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

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 0604028N I Small and Medium Unmanned Undersea Vehicles							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	0.000	16.717	-	16.717	22.747	23.598	24.031	24.031	Continuing	Continuing
3123: SMCM UUV	0.000	0.000	0.000	16.717	-	16.717	22.747	23.598	24.031	24.031	Continuing	Continuing

Note

FY 2018 and prior funding in Program Element (PE) 0603502N. Projects realigned from PE 0603502N starting in FY 2019.

A. Mission Description and Budget Item Justification

Part of the mine countermeasure systems mission is to provide minehunting capabilities to counter known and projected mine threats in support of minehunting operations worldwide, including intelligence and oceanographic capabilities that will enable mine warfare superiority. The Knifefish Surface Mine Countermeasure Unmanned Undersea Vehicle (SMCM UUV) is part of the UUV Family of Systems and is part of the MCM Mission Package (MP).

In order to accelerate future capability and support steady growth of the fleet's UUV FoS the Knifefish SMCM UUV program develops advanced Unmanned Undersea Vehicles (UUVs) to support clandestine mine detection capability against volume, bottom, and buried mines. Equipment includes vehicles and associated systems support equipment. In parallel, Pre-Planned Product Improvement (P3I) design efforts are ongoing to support insertion of incremental capability when the technology is ready. Planned P3I candidates being considered include increased detection range capability, communications upgrades, on-board sonar processing and target recognition, command and control improvements, and other smaller tasks, as well as future payloads as required.

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	16.717	-	16.717
Total Adjustments	0.000	0.000	16.717	-	16.717
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Rate/Misc Adjustments	0.000	0.000	16.717	-	16.717

Change Summary Explanation

Program Changes:

FY19 +\$16,717K transfer to new Program Element from 0603502N.

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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 0604028N I Small and Medium Unmanned Undersea Vehicles
<div>Technical: Not applicable.</div> <div>Schedule: Not applicable.</div>		

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy										Date: February 2018		
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0604028N / Small and Medium Unmanned Undersea Vehicles				Project (Number/Name) 3123 / SMCM UUV			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
3123: SMCM UUV	0.000	0.000	0.000	16.717	-	16.717	22.747	23.598	24.031	24.031	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
Note FY 2018 and prior funding in Program Element (PE) 0603502N. Projects realigned from PE 0603502N starting in FY 2019.												
A. Mission Description and Budget Item Justification As part of the UUV FOS and in support of the MCM MP, the Knifefish Surface Mine Countermeasure Unmanned Undersea Vehicle (SMCM UUV) program develops advanced Unmanned Undersea Vehicles (UUVs) to support clandestine mine detection capability against volume, bottom, and buried mines. Equipment includes vehicles and associated systems support equipment. In parallel, Pre-Planned Product Improvement (P3I) design efforts are ongoing to support insertion of incremental capability when the technology is ready. Planned P3I candidates being considered include increased detection range capability, communications upgrades, on-board sonar processing and target recognition, command and control improvements, and other smaller tasks, as well as potential future payloads as required.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Knifefish Development Articles: FY 2018 Plans: FY 2018 funding in Program Element (PE) 0603502N. FY 2019 Base Plans: Complete P3I Block 1 development. Commence P3I effort for Block 2 systems (onboard processing and re-acquisition/ID). Conduct developmental efforts for Support systems (processing container, Launch & Recovery, etc.). Achieve Full Rate Production Decision. Perform engineering efforts related to issuing Request for Proposal (RFP) for Full Rate Production. FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: FY 2018 funding in Program Element (PE) 0603502N. FY 2019 decrease due to completion of E&MD phase transitioning to P3I efforts.								0.000	0.000	8.600	0.000	8.600
								-	-	-	-	-
Title: Knifefish Support Articles:								0.000	0.000	3.472	0.000	3.472
								-	-	-	-	-

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Appropriation/Budget Activity 1319 / 4		R-1 Program Element (Number/Name) PE 0604028N / Small and Medium Unmanned Undersea Vehicles		Project (Number/Name) 3123 / SMCM UUV		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
FY 2018 Plans: FY 2018 funding in Program Element (PE) 0603502N.						
FY 2019 Base Plans: Provide engineering support for existing EDM systems. Support procurement of LRIP systems as well as issuing RFP for Full Rate Production.						
FY 2019 OCO Plans: N/A						
FY 2018 to FY 2019 Increase/Decrease Statement: FY 2018 funding in Program Element (PE) 0603502N. FY 2019 decrease due to completion of E&MD phase transitioning to P3I efforts.						
Title: Knifefish Test and Evaluation		0.000	0.000	3.410	0.000	3.410
Articles:		-	-	-	-	-
FY 2018 Plans: FY 2018 funding in Program Element (PE) 0603502N.						
FY 2019 Base Plans: Conduct Knifefish system developmental testing related to P3I efforts, Operational Testing from LCS, and other testing from Vessels of Opportunity (VOO), as required.						
FY 2019 OCO Plans: N/A						
FY 2018 to FY 2019 Increase/Decrease Statement: FY 2018 funding in Program Element (PE) 0603502N. FY 2019 increase to conduct full Operational Test (OT) from LCS.						
Title: Knifefish Management		0.000	0.000	1.235	0.000	1.235
Articles:		-	-	-	-	-
FY 2018 Plans: FY 2018 funding in Program Element (PE) 0603502N.						
FY 2019 Base Plans:						

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Appropriation/Budget Activity 1319 / 4			R-1 Program Element (Number/Name) PE 0604028N / <i>Small and Medium Unmanned Undersea Vehicles</i>			Project (Number/Name) 3123 / <i>SMCM UUV</i>					
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)											
			FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total				
Conduct acquisition and management of development, procurement, and program activities including Full Rate Production Decision and issuing RFP for Full Rate Production. FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: FY 2018 funding in Program Element (PE) 0603502N. FY 2019 minor increase due to preparing to transition to Full Rate Production (FRP).											
Accomplishments/Planned Programs Subtotals			0.000	0.000	16.717	0.000	16.717				
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• OPN/2622: <i>Minesweeping Replacement</i>	26.764	31.531	35.709	-	35.709	55.949	51.338	34.007	16.753	Continuing	Continuing
• OPN/1601: <i>LCS MCM Mission Modules</i>	29.724	55.870	124.147	-	124.147	204.324	245.108	227.068	234.109	1,501.531	2,771.262
• RDTEN/0603502N/3123: <i>SMCM UUV</i>	20.890	25.052	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	181.472
Remarks The above OPN funding lines account for several programs, of which the Knifefish program is only a portion.											
D. Acquisition Strategy The Knifefish program was initiated in FY11 to develop Surface Mine Countermeasure Unmanned Undersea Vehicles (SMCM UUV) equipped with advanced Low Frequency Broadband (LFBB) sonar that provides volume, bottom, and buried mine detection capability. Procurement of the SMCM UUV with LFBB will occur after Milestone C.											
E. Performance Metrics Successful Milestone C in 3Q FY 2018 and FRP decision in FY 2019.											

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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 0604028N / Small and Medium Unmanned Undersea Vehicles				Project (Number/Name) 3123 / SMCM UUV					
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
Knifefish Development & Engineering Support	C/CPIF	General Dynamics AIS : McLeansville, NC	0.000	0.000		0.000		2.000	Dec 2018	-		2.000	Continuing	Continuing	Continuing
Hardware/Software Development - Support Equipment	WR	NSWC, PC : PANAMA CITY, FL	0.000	0.000		0.000		0.500	Dec 2018	-		0.500	Continuing	Continuing	Continuing
Knifefish P3I Development Contractor	C/CPIF	GDMS : McLeansville, NC	0.000	0.000		0.000		6.100	Nov 2018	-		6.100	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.000		8.600		-		8.600	Continuing	Continuing	N/A
Remarks FY 2018 and prior funding in Program Element (PE) 0603502N.															
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
Engineering Support	WR	NSWC, PC : PANAMA CITY, FL	0.000	0.000		0.000		0.500	Dec 2018	-		0.500	Continuing	Continuing	Continuing
Engineering Support	WR	NUWC, Newport : NEWPORT, RI	0.000	0.000		0.000		0.250	Dec 2018	-		0.250	Continuing	Continuing	Continuing
Engineering Support	WR	VARIOUS : VARIOUS	0.000	0.000		0.000		0.500	Dec 2018	-		0.500	Continuing	Continuing	Continuing
Engineering Support P3I	WR	NSWC, PC : PANAMA CITY, FL	0.000	0.000		0.000		0.480	Dec 2018	-		0.480	Continuing	Continuing	Continuing
Engineering Support P3I	WR	NUWC, Newport : NEWPORT, RI	0.000	0.000		0.000		0.220	Dec 2018	-		0.220	Continuing	Continuing	Continuing
Engineering Support P3I	WR	VARIOUS : VARIOUS	0.000	0.000		0.000		1.522	Nov 2018	-		1.522	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.000		3.472		-		3.472	Continuing	Continuing	N/A
Remarks FY 2018 and prior funding in Program Element (PE) 0603502N.															

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Appropriation/Budget Activity 1319 / 4						R-1 Program Element (Number/Name) PE 0604028N / <i>Small and Medium Unmanned Undersea Vehicles</i>				Project (Number/Name) 3123 / <i>SMCM UUV</i>					

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
Government T&E Support	WR	VARIOUS : VARIOUS	0.000	0.000		0.000		2.150	Dec 2018	-		2.150	0.000	2.150	-
Test and Evaluation	WR	COMOPTEVFOR : NORFOLK, VA	0.000	0.000		0.000		0.260	Dec 2018	-		0.260	0.000	0.260	-
Government T&E Support	WR	NSWC, PC : PANAMA CITY, FL	0.000	0.000		0.000		1.000	Dec 2018	-		1.000	0.000	1.000	-
Subtotal			0.000	0.000		0.000		3.410		-		3.410	0.000	3.410	N/A

Remarks
FY 2018 and prior funding in Program Element (PE) 0603502N.

Management Services (\$ 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
Program Management Support	C/CPFF	VARIOUS : WASHINGTON, DC	0.000	0.000		0.000		1.100	Feb 2019	-		1.100	0.000	1.100	-
Travel	WR	NAVSEA : WNY, DC	0.000	0.000		0.000		0.135	Dec 2018	-		0.135	0.000	0.135	-
Subtotal			0.000	0.000		0.000		1.235		-		1.235	0.000	1.235	N/A

Remarks
FY 2018 and prior funding in Program Element (PE) 0603502N.

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000	0.000	16.717	-	16.717	Continuing	Continuing	N/A

Remarks
FY 2018 and prior funding in Program Element (PE) 0603502N.

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

Date: February 2018

Appropriation/Budget Activity

1319 / 4

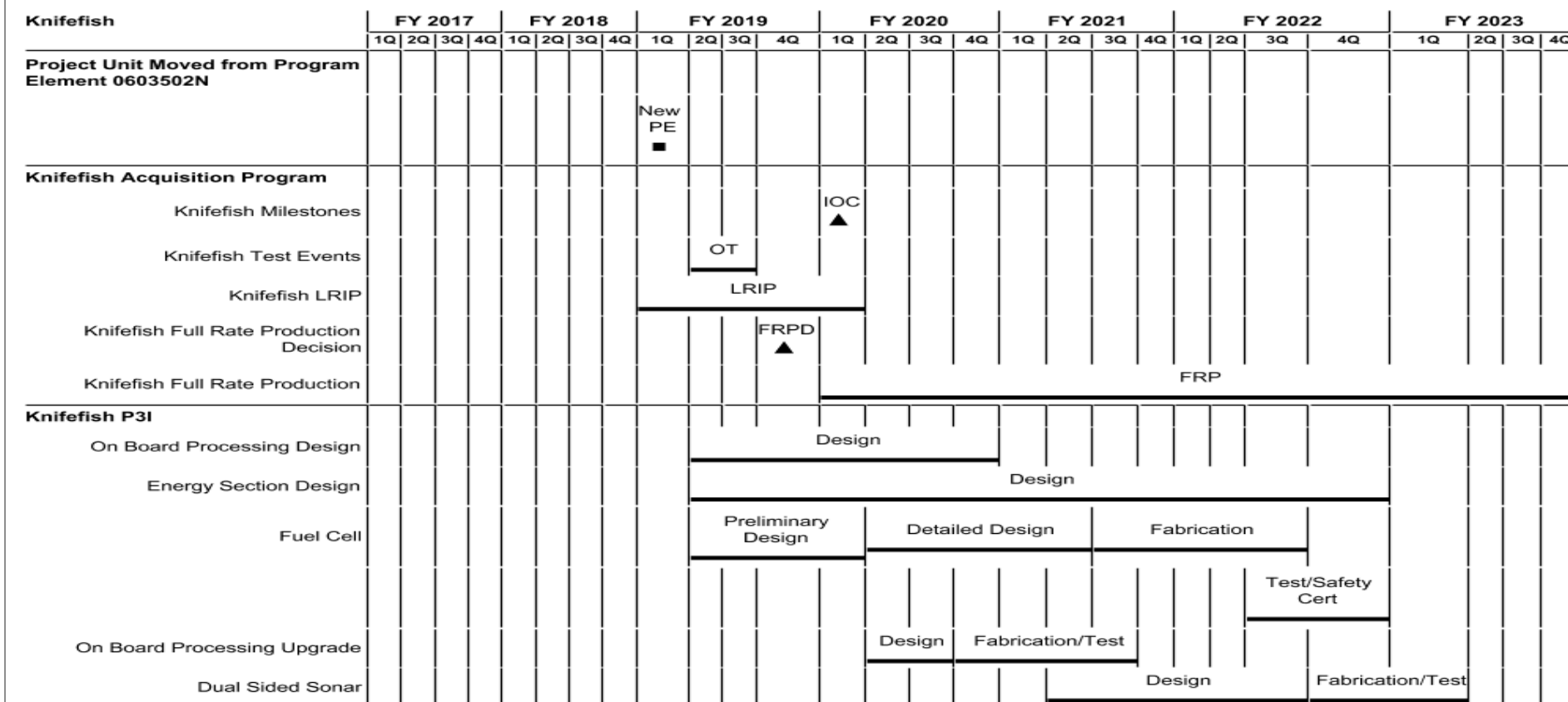
R-1 Program Element (Number/Name)

PE 0604028N / Small and Medium

Unmanned Undersea Vehicles

Project (Number/Name)

3123 / SMCM UUV



2019PB - 0604028N - 3123

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604028N / <i>Small and Medium Unmanned Undersea Vehicles</i>	Project (Number/Name) 3123 / <i>SMCM UUV</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Knifefish</i>				
Project Unit Moved from Program Element 0603502N:	1	2019	1	2019
Knifefish Acquisition Program: Knifefish Milestones: IOC	1	2020	1	2020
Knifefish Acquisition Program: Knifefish Test Events: OT	2	2019	3	2019
Knifefish Acquisition Program: Knifefish LRIP: LRIP	1	2019	1	2020
Knifefish Acquisition Program: Knifefish Full Rate Production Decision: FRPD	4	2019	4	2019
Knifefish Acquisition Program: Knifefish Full Rate Production: FRP	1	2020	4	2023
Knifefish P3I: On Board Processing Design: Design	2	2019	4	2020
Knifefish P3I: Energy Section Design: Design	2	2019	4	2022
Knifefish P3I: Fuel Cell: Preliminary Design	2	2019	1	2020
Knifefish P3I: Fuel Cell: Detailed Design	2	2020	2	2021
Knifefish P3I: Fuel Cell: Fabrication	3	2021	3	2022
Knifefish P3I: Fuel Cell: Test/Safety Cert	3	2022	4	2022
Knifefish P3I: On Board Processing Upgrade: Design	2	2020	3	2020
Knifefish P3I: On Board Processing Upgrade: Fabrication/Test	4	2020	3	2021
Knifefish P3I: Dual Sided Sonar: Design	2	2021	3	2022
Knifefish P3I: Dual Sided Sonar: Fabrication/Test	4	2022	1	2023