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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2019 Navy **Date:** February 2018

<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>					<b>R-1 Program Element (Number/Name)</b> PE 0603654N / <i>JT Service Explosive Ordn Dev</i>							
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	582.764	48.686	83.067	43.148	13.900	57.048	51.725	38.381	36.287	47.074	Continuing	Continuing
0377: <i>JT Service Expl Ord Disp System</i>	365.499	13.540	13.572	7.839	-	7.839	18.192	6.034	6.683	11.377	Continuing	Continuing
1317: <i>EOD Diving System</i>	107.448	6.467	5.113	4.357	-	4.357	4.527	4.621	3.977	4.816	Continuing	Continuing
3177: <i>Joint Counter Radio-Controlled IED Elec Warfare</i>	0.000	13.194	45.264	14.016	13.900	27.916	11.414	11.731	9.755	12.155	Continuing	Continuing
4023: <i>VSW MCM/Force Protection UUV</i>	109.817	15.485	19.118	16.936	-	16.936	17.592	15.995	15.872	18.726	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This is a Joint Service Program.

This program provides for the development of Explosive Ordnance Disposal tools and equipment for use by all military services. The responsibility is assigned to the Navy as single service manager, by Department of Defense Directive 5160.62 of 26 April 1989, for management of the Joint Service Explosive Ordnance Disposal Research and Development Program.

Proliferation of sophisticated types of foreign and domestic ordnance and Improvised Explosive Devices necessitate a continuing development program to provide Explosive Ordnance Disposal personnel of all military services with the special equipment and tools required to support this mission.

This program also provides life support related equipment necessary to support the performance of Navy Explosive Ordnance Disposal tasks underwater. This equipment must have inherently low acoustic and magnetic signatures in order to allow the Explosive Ordnance Disposal technician to safely approach, render-safe and dispose of sea mines and other underwater ordnance.

This program also provides for the research and development of Electronic Warfare (EW) systems, equipment, procedures, and tactical aids for all military services against the threat posed by Radio-Controlled Improvised Explosive Devices (RCIEDs) and to prevent initiation of RCIEDs across the spectrum of Joint military operations. Utilize Joint requirements to provide a system of systems approach for a suite of equipment for mounted, dismounted, and fixed site operations; provide a Joint Counter RCIED EW (CREW) development of equipment, procedures, and tactical aids to make rapid improvements to performance, supportability and affordability, while maintaining pace with evolving global threat.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2019 Navy	<b>Date:</b> February 2018
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<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603654N / <i>JT Service Explosive Ordn Dev</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>
Previous President's Budget	46.911	53.367	44.474	-	44.474
Current President's Budget	48.686	83.067	43.148	13.900	57.048
Total Adjustments	1.775	29.700	-1.326	13.900	12.574
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.259	0.000			
• SBIR/STTR Transfer	-1.463	0.000			
• Program Adjustments	3.500	29.700	0.000	-	0.000
• Rate/Misc Adjustments	0.000	0.000	-1.326	13.900	12.574
• Congressional General Reductions Adjustments	-0.021	-	-	-	-
• Congressional Directed Reductions Adjustments	-1.500	-	-	-	-

**Change Summary Explanation**

Other Rate/Misc Adjustments: -\$1.326M.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Navy										<b>Date:</b> February 2018		
<b>Appropriation/Budget Activity</b> 1319 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603654N / JT Service Explosive Ordn Dev				<b>Project (Number/Name)</b> 0377 / JT Service Expl Ord Disp System			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
0377: JT Service Expl Ord Disp System	365.499	13.540	13.572	7.839	-	7.839	18.192	6.034	6.683	11.377	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

This Program Element (PE) Project (0377) provides funding for the detailed design, development, risk mitigation, issue resolution, integrations, test, test equipment, simulations and post-deployment improvements of specialized equipment, tools and assessment of accessories that expand range of military operations required to support DoD's only Joint Explosive Ordnance Disposal (EOD) programs.

EOD exclusively executes world-wide missions for detection/location, identification, render-safe, recovery, field and laboratory evaluation, and disposal of hazards and unexploded ordnance (UXO) that is a threat to military operations, installations, personnel, or material. UXO includes foreign and domestic, both conventional and non-conventional, including Improvised Explosive Devices (IEDs); hazards includes fuels weapons and weapons of mass destruction devices using radiological and biological means with or without explosives.

The responsibility is assigned to the Navy as single service manager, by Department of Defense Directive 5160.62 of 3 June 2011, for management of the Joint Service Explosive Ordnance Disposal Research and Development Program. EOD programs are designed to reduce the EOD operator's exposure to explosive hazards or limit the risk to an acceptable level. EOD operations range from hand entry of explosive devices by EOD technicians to robotic actions and sensing capabilities that provide a safe distance of the explosive hazard at a greatly reduced cost to trained and experienced EOD operators.

**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>
<b>Title:</b> JOINT EXPLOSIVE ORDNANCE DISPOSAL DECISION SUPPORT SYSTEM (JEOD DSS)	1.915	2.296	1.595	0.000	1.595
<b>Articles:</b>	-	-	-	-	-
<b>FY 2018 Plans:</b> Continue AEODRS Inc 2 Joint Service EOD Common Control Platform integration, testing and production readiness. Development of Software Mobile application for EOD digital handheld devices for Joint Service Decision Support System (DSS) tools.					
<b>FY 2019 Base Plans:</b> Continue the EOD Warfighter defined improvements to the JEOD DSS Portal and Mobile Field Kit; applications; and further the integration of AN/GSQ-275 Radiographic Imaging System EOD, Advanced EOD Robotics					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Navy		<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603654N / JT Service Explosive Ordn Dev	<b>Project (Number/Name)</b> 0377 / JT Service Expl Ord Disp System

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>
System (AEODRS), and other Joint Service EOD tools and equipment into the JEOD DSS Node 4 Common Controller.  <b>FY 2019 OCO Plans:</b> N/A  <b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> Decrease from FY18 to FY19 is in accordance with planned program profile and is not due to a negative action against this effort.					
<b>Title:</b> EOD ROBOTICS  <b>Articles:</b>	10.345 -	9.956 -	6.244 -	0.000 -	6.244 -
<b>FY 2018 Plans:</b> Continue development and test AEODRS Increment 2 Prime System Integrator Production Representative/First Articles Systems and prepare for production and manufacturing. Prepare for AEODRS Increment 3 (Base and Infrastructure) Program Initiation (Milestone B).  <b>FY 2019 Base Plans:</b> Conduct Government Production First Article acceptance test and preparation for Full Rate Production. Milestone Authority approval for Advanced EOD Robotics System (AEODRS) Inc 3, Milestone B. Complete technical re-fresh plans and engineering improvements plans for AEODRS increments.  <b>FY 2019 OCO Plans:</b> N/A  <b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> Decrease from FY18 to FY19 is in accordance with planned program profile and is not due to a negative action against this effort for continued development for Advanced EOD Robotics Systems Inc 2 and Advanced EOD Robotics Systems Inc 3 Offset.					
<b>Title:</b> TCM AN/PLT-XXX SYSTEMS  <b>Articles:</b>	1.280 -	1.320 -	0.000 -	0.000 -	0.000 -
<b>FY 2018 Plans:</b> Develop and upgrade threat loadset to remain current with continually changing threats.  <b>FY 2019 Base Plans:</b>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Navy		<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603654N / JT Service Explosive Ordn Dev	<b>Project (Number/Name)</b> 0377 / JT Service Expl Ord Disp System

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>
Technical adjustment to Project 3177.					
<b>FY 2019 OCO Plans:</b> N/A					
<b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> Technical Adjustment to Project 3177.					
<b>Accomplishments/Planned Programs Subtotals</b>	13.540	13.572	7.839	0.000	7.839

**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPN/5509(a): EOD Equipment (VN075)	6.355	0.000	8.506	-	8.506	9.237	5.579	5,771.000	6.039	0.000	5,828.599

**Remarks**

**D. Acquisition Strategy**  
 Joint Service acquisition strategies utilize an evolutionary open architecture and modular strategy for rapid acquisition of mature technology for the user. The evolutionary approach delivers baseline capability and subsequent increments, recognizing up front the need for future capability improvements. Each increment is a militarily useful and supportable operational capability that can be developed, produced, deployed, and sustained. The evolutionary open architecture and modular strategy allows for rapid block upgrades, pre-planned product improvements, new accessories that expand range of military operations that provide a significant increase in operational capability and improvements at the modular level and encourages competition and second sources to lower life cycle costs. Once deployed, the upgrades can be developed, tested and deployed at the modular level and new capabilities can be delivered without having to return the entire tool (e.g. robot) to a depot for system level conversion. System Test bed and modeling and simulation can verify module system level compliance in a laboratory, greatly reducing the cost to conduct expensive range testing. Analysis of Alternatives (AOA) studies are conducted prior to the initiation of new subprojects. The AOA addresses and emphasizes acquisition strategies of the most cost-effective solution over the subprojects' life-cycle. Contracting for RDT&E, if required, is always competitive and when feasible, production options are included.

**E. Performance Metrics**  
 Processed 40 functional & 113 Maintenance Joint Service EOD Decision Support System (DSS) change requests resulting of 4,264 sets of Mobile Field Kit Software, 4,264 Unclassified and Secret AEODPS. Completed migration to Microsoft Windows 10 Operating System on Joint EOD DSS Node 4 Common Controller and completed the unclassified configuration of the JEOD DSS N4 CC.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy** **Date:** February 2018

<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603654N / JT Service Explosive Ordn Dev	<b>Project (Number/Name)</b> 0377 / JT Service Expl Ord Disp System
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<b>Product Development (\$ in Millions)</b>				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Primary Hardware Development	WR	NSWCIHEODTD : Indian Head, MD	185.244	8.165	Oct 2016	2.947	Nov 2017	1.000	Nov 2018	-		1.000	Continuing	Continuing	Continuing
Primary Hardware Development	C/FFP	Northrop Grumman : Herdon, VA	9.044	3.500	Dec 2016	0.000		0.000	Nov 2018	-		0.000	Continuing	Continuing	Continuing
Primary Hardware Development	C/FFP	TBD : TBD	0.000	0.000	Jun 2017	8.500	Nov 2017	4.847	Nov 2018	-		4.847	0.000	13.347	-
ILS	WR	EODTD : Indian Head, MD	48.590	0.500	Oct 2016	0.400	Nov 2017	0.300	Nov 2018	-		0.300	Continuing	Continuing	Continuing
<b>Subtotal</b>			242.878	12.165		11.847		6.147		-		6.147	Continuing	Continuing	N/A

<b>Support (\$ in Millions)</b>				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Support	C/CPFF	HARRIS : Herndon, VA	8.008	0.300	Nov 2016	0.375	Nov 2017	0.367	Nov 2018	-		0.367	Continuing	Continuing	Continuing
<b>Subtotal</b>			8.008	0.300		0.375		0.367		-		0.367	Continuing	Continuing	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental Test & Evaluation	WR	EODTD : Indian Head, MD	76.469	0.850	Nov 2016	0.900	Nov 2017	0.900	Dec 2018	-		0.900	Continuing	Continuing	Continuing
Operation Test & Evaluation	WR	EODTD : Indian Head, MD	11.483	0.025	Nov 2016	0.025	Nov 2017	0.025	Nov 2018	-		0.025	Continuing	Continuing	Continuing
<b>Subtotal</b>			87.952	0.875		0.925		0.925		-		0.925	Continuing	Continuing	N/A







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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2019 Navy		<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603654N / JT Service Explosive Ordn Dev	<b>Project (Number/Name)</b> 0377 / JT Service Expl Ord Disp System

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 0377</b>				
JOINT EXPLOSIVE ORDNANCE DISPOSAL DECISION SUPPORT SYSTEM (JEOD DSS): Continuous Improvement (Inc 1)	1	2017	4	2023
JOINT EXPLOSIVE ORDNANCE DISPOSAL DECISION SUPPORT SYSTEM (JEOD DSS): Engineering Change Proposal 1 (Inc 1)	2	2017	2	2017
JOINT EXPLOSIVE ORDNANCE DISPOSAL DECISION SUPPORT SYSTEM (JEOD DSS): Engineering Change Proposal 2 (Inc 1)	4	2017	4	2017
JOINT EXPLOSIVE ORDNANCE DISPOSAL DECISION SUPPORT SYSTEM (JEOD DSS): Engineering Change Proposal 3 (Inc 1)	2	2018	2	2018
JOINT EXPLOSIVE ORDNANCE DISPOSAL DECISION SUPPORT SYSTEM (JEOD DSS): Engineering Change Proposal 4 (Inc 1)	4	2018	4	2018
JOINT EXPLOSIVE ORDNANCE DISPOSAL DECISION SUPPORT SYSTEM (JEOD DSS): Engineering Change Proposal 5 (Inc 1)	2	2019	2	2019
JOINT EXPLOSIVE ORDNANCE DISPOSAL DECISION SUPPORT SYSTEM (JEOD DSS): Engineering Change Proposal 6 (Inc 1)	4	2019	4	2019
JOINT EXPLOSIVE ORDNANCE DISPOSAL DECISION SUPPORT SYSTEM (JEOD DSS): Engineering Change Proposal 7 (Inc 1)	2	2020	2	2020
JOINT EXPLOSIVE ORDNANCE DISPOSAL DECISION SUPPORT SYSTEM (JEOD DSS): Engineering Change Proposal 8 (Inc 1)	4	2020	4	2020
JOINT EXPLOSIVE ORDNANCE DISPOSAL DECISION SUPPORT SYSTEM (JEOD DSS): Engineering Change Proposal 9 (Inc 1)	2	2021	2	2021
JOINT EXPLOSIVE ORDNANCE DISPOSAL DECISION SUPPORT SYSTEM (JEOD DSS): Engineering Change Proposal 10 (Inc 1)	4	2021	4	2021
JOINT EXPLOSIVE ORDNANCE DISPOSAL DECISION SUPPORT SYSTEM (JEOD DSS): Engineering Change Proposal 11 (Inc 1)	2	2022	2	2022

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**Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy** **Date:** February 2018

<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603654N / JT Service Explosive Ordn Dev	<b>Project (Number/Name)</b> 0377 / JT Service Expl Ord Disp System
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
JOINT EXPLOSIVE ORDNANCE DISPOSAL DECISION SUPPORT SYSTEM (JEOD DSS): Engineering Change Proposal 12 (Inc 1)	4	2022	4	2022
JOINT EXPLOSIVE ORDNANCE DISPOSAL DECISION SUPPORT SYSTEM (JEOD DSS): Engineering Change Proposal 13 (Inc 1)	2	2023	2	2023
JOINT EXPLOSIVE ORDNANCE DISPOSAL DECISION SUPPORT SYSTEM (JEOD DSS): Engineering Change Proposal 14 (Inc 1)	4	2023	4	2023
JOINT EXPLOSIVE ORDNANCE DISPOSAL DECISION SUPPORT SYSTEM (JEOD DSS): Software Production & Development (Inc 2)	1	2020	4	2021
JOINT EXPLOSIVE ORDNANCE DISPOSAL DECISION SUPPORT SYSTEM (JEOD DSS): Continuous Improvement (Inc 2)	1	2022	4	2023
JOINT EXPLOSIVE ORDNANCE DISPOSAL DECISION SUPPORT SYSTEM (JEOD DSS): Engineering Change Proposal 1 (Inc 2)	3	2022	3	2022
JOINT EXPLOSIVE ORDNANCE DISPOSAL DECISION SUPPORT SYSTEM (JEOD DSS): Engineering Change Proposal 2 (Inc 2)	1	2023	1	2023
JOINT EXPLOSIVE ORDNANCE DISPOSAL DECISION SUPPORT SYSTEM (JEOD DSS): Engineering Change Proposal 3 (Inc 2)	3	2023	3	2023
TCM, AN/PLT-XXX (CLASSIFIED III): Continuous Improvement	1	2017	4	2018
ADVANCED EOD ROBOT SYSTEM (INC 1): Engineering & Manufacturing (Inc 1)	1	2017	1	2018
ADVANCED EOD ROBOT SYSTEM (INC 1): Production Decision MS C (Inc 1)	4	2017	1	2018
ADVANCED EOD ROBOT SYSTEM (INC 1): Production and Deployment (Inc 1)	1	2018	4	2022
ADVANCED EOD ROBOT SYSTEM (INC 1): Continuous Improvement (Inc 1)	1	2019	4	2023
ADVANCED EOD ROBOT SYSTEM (INC 1): Engineering Change Proposal (Inc 1) 1	4	2020	4	2020
ADVANCED EOD ROBOT SYSTEM (INC 1): Engineering Change Proposal (Inc 1) 2	4	2021	4	2021
ADVANCED EOD ROBOT SYSTEM (INC 1): Engineering Change Proposal (Inc 1) 3	4	2022	4	2022
ADVANCED EOD ROBOT SYSTEM (INC 1): Engineering Change Proposal (Inc 1) 4	4	2023	4	2023
ADVANCED EOD ROBOT SYSTEM (INC 2): Engineering & Manufacturing (Inc 2)	1	2017	4	2019
ADVANCED EOD ROBOT SYSTEM (INC 2): Production Decision MS C (Inc 2)	3	2019	3	2019

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**Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy** **Date:** February 2018

<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603654N / JT Service Explosive Ordn Dev	<b>Project (Number/Name)</b> 0377 / JT Service Expl Ord Disp System
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
ADVANCED EOD ROBOT SYSTEM (INC 2): Production and Deployment (Inc 2)	3	2019	4	2022
ADVANCED EOD ROBOT SYSTEM (INC 2): Continuous Improvement (Inc 2)	1	2021	4	2023
ADVANCED EOD ROBOT SYSTEM (INC 2): Engineering Change Proposal (Inc 2) 1	4	2021	4	2021
ADVANCED EOD ROBOT SYSTEM (INC 2): Engineering Change Proposal (Inc 2) 2	4	2022	4	2022
ADVANCED EOD ROBOT SYSTEM (INC 2): Engineering Change Proposal (Inc 2) 3	4	2023	4	2023
ADVANCED EOD ROBOT SYSTEM (INC 3): Milestone B (Inc 3)	1	2019	1	2019
ADVANCED EOD ROBOT SYSTEM (INC 3): Engineering & Manufacturing (Inc 3)	1	2019	1	2022
ADVANCED EOD ROBOT SYSTEM (INC 3): Production Decision MS C (Inc 3)	1	2022	1	2022
ADVANCED EOD ROBOT SYSTEM (INC 3): Production and Deployment (Inc 3)	1	2022	4	2023
ADVANCED EOD ROBOT SYSTEM (INC 3): Engineering Change Proposal (Inc 3)	2	2023	3	2023

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Navy										<b>Date:</b> February 2018		
<b>Appropriation/Budget Activity</b> 1319 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603654N / JT Service Explosive Ordn Dev				<b>Project (Number/Name)</b> 1317 / EOD Diving System			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
1317: EOD Diving System	107.448	6.467	5.113	4.357	-	4.357	4.527	4.621	3.977	4.816	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

These resources support the development of equipment for the Navy's only comprehensive expeditionary detect to engage MCM capability, i.e. Ex MCM Company. Specifically, it provides for development of Diver Safety/Life Support Equipment, Advanced Diver Integrated Sensors and Advanced Firing Systems to support Navy Explosive Ordnance Disposal (EOD) underwater operations and Expeditionary MCM Company establishment by US Fleet Forces Command. The equipment must have inherently low acoustic and magnetic signatures in order to allow the EOD divers to safely approach, render-safe, recover, exploit, and dispose of underwater explosive threats to include sea mines, limpet mines, underwater improvised explosive devices, and unexploded ordnance. Note: The schedules have been re-formatted to allow for better communication of program execution.

**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>
<b>Title:</b> DIVER SAFETY & LIFE SUPPORT SYSTEMS	4.281	2.950	2.000	0.000	2.000
<b>Articles:</b>	-	-	-	-	-
<p><b>Description:</b> Diver Safety &amp; Life Support Systems: Develop diver safety tools to include more capable life support systems for EOD, and Mobile Diving &amp; Salvage Units (MDSU) operations. Specific tools include but are not limited to Underwater Breathing Apparatus (UBA), specialized dive masks, heads-up displays, emergency life support systems and the ability to train divers and to evaluate Mine Countermeasures (MCM)/Explosive Ordnance Disposal (EOD) tools, tactics and procedures with regard to influence cleanliness against sea mines both at home and in controlled threat areas prior to commencing EOD operations.</p> <p><b>FY 2018 Plans:</b> The MMUBA will receive an acquisition designation and achieve MS B in FY 2018. Development contract will be awarded to deliver EDMs for test and evaluation. Complete fielding of METRES improvements.</p> <p><b>FY 2019 Base Plans:</b> FY19 efforts will focus on continuation of the MMUBA acquisition program (MOTS UBA, MMUBA, MK 16 PIP) and diver safety life support enhancements identified through continued engagement with Fleet EOD diving and expeditionary salvage forces.</p> <p><b>FY 2019 OCO Plans:</b></p>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Navy		<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603654N / JT Service Explosive Ordn Dev	<b>Project (Number/Name)</b> 1317 / EOD Diving System

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>
N/A					
<p><b><i>FY 2018 to FY 2019 Increase/Decrease Statement:</i></b> Decrease from FY18 to FY19 is in accordance with planned program profile and is not due to a negative action against this effort based on FY18 completion of assessment and evaluation of Commercial Off-the-Shelf (COTS) diving rigs and FY18 execution of assessment, evaluation and selection of Multi Mission Underwater Breathing Apparatus.</p>					
<p><b><i>Title:</i></b> ADVANCED DIVER INTEGRATED SENSORS</p> <p align="right"><b><i>Articles:</i></b></p> <p><b><i>Description:</i></b> Develop Advanced Diver Integrated Sensors equipment to enhance EOD and MDSU ability to detect, access, neutralize and gather intelligence on underwater targets of interest. Requirements include STRIDENT and improvements to the MK 15 Underwater Imaging System (UIS).</p> <p><b><i>FY 2018 Plans:</i></b> In FY18, the ACAT designation and Milestone B will be realized and STRIDENT Engineering Development Model (EDM) contract will be awarded. EDM development and fabrication will commence with testing by the by the manufacturer continuing through of FY 2018. Continue to enhance the MK 15 Mod UIS diver-based search capability through fleet-based product improvements.</p> <p><b><i>FY 2019 Base Plans:</i></b> FY19 efforts will focus on completing the initial enhancements needed to continue MK 15 UIS capability until STRIDENT capability is fielded. Continue development, testing, and evaluation of STRIDENT EDMs.</p> <p><b><i>FY 2019 OCO Plans:</i></b> N/A</p> <p><b><i>FY 2018 to FY 2019 Increase/Decrease Statement:</i></b> No significant change from FY 2018 to FY 2019.</p>	1.897	1.920	1.958	0.000	1.958
	-	-	-	-	-
<p><b><i>Title:</i></b> ADVANCED FIRING SYSTEM</p> <p align="right"><b><i>Articles:</i></b></p> <p><b><i>Description:</i></b> Develops product improvements to existing systems for below and above water neutralization of underwater threats to support EOD and MDSU operations.</p> <p><b><i>FY 2018 Plans:</i></b></p>	0.289	0.243	0.399	0.000	0.399
	-	-	-	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Navy		<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603654N / JT Service Explosive Ordn Dev	<b>Project (Number/Name)</b> 1317 / EOD Diving System

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>
Continue development and testing of product improvements to AFD receiver subsystems. <b>FY 2019 Base Plans:</b> FY19 efforts will focus on continuing development, testing, and evaluation of product improvements to the Mk 12 AFS receiver subsystems. <b>FY 2019 OCO Plans:</b> N/A <b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> No significant change from FY 2018 to FY 2019.					
<b>Accomplishments/Planned Programs Subtotals</b>	6.467	5.113	4.357	0.000	4.357

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• OPN/0977a: Underwater EOD Program (Cost Code UQ034)	1.730	1.100	1.125	-	1.125	1.350	2.095	6.622	6.754	0.000	47.521
• OPN/0977b: UW EOD (UQ036)	0.411	0.475	0.660	-	0.660	0.660	0.660	4.050	4.131	0.000	14.585

**Remarks**

**D. Acquisition Strategy**  
Analysis of Alternatives (AOA) studies are always conducted prior to the initiation of new sub-projects. The AOA addresses and emphasizes acquisition strategies of the most cost-effective solution over the sub-projects life-cycle. The acquisition strategies observe the following hierarchy of alternatives: commercial item (including modification), non-developmental item (including modification), and lastly, developmental programs. Contracting for RDT&E, if required, is always competitive and when feasible, production options are included.

**E. Performance Metrics**  
Research and Develop technologies for the design of Diver Safety Systems, Advanced Diver Integrated Sensors and Advanced Underwater Firing Systems used to render safe, recover, exploit, and dispose of sea limpet mines and unexploded ordnance.

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2019 Navy</b>											<b>Date: February 2018</b>				
<b>Appropriation/Budget Activity</b> 1319 / 4						<b>R-1 Program Element (Number/Name)</b> PE 0603654N / JT Service Explosive Ordn Dev					<b>Project (Number/Name)</b> 1317 / EOD Diving System				

<b>Product Development (\$ in Millions)</b>				<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Primary Hardware Development	WR	Multiple Activities : Not Specified	42.103	2.047	Oct 2016	0.950	Oct 2017	0.850	Nov 2018	-		0.850	Continuing	Continuing	Continuing
Software Development	WR	Multiple Activites : Not Specified	5.094	1.439	Oct 2016	0.208	Oct 2017	0.170	Nov 2018	-		0.170	Continuing	Continuing	Continuing
Systems Engineering	WR	Multiple Activities : Not Specified	8.228	0.000		0.000		0.000		-		0.000	0.000	8.228	-
ILS	WR	Multiple Activies : Not Specified	11.916	0.000		0.000		0.000		-		0.000	0.000	11.916	-
Systems Engineering	WR	NSWC : Panama City	2.228	0.617	Oct 2016	0.879	Oct 2017	0.702	Nov 2018	-		0.702	Continuing	Continuing	Continuing
Systems Engineering	WR	SPAWAR : San Diego	3.634	0.376	Oct 2016	1.189	Oct 2017	0.970	Nov 2018	-		0.970	Continuing	Continuing	Continuing
<b>Subtotal</b>			73.203	4.479		3.226		2.692		-		2.692	Continuing	Continuing	N/A

<b>Support (\$ in Millions)</b>				<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Program Management Support1	C/CPFF	HARRIS : Herndon VA	3.537	0.000		0.000		0.000		-		0.000	0.000	3.537	-
Program Management Support2	C/CPFF	HARRIS : Herndon VA	3.871	0.530	Oct 2016	0.510	Nov 2017	0.450	Nov 2018	-		0.450	Continuing	Continuing	Continuing
Integrated Logistics Support	WR	Not Specified : Not Specified	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Configuration Management	WR	Not Specified : Not Specified	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Technical Data	WR	Not Specified : Not Specified	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
GFE	WR	Not Specified : Not Specified	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Award Fees	WR	Not Specified : Not Specified	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy												Date: February 2018			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 4				PE 0603654N / JT Service Explosive Ordn Dev				1317 / EOD Diving System							
<b>Support (\$ in Millions)</b>				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
<b>Subtotal</b>			7.408	0.530		0.510		0.450		-		0.450	Continuing	Continuing	N/A
<b>Test and Evaluation (\$ in Millions)</b>				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Test & Evaluation	WR	Multiple Activities : Not Specified	8.180	0.719	Oct 2016	0.663	Oct 2017	0.585	Nov 2018	-		0.585	Continuing	Continuing	Continuing
Operational Test & Evaluation	WR	Multiple Activities : Not Specified	1.560	0.000		0.000		0.000		-		0.000	0.000	1.560	-
<b>Subtotal</b>			9.740	0.719		0.663		0.585		-		0.585	Continuing	Continuing	N/A
<b>Management Services (\$ in Millions)</b>				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	WR	EODTECHDIV : IH MD	10.141	0.717	Oct 2016	0.693	Nov 2017	0.611	Nov 2018	-		0.611	0.000	12.162	-
Miscellaneous	WR	NSWC, Activities : Not Specified	6.943	0.022	Oct 2016	0.021	Nov 2017	0.019	Nov 2018	-		0.019	0.000	7.005	-
Acquisition Workforce Fund	Various	Various : Various	0.013	0.000		0.000		0.000		-		0.000	0.000	0.013	-
<b>Subtotal</b>			17.097	0.739		0.714		0.630		-		0.630	0.000	19.180	N/A
			Prior Years	FY 2017	FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract	
<b>Project Cost Totals</b>			107.448	6.467		5.113		4.357		-		4.357	Continuing	Continuing	N/A
<b>Remarks</b>															





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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2019 Navy		<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603654N / JT Service Explosive Ordn Dev	<b>Project (Number/Name)</b> 1317 / EOD Diving System

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 1317</b>				
TITLE: DIVER SAFETY LIFE SUPPORT	1	2017	4	2023
---MS B (Multi-Mission UBA)	3	2018	3	2018
---Engineering & Manufacturing (Multi-Mission UBA)	4	2018	4	2021
---Testing (Multi-Mission UBA)	3	2019	1	2021
---Dive Table Development (Multi-Mission UBA)	2	2021	4	2021
---Production Decision MS C (Multi-Mission UBA)	4	2021	4	2021
---Production and Deployment (Multi-Mission UBA)	2	2022	4	2023
---Continuous Improvement_	3	2022	4	2023
TITLE: ADVANCED FIRING SYSTEMS	1	2017	4	2023
---Continuous Improvement.	1	2017	4	2023
---Engineering Change Proposal 1	3	2017	3	2017
---Engineering Change Proposal 2	3	2019	3	2019
---Engineering Change Proposal 3	3	2021	3	2021
---Engineering Change Proposal 4	3	2023	3	2023
TITLE: DIVER INTEGRATED SENSORS	1	2017	4	2023
---MS B (STRIDENT)	3	2018	3	2018
---Engineering & Manufacturing (STRIDENT)	3	2018	3	2021
---Testing (STRIDENT)	2	2019	2	2021
---Production Decision MS C (STRIDENT)	3	2021	3	2021
---Production and Deployment (STRIDENT)	4	2021	4	2023
---Continuous Improvement-	3	2022	4	2023

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Navy										<b>Date:</b> February 2018		
<b>Appropriation/Budget Activity</b> 1319 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603654N / JT Service Explosive Ordn Dev				<b>Project (Number/Name)</b> 3177 / Joint Counter Radio-Controlled IED Elec Warfare			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
3177: Joint Counter Radio-Controlled IED Elec Warfare	0.000	13.194	45.264	14.016	13.900	27.916	11.414	11.731	9.755	12.155	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

Provides for the research and development of Electronic Warfare (EW) systems, equipment, procedures, and tactical aids for all military services against the threat posed by Radio-Controlled Improvised Explosive Devices (RCIEDs) and to prevent initiation of RCIEDs across the spectrum of Joint military operations. Utilize Joint requirements to provide a system of systems approach for a suite of equipment for mounted, dismounted, and fixed site operations; provide a Joint Counter RCIED EW (JCREW) development of equipment, procedures, and tactical aids to make rapid improvements to performance, supportability and affordability, while maintaining pace with evolving global threat.

Also provides for the rapid development and testing of JCREW Counter-Unmanned Aerial System (C-UAS) for Joint Urgent Operational Need Statement (JUON) CC-0558. This includes the modification of JCREW software, threat loads, and advanced techniques to provide an Increment I C-UAS capability, integration into JCREW dismounted systems delivered off the LRIP contract, lab verification, and open air testing. Due to rapidly evolving threats team will develop and support additional software drops throughout year.

The JCREW system, Increment 1 Block 1 (I1B1) is the next generation of counter RCIED systems. This family of systems includes fixed site, mounted and dismounted units, which provide countermeasures against the global RCIED threat. Key system design features include significant performance increases over current legacy systems, a modular open architecture system to address current and future advanced threats, robust information assurance and security, and is net-capable for improved Communications and Control (C2). JCREW I1B1 supports global deployment and sustainment for all combatant commands providing increased protection to Warfighter against the evolving worldwide RCIED threats.

**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>
<b>Title:</b> Joint Counter Radio-Controlled IED Elec Warfare	13.194	45.264	13.070	13.900	26.970
<b>Articles:</b>	-	-	-	-	-
<b>Description:</b> Supports the design, integration and test of Tech Insertion hardware, software, and advanced techniques into JCREW systems. Tech Insertion candidates include ONR sponsored technologies ready for transition to JCREW, and techniques, hardware and software performance improvements developed by Navy laboratories, FFRDCs, UARCs, and the JCREW Prime contractor. Analysis of Alternatives will be conducted to evaluate and select Tech Insertion candidates based on technical maturity, cost, and performance. Hardware and software updates will be designed, tested, and implemented into JCREW through Engineering Change					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Navy		<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603654N / JT Service Explosive Ordn Dev	<b>Project (Number/Name)</b> 3177 / Joint Counter Radio-Controlled IED Elec Warfare

**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>
Proposals. Also provides for the rapid development and testing of JCREW Counter-Unmanned Aerial System (C-UAS) for Joint Urgent Operational Need(JUON) CC-0558.					
<b>FY 2018 Plans:</b> Complete Analysis of Alternatives for Tech Insertion 2. Begin product development of Tech Insertion 2. Continue development and testing of threat loads and software and hardware Engineering Change Proposals (ECPs) in support of C-UAS JUON CC-0558.					
<b>FY 2019 Base Plans:</b> Perform and complete Tech Refresh development, implementation and testing for Tech Insertion 2. Begin Analysis of Alternatives for Tech Insertion 3. Continue development and testing of threat loads, software, and hardware and processing the associated Engineering Change Proposals (ECPs) in support of support of C-UAS JUON CC-0558.					
<b>FY 2019 OCO Plans:</b> FY2019 OCO \$12.9M funding supports Navy assigned requirement to provide C-UAS capability in response to JUON CC-0558. Thirty C-UAS systems have been fielded to date to provide a rapid response initial capability, with additional systems planned per the JUON. Enhanced performance will be required to maintain capability against the evolving UAS threat. These enhancements will require development and testing of hardware and software/firmware upgrades, and integration of C-UAS capability on various platforms, to include small combatant craft, ships, and fixed site infrastructure.					
Additional \$1M OCO funds provide HEMLOCK project with required software upgrades to enable enhanced cyber and electronics forensics and exploitation of RCIED threats. Further information on Hemlock available at a higher classification.					
<b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> Decrease from FY18 to FY19 is in accordance with planned program profile and is not due to a negative action against this effort primarily due to completion of major efforts in FY18 supporting Joint Urgent Operational Need (CC-0558) for Counter Unmanned Aerial Systems (CUAS).					
<b>Title:</b> EOD CREW	0.000	0.000	0.946	0.000	0.946
<b>Articles:</b>	-	-	-	-	-
<b>FY 2018 Plans:</b>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Navy		<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603654N / JT Service Explosive Ordn Dev	<b>Project (Number/Name)</b> 3177 / Joint Counter Radio-Controlled IED Elec Warfare

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>
N/A					
<b>FY 2019 Base Plans:</b> Develop AN/PLT-5 load sets for fielded EOD TCM systems to remain current with continually changing threats, both CONUS and OCONUS. Develop AN/PLT-4 replacement.					
<b>FY 2019 OCO Plans:</b> N/A					
<b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> Technical Adjustment from Project Unit 0377.					
<b>Accomplishments/Planned Programs Subtotals</b>	13.194	45.264	14.016	13.900	27.916

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• OPN/5509(b): Explosive Ordnance Disposal Equip	81.208	63.462	0.836	30.900	31.736	0.868	0.877	0.894	0.912	0.000	182.886

**Remarks**  
PE 0604653N/JT Cntr Radio Controlled IED Elec War (JCREW) consolidated into PE 0603654N/JT Service Explosive Ordn Dev FY17 and out.

**D. Acquisition Strategy**  
FRP Production Line Start Up and Ramp Up and FRP Organic Depot Line Startup and Ramp Up in FY 2017. Spares support and OEM Depot will be utilized during LRIP phase. Establishment of Organic Depot capability during LRIP phase in support of FRP Decision Review with Weapons System Support Center Mechanicsburg as Primary Inventory Control Activity (PICA). Full Rate Production contract will be full and open competition using LRIP final Tech Data Package (TDP) with unlimited data rights. Tech Insertion will help to maintain JCREW performance against evolving global RCIED threats.

**E. Performance Metrics**  
LRIP contract awarded September 2015. Deliveries will support IOC. Analysis of Alternatives for Tech Insertion 1 in September 2015. Full Rate Production contract award planned for August 2017. Tech Insertion 2 development commences in FY18 based on outcome of Analysis of Alternatives.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy												Date: February 2018			
Appropriation/Budget Activity 1319 / 4				R-1 Program Element (Number/Name) PE 0603654N / JT Service Explosive Ordn Dev				Project (Number/Name) 3177 / Joint Counter Radio-Controlled IED Elec Warfare							
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	Various	TBD : TBD	0.000	1.929	Nov 2016	8.615	Jan 2018	3.105	Jan 2019	2.526	Jan 2019	5.631	Continuing	Continuing	Continuing
Systems Engineering	Various	TBD : TBD	0.000	3.464	Nov 2016	3.452	Jan 2018	1.350	Jan 2019	1.260	Jan 2019	2.610	Continuing	Continuing	Continuing
Software Development	Various	TBD : TBD	0.000	0.964	Nov 2016	6.495	Jan 2018	1.705	Jan 2019	1.067	Jan 2019	2.772	Continuing	Continuing	Continuing
System Integration	Various	TBD : TBD	0.000	0.964	Nov 2016	1.952	Jan 2018	1.300	Jan 2019	1.152	Jan 2019	2.452	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	7.321		20.514		7.460		6.005		13.465	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Loadset Development	FFRDC	JHU/APL, MITRE : : Laurel, MD	0.000	0.592	Nov 2016	4.504	Dec 2017	0.810	Nov 2018	1.048	Nov 2018	1.858	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC : : Various	0.000	2.242	Nov 2016	7.179	Nov 2017	2.986	Nov 2018	3.900	Nov 2018	6.886	Continuing	Continuing	Continuing
Program Management Support	WR	IHEODTD : : Indian Head, MD	0.000	0.331	Nov 2016	1.241	Nov 2017	0.270	Nov 2018	0.375	Nov 2018	0.645	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	3.165		12.924		4.066		5.323		9.389	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test & Evaluation	WR	NSWC : : Various	0.000	1.208	Nov 2016	6.658	Nov 2017	0.896	Nov 2018	1.031	Nov 2018	1.927	Continuing	Continuing	Continuing
Test & Evaluation	MIPR	YPG : Yuma, Arizona	0.000	0.850	Nov 2016	3.398	Nov 2017	1.365	Nov 2018	1.241	Nov 2018	2.606	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	2.058		10.056		2.261		2.272		4.533	Continuing	Continuing	N/A









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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2019 Navy		<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603654N / JT Service Explosive Ordn Dev	<b>Project (Number/Name)</b> 3177 / Joint Counter Radio-Controlled IED Elec Warfare

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 3177</b>				
JCREW I1B1: LRIP Production	1	2017	4	2017
JCREW I1B1: Full Rate Production	3	2017	1	2021
JCREW I1B1: TECH INSERTION 1	1	2017	4	2017
JCREW I1B1: Tech Refresh Development (1)	1	2017	3	2017
JCREW I1B1: Tech Refresh Implementation and Test (1)	4	2017	4	2017
JCREW I1B1: TECH INSERTION 2	4	2017	3	2019
JCREW I1B1: Tech Refresh Analysis of Alternatives (2)	4	2017	2	2018
JCREW I1B1: Tech Refresh Development (2)	3	2018	2	2019
JCREW I1B1: Tech Refresh Implementation and Test (2)	3	2019	3	2019
JCREW I1B1: TECH INSERTION 3	3	2019	2	2021
JCREW I1B1: Tech Refresh Analysis of Alternatives (3)	3	2019	1	2020
JCREW I1B1: Tech Refresh Development (3)	2	2020	1	2021
JCREW I1B1: Tech Refresh Implementation and Test (3)	2	2021	2	2021
JCREW I1B1: TECH INSERTION 4	2	2021	4	2022
JCREW I1B1: Tech Refresh Analysis of Alternatives (4)	2	2021	4	2021
JCREW I1B1: Tech Refresh Development (4)	1	2022	4	2022
JCREW I1B1: Tech Refresh Implementation and Test (4)	1	2023	1	2023
JCREW I1B1: Counter Unmanned Aerial System Development	3	2017	4	2019
JCREW I1B1: C-UAS Fielding for JUONS	3	2017	3	2017
JCREW I1B1: C-UAS Improvement Program	1	2019	4	2020
EOD CREW: Continuous Improvement	1	2019	4	2023

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2019 Navy			<b>Date:</b> February 2018	
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603654N / JT Service Explosive Ordn Dev	<b>Project (Number/Name)</b> 3177 / Joint Counter Radio-Controlled IED Elec Warfare		

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
EOD CREW: AN/PLT 4 Replacement	1	2019	4	2023

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Navy										<b>Date:</b> February 2018		
<b>Appropriation/Budget Activity</b> 1319 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603654N / JT Service Explosive Ordn Dev				<b>Project (Number/Name)</b> 4023 / VSW MCM/Force Protection UUV			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
4023: VSW MCM/Force Protection UUV	109.817	15.485	19.118	16.936	-	16.936	17.592	15.995	15.872	18.726	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

This funding support the development of unmanned systems for the Navy's only fielded expeditionary unmanned underwater EOD and MCM capability. Specifically, it provides for development of affordable expeditionary, unmanned underwater systems to support Navy Expeditionary forces including Explosive Ordnance (EOD). Mobile Diving and Salvage Units, and Shallow Water (SW), Very Shallow Water (VSW) and Expeditionary Mine Countermeasures (ExMCM) mission operations. The equipment must be highly portable in order to support the Navy EOD technician to safely approach, render safe, recover, exploit and dispose of underwater explosive threats to include sea mines, limpet mines and unexploded ordnance. Provides support for the Navy's high priority missions of Maritime Homeland Defense, MCM, including clandestine reconnaissance and mine clearance in support of amphibious operations. Development of Expeditionary UUV systems to support localization render-safe and detailed intelligence gathering of UXO including Underwater Improvised Explosive Devices. This project supports CNO N957 MCM UUV Roadmap.

The increase in RDT&E resources from FY 2017 to FY 2018 provides the RDT&E resources needed to execute two formal MK 18 Family of Systems acquisition programs as well as three major engineering change proposals and the enhancement to the MK19 Family of Systems to provide an underwater threat interdiction capability. These efforts require prototype development and significant DT&E during FY 2018. FY 2018 program execution tempo reflects a significant increase in activity to support MK 18 UUV Increment II and EOD Response ROV capability development

FY 2018 will focus on completion of the development and testing of advanced sensors (SSAM and ATLAS) that will allow warfighters to detect, classify and localize high priority threats in meeting mine warfare missions. Also, resources will be used to expand deployability of the MK 18 Family of Systems aboard a higher number of shipboard platforms and also to deploy the family of systems from additional small boats other than the 11m RHIB. The Increment 1 MK 18 Mod 2 upgrade will allow implementation of Automated Target Recognition (ATR), advanced autonomy architecture and enhanced electro-optic sensor performance. Increment II will focus on improving MCM performance and reducing the tactical timeline through fielding a Reacquire, Identify and Mark capability for the MK 18 Mod 2 system. Concurrently with these efforts, the MK 18 Mod 1 is undergoing a configuration change that will provide a higher area coverage rate, inclusion of vehicle autonomy, and Automated Target Recognition. Additional efforts will execute the open competition process necessary to acquire and verify an EOD Response ROV capability focusing on user effectiveness and operational suitability.

These efforts will significantly improve the capabilities of the projected inventory of 48 MK 18 Mod 2 vehicles and 75 MK 18 Mod 1 vehicles for fleet expeditionary forces. Currently, the MK 18 Family of Systems are being employed in multiple theater of operations (5th, 6th and 7th Fleet) and have been continuously employed in multiple CONUS based port survey and maritime homeland defense as well.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2019 Navy **Date:** February 2018

<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603654N / JT Service Explosive Ordn Dev	<b>Project (Number/Name)</b> 4023 / VSW MCM/Force Protection UUV
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These resources also support the FY 2018 enhancement of the MK 19 Family of Systems, (i.e. a ROV based ship's hull search capability) as well as a MK 19 variant (i.e. a ROV based target interdiction capability) based on the previously conducted EUNS AoA. In FY 2018, the next generation (i.e. modified-off-the-shelf (MOTS) ROV) is being developed to decrease risk when reacquiring/investigating a potential threat (i.e. sea mine or underwater Improvised Explosive Device).

**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<b>Title:</b> VSW MCM/Force Protection UUV	15.485	19.118	16.936	0.000	16.936
<b>Articles:</b>	-	-	-	-	-
<p><b>Description:</b> This program supports development, testing and Fleet approval for evolving generations of affordable, expeditionary Unmanned Underwater Vehicles (UUV), support equipment, and Common Operator Interface Navy (COIN) systems to address validated requirements in support of Expeditionary SW and VSW UMCM mission areas. Mission areas include: open and confined areas, hulls, piers and pilings to search, classify, map, re-acquire, identify, and neutralize sea and limpet mines and underwater improvised explosive devices.</p> <p><b>FY 2018 Plans:</b> Continue testing evaluation, fielding and installation of MK 18 MOD 1 and MOD 2 UUV Systems to meet US Fleet Forces Command inventory objectives in support of the Expeditionary MCM Company capability establishment. The MK 18 Family of Systems will enter the Production/Deployment phase following a successful Milestone C decision for the MK 18 Mod 2 Increment 1 project. FY 18 efforts will continue in preparation for a production decision for the advanced sensors (i.e. ATLAS and SSAM); and the MK 18 Mod 2 Increment 2 project will enter the Engineering Development and Manufacturing phase. The MK 19 Engineering Change Proposal process will field a MOTS ROV prototype for DT&amp;E, in FY 2018. FY18 efforts will also address development of synthetic training for the MK 18 FoS, enhanced C2 capability with mobile gateway buoy and HFGW and assessing system vulnerabilities thru penetration testing on the MK 18 FoS.</p> <p><b>FY 2019 Base Plans:</b> FY19 efforts will focus on continued development and testing of MK 18 Mod 2 Increment II and MOTS ROV projects. Additionally, efforts to complete preliminary engineering change proposal actions necessary to transition technologies developed and demonstrated in the rapid innovation fund (RIF) and small business innovative research (SBIR) initiatives to initiate transition as incremental capability improvements to baseline MK 18 and MK 19 systems will continue. These capability improvements will form the developmental baseline for the Next Generation UUV system.</p> <p><b>FY 2019 OCO Plans:</b></p>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Navy		<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603654N / JT Service Explosive Ordn Dev	<b>Project (Number/Name)</b> 4023 / VSW MCM/Force Protection UUV

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>
N/A					
<b><i>FY 2018 to FY 2019 Increase/Decrease Statement:</i></b> Decrease from FY18 to FY19 is in accordance with planned program profile primarily related to FY18 completion of MK 18 Mod 2 UUV Increment I development and completion of prototype development and operational effectiveness and suitability testing of ATLAS advanced sensor.					
<b>Accomplishments/Planned Programs Subtotals</b>	15.485	19.118	16.936	0.000	16.936

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• OPN/0977(a): <i>Underwater EOD Program (Cost Code UQ034)</i>	22.110	34.124	27.620	-	27.620	20.970	21.235	14.339	14.316	0.000	274.402
• OPN/0977(b): <i>Expeditionary Mine Countermeasures (ExMCM) (Cost Code UQ038)</i>	0.000	15.412	33.932	6.700	40.632	1.150	0.591	0.603	0.615	0.000	59.003
• OPN/0977 (c): <i>Naval Special Warfare (NSW) (Cost Code UQ039)</i>	0.000	4.950	3.370	2.500	5.870	1.692	1.692	1.692	1.725	0.000	17.621

**Remarks**

**D. Acquisition Strategy**  
Analysis of Alternatives (AOA) studies are always conducted prior to the initiation of new sub-projects. The AOA addresses and emphasizes acquisitions strategies of the most cost effective solution over the sub-projects' life -cycle. The acquisition strategies observe the following hierarchy of alternatives: commercial item (including modifications), non-developmental item (including modifications), and lastly, developmental programs. Contracting for RDT&E, if required is always competitive and when feasible, production options are included. This ongoing program capitalizes on a User Operational Evaluation System (UOES) effort involving Fleet operators engaged in tactical experimentation with prototype UUVs prior to fielding baseline systems and capability improvement package increments. These UUV operators also participate in detailed requirements analyses and definition. Operational capabilities with UUV have been realized at designated operational units, with a competitive acquisition strategy. The addition of enhanced capabilities through an evolutionary acquisition approach to the UUV toolbox is programmed for delivery in accordance with approved CNO requirements and ONR TTAs. Further improvements to the toolbox to add basic mine and underwater explosive threats neutralization capabilities will be pursued.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Navy		<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603654N / <i>JT Service Explosive Ordn Dev</i>	<b>Project (Number/Name)</b> 4023 / <i>VSW MCM/Force Protection UUV</i>

**E. Performance Metrics**

Research and Develop technologies for the design of Expeditionary Unmanned Underwater Systems to provide enhanced fleet capabilities to locate, classify, identify, assess, neutralize and conduct post-neutralization battle damage assessment/verification of mines and unexploded ordnance in support of ExMCM and EOD Forces.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy												Date: February 2018				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
1319 / 4				PE 0603654N / JT Service Explosive Ordn Dev				4023 / VSW MCM/Force Protection UUV								
<b>Product Development (\$ in Millions)</b>				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Primary Hardware Development	WR	Multiple Activities : Not Specified	19.646	2.976	Oct 2016	4.240	Oct 2017	3.588	Nov 2018	-		3.588	0.000	30.450	-	
Systems Engineering	WR	NSWC Activities : Not Specified	13.398	2.780	Oct 2016	3.478	Oct 2017	2.613	Nov 2018	-		2.613	0.000	22.269	-	
Primary Hardware Development	WR	NSWC IH : IH, MD	16.238	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing	
Systems Engineering	WR	NSWC, Activities : Not Specified	21.659	2.686	Oct 2016	3.152	Oct 2017	2.761	Nov 2018	-		2.761	Continuing	Continuing	Continuing	
<b>Subtotal</b>			70.941	8.442		10.870		8.962		-		8.962	Continuing	Continuing	N/A	
<b>Support (\$ in Millions)</b>				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Technical Support	C/CPFF	HARRIS : Herndon, VA	5.676	0.586	Oct 2016	0.572	Nov 2017	0.583	Nov 2018	-		0.583	Continuing	Continuing	Continuing	
<b>Subtotal</b>			5.676	0.586		0.572		0.583		-		0.583	Continuing	Continuing	N/A	
<b>Test and Evaluation (\$ in Millions)</b>				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Developmental Test & Evaluation	WR	NSWC Activities : Not Specified	13.452	3.519	Oct 2016	3.844	Oct 2017	3.681	Nov 2018	-		3.681	0.000	24.496	-	
Operational Test & Evaluation	WR	NSWC Activities : Not Specified	2.957	1.354	Oct 2016	1.785	Oct 2017	1.763	Nov 2018	-		1.763	0.000	7.859	-	
Developmental Test & Evaluation	WR	NSWC Activities : Not Specified	8.994	1.151	Oct 2016	1.284	Oct 2017	1.269	Nov 2018	-		1.269	Continuing	Continuing	Continuing	
Operational Test & Evaluation	WR	NSWC IH : IH, MD	1.424	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing	
<b>Subtotal</b>			26.827	6.024		6.913		6.713		-		6.713	Continuing	Continuing	N/A	





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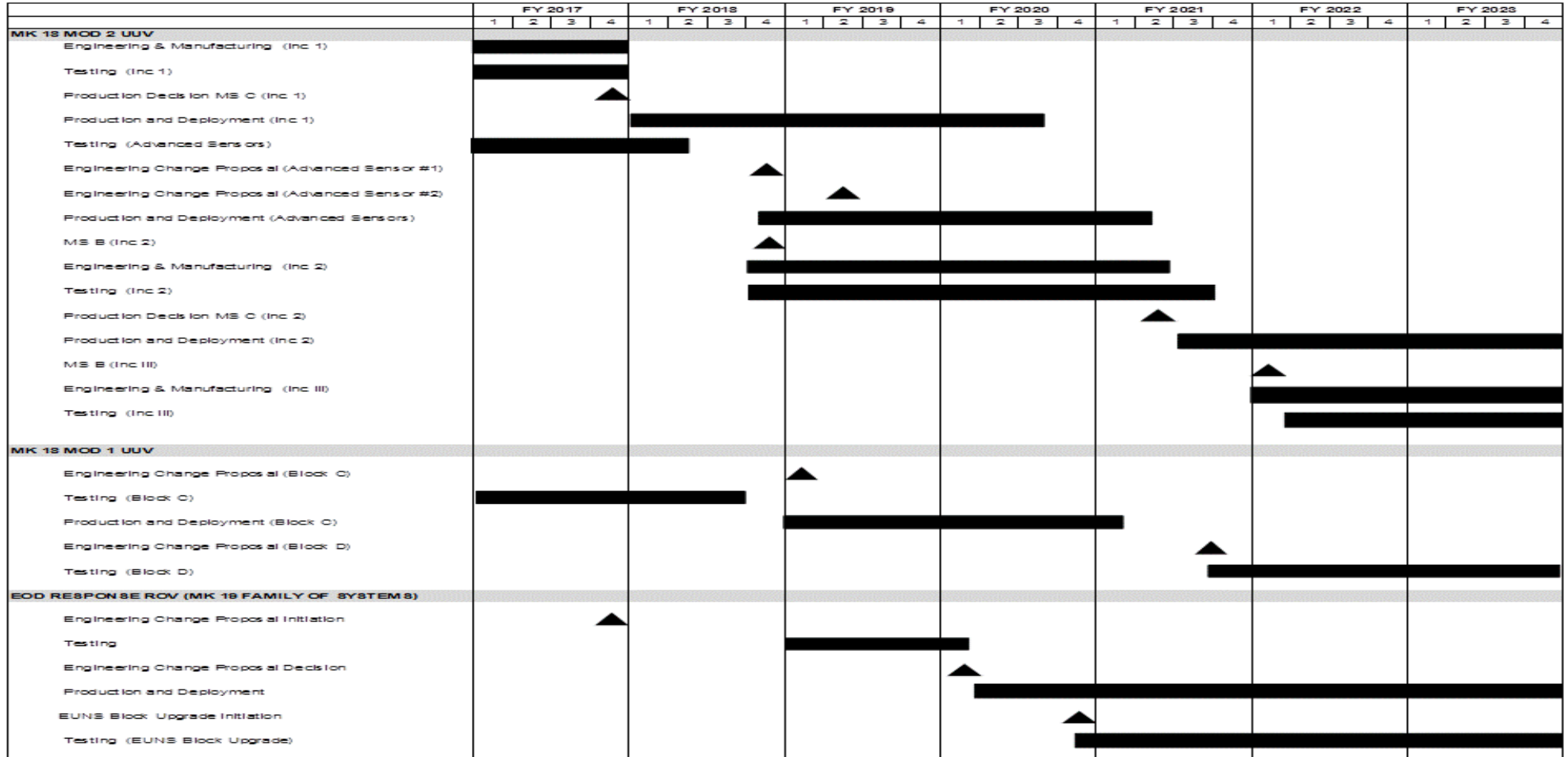
**Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy**

**Date:** February 2018

**Appropriation/Budget Activity**  
1319 / 4

**R-1 Program Element (Number/Name)**  
PE 0603654N / JT Service Explosive Ordn  
Dev

**Project (Number/Name)**  
4023 / VSW MCM/Force Protection UUV



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2019 Navy		<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603654N / JT Service Explosive Ordn Dev	<b>Project (Number/Name)</b> 4023 / VSW MCM/Force Protection UUV

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 4023</b>				
TITLE: MK 18 MOD 2 UUV	1	2017	4	2023
---Engineering & Manufacturing (Inc 1)	1	2017	4	2017
---Testing (Inc 1)	1	2017	4	2017
---Production Decision MS C (Inc 1)	4	2017	4	2017
---Production and Deployment (Inc 1)	1	2018	3	2020
---Testing (Advance Sensors)	1	2017	2	2018
---Engineering Change Proposal (Advanced Sensors #1)	4	2018	4	2018
---Engineering Change Proposal (Advanced Sensors #2)	2	2019	2	2019
---Production and Deployment (Advanced Sensors)	4	2018	1	2021
---MS B (Inc 2)	4	2018	4	2018
---Engineering & Manufacturing (Inc 2)	4	2018	2	2021
---Testing (Inc 2)	4	2018	3	2021
---Production Decision MS C (Inc 2)	2	2021	2	2021
---Production and Deployment (Inc 2)	3	2021	4	2023
---MS B (Inc III)	1	2022	1	2022
---Engineering & Manufacturing (Inc III)	1	2022	4	2023
---Testing (Inc III)	2	2022	4	2023
TITLE: MK 18 MOD 1 UUV	1	2017	4	2023
---Engineering Change Proposal (Block C)	1	2019	1	2019
---Testing (Block C)	1	2017	3	2018
---Production and Deployment (Block C)	1	2019	1	2021

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2019 Navy **Date:** February 2018

<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603654N / JT Service Explosive Ordn Dev	<b>Project (Number/Name)</b> 4023 / VSW MCM/Force Protection UUV
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
---Engineering Change Proposal (Block D)	3	2021	3	2021
---Testing (Block D)	4	2021	4	2023
TITLE: EOD RESPONSE (ROV) (MK 19 FAMILY OF SYSTEMS)	1	2017	4	2023
---Engineering Change Proposal Decision_	4	2017	4	2017
---Testing	1	2019	1	2020
---Engineering Change Proposal Decision	1	2020	1	2020
---Production and Deployment	2	2020	4	2023
---EUNS Block Upgrade Initiation	4	2020	4	2020
---Testing (EUNS Block Upgrade)	4	2020	4	2023