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 0604029N *I Unmanned Undersea Vehicle Core Technologies*							
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	30.187	-	30.187	59.523	10.986	3.079	5.473	Continuing	Continuing
3393: *Adv Undersea Prototyping-Remote Command & Control*	0.000	0.000	0.000	12.764	-	12.764	19.953	4.828	1.983	2.982	Continuing	Continuing
3395: *Adv Undersea Prototyping-Explosive Payloads*	0.000	0.000	0.000	8.715	-	8.715	27.459	5.657	1.096	1.495	Continuing	Continuing
3396: *Adv Undersea Prototyping-Non-Lethal Payloads*	0.000	0.000	0.000	8.708	-	8.708	12.111	0.501	0.000	0.996	Continuing	Continuing

Note

FY 2018 and prior funding in Program Element (PE) 0604536N. Projects moved from PE 0604536N starting in FY 2019.

The FY 2019 funding request was reduced by $4.835 million to account for the availability of prior year execution balances.

A. Mission Description and Budget Item Justification

In order to accelerate future capability and support steady growth of the fleet's Unmanned Undersea Vehicle (UUV) Family of Systems (FoS), UUV core technology efforts include development and test of UUV technologies and will advance the development of unmanned undersea vehicles systems by leveraging ONR and Industry UUV efforts for associated technologies. Payloads will be customized to meet Navy needs and demonstrate useful capability for the fleet. Theis Program Element supports developing experience, demonstrating launch, communications, command and control, navigation, endurance, recovery, payload feasibility, and mission planning and execution initially for XLUUVs and then other UUVs, as applicable. Energy prototyping will leverage existing independent research and development in energy-dense technology that could meet power requirements for future UUV missions that are limited by the amount of power currently available. Efforts include research, development, test, and evaluation of advanced development model energy solutions initially applicable to XLUUVs for increased energy endurance and efficiency to extend the reach of all unmanned undersea systems. The Common Control/Autonomy efforts will include risk reduction and developmental efforts of autonomy systems and architectures to work to develop common standards, interfaces, and systems to support cross-domain applications. The payloads efforts will include investigation, experimentation, demonstration, development and integration of lethal and non-lethal payloads, as applicable.

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 0604029N *I Unmanned Undersea Vehicle Core Technologies*		
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	30.187	-	30.187
Total Adjustments	0.000	0.000	30.187	-	30.187
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Rate/Misc Adjustments	0.000	0.000	30.187	-	30.187

Change Summary Explanation

Program Changes:
FY19 +$30,187K transfer to new Program Element from 0604536N.

Technical: Not applicable.
Schedule: Not applicable.

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 0604029N / *Unmanned Undersea Vehicle Core Technologies*	Project (Number/Name) 3393 / *Adv Undersea Prototyping-Remote Command & Control*	

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
3393: *Adv Undersea Prototyping-Remote Command & Control*	0.000	0.000	0.000	12.764	-	12.764	19.953	4.828	1.983	2.982	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

FY 2018 and prior funding in Program Element (PE) 0604536N.

The FY 2019 funding request was reduced by $1.879 million to account for the availability of prior year execution balances.

A. Mission Description and Budget Item Justification

Advanced Undersea energy efforts will leverage existing independent research and development in energy-dense technology that could meet power requirements for the Unmanned Undersea Vehicle (UUV) FoS missions, which are limited by the amount of power that they can carry. Efforts under this program element include research, development, test, and
evaluation of advanced energy solutions initially applicable to XLUUVs for increased energy endurance and efficiency to extend the reach of unmanned undersea systems. The Common Control/Autonomy portion of this project funds risk reduction and developmental efforts of autonomy systems and architectures to work to develop common standards, interfaces, and
systems to support cross-domain applications. This includes advanced development prototyping and demonstrations to accelerate the design and development of commonality and interoperability capabilities for the cross-domain (Surface and Sub-Surface, Aviation and Ground) requirements of the Navy. Coordinating with the Common Control System where
applicable, these efforts will demonstrate scalable, adaptable and interoperable warfighting capabilities across various unmanned systems. The advanced development emphasis will be to encourage innovation and enable rapid integration of UxS capabilities across domains while working to develop common standards, interfaces, and systems. These efforts will define, develop and demonstrate capability that advance new technology, hardware and software of Control Systems that could be used to operate multiple and dissimilar Naval UxSs. Supports Advanced Development and Prototyping of PE 0305205N: UAS Integration and Interoperability.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Product Development	0.000	0.000	10.534	0.000	10.534
Articles:	-	-	-	-	-
FY 2018 Plans: FY 2018 funding in Program Element (PE) 0604536N.					
FY 2019 Base Plans:					

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 0604029N / *Unmanned Undersea Vehicle Core Technologies*	**Project (Number/Name)** 3393 / *Adv Undersea Prototyping-Remote Command & Control*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Energy: Continue component design and begin system integration for the Advanced Development Model prototype. Conduct Critical Design Review (CDR). Increase in design and system integration efforts contribute to budget ramp up. Autonomy : Commence development of modeling and simulation. Work on standards and specifications initial implementation and modeling/simulation efforts & test bed development. Continue requirements development, focusing on vehicle management. Start initial low-level testing and continue design efforts for CCS. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** FY 2018 funding in Program Element (PE) 0604536N. FY 2019 increase in funding is due to increased energy efforts, autonomy modeling and simulation, test bed development, and increased CCS efforts.					
Title: Support	0.000	0.000	1.780	0.000	1.780
Articles:	-	-	-	-	-
FY 2018 Plans: FY 2018 funding in Program Element (PE) 0604536N. ***FY 2019 Base Plans:*** Energy: Update program documentation as required and support efforts. Autonomy: Update documentation and continue work on development of common autonomy standards, interfaces, and systems; support modeling/simulation efforts and test bed development. Update CCS documentation and support testing and design efforts. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** FY 2018 funding in Program Element (PE) 0604536N. FY 2019 increase in funding is due to increased support needs for energy, autonomy modeling and simulation, test bed development, and increased CCS efforts.					
Title: Management	0.000	0.000	0.450	0.000	0.450
Articles:	-	-	-	-	-

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 0604029N / *Unmanned Undersea Vehicle Core Technologies*	**Project (Number/Name)** 3393 / *Adv Undersea Prototyping-Remote Command & Control*

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) 0604536N. ***FY 2019 Base Plans:*** Energy: Provide guidance, project planning, financial and contracting support, and coordination between prototype developer, test support, engineering, and contractors. Autonomy: Provide guidance, project planning, financial and contracting support, and coordination for development of common autonomy standards, interfaces, and systems, and common control efforts. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** FY 2018 funding in Program Element (PE) 0604536N. FY 2019 increase in funding is due to increased management needs for energy, autonomy modeling and simulation, test bed development, and increased CCS efforts.					
Accomplishments/Planned Programs Subtotals	0.000	0.000	12.764	0.000	12.764

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
• RDTEN/0604536N/3393: *Adv Undersea Prototyping-Remote Command & Control*	1.486	2.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.486

Remarks

Funding moved to new Program Element in FY2019

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 0604029N / *Unmanned Undersea Vehicle Core Technologies*	**Project (Number/Name)** 3393 / *Adv Undersea Prototyping-Remote Command & Control*

D. Acquisition Strategy

Design Advanced Energy components to reach Preliminary Design Review in FY18. Develop and build advanced energy prototype and integrate system when ready. Test advanced energy prototype starting in FY21. Develop requirements, standards, interfaces, and architecture for Autonomy and Common Control System (CCS) unmanned system software
components to support common prototyping and experimentation. Design and develop CCS unmanned system software components for common cross domain prototyping and system integration with surrogate systems starting in FY22. Coordination with UxS platforms will eliminate redundant efforts, encourage innovation, and improve coordination of unmanned systems across multiple domains.

Leveraging the available applicable portions of the Common Control System (CCS) capabilities and products, the effort will work to reduce risk with advanced development efforts across Naval operating domains. The advanced energy efforts will leverage resources and prototype expertise to encourage industry innovation and allow for rapid integration into
unmanned systems. Coordinate with other UxS Programs and Systems on the development of UUV autonomy standards, architectures, and systems, defining and focusing autonomy efforts. Develop algorithms and models and simulations for testing autonomy that could be inserted into UUVs.

E. Performance Metrics

Demonstrate use of advanced UUV Energy technology in an Advanced Development Model prototype. Demonstrate CCS & autonomy software through surrogate systems.

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 0604029N / *Unmanned Undersea Vehicle Core Technologies*	Project (Number/Name) 3393 / *Adv Undersea Prototyping-Remote Command & Control*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Energy Prototype Contract	SS/CPFF	ARL PSU : State College, PA	0.000	0.000		0.000		3.635	Dec 2018	-		3.635	Continuing	Continuing	Continuing
Common Control System (CCS) Cross-Domain Architecture Development	Various	Various : Various	0.000	0.000		0.000		3.100	Dec 2018	-		3.100	Continuing	Continuing	Continuing
Autonomy	Various	Various : Various	0.000	0.000		0.000		3.799	Dec 2018	-		3.799	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.000		10.534		-		10.534	Continuing	Continuing	N/A

Remarks

FY 2018 and prior funding in Program Element (PE) 0604536N.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Energy Prototype Engineering Support 1	SS/CPFF	Various : Various	0.000	0.000		0.000		0.794	Dec 2018	-		0.794	Continuing	Continuing	Continuing
Auontomy Support	Various	NAVSEA Activities : Washington, DC	0.000	0.000		0.000		0.506	Dec 2018	-		0.506	Continuing	Continuing	Continuing
Common Control System (CCS) Engineering Support	Various	Various : Various	0.000	0.000		0.000		0.480	Dec 2018	-		0.480	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.000		1.780		-		1.780	Continuing	Continuing	N/A

Remarks

FY 2018 and prior funding in Program Element (PE) 0604536N.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Energy Prototype	Various	Various : Various	0.000	0.000		0.000		0.150	Jan 2019	-		0.150	Continuing	Continuing	Continuing

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 0604029N / *Unmanned Undersea Vehicle Core Technologies*	**Project (Number/Name)** 3393 / *Adv Undersea Prototyping-Remote Command & Control*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Autonomy	Various	NAVSEA Activities : Washington, DC	0.000	0.000		0.000		0.150	Jan 2019	-		0.150	Continuing	Continuing	Continuing
Common Control System (CCS)	Various	Various : Various	0.000	0.000		0.000		0.150	Jan 2019	-		0.150	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.000		0.450		-		0.450	Continuing	Continuing	N/A

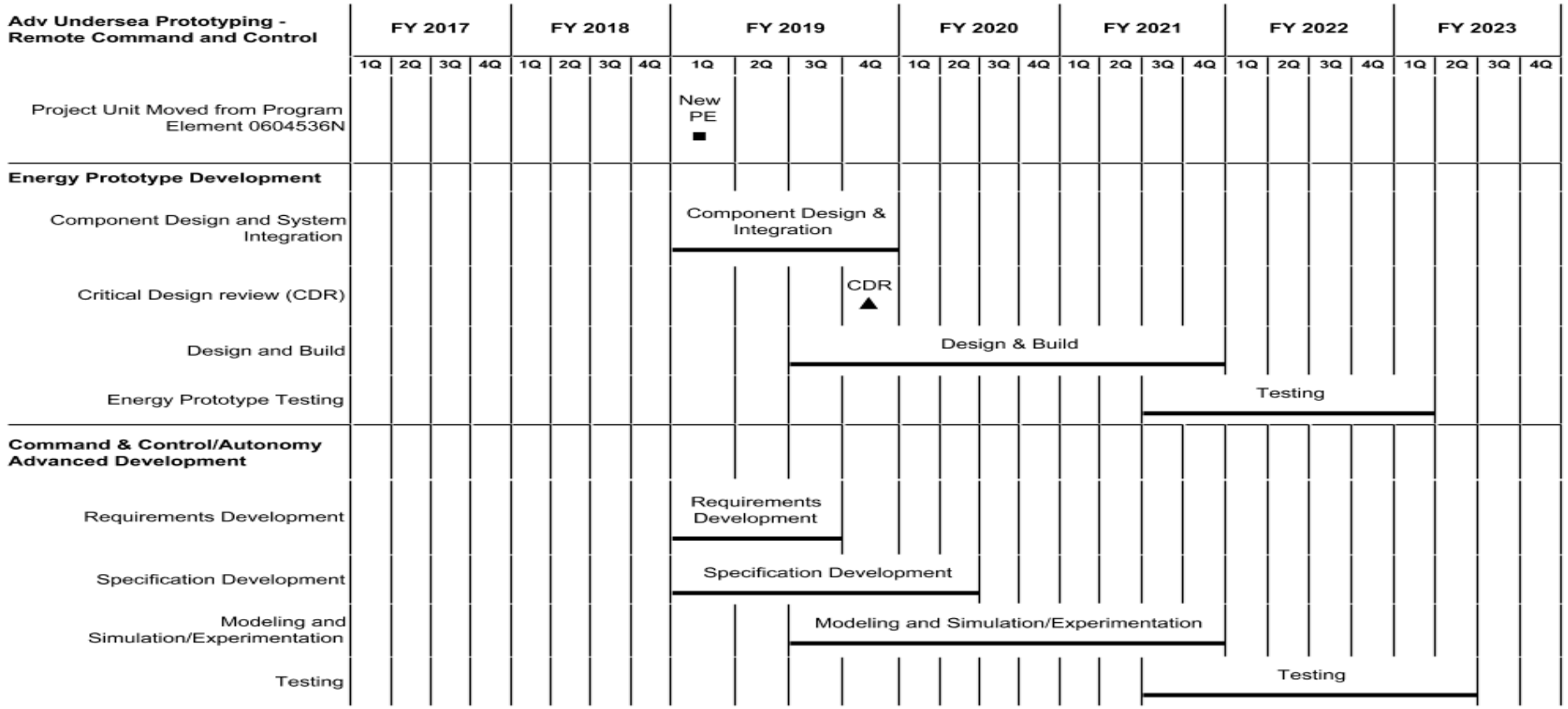
Remarks

FY 2018 and prior funding in Program Element (PE) 0604536N.

	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		0.000		12.764		-		12.764	Continuing	Continuing	N/A

Remarks

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 0604029N / *Unmanned Undersea Vehicle Core Technologies*	**Project (Number/Name)** 3393 / *Adv Undersea Prototyping-Remote Command & Control*



2019PB - 0604029N - 3393

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 0604029N / *Unmanned Undersea Vehicle Core Technologies*	**Project (Number/Name)** 3393 / *Adv Undersea Prototyping-Remote Command & Control*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Adv Undersea Prototyping - Remote Command and Control				
Project Unit Moved from Program Element 0604536N: New PE	1	2019	1	2019
Energy Prototype Development: Component Design and System Integration: Component Design and System Integration	1	2019	4	2019
Energy Prototype Development: Critical Design review (CDR): Critical Design review (CDR)	4	2019	4	2019
Energy Prototype Development: Design and Build: Design and Build	3	2019	4	2021
Energy Prototype Development: Energy Prototype Testing: Testing	3	2021	1	2023
Command & Control/Autonomy Advanced Development: Requirements Development: Requirements Development	1	2019	3	2019
Command & Control/Autonomy Advanced Development: Specification Development: Specification Development	1	2019	2	2020
Command & Control/Autonomy Advanced Development: Modeling and Simulation/ Experimentation:	3	2019	4	2021
Command & Control/Autonomy Advanced Development: Testing: Testing	3	2021	2	2023

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 0604029N / *Unmanned Undersea Vehicle Core Technologies*	Project (Number/Name) 3395 / *Adv Undersea Prototyping-Explosive Payloads*	

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
3395: *Adv Undersea Prototyping-Explosive Payloads*	0.000	0.000	0.000	8.715	-	8.715	27.459	5.657	1.096	1.495	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

FY 2018 and prior funding in Program Element (PE) 0604536N.

The FY 2019 funding request was reduced by $1.253 million to account for the availability of prior year execution balances.

A. Mission Description and Budget Item Justification

Advanced undersea prototyping of undersea explosive payloads initially from XL sized UUVs, and eventually from other UUVs in the UUV FOS. Leveraging the developments at ONR and other activities for undersea weapons, work to complete analysis of feasibility, policy, lethality, and performance of integrating undersea weapons systems initially on XLUUVs. The program will design new hardware, investigate and develop new interfaces/systems to increase lethality in both the undersea and surface targets. New C2 algorithms will be developed for advanced targeting. Once initially proven on XLUUVs, efforts will support integrating on applicable FOS UUVs, as applicable.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Explosive Payloads	0.000	0.000	8.715	0.000	8.715
Articles:	-	-	-	-	-
FY 2018 Plans: FY 2018 funding in Program Element (PE) 0604536N.					
FY 2019 Base Plans: Continue development of XLUUV Undersea weapons payload systems. Order initial material in support of design. Continue XLUUV interface development.					
FY 2019 OCO Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement: FY 2018 and prior funding in Program Element (PE) 0604536N. FY 2019 increase in funding supports material order and increased development efforts.					
Accomplishments/Planned Programs Subtotals	0.000	0.000	8.715	0.000	8.715

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 0604029N / *Unmanned Undersea Vehicle Core Technologies*	**Project (Number/Name)** 3395 / *Adv Undersea Prototyping-Explosive Payloads*

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
• RDTEN/0604536N/3395: *Adv Undersea Prototyping-Explosive Payloads*	1.220	2.014	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.234

Remarks

Funding moved to new Program Element in FY2019

D. Acquisition Strategy

Leverage the knowledge base at the Naval Research and Development Enterprise to complete the feasibility studies that will then lead to the development of critical technology. The effort will heavily use the experience resident in the undersea weapons industrial base .

E. Performance Metrics

Successful launch of undersea weapons from an ORCA XLUUV.

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 0604029N / *Unmanned Undersea Vehicle Core Technologies*	**Project (Number/Name)** 3395 / *Adv Undersea Prototyping-Explosive Payloads*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
XL Payload Interface Design & Fabrication	C/CPIF	TBD : TBD	0.000	0.000		0.000		5.035	Jan 2019	-		5.035	Continuing	Continuing	Continuing
COMMAND AND CONTROL	WR	TBD : TBD	0.000	0.000		0.000		1.609	Dec 2018	-		1.609	Continuing	Continuing	Continuing
Tech Support	C/CPFF	TBD : TBD	0.000	0.000		0.000		0.991	Jan 2019	-		0.991	Continuing	Continuing	Continuing
Management	WR	TBD : TBD	0.000	0.000		0.000		0.300	Nov 2018	-		0.300	Continuing	Continuing	Continuing
Safety	WR	NSWC Indian Head : Indian Head, MD	0.000	0.000		0.000		0.780	Jan 2019	-		0.780	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.000		8.715		-		8.715	Continuing	Continuing	N/A

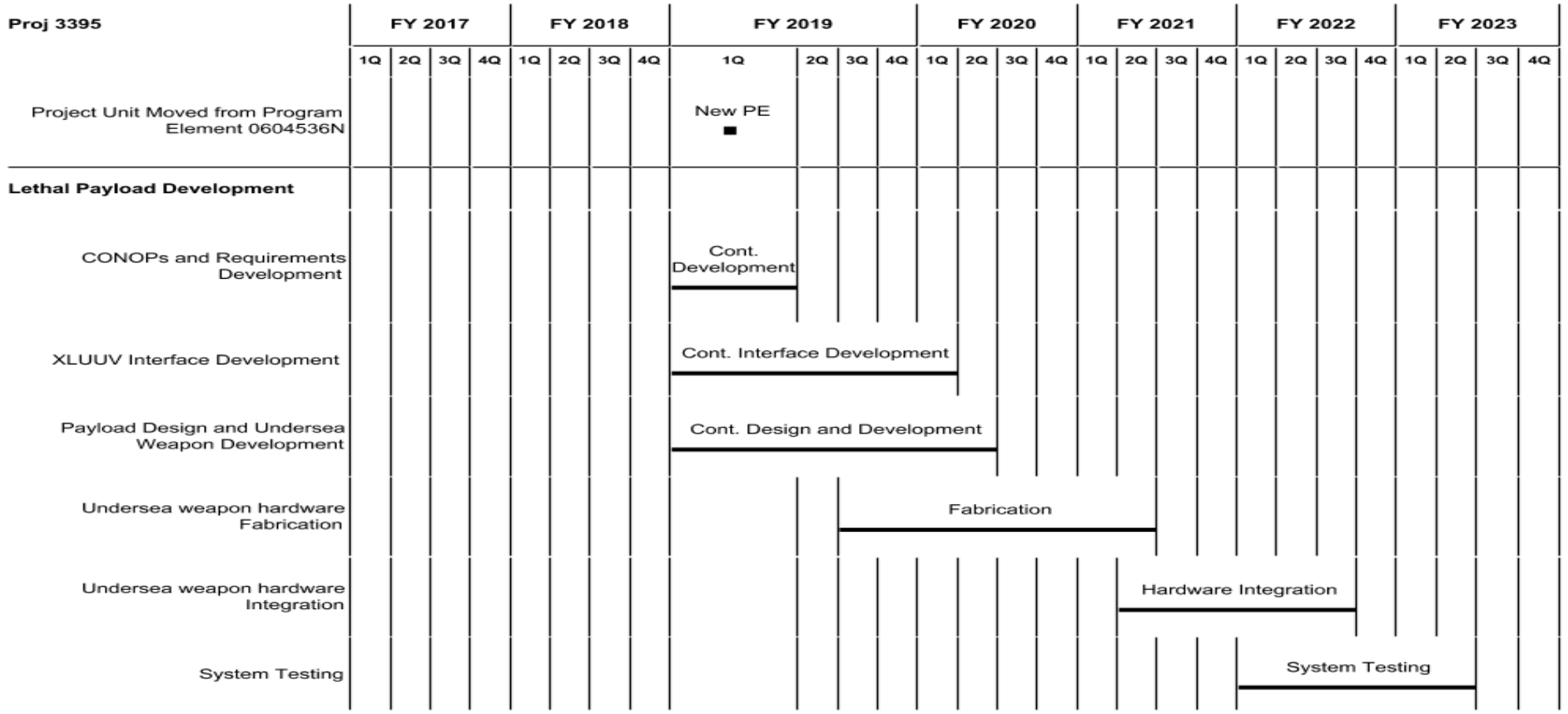
Remarks

Project moved to new Program Element in FY2019

	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		8.715		-		8.715	Continuing	Continuing	N/A

Remarks

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 0604029N / *Unmanned Undersea Vehicle Core Technologies*	**Project (Number/Name)** 3395 / *Adv Undersea Prototyping-Explosive Payloads*



2019PB - 0604029N - 3395

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 0604029N / *Unmanned Undersea Vehicle Core Technologies*	**Project (Number/Name)** 3395 / *Adv Undersea Prototyping-Explosive Payloads*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3395				
Project Unit Moved from Program Element 0604536N: New PE	1	2019	1	2019
Lethal Payload Development: CONOPs and Requirements Development: CONOPs and Requirements	1	2019	1	2019
Lethal Payload Development: XLUUV Interface Development: Schedule Detail	1	2019	1	2020
Lethal Payload Development: Payload Design and Undersea Weapon Development: Phase A concept design- XL UUV Interface development	1	2019	2	2020
Lethal Payload Development: Undersea weapon hardware Fabrication: Fabrication	3	2019	2	2021
Lethal Payload Development: Undersea weapon hardware Integration:	2	2021	3	2022
Lethal Payload Development: System Testing:	1	2022	2	2023

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 0604029N / *Unmanned Undersea Vehicle Core Technologies*	Project (Number/Name) 3396 / *Adv Undersea Prototyping-Non-Lethal Payloads*	

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
3396: *Adv Undersea Prototyping-Non-Lethal Payloads*	0.000	0.000	0.000	8.708	-	8.708	12.111	0.501	0.000	0.996	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

FY 2018 and prior funding in Program Element (PE) 0604536N.

The FY 2019 funding request was reduced by $1.253 million to account for the availability of prior year execution balances.

A. Mission Description and Budget Item Justification

Advanced undersea prototyping will experiment and demonstrate non-lethal payloads on ORCA XLUUVs for use initially on ORCA XLUUV and then on other FoS UUVs. This effort will investigate the possibilities of employing non-lethal payloads initially from the XLUUV to support ISR and strike missions. Non-kinetic payloads provide the warfare commander
an option to stop aggressive behavior without escalating the conflict. Non-lethal payloads that will be considered include jamming, EO/IR dazzling, microwave, aerial assets, and other methods. Once initially proven on XLUUVs, efforts will support integrating on applicable FOS UUVs, as applicable.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Non Lethal Payloads	0.000	0.000	8.708	0.000	8.708
Articles:	-	-	-	-	-
FY 2018 Plans: FY 2018 funding in Program Element (PE) 0604536N.					
FY 2019 Base Plans: Conduct design efforts for the non-lethal payloads of the XLUUVs, develop the Interface Control Document (ICD). Commence planning for the fabrication effort. Order long lead material.					
FY 2019 OCO Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement:					

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 0604029N / *Unmanned Undersea Vehicle Core Technologies*	**Project (Number/Name)** 3396 / *Adv Undersea Prototyping-Non-Lethal Payloads*

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 funding in Program Element (PE) 0604536N. Increase in FY 2019 funding supports long lead time material and increased development efforts.					
Accomplishments/Planned Programs Subtotals	0.000	0.000	8.708	0.000	8.708

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
• RDTEN/0604536N/3396: *Adv Undersea Prototyping-Non-Lethal Payloads*	0.500	1.017	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.517

Remarks

Funding moved to new Program Element in FY2019

D. Acquisition Strategy

A technology study and market research will be completed in the first 12 months to examine the options available and the impact to the warfighter the different technology options bring. This will use a group of experts throughout the advanced undersea industry. Initial design efforts of a prototype system for the development of a non-kinetic payload will start in late FY18 for preliminary efforts with main efforts occurring after the study is completed. The payload will be initially integrated and demonstrated on the ORCA XLUUV.

E. Performance Metrics

Non-kinetic payload integrated onto an XLUUV. Detailed metrics are classified.

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 0604029N / *Unmanned Undersea Vehicle Core Technologies*	**Project (Number/Name)** 3396 / *Adv Undersea Prototyping-Non-Lethal Payloads*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Design, Material, & Fabrication Efforts	WR	TBD : TBD	0.000	0.000		0.000		6.975	Nov 2018	-		6.975	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.000		6.975		-		6.975	Continuing	Continuing	N/A

Remarks

Project moved to new Program Element in FY2019

Support ($ in Millions)

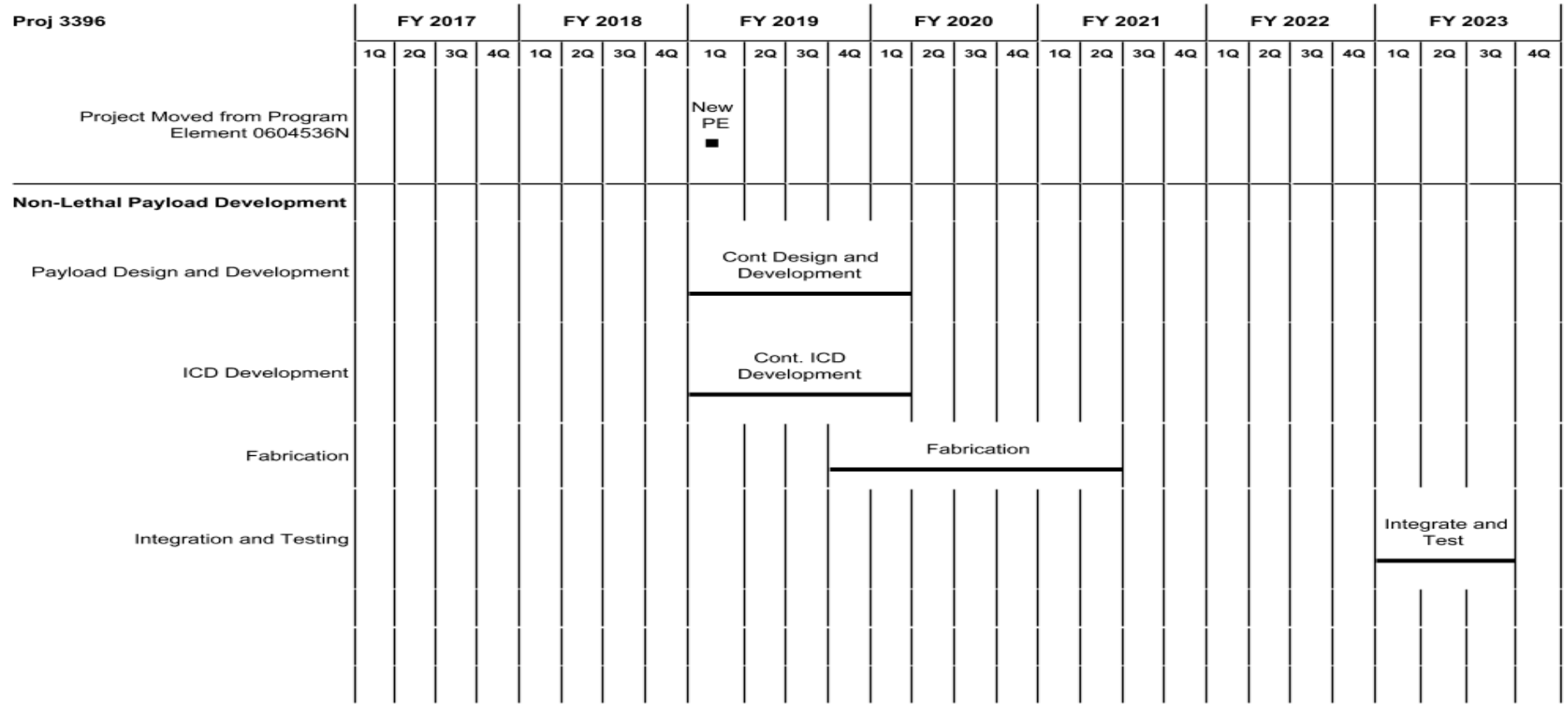
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DESIGN ANALYSIS	WR	NRL : WASHINGTON, D.C.	0.000	0.000		0.000		0.885	Nov 2018	-		0.885	Continuing	Continuing	Continuing
Program Support	C/FFP	various : Arlington, VA	0.000	0.000		0.000		0.848	Nov 2018	-		0.848	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.000		1.733		-		1.733	Continuing	Continuing	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
Project Cost Totals	0.000	0.000		0.000		8.708		-		8.708	Continuing	Continuing	N/A

Remarks

Project moved to new Program Element in FY2019

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 0604029N / *Unmanned Undersea Vehicle Core Technologies*	**Project (Number/Name)** 3396 / *Adv Undersea Prototyping-Non-Lethal Payloads*



2019PB - 0604029N - 3396

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 0604029N / *Unmanned Undersea Vehicle Core Technologies*	**Project (Number/Name)** 3396 / *Adv Undersea Prototyping-Non-Lethal Payloads*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3396				
Project Moved from Program Element 0604536N: Schedule Detail	1	2019	1	2019
Non-Lethal Payload Development: Payload Design and Development:	1	2019	1	2020
Non-Lethal Payload Development: ICD Development:	1	2019	1	2020
Non-Lethal Payload Development: Fabrication:	4	2019	2	2021
Non-Lethal Payload Development: Integration and Testing:	1	2023	3	2023