Model (EDM) - Lab								
Software Delivery								
Preproduction Readiness Review (PRR)								
EDM Delivery - Flt Related								
Milestone C (MS C)								
Operational Testing (OT-IIA) ADS		1Q-2Q						
Start Low-Rate Initial Production I (LRIP I)								
Software Delivery								
Developmental Testing (DT-IIB) SDS				3Q				
Physical Configuration Audit - SDC		3Q						
Start Low-Rate Initial Production II								
Operational Observation of Capability (OOC) SDS					1Q			
Developmental Testing (DT-IIC) SRS				2Q				
Functional Configuration Audit (FCA) - PRM			2Q					
Low-Rate Initial Production I Delivery								
Technical Evaluation (TECHEVAL)								
Physical Configuration Audit - PRM			4Q					
Operational Observation of Capability (OOC) SRS				2Q				
Low-Rate Initail Production II Delivery								
Operational Evaluation SRDRS with 2nd PRM					4Q			
IOC					4Q			
Milestone III (MSIII)					4Q			
First Deployment PRM				3Q				
First Deployment SDS					2Q			
First Deployment SRDRS					2Q			

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Exhibit R-4a, Schedule Detail

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