Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy											Date: March 2019	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 0603713N *I Ocean Engineering Tech Dev*							
COST ($ in Millions)	**Prior Years**	**FY 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Cost To Complete**	**Total Cost**
Total Program Element	64.428	8.853	5.915	5.619	-	5.619	5.731	5.845	5.965	6.085	Continuing	Continuing
0099: *Deep Submergence Bio Med Dev*	35.034	4.620	4.487	4.360	-	4.360	4.444	4.534	4.627	4.720	Continuing	Continuing
0394: *Shallow Depth Diving EQ*	29.394	4.233	1.428	1.259	-	1.259	1.287	1.311	1.338	1.365	Continuing	Continuing

A. Mission Description and Budget Item Justification

Developments in this program will enable the U.S. Navy to overcome deficiencies that constrain manned diving operations in several critical areas such as submarine rescue, recovery, salvage, underwater ship husbandry, underwater construction and naval special operations. This program develops biomedical technology, diver life support equipment, and the systems, tools, and procedures to permit manned underwater operations and enhance diver performance and safety.

B. Program Change Summary ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	8.212	5.915	5.619	-	5.619
Current President's Budget	8.853	5.915	5.619	-	5.619
Total Adjustments	0.641	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.795	0.000			
• SBIR/STTR Transfer	-0.153	0.000			
• Rate/Misc Adjustments	-0.001	0.000	0.000	-	0.000

Change Summary Explanation

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603713N / *Ocean Engineering Tech Dev*	Project (Number/Name) 0099 / *Deep Submergence Bio Med Dev*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
0099: *Deep Submergence Bio Med Dev*	35.034	4.620	4.487	4.360	-	4.360	4.444	4.534	4.627	4.720	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project:
1) Develops advanced biomedical and bioengineering technology for medical and life support enhancement to decrease submariner deaths and permanent injury in a disabled submarine (DISSUB) and during submarine escape and rescue;
2) Conducts research for diver health, safety, and effectiveness:
- to increase understanding of human performance and enhanced diver stress management and survivability in high stress environments such as in cold/warm water and at altitude; and - to validate and improve the accuracy of assumptions associated with equipment testing and certification, diving procedures, and diver biomedical physiology.

Deliverables for DISSUB include: medical guidance/procedures increasing submariner survivability for submarine escape and rescue (including new Submarine Rescue Diving and Recompression System (SRDRS)), life support parameters, medical procedures for life support; exposure and mitigation guidance for atmospheric contaminants, high levels of oxygen and/or carbon dioxide; prevention and treatment of decompression sickness and pulmonary oxygen toxicity; and senior survivor expert decision system.

Deliverables for diver health and safety include: decompression guidance in extreme environment diving with various breathing mixtures, temperatures, durations, and altitudes; exposure guidance for oxygen breathing; diver performance guidance based on physiological effects of diving; enhanced underwater swimming efficiency; enhanced diver thermal protection; collection of operational diving depth/time profiles to predict decompression risk, and exposure and mitigation guidance for divers experiencing underwater continuous noise, impulse noise, or underwater blast.

Requirements:
OPNAVINST 3150.27C, Navy Diving Policy and Joint Military Diving Technology and Training Program, 24 Jun 2016
Navy Salvage and Navy Diving Capabilities-Based Assessment (CBA) Report, 19 Dec 2013
NAPDD #587-873, Deep Submergence Biomedical Development, 23 Nov 1999
NAVSEA Instruction 3900.10, Management of the Deep Submergence Biomedical Research and Development Program, 4 Feb 2003
Navy Diving Initial Capabilities Document (ICD)

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Deep Submergence Bio Med Dev - Diver Health and Safety	2.396	2.244	2.180	0.000	2.180

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603713N / *Ocean Engineering Tech Dev*	**Project (Number/Name)** 0099 / *Deep Submergence Bio Med Dev*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Articles:	-	-	-	-	-

Description: Diver Health and Safety Research: Novel methods for decompression safety and treatment of decompression sickness/arterial gas embolism. Advanced decompression models for extreme environments, including thermally challenging, long duration, multi-gas, and/or diving at altitude. Diving physiology advances in exercise, thermal exposure, oxygen/carbon dioxide alterations, other gas mixture alternations, hydration, and sustained operations. Develop pulmonary oxygen toxicity exposure limits. Provide pulmonary and Central Nervous System (CNS) oxygen toxicity mitigation strategies. Develop an advanced diver thermal model. Develop advanced insulation garments for diver thermal protection. Develop guidance for optimizing thermal control during decompression. Develop guidelines for conduct of diving operations at altitude. Develop guidance for infra- and ultra-sound diver exposure. Continue collection of operational and research dive data for inclusion in advanced probabilistic decompression models. Investigate diver in-water maladies. Develop/improve real-time decompression guidance and dive planning. Research procedures for assessing and mitigating risk for diving in contaminated water.

FY 2019 Plans:

* Multi-Year Project Support: Completion of projects initiated in prior fiscal years will be supported where progress is deemed acceptable and project goals remain valid and attainable.

* Modernization of the Navy Dive Planner: Modernizing the Navy Dive Planner to ensure continued availability of this critical dive planning tool as software advances create obsolescence issues for the current version. This work is planned to continue into FY-20.

* Development of 21st Century Helium-O2 Decompression Tables: Sentinel work developing new probabilistic helium-oxygen decompression tables, enabling safer deep diving beyond current limits. This work is planned to continue into FY-20 and FY-21.

* Prevention of Swimming-Induced Pulmonary Edema: Research will begin seeking to prevent Swimming-Induced Pulmonary Edema (SIPE), a problem identified as a priority by the Naval Special Warfare community. This work is planned to continue into FY-20.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603713N / *Ocean Engineering Tech Dev*	**Project (Number/Name)** 0099 / *Deep Submergence Bio Med Dev*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
* Assessment of Ketone Esters for Prevention of CNS O2 Toxicity: Investigation into the utility of ketone esters for prevention of CNS oxygen toxicity will be supported. This will contribute to the goal of enabling divers to submerge for longer times more safely. This work is planned to continue into FY-20 and FY-21. * Assess Heart Rate Variability for Predicting Diver Impairment: An investigation into the association between heart rate variability (HRV) and diver impairment from gas narcosis, oxygen toxicity, or decompression sickness will begin. * Applied Systems Engineering for Warm Water Diving Guidance: Analysis of and improvement to warm water diving guidance will be pursued, to address concerns raised by divers assigned to regions requiring operations in warm water environments. This work is planned to continue into FY-20.					
FY 2020 Base Plans: * Multi-Year Project Support: Completion of projects initiated in prior fiscal years will be supported where progress is deemed acceptable and project goals remain valid and attainable. * Improve Safety of Rebreather Diving: Rebreather diving entails the highest risk diving performed by Navy personnel. This is an ongoing area of focus for the program and projects addressing these concerns will be solicited in future Broad Agency Announcements. This work is planned to continue into FY-21 and FY-22. * Pursue Approval of Medication Use to Prevent O2 Toxicity: Cutting edge approaches using medications and supplements to mitigate oxygen toxicity will be pursued, with seeking and obtaining FDA approval being a major milestone in such efforts. Work will be sponsored to define that process and establish the organizational connections to make this streamlined. This work is planned to continue into FY-21 and FY-22. * Improve Diver Safety Through Innovative Monitoring Techniques: Technological advances are accelerating enabling broad physiologic monitoring of warfighters. We will pursue methods to translate these technologies into the undersea environment. This work is planned to continue into FY-21 and FY-22. * Improve Thermoregulation and Thermal Monitoring: Thermal control for divers remains a top priority and a long-term area of focus for the program due to the mission-limiting nature of this challenge. This work is planned to continue into FY-21 and FY-22.					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603713N / *Ocean Engineering Tech Dev*	**Project (Number/Name)** 0099 / *Deep Submergence Bio Med Dev*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
* Develop Real-Time Decompression Capability for Next Generation Navy Dive Computer: Current advances in computing power are enabling embedding real-time probabilistic decompression models into diver computers. This will be the next significant leap forward in decompression dive planning and is expected to enable risk-based decompression planning. This work is planned to continue into FY-21 and FY-22. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** A decrease of 0.064 in FY20 for the Diver Health, Safety, and Performance portion of the program is due to the reduction of one biomedical research project in this focus area.					
Title: Deep Submergence Bio Med Dev - Submarine Escape & Rescue	2.224	2.243	2.180	0.000	2.180
Articles:	-	-	-	-	-
Description: Submarine Rescue/Escape Research: Provide decompression procedures for pressurized Submarine Rescue Diving and Recompression System (SRDRS) operators. Investigate adjunctive therapies for treating Disabled Submarine (DISSUB) survivors. Provide updated guidance for food, water, clothing, medical supplies, to enhance survival of submarine crews awaiting rescue. Develop/provide flexible computer-generated decompression schedules for wide range of conditions in a DISSUB. Develop DISSUB medical triage procedures and support DISSUB survival trials. Develop mitigation strategies to reduce hyperbaric oxygen exposures in closed vehicles/compartments. Develop treatment guidance for decompression sickness and arterial gas embolism in submarine escape and rescue. Investigate the use of novel pharmacologic agents to reduce decompression risk and/or oxygen toxicity in submarine rescues. Develop/deploy toxic gas analyzer for use in pressurized DISSUB rescue. Investigate interventions for toxicological problems in DISSUB survivors. Develop strategies to minimize decompression sickness and arterial gas embolism with Submarine Escape and Surface Survival Personnel Equipment (SESSPE) training. ***FY 2019 Plans:*** * Multi-Year Project Support: Completion of projects initiated in prior fiscal years will be supported where progress is deemed acceptable and project goals remain valid and attainable. * Man-testing of Specialized Surface Decompression Procedures for DISSUB: Research involving manned testing of specialized oxygen pre-breathe and surface decompression procedures for DISSUB rescue without					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603713N / *Ocean Engineering Tech Dev*	**Project (Number/Name)** 0099 / *Deep Submergence Bio Med Dev*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
TUP will begin to continue our efforts to mitigate this life-threatening scenario. This work is planned to continue into FY-20 and FY-21. * Assessment of Tiotropium Bromide for Prevention of Pulmonary O2 Toxicity: Work will be sponsored to pursue approval to use this FDA approved medication in humans to test its utility for reducing the negative impact of hyperbaric oxygen on lung function. * Medical Response Strategies for DISSUB Escapees: Phase 2 work will be completed, leveraging findings of a prior study focused on submarine rescue, to investigate and develop medical response strategies for submarine escape. * Complete Development and Integration of DISSUB Dive Planner: Recently completed project developing DISSUB Dive Planner will need to have an Independent Validation and Verification (IV&V) performed prior to distribution to the Fleet. This will be conducted in FY19. ***FY 2020 Base Plans:*** * Multi-Year Project Support: Completion of projects initiated in prior fiscal years will be supported where progress is deemed acceptable and project goals remain valid and attainable. * Development of a New Simplified Toxic Gas Detector for DISSUB: New technology has been identified which has the potential to simplify detection and quantification of toxic gas presence in a disabled submarine situation, allowing rapid atmosphere contamination assessment by rescue forces. This work is planned to continue into FY-21 and FY-22. * Improve Guidance in the Submarine Rescue System Decompression Plan: The SRS Decompression Plan is a living document which will be updated based on results from relevant studies completed in prior years. As procedural testing proceeds in effort to certify the rescue system, additional biomedical concerns are expected to arise and will be addressed. This work is planned to continue into FY-21 and FY-22. * Optimize Submarine Cognition and Decision-Making in DISSUB: This will remain an area of focus for the program in an effort to mitigate factors which are expected to diminish effectiveness of personnel, particularly leaders, onboard a DISSUB. This work is planned to continue into FY-21 and FY-22.					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603713N / *Ocean Engineering Tech Dev*	**Project (Number/Name)** 0099 / *Deep Submergence Bio Med Dev*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
* Update DISSUB Rescue Planner: As with the Navy Dive Planner, a need to update and upgrade the DISSUB Rescue Planner is anticipated as Fleet use expands. This work is planned to continue into FY-21 and FY-22. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** A decrease of 0.063M in FY20 for the Submarine Escape and Rescue portion of the program is due to the reduction of one biomedical research project in this focus area.					
Accomplishments/Planned Programs Subtotals	4.620	4.487	4.360	0.000	4.360

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Integrated thrust area teams (e.g., decompression research) are established with university, commercial, and in-house Navy labs 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 Undersea Medical Officer. Contracting by competitive process using BAA and leveraging ONR capabilities.

E. Performance Metrics

Quarterly Program Reviews of researcher progress measured against research proposal goals and timelines.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603713N / *Ocean Engineering Tech Dev*	Project (Number/Name) 0099 / *Deep Submergence Bio Med Dev*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Test & Evaluation	WR	NEDU : Panama City, FL	22.993	1.100	Nov 2017	0.403	Nov 2018	0.000		-		0.000	Continuing	Continuing	Continuing
Development Test & Evaluation	WR	NMRC : Silver Spring, MD	8.410	1.291	Nov 2017	0.692	Nov 2018	0.294	Nov 2019	-		0.294	Continuing	Continuing	Continuing
Development Test & Evaluation	Various	DUKE UNIV : Durham, NC	1.121	1.000	Jul 2018	1.013	Jul 2019	0.650	Nov 2019	-		0.650	Continuing	Continuing	Continuing
Development Test & Evaluation	C/CPFF	ROH : Arlington, VA	0.282	0.000	May 2018	0.030	May 2019	0.030	Nov 2019	-		0.030	Continuing	Continuing	Continuing
Development Test & Evaluation	Various	Various : Various	0.000	0.143	Mar 2018	1.334	Mar 2019	3.050	Mar 2020	-		3.050	Continuing	Continuing	Continuing
Development Test & Evaluation	C/FFP	WISCONSIN : Madison, WI	0.987	0.349	Feb 2018	0.335	Feb 2019	0.000		-		0.000	Continuing	Continuing	Continuing
Development Test & Evaluation	C/FFP	SUNY : Buffalo, NY	0.686	0.587	Apr 2018	0.607	Apr 2019	0.306	Nov 2019	-		0.306	Continuing	Continuing	Continuing
Development Test & Evaluation	WR	NSWC : Panama City, FL	0.039	0.120	Mar 2018	0.041	Nov 2018	0.000		-		0.000	0.000	0.200	-
		Subtotal	34.518	4.590		4.455		4.330		-		4.330	Continuing	Continuing	N/A

Remarks

Cost shown in "various" line reflects the funds that will be available in that fiscal year, based on projected budget, for sponsoring new research. Each year, this number reflects the residual after all ongoing research is funded, and dictates how many new projects can be sponsored that year. It does not reflect growth in the context of the annual allocation of funds, but rather fluctuates based on variations in cost and duration of previously sponsored work. Some years this line item decreases when several long-term expensive studies are selected for sponsorship the year before (as occurred in FY19 compared with FY18). The selection process is annually cyclical and at this time, we do not know what new studies will be selected for FY20 start dates. The "various" line item for FY20 merely reflects that numerous studies will conclude in FY19, making more funds available in FY20 for project selection. The anticipated research study areas for these new starts is identified in the R-2A and R-4 budget exhibits.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	Various	Various : Various	0.516	0.030	Oct 2017	0.032	Oct 2018	0.030	Oct 2019	-		0.030	Continuing	Continuing	Continuing
		Subtotal	0.516	0.030		0.032		0.030		-		0.030	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603713N / *Ocean Engineering Tech Dev*	Project (Number/Name) 0099 / *Deep Submergence Bio Med Dev*	

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	35.034	4.620		4.487		4.360		-		4.360	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603713N / *Ocean Engineering Tech Dev*	**Project (Number/Name)** 0099 / *Deep Submergence Bio Med Dev*

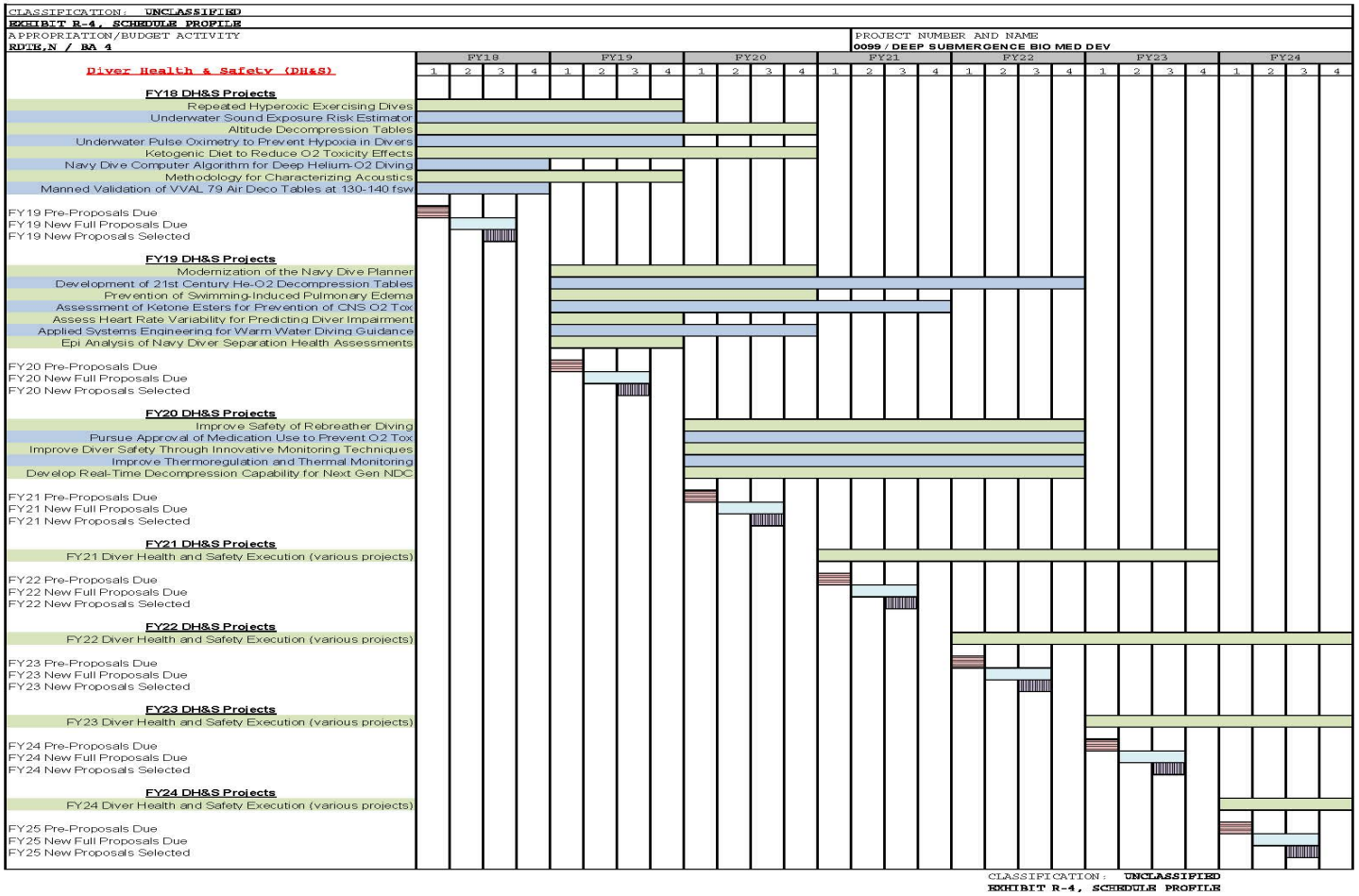

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603713N / *Ocean Engineering Tech Dev*	**Project (Number/Name)** 0099 / *Deep Submergence Bio Med Dev*

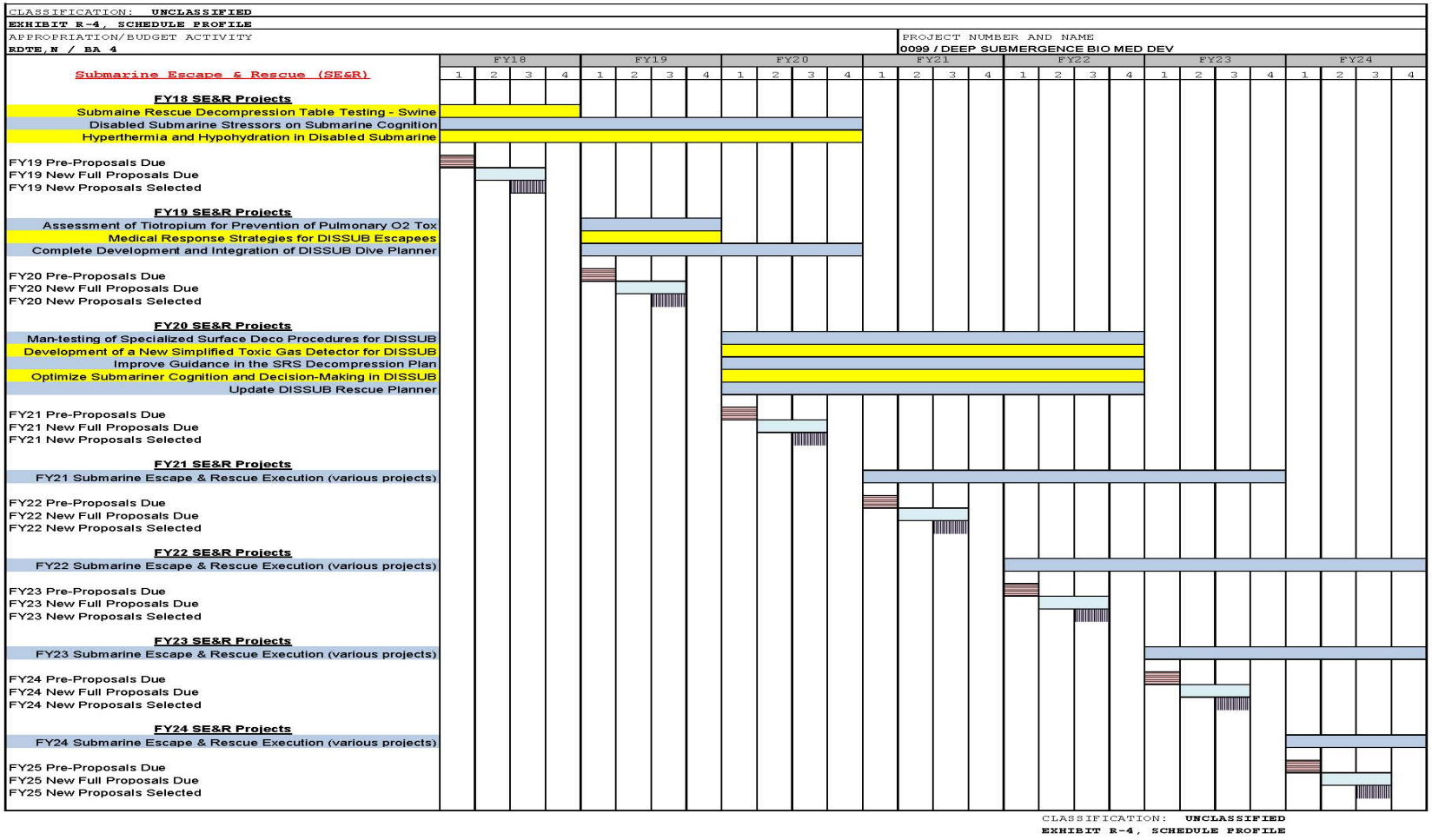

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603713N / *Ocean Engineering Tech Dev*	**Project (Number/Name)** 0099 / *Deep Submergence Bio Med Dev*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0099				
Diver Health & Safety (DH&S): FY18 DH&S Projects: Repeated Hyperoxic Exercising Dives	1	2018	4	2019
Diver Health & Safety (DH&S): FY18 DH&S Projects: Underwater Sound Exposure Risk Estimator	1	2018	4	2019
Diver Health & Safety (DH&S): FY18 DH&S Projects: Altitude Decompression Tables	1	2018	4	2020
Diver Health & Safety (DH&S): FY18 DH&S Projects: Underwater Pulse Oximetry to Prevent Hypoxia in Divers	1	2018	4	2019
Diver Health & Safety (DH&S): FY18 DH&S Projects: Ketogenic Diet to Reduce O2 Toxicity Effects	1	2018	4	2020
Diver Health & Safety (DH&S): FY18 DH&S Projects: Navy Dive Computer Algorithm for Deep Helium-O2 Diving	1	2018	4	2018
Diver Health & Safety (DH&S): FY19 Pre-Proposals Due	1	2018	1	2018
Diver Health & Safety (DH&S): Page/Group/Row: FY19 New Full Proposals Due	2	2018	3	2018
Diver Health & Safety (DH&S): Page/Group/Row: FY19 New Proposals Selected	3	2018	3	2018
Diver Health & Safety (DH&S): FY19 DH&S Projects: Modernization of the Navy Dive Planner	1	2019	4	2020
Diver Health & Safety (DH&S): FY19 DH&S Projects: Development of 21st Century He-O2 Decompression Tables	1	2019	4	2022
Diver Health & Safety (DH&S): FY19 DH&S Projects: Prevention of Swimming-Induced Pulmonary Edema	1	2019	4	2020
Diver Health & Safety (DH&S): FY19 DH&S Projects: Assessment of Ketone Esters for Prevention of CNS O2 Tox	1	2019	4	2021
Diver Health & Safety (DH&S): FY19 DH&S Projects: Assess Heart Rate Variability for Predicting Diver Impairment	1	2019	4	2019

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603713N / *Ocean Engineering Tech Dev*	**Project (Number/Name)** 0099 / *Deep Submergence Bio Med Dev*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Diver Health & Safety (DH&S): FY19 DH&S Projects: Applied Systems Engineering for Warm Water Diving Guidance	1	2019	4	2020
Diver Health & Safety (DH&S): FY19 DH&S Projects: 'Epi Analysis of Navy Diver Separation Health Assessments	1	2019	4	2019
Diver Health & Safety (DH&S): FY20 Pre-Proposals Due	1	2019	1	2019
Diver Health & Safety (DH&S): FY20 New Full Proposals Due	2	2019	3	2019
Diver Health & Safety (DH&S): FY20 New Proposals Selected	3	2019	3	2019
Diver Health & Safety (DH&S): FY20 DH&S Projects: Improve Safety of Rebreather Diving	1	2020	4	2022
Diver Health & Safety (DH&S): FY20 DH&S Projects: Pursue Approval of Medication Use to Prevent O2 Tox	1	2020	4	2022
Diver Health & Safety (DH&S): FY20 DH&S Projects: Improve Diver Safety Through Innovative Monitoring Techniques	1	2020	4	2022
Diver Health & Safety (DH&S): FY20 DH&S Projects: Improve Thermoregulation and Thermal Monitoring	1	2020	4	2022
Diver Health & Safety (DH&S): FY20 DH&S Projects: Develop Real-Time Decompression Capability for Next Gen NDC	1	2020	4	2022
Diver Health & Safety (DH&S): FY21 Pre-Proposals Due	1	2020	1	2020
Diver Health & Safety (DH&S): FY21 New Full Proposals Due	2	2020	3	2020
Diver Health & Safety (DH&S): FY21 New Proposals Selected	3	2020	3	2020
Diver Health & Safety (DH&S): 'FY21 DH&S Projects: 'FY21 Diver Health and Safety Execution (various projects)	1	2021	4	2023
Diver Health & Safety (DH&S): FY22 Pre-Proposals Due	1	2020	1	2020
Diver Health & Safety (DH&S): FY22 New Full Proposals Due	2	2020	3	2020
Diver Health & Safety (DH&S): FY22 New Proposals Selected	3	2020	3	2020
Diver Health & Safety (DH&S): 'FY22 DH&S Projects: 'FY22 Diver Health and Safety Execution (various projects)	1	2022	4	2024

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603713N / *Ocean Engineering Tech Dev*	**Project (Number/Name)** 0099 / *Deep Submergence Bio Med Dev*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Diver Health & Safety (DH&S): FY23 Pre-Proposals Due	1	2022	1	2022
Diver Health & Safety (DH&S): FY23 New Full Proposals Due	2	2022	3	2022
Diver Health & Safety (DH&S): FY23 New Proposals Selected	3	2022	3	2022
Diver Health & Safety (DH&S): 'FY23 DH&S Projects: 'FY23 Diver Health and Safety Execution (various projects)	1	2023	4	2024
Diver Health & Safety (DH&S): FY24 Pre-Proposals Due	1	2023	1	2023
Diver Health & Safety (DH&S): FY24 New Full Proposals Due	2	2023	3	2023
Diver Health & Safety (DH&S): FY24 New Proposals Selected	3	2023	3	2023
Diver Health & Safety (DH&S): 'FY24 DH&S Projects: 'FY24 Diver Health and Safety Execution (various projects)	1	2024	4	2024
Diver Health & Safety (DH&S): FY25 Pre-Proposals Due	1	2024	1	2024
Diver Health & Safety (DH&S): FY25 New Full Proposals Due	2	2024	3	2024
Diver Health & Safety (DH&S): FY25 New Proposals Selected	3	2024	3	2024
Submarine Escape & Rescue (SE&R): FY18 SE&R Projects: Submarine Rescue Decompression Table Testing - Swine	1	2018	4	2018
Submarine Escape & Rescue (SE&R): FY18 SE&R Projects: Disabled Submarine Stressors on Submarine Cognition	1	2018	4	2020
Submarine Escape & Rescue (SE&R): FY18 SE&R Projects: Hyperthermia and Hypohydration in Disabled Submarine	1	2018	4	2020
Submarine Escape & Rescue (SE&R): FY19 Pre-Proposals Due	1	2018	1	2018
Submarine Escape & Rescue (SE&R): FY19 New Full Proposals Due	2	2018	3	2018
Submarine Escape & Rescue (SE&R): FY19 New Proposals Selected	3	2018	3	2018
Submarine Escape & Rescue (SE&R): 'FY19 SE&R Projects: Assessment of Tiotripium for Prevention of Pulmonary O2 Tox	1	2019	4	2019
Submarine Escape & Rescue (SE&R): 'FY19 SE&R Projects: Medical Response Strategies for DISSUB Escapees	1	2019	4	2019

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603713N / *Ocean Engineering Tech Dev*	**Project (Number/Name)** 0099 / *Deep Submergence Bio Med Dev*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Submarine Escape & Rescue (SE&R): 'FY19 SE&R Projects: Complete Development and Integration of DISSUB Dive Planner	1	2019	4	2020
Submarine Escape & Rescue (SE&R): FY20 Pre-Proposals Due	1	2019	1	2019
Submarine Escape & Rescue (SE&R): FY20 New Full Proposals Due	2	2019	3	2019
Submarine Escape & Rescue (SE&R): FY20 New Proposals Selected	3	2019	3	2019
Submarine Escape & Rescue (SE&R): 'FY20 SE&R Projects: 'Man-testing of Specialized Surface Deco Procedures for DISSUB	1	2020	1	2022
Submarine Escape & Rescue (SE&R): 'FY20 SE&R Projects: Development of a New Simplified Toxic Gas Detector for DISSUB	1	2020	4	2022
Submarine Escape & Rescue (SE&R): 'FY20 SE&R Projects: Improve Guidance in the SRS Decompression Plan	1	2020	4	2022
Submarine Escape & Rescue (SE&R): 'FY20 SE&R Projects: Optimize Submariner Cognition and Decision-Making in DISSUB	1	2020	4	2022
Submarine Escape & Rescue (SE&R): 'FY20 SE&R Projects: Update DISSUB Rescue Planner	1	2020	4	2022
Submarine Escape & Rescue (SE&R): FY21 Pre-Proposals Due	1	2020	1	2020
Submarine Escape & Rescue (SE&R): FY21 New Full Proposals Due	2	2020	3	2020
Submarine Escape & Rescue (SE&R): FY21 New Proposals Selected	3	2020	3	2020
Submarine Escape & Rescue (SE&R): FY21 SE&R Projects: FY21 Submarine Escape & Rescue Execution (various projects)	1	2021	4	2023
Submarine Escape & Rescue (SE&R): FY22 Pre-Proposals Due	1	2021	1	2021
Submarine Escape & Rescue (SE&R): FY22 New Full Proposals Due	2	2021	3	2021
Submarine Escape & Rescue (SE&R): FY22 New Proposals Selected	3	2021	3	2021
Submarine Escape & Rescue (SE&R): FY22 SE&R Projects: FY22 Submarine Escape & Rescue Execution (various projects)	1	2022	1	2024
Submarine Escape & Rescue (SE&R): FY23 Pre-Proposals Due	1	2022	1	2022
Submarine Escape & Rescue (SE&R): FY23 New Full Proposals Due	2	2022	3	2022

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603713N / *Ocean Engineering Tech Dev*	**Project (Number/Name)** 0099 / *Deep Submergence Bio Med Dev*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Submarine Escape & Rescue (SE&R): FY23 New Proposals Selected	3	2022	3	2022
Submarine Escape & Rescue (SE&R): FY23 SE&R Projects: FY23 Submarine Escape & Rescue Execution (various projects)	1	2023	4	2024
Submarine Escape & Rescue (SE&R): FY24 Pre-Proposals Due	1	2023	1	2023
Submarine Escape & Rescue (SE&R): FY24 New Full Proposals Due	2	2023	3	2023
Submarine Escape & Rescue (SE&R): FY24 New Proposals Selected	3	2023	3	2023
Submarine Escape & Rescue (SE&R): FY24 SE&R Projects: FY24 Submarine Escape & Rescue Execution (various projects)	1	2024	4	2024
Submarine Escape & Rescue (SE&R): FY25 Pre-Proposals Due	1	2024	1	2024
Submarine Escape & Rescue (SE&R): FY25 New Full Proposals Due	2	2024	3	2024
Submarine Escape & Rescue (SE&R): FY25 New Proposals Selected	3	2024	3	2024

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy											Date: March 2019	
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603713N / *Ocean Engineering Tech Dev*				Project (Number/Name) 0394 / *Shallow Depth Diving EQ*			
COST ($ in Millions)	**Prior Years**	**FY 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Cost To Complete**	**Total Cost**
0394: *Shallow Depth Diving EQ*	29.394	4.233	1.428	1.259	-	1.259	1.287	1.311	1.338	1.365	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project develops 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. R&D will be performed in the areas of diver efficiency, visual enhancement, contaminated water diving, diver thermal protection, and recompression chamber technology.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	**FY 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**
Title: Shallow Depth Diving EQ - Diving	1.709	1.379	1.209	0.000	1.209
Articles:	-	-	-	-	-
Description: Continued research into all engineering and equipment design aspects of manned diving, to include: life support, contaminated water, SCUBA, gas analysis, thermal protection, saturation diving, and divers tools.					
FY 2019 Plans: * Diver Augmented Visual Display (DAVD) Hi Res Sonar: Begin design work on a high resolution, high frequency, short range visualization system (HI RES SONAR) that will integrate with DAVD system. This will allow accurate, real time visualization for use when conducting underwater search, salvage, ships husbandry, or construction in low visibility waters. * FLEX Chamber Development: Continue design of a flexible, double lock, recompression chamber. This year will see the completion of developmental pressure vessel testing, design of all of the internal components, as well as the control and gas supply systems. * Modernized SCUBA Regulator Testing: Testing of five (5) COTS SCUBA regulator sets is planned for FY18 through FY20. Complete testing of three (3) of the remaining four (4) SCUBA regulators is planned for FY19.					
FY 2020 Base Plans: * Diver Augmented Visual Display: Hi Res Sonar: Continue design and testing of a high resolution, high frequency, short range visualization system (HI RES SONAR) that will integrate with DAVD system. This will					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603713N / *Ocean Engineering Tech Dev*	**Project (Number/Name)** 0394 / *Shallow Depth Diving EQ*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
allow accurate, real time visualization for use when conducting underwater search, salvage, ships husbandry, or construction in low visibility waters. * FLEX Chamber Development: Complete the design and fabrication of the prototype flexible, double lock, recompression chamber. This year will see the completion of all developmental work for the system. The full prototype model will be built, tested and delivered to the US Navy for follow-on independent testing. * Modernized SCUBA Regulator Testing: Testing of five (5) COTS SCUBA regulator sets is planned for FY18 through FY20. Complete testing of the final SCUBA regulator is planned for FY20 as well as the delivery of the final report comparing performance and recommending which to select. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** The decrease of $0.17M from PB19 is due to shifting from design to fabrication and testing of the DAVD system.					
Title: Shallow Depth Diving EQ - Submarine Rescue ***Articles:*** ***Description:*** Submarine rescue decompression system permits decompression of submarine crew rescued from a pressurized, disabled submarine of pressures up to 6 atmospheres (ATA). ***FY 2019 Plans:*** Engineering analysis of pressurized rescue skirt to address shallow water rescue capability gap. ***FY 2020 Base Plans:*** Engineering evaluation of system capability increases. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase of 0.001 from FY19 to FY20 is due to inflation.	2.524 -	0.049 -	0.050 -	0.000 -	0.050 -
Accomplishments/Planned Programs Subtotals	4.233	1.428	1.259	0.000	1.259

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603713N / *Ocean Engineering Tech Dev*	**Project (Number/Name)** 0394 / *Shallow Depth Diving EQ*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• OPN/0955: *Deep Subm Sys Proj (DSSP) Equip*	4.178	3.629	2.909	-	2.909	2.971	3.029	3.091	3.152	Continuing	Continuing
• OPN/1130: *Diving and Salvage Equipment*	10.619	10.706	11.854	-	11.854	10.654	10.881	11.078	11.299	0.000	128.194

Remarks

D. Acquisition Strategy

Diving Program acquisitions are executed and managed by SEA00C. Acquisitions are made for both COTS and developmental items as required to ensure adequate operational availability and safety of the diver. R&D projects are selected in March for a November award using a Broad Area Announcement.
Submarine Rescue Systems - prime integration contract is in place and final efforts in pursuit of certification are underway.

E. Performance Metrics

Diving - Semi-annual program review with NEDU.
Diving - Annual program review for each R&D project.
Diving & Submarine Rescue - Quarterly execution assessments.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603713N / *Ocean Engineering Tech Dev*	**Project (Number/Name)** 0394 / *Shallow Depth Diving EQ*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering - Design, Integration (PMS-391 TUP)	C/CPFF	Oceaneering : Hanover, MD	24.409	2.524	Oct 2017	0.000		0.000		-		0.000	0.000	26.933	-
Systems Engineering - Design, Integration (PMS-391)	WR	NUWC : Newport, RI	0.000	0.000		0.049	Jan 2019	0.000		-		0.000	0.000	0.049	-
Systems Engineering - Design, Integration (PMS-391)	Various	Various : Various	0.000	0.000		0.000		0.050	Dec 2019	-		0.050	0.000	0.050	-
Diving Equipment Product Development (00C)	C/CPFF	Phoenix : Largo, MD	0.000	0.430	Jan 2018	0.000		0.000		-		0.000	0.000	0.430	-
Diving Equipment Product Development (00C)	Various	Various : Various	2.622	0.000		0.400	Oct 2018	0.589	Oct 2019	-		0.589	Continuing	Continuing	Continuing
Diving Equipment Product Development (00C)	C/CPFF	PCCI : Alexandria, VA	0.329	0.880	Mar 2018	0.680	Jan 2019	0.463	Jan 2020	-		0.463	0.000	2.352	-
Diving Equipment Product Development (00C)	C/CPFF	Penn state UARC : Not Specified	0.400	0.200	Jan 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Diving Equipment Product Development (00C)	WR	NSWC-PC : Panama City, FL	0.583	0.041	Nov 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	28.343	4.075		1.129		1.102		-		1.102	Continuing	Continuing	N/A

Remarks

Cost shown in various lines is due to the unknowns of who will be the Prime Contractor on the Divers Augmented Visual Display (DAVD): Hi Res Sonar project. Various is used as a generic header in this case. The funds are intended for the DAVD project.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test and Evaluation (00C)	WR	NEDU : Panama City, FL	0.451	0.075	Mar 2018	0.205	Jan 2019	0.051	Jan 2020	-		0.051	0.000	0.782	-
		Subtotal	0.451	0.075		0.205		0.051		-		0.051	0.000	0.782	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603713N / *Ocean Engineering Tech Dev*	Project (Number/Name) 0394 / *Shallow Depth Diving EQ*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel (00C)	Various	NAVSEA : Washington, DC	0.140	0.013	Oct 2017	0.007	Oct 2018	0.026	Oct 2019	-		0.026	Continuing	Continuing	Continuing
SBIR Assessment	Various	Various : Various	0.443	0.070	Oct 2017	0.059	Oct 2018	0.051	Oct 2019	-		0.051	0.000	0.623	-
Program Management Support (00C)	C/CPFF	Unknown : Not Specified	0.017	0.000	Mar 2018	0.028	Mar 2019	0.029	Mar 2020	-		0.029	Continuing	Continuing	Continuing
		Subtotal	0.600	0.083		0.094		0.106		-		0.106	Continuing	Continuing	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	29.394	4.233		1.428		1.259		-		1.259	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603713N / *Ocean Engineering Tech Dev*	**Project (Number/Name)** 0394 / *Shallow Depth Diving EQ*

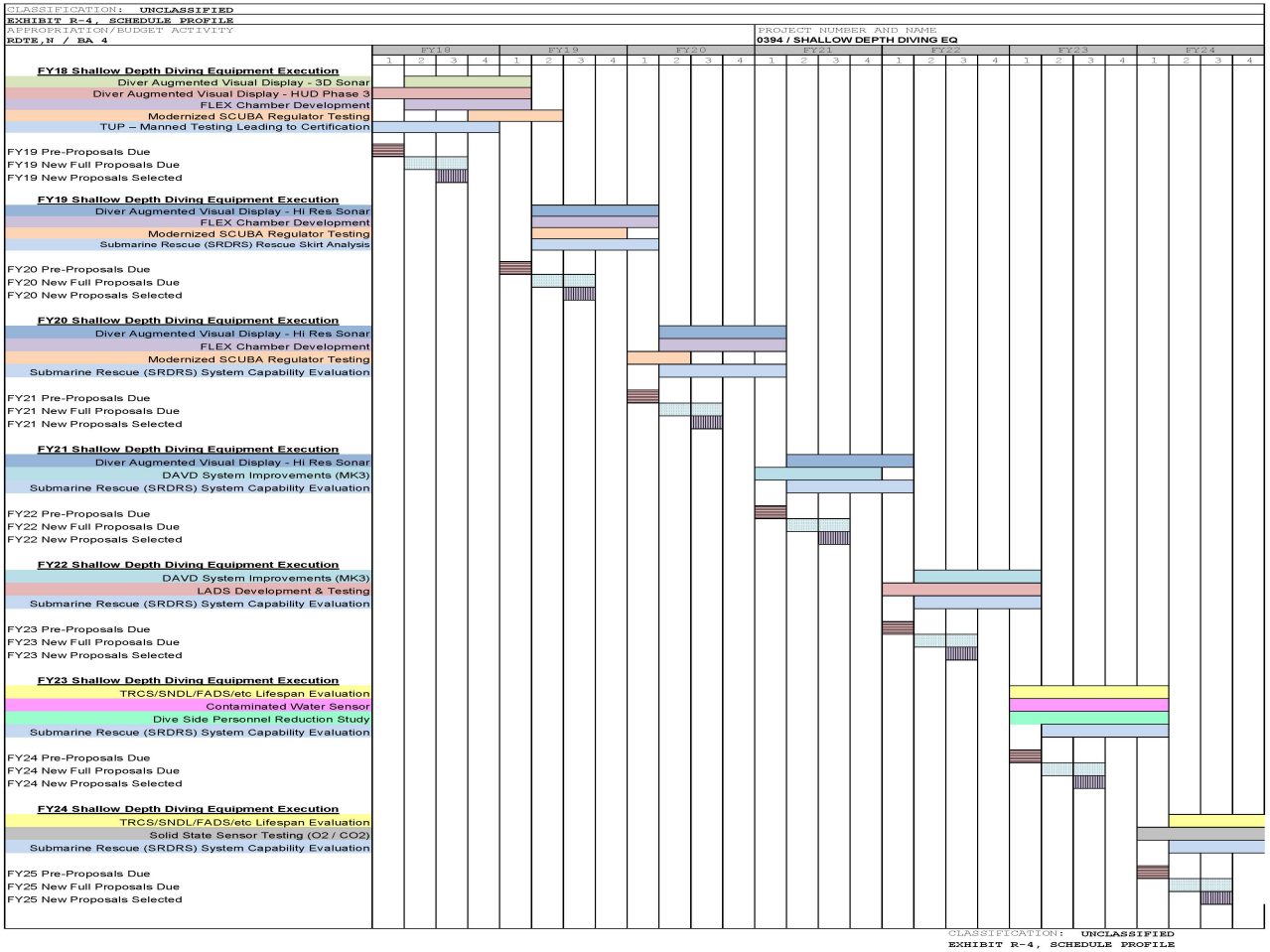

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603713N / *Ocean Engineering Tech Dev*	**Project (Number/Name)** 0394 / *Shallow Depth Diving EQ*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0394				
FY18 Shallow Depth Diving Equipment Execution: Diver Augmented Visual Display - 3D Sonar	2	2018	1	2019
FY18 Shallow Depth Diving Equipment Execution: Diver Augmented Visual Display - HUD Phase 3	1	2018	1	2019
FY18 Shallow Depth Diving Equipment Execution: FLEX Chamber Development	2	2018	1	2019
FY18 Shallow Depth Diving Equipment Execution: Modernized SCUBA Regulator Testing	4	2018	2	2019
FY18 Shallow Depth Diving Equipment Execution: TUP Manned Testing Leading to Certification	1	2018	4	2018
FY19 Pre-Proposals Due	1	2018	1	2018
FY19 New Full Proposals Due	2	2018	3	2018
FY19 New Proposals Selected	3	2018	3	2018
FY19 Shallow Depth Diving Equipment Execution: Diver Augmented Visual Display - Hi Res Sonar	2	2019	1	2020
FY19 Shallow Depth Diving Equipment Execution: FLEX Chamber Development	2	2019	1	2020
FY19 Shallow Depth Diving Equipment Execution: Modernized SCUBA Regulator Testing	2	2019	4	2019
FY19 Shallow Depth Diving Equipment Execution: Submarine Rescue (SRDRS) Rescue Skirt Analysis	2	2019	1	2020
FY20 Pre-Proposals Due	1	2019	1	2019
FY20 New Full Proposals Due	2	2019	3	2019
FY20 New Proposals Selected	3	2019	3	2019

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603713N / *Ocean Engineering Tech Dev*	**Project (Number/Name)** 0394 / *Shallow Depth Diving EQ*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
FY20 Shallow Depth Diving Equipment Execution: Diver Augmented Visual Display - Hi Res Sonar	2	2020	1	2021
FY20 Shallow Depth Diving Equipment Execution: FLEX Chamber Development	2	2020	1	2021
FY20 Shallow Depth Diving Equipment Execution: Modernized SCUBA Regulator Testing	1	2020	2	2020
FY20 Shallow Depth Diving Equipment Execution: Submarine Rescue (SRDRS) System Capability Evaluation	2	2020	1	2021
FY21 Pre-Proposals Due	1	2020	1	2020
FY21 New Full Proposals Due	2	2020	3	2020
FY21 New Proposals Selected	3	2020	3	2020
FY21 Shallow Depth Diving Equipment Execution: Diver Augmented Visual Display - Hi Res Sonar	2	2021	1	2022
FY21 Shallow Depth Diving Equipment Execution: DAVD System Improvements (MK3)	1	2021	4	2021
FY21 Shallow Depth Diving Equipment Execution: Submarine Rescue (SRDRS) System Capability Evaluation	2	2021	4	2021
FY22 Pre-Proposals Due	1	2021	1	2021
FY22 New Full Proposals Due	2	2021	3	2021
FY22 New Proposals Selected	3	2021	3	2021
FY22 Shallow Depth Diving Equipment Execution: DAVD System Improvements (MK3)	2	2022	1	2023
FY22 Shallow Depth Diving Equipment Execution: LADS Development & Testing	1	2022	1	2023
FY22 Shallow Depth Diving Equipment Execution: Submarine Rescue (SRDRS) System Capability Evaluation	2	2022	1	2023
FY23 Pre-Proposals Due	1	2022	1	2022
FY23 New Full Proposals Due	2	2022	2	2023
FY23 New Proposals Selected	3	2022	3	2023
'FY23 Shallow Depth Diving Equipment Execution: TRCS/SNDL/FADS/etc Lifespan Evaluation	1	2023	1	2024

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603713N / *Ocean Engineering Tech Dev*	**Project (Number/Name)** 0394 / *Shallow Depth Diving EQ*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
'FY23 Shallow Depth Diving Equipment Execution: Contaminated Water Sensor	1	2023	1	2024
'FY23 Shallow Depth Diving Equipment Execution: Dive Side Personnel Reduction Study	1	2023	1	2024
'FY23 Shallow Depth Diving Equipment Execution: Submarine Rescue (SRDRS) System Capability Evaluation	2	2023	1	2024
FY24 Pre-Proposals Due	1	2023	1	2023
FY24 New Full Proposals Due	2	2023	3	2023
FY24 New Proposals Selected	3	2023	3	2023
'FY24 Shallow Depth Diving Equipment Execution: TRCS/SNDL/FADS/etc Lifespan Evaluation	2	2024	4	2024
'FY24 Shallow Depth Diving Equipment Execution: Solid State Sensor Testing (O2 / CO2)	1	2024	4	2024
'FY24 Shallow Depth Diving Equipment Execution: Submarine Rescue (SRDRS) System Capability Evaluation	2	2024	4	2024
FY25 Pre-Proposals Due	1	2024	1	2024
FY25 New Full Proposals Due	2	2024	3	2024
FY25 New Proposals Selected	3	2024	3	2024