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 0603382N *I Advanced Combat Systems Tech*							
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	67.237	3.583	61.381	59.741	-	59.741	67.098	75.244	46.307	50.826	Continuing	Continuing
0324: *Adv Combat System Technology*	67.237	1.583	1.869	1.813	-	1.813	1.797	1.835	1.875	1.912	Continuing	Continuing
0385: *Rapid Prototype Development*	0.000	1.000	25.876	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	26.876
0399: *Unmanned Rapid Prototype Development*	0.000	1.000	15.361	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	16.361
3422: *SHARC Surface Platform*	0.000	0.000	6.775	9.935	-	9.935	11.445	13.459	2.968	0.000	0.000	44.582
3423: *LOCUST*	0.000	0.000	3.500	3.454	-	3.454	2.960	5.948	7.940	8.103	Continuing	Continuing
3424: *Heterogeneous Collaborative Unmanned Systems (HCUS)*	0.000	0.000	8.000	7.896	-	7.896	3.922	0.000	0.000	0.000	0.000	19.818
3437: *EMW/SEWIP/SSEE Accelerator*	0.000	0.000	0.000	21.584	-	21.584	23.771	23.773	0.000	0.000	0.000	69.128
3438: *Innovative Naval Prototype (INP) Transition (6.4)*	0.000	0.000	0.000	15.059	-	15.059	23.203	30.229	33.524	40.811	Continuing	Continuing

Note

Plans and associated resources in Program Element (PE) 0603382N ADVANCED COMBAT SYSTEMS TECH, Project Unit (PU) 0385 Rapid Prototype Development, and PU 0399 Unmanned Rapid Prototype Development are realigned effective FY2019 to PE 0604030N Rapid Prototyping, Experimentation and Demonstration, PU 0385 Rapid Prototype Development.

A. Mission Description and Budget Item Justification

The Advanced Combat System Technology line is to evolve the technical and business practices for programs to change to an open architecture construct. The program was constructed to mature both technical and business model integration for C5I systems programs of record in an open architecture environment. The priority was incorporating the principles of modular design and design disclosure, reusable application software, interoperability and secure information exchange, lifecycle affordability and encouraging competition and collaboration.

Project Unit 0324: Funding is to fully implement the Naval Open (Systems) Architecture (OSA) strategy. The implementation of this strategy provides the tools and leadership for assisting programs and the Naval Research and Development Establishment through the technical, business and cultural transition to OSA. The primary tools and assistance is established through a limited set of technical reference frameworks, consistent contract language guidance, Intellectual Property strategies and

improvements in transparency of design disclosure and information exchange on past and current investments to support portfolio management and cross-program reuse. The OSA transformation effort will be applied to programs of record and coupled with rapid prototyping efforts being realized as management efficiencies both within programs and in accelerated acquisition efforts. Those elements include ensuring that all naval systems, families of systems, programs and prototypes move to modular OSA in accordance with Department of Defense (DoD) Instruction 5000.01 of 7 January 2015 which mandates that all DoD programs utilize Modular OSA to rapidly field affordable and interoperable systems. This project facilitates a strategic shift in the technical and business methods to establish cooperation and cross-domain/COI business relationships. This improves innovation and economies of scale throughout the Navy and Marine Corps. This leadership effort has identified the business case and potential return on investment for moving the Navy towards an open systems approach, supported the development of open systems technologies, and integrated best business and technical practices for open systems development within Naval acquisition. Naval OSA ensures Navy-wide system architectures become extensible and scalable in function, capacity, and workload to meet Joint warfighting requirements. This also includes the identification and development of common software components, functions, reuse methodologies, and extensible product lines.

Project Unit 0385: The Rapid Prototype Development project funds a strategic focus on rapid prototyping of innovative combat system technologies and engineering innovations to explore Fleet-proposed capability concepts and needs, as well as foster advancements in naval warfighting capabilities. With an emphasis on rapidly prototyping mature technologies, the project is intended to expedite the development, exploration and fielding of technology and engineering prototypes to provide advanced warfighting capabilities, new technologies and engineering innovations across all Naval warfighting domains. Concepts and enabling technologies include but are not limited to: directed energy weapons, hypersonics, unmanned systems, artificial intelligence, machine learning, and multi-domain operations.

Project Unit 0399: Funding realigned to the Rapid Prototype Development project (Project Number 0385) in FY 2019.

Project Unit 3422: The SHARC Surface Platforms demonstration project is part of the Department of Defense Third Offset Strategy as one element in the Sensor Grid category for 24/7 autonomy infused Situational Awareness (SA). This project will purchase Commercial-off-the-Shelf SHARC Platforms (wave gliders) and integrate four (4) unique Government-owned classified mission payloads focused on the detection of threats. These capabilities will enable CONOPS development in an operationally relevant environment to demonstrate how these technologies can improve the SA to the battlespace Commanders.

Project Unit 3423: The LOCUST demonstration is part of the Department of Defense Third Offset Strategy as one element in the Effector Grid category for small autonomous systems. LOCUST leverages the BA-3 Innovative Naval Prototype program developing and demonstrating swarming technology. The BA-3 effort is developing both the air vehicle, UAS swarming behaviors, and miniaturized sensor systems. ONR has demonstrated an autonomous system capable of launching 33 UASs in 40 seconds and flying them in a coordinated swarm. This BA-4 effort is trailing the BA-3 demonstration of technologies by a fiscal quarter and then demonstrating the technology in operationally relevant environments with military mission applications.

Project Unit 3424: The Heterogeneous Collaborative Unmanned Systems (HCUS) demonstration is part of the Department of Defense Third Offset Strategy as one element in the Effector Grid category for small autonomous systems. HCUS provides autonomous, tactical monitoring of an adversary's port-sized littoral area for an extended period of time with capability to apply limited offensive effects on-demand. Vehicles and sensors are intended to be used in contested environments - employing local communications nets, autonomous vehicle behavior, low bandwidth command links and local navigation with no requirement for GPS input.

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 0603382N *I Advanced Combat Systems Tech*

HCUS systems can be encapsulated and deployed as a single payload, or a small number of payload packages designed for specific missions. The payloads can be carried into theater by various manned or unmanned platforms depending on the degree of stealth required. A week-long project demonstration will simulate covert deployment, operations of autonomous UAVs over the area of interest, data exfiltration to a remote operator, autonomous UAV recharging via USVs and/or UUVs, deployment of unmanned ground sensors for persistent sensing, and remote operator on-demand offensive attack on a simulated target.

Project 3438: This activity addresses the advanced component development and prototype demonstration associated with ONR's Innovative Naval Prototypes (INP) Program and the Leap Ahead Technology (LA-Tech) investments. INP and LA-Tech investments represent game changing technologies with the potential to revolutionize operational concepts. They are disruptive in nature as they would dramatically change the way naval forces fight. INPs and LA-Techs push the imagination of our nation's technical talent to deliver transformational warfighting capabilities. Investments may include such mission areas as Unmanned and Autonomous Systems, Directed Energy / Electric Weapons, Electromagnetic Maneuver Warfare, Cyber Warfare, and Undersea Warfare. Funding to be realigned from the Unmanned Rapid Prototype Development project (Project Number 0399) in FY 2019.

Project 3437: The EMW/SEWIP/SSEE Accelerator is part of the Department of Defense Third Offset Strategy to improve real time Electro-Magnetic Maneuver Warfare operations. This effort will develop integrated cross platform active and passive sensing solutions, next generation network and real time spectrum operations.

B. Program Change Summary ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	57.034	61.381	65.946	-	65.946
Current President's Budget	3.583	61.381	59.741	-	59.741
Total Adjustments	-53.451	0.000	-6.205	-	-6.205
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.063	0.000			
• Program Adjustments	0.000	0.000	22.000	-	22.000
• Rate/Misc Adjustments	0.000	0.000	-28.205	-	-28.205
• Congressional General Reductions Adjustments	-0.005	-	-	-	-
• Congressional Directed Reductions Adjustments	-53.383	-	-	-	-

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 0603382N / *Advanced Combat Systems Tech*	Project (Number/Name) 0324 / *Adv Combat System Technology*	

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
0324: *Adv Combat System Technology*	67.237	1.583	1.869	1.813	-	1.813	1.797	1.835	1.875	1.912	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project Unit 0324: Funding is to fully implement the Naval Open (Systems) Architecture (OSA) strategy. The implementation of this strategy provides the tools and leadership for assisting programs and the Naval Research and Development Establishment (NR&DE) through technical, business and policy transition to OSA. The primary tools and assistance are provided through a limited set of technical reference frameworks, consistent contract language guidance, Intellectual Property strategies and improvements in transparency of design disclosure and information exchange on past and current investments to support portfolio management and cross-program reuse. The OSA transformation effort will be applied to programs of record and coupled with rapid prototyping efforts being realized as management efficiencies both within programs and in accelerated acquisition efforts. Those elements include ensuring that all naval systems, families of systems, programs and prototypes move to modular OSA in accordance with Department of Defense (DoD) Instruction 5000.01 of 7 January 2015 which mandates that all DoD programs utilize Modular Open Systems Architecture to rapidly field affordable and interoperable systems. This project facilitates a strategic shift in the technical and business methods to establish cooperation, cross-domain, and community of interest business relationships. This improves innovation and economies of scale throughout the Navy and Marine Corps. This leadership effort has identified the business case and potential return on investment for moving the Navy towards an open systems approach, supported the development of open systems technologies, and integrated best business and technical practices for open systems development within Naval acquisition. Naval OSA ensures Navy-wide system architectures become extensible and scalable in function, capacity, and workload to meet Joint warfighting requirements. This also includes the identification and development of common software components, functions, reuse methodologies, and extensible product lines.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Align the Naval Enterprise Across All Domains to Implement OA	0.988	0.631	0.562	0.000	0.562
Articles:	-	-	-	-	-
FY 2018 Plans: Coordinate the development of hardware and software in using Technical Reference Frameworks for common products that could be employed across a variety of platforms.					
FY 2019 Base Plans: The FY 2019 budget plan is to continue to execute the FY2018 plan in addition to support program Modular Open Architecture development in coordination with accelerated acquisition projects and POR and define where Modular Open Systems Architecture is needed based on technology growth areas and Threats.					
FY 2019 OCO 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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 0324 / *Adv Combat System Technology*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** There is no significant difference between FY18 and FY19.					
Title: Change the Naval and Marine Corps policy and guidance to Institutionalize OA Principle ***Articles:*** ***FY 2018 Plans:*** Coordinate the development of hardware and software in using Technical Reference Frameworks for common products that could be employed across a variety of platforms. ***FY 2019 Base Plans:*** The FY 2019 budget will be utilized to continue to execute the FY2018 plan in addition to support the initiation of Modular Open Systems Architecture for rapid prototyping projects to be incorporated in conjunction with platform system block upgrades and promote policy changes that support the implementation and standardization of Modular Open Systems Architecture for POR interoperability efforts. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** These are Economic Adjustments due to inflation from FY2018 to FY2019.	0.208 -	0.624 -	0.619 -	0.000 -	0.619 -
Title: OA Systems Engineering Leadership ***Articles:*** ***FY 2018 Plans:*** Continue FY2017 Plan in addition to: Sponsor Communities of Interest to support cooperation between programs ***FY 2019 Base Plans:*** The FY 2019 budget will be utilized to continue to execute the FY2018 plan in addition to coordinate the development and maintenance of Modular Open Systems Architecture interfaces and standards, promote projects that have successfully implemented OA in its systems, and to delegate authority as appropriate to enable speed and agility. ***FY 2019 OCO Plans:***	0.159 -	0.225 -	0.232 -	0.000 -	0.232 -

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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 0324 / *Adv Combat System Technology*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** There is no significant difference between FY18 and FY19					
Title: Knowledge Products for Implementing OSA	0.228	0.389	0.400	0.000	0.400
Articles:	-	-	-	-	-
FY 2018 Plans: Continue with FY2017 Plan in addition to: Work with the Naval Laboratories to establish OSA as the default method for creating prototypes ***FY 2019 Base Plans:*** The FY 2019 budget will continue to execute the FY2018 plan and to provide Scientists and Engineers within NR&DE common products that can be used across the enterprise and identify test assets that can be leveraged between programs to implement OSA and accelerate acquisition. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** These are Economic Adjustments due to inflation from FY2018 to FY2019.					
Accomplishments/Planned Programs Subtotals	1.583	1.869	1.813	0.000	1.813

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

This has been a Navy Acquisition Executive directed effort to fundamentally alter the business, technical and policy for warfare systems acquisition to result in improved cost, increased access to innovation, a reduction in time to field, and promote cultural environment change. The Navy's OSA Enterprise effort built off past successes such as the Acoustic Rapid Commercial-off-the-Shelf Insertion started program and established this core OA Budget line (policy statement dated 5 August 2004). The strategy was further refined in the Deputy Chief of Naval Operations (DCNO)requirement of 23 December 2005 (N6/7), the Naval OSA Strategy of 2011 and extended for applicability to the other Defense Services under the DoD Better Buying Power initiative. This effort continues to expand into and support the related strategic shift to Rapid Prototyping, Experimentation and Demonstration.

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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 0324 / *Adv Combat System Technology*

E. Performance Metrics

Change Naval Processes and business practices to cost-effectively innovate and rapidly deploy improved warfighting capability based on fleet requirements. Provide OSA to field common, interoperable capabilities; Change Navy and Marine Corps Business processes to Institutionalize OSA Principles.

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 0603382N / *Advanced Combat Systems Tech*	Project (Number/Name) 0324 / *Adv Combat System Technology*	

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
SE/OA Domain Support	C/FP	APL/ IET Contract : VARIOUS	2.576	0.000		0.000		0.000		-		0.000	0.000	2.576	Continuing
Systems Engineering	MIPR	NSWC / Dahlgren : Dahlgren, VA	13.307	0.000		0.000		0.000		-		0.000	0.000	13.307	Continuing
Systems Engineering	WR	NSWC/CRANE, Carderock, DISA : VARIOUS	3.119	0.000		0.000		0.000		-		0.000	0.000	3.119	Continuing
Systems Engineering	C/CPAF	ASSETT; Lockheed Martin, NJ; Gartner, VA : Washington DC	5.114	0.000		0.000		0.000		-		0.000	0.000	5.114	Continuing
OA DOMAIN SUPPORT	WR	NUWC/Newport, Spawar, Navair : VARIOUS	11.931	0.000		0.000		0.000		-		0.000	0.000	11.931	Continuing
SE/Signal Processor	C/CPAF	Lockheed Martin : VARIOUS	6.000	0.000		0.000		0.000		-		0.000	0.000	6.000	Continuing
SE/Signal Processor	C/CPAF	BAE : VARIOUS	0.300	0.000		0.000		0.000		-		0.000	0.000	0.300	Continuing
SE/Signal Processor	C/CPAF	Raytheon : VARIOUS	0.100	0.000		0.000		0.000		-		0.000	0.000	0.100	Continuing
SE/Signal Processor	WR	NSWC/DD, NRL, PHD : VARIOUS	0.600	0.000		0.000		0.000		-		0.000	0.000	0.600	Continuing
Align the Naval Enterprise Across All Domains to Implement OA	WR	NSWCDD : VARIOUS	1.000	0.988	Mar 2017	0.631	Oct 2017	0.562	Oct 2018	-		0.562	0.000	3.181	-
Change the Naval and Marine Corps policy and guidance to Institutionalize OA Principle	WR	NSWC, NRL, NUWC, NAWC : VARIOUS	0.192	0.208	Jul 2017	0.624	Oct 2017	0.619	Oct 2018	-		0.619	0.000	1.643	-
OA Systems Engineering Leadership	WR	NSWC, NRL, NUWC, NAWC : VARIOUS	0.161	0.159	Jul 2017	0.225	Oct 2017	0.232	Oct 2018	-		0.232	0.000	0.777	-
Knowledge Products for Implementing OSA	WR	NSWC, NRL, NUWC, NAWC NUW, NEWPORT,	0.219	0.228	Jul 2017	0.389	Oct 2017	0.400	Oct 2018	-		0.400	0.000	1.236	-

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 0603382N / *Advanced Combat Systems Tech*	Project (Number/Name) 0324 / *Adv Combat System Technology*	

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
		NSWC CRANE : VARIOUS													
		Subtotal	44.619	1.583		1.869		1.813		-		1.813	0.000	49.884	N/A

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
Industry Development	C/FP	IBM, ANGLE, TBD (New IET Contract) : VARIOUS	9.805	0.000		0.000		0.000		-		0.000	0.000	9.805	Continuing
Technical Data-Academia	WR	NPS-Monterey/DAU : MONTEREY, CA	2.348	0.000		0.000		0.000		-		0.000	0.000	2.348	Continuing
Software Development	C/FP	TRIDENT, ASSET : VARIOUS	0.309	0.000		0.000		0.000		-		0.000	0.000	0.309	Continuing
		Subtotal	12.462	0.000		0.000		0.000		-		0.000	0.000	12.462	N/A

Test and Evaluation ($ 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
Operational Test & Evaluation	WR	NSWC/DD : DAHLGREN, VA	2.216	0.000		0.000		0.000		-		0.000	0.000	2.216	Continuing
OA Asset Repository (SBIR Account)	WR	Miscellaneous : VARIOUS	0.150	0.000		0.000		0.000		-		0.000	0.000	0.150	Continuing
		Subtotal	2.366	0.000		0.000		0.000		-		0.000	0.000	2.366	N/A

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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 0324 / *Adv Combat System Technology*

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
Program Management Support	C/CPAF	Miscellaneous : VARIOUS	3.021	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
SBIR Assessment (Cong Add)	WR	NSWC/DD : DAHLGREN, VA	4.748	0.000		0.000		0.000		-		0.000	0.000	4.748	Continuing
DAWDF	TBD	TBD : TBD	0.021	0.000		0.000		0.000		-		0.000	0.000	0.021	Continuing
		Subtotal	7.790	0.000		0.000		0.000		-		0.000	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	67.237	1.583		1.869		1.813		-		1.813	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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 0324 / *Adv Combat System Technology*

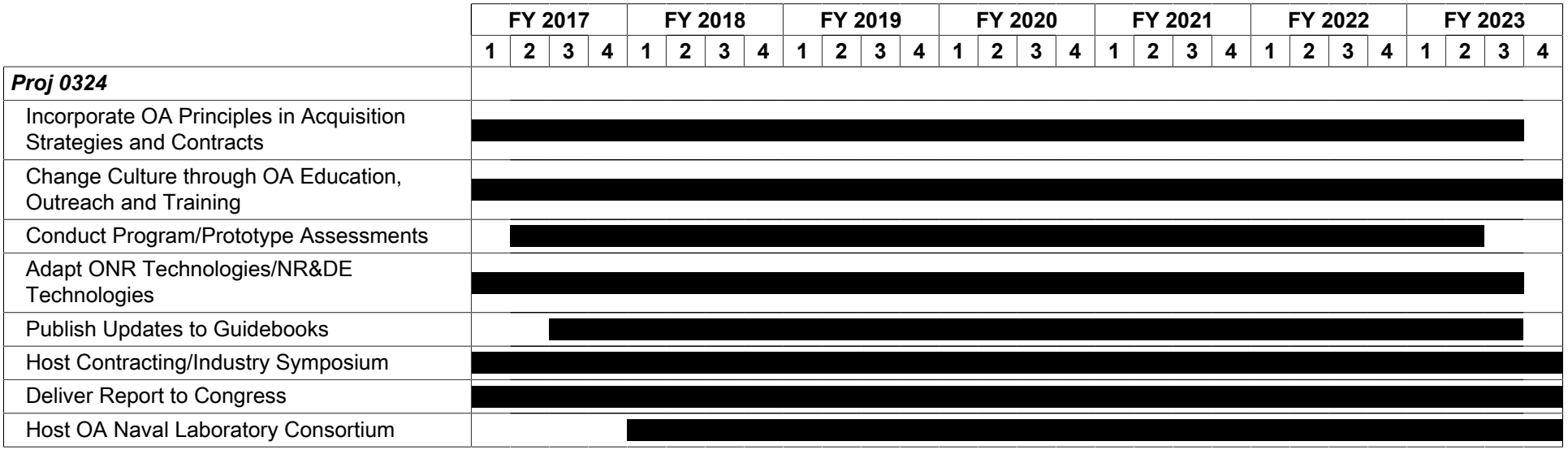

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 0324 / *Adv Combat System Technology*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0324				
Incorporate OA Principles in Acquisition Strategies and Contracts	1	2017	3	2023
Change Culture through OA Education, Outreach and Training	1	2017	4	2023
Conduct Program/Prototype Assessments	2	2017	2	2023
Adapt ONR Technologies/NR&DE Technologies	1	2017	3	2023
Publish Updates to Guidebooks	3	2017	3	2023
Host Contracting/Industry Symposium	1	2017	4	2023
Deliver Report to Congress	1	2017	4	2023
Host OA Naval Laboratory Consortium	1	2018	4	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 0603382N / *Advanced Combat Systems Tech*	Project (Number/Name) 0385 / *Rapid Prototype Development*	

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
0385: *Rapid Prototype Development*	0.000	1.000	25.876	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	26.876
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

The funding decrease from FY2018 to FY2019 reflects the realignment of requirements and associated resources from Program Element (PE) 0603382N ADVANCED COMBAT SYSTEMS TECH, Project Unit (PU) 0385 Rapid Prototype Development to PE 0604030N Rapid Prototyping, Experimentation and Demonstration, PU 0385 Rapid Prototype Development.

A. Mission Description and Budget Item Justification

Department of Navy (DON) leadership has acknowledged that maintaining maritime superiority depends in part on our ability to accelerate the speed of warfighting and technological innovations in order to extend our advantage to offset our adversaries' growing capabilities. It is fundamental to the DON's efforts to improve our acquisition outcomes. This project is aligned with, and in direct response to, calls for increased prototyping and experimentation in USD(AT&L)'s Better Buying Power 3.0, Secretary of the Navy's (SECNAV) Task Force Innovation direction, and the CNO direction to achieve High Velocity Learning at Every Level. These efforts will reinvigorate and increase the use of prototyping to rapidly field new warfighting capabilities, concepts and technologies, and engineering solutions.

The Rapid Prototype Development project funds a strategic focus on rapid prototyping of innovative combat system technologies and engineering innovations to explore Fleet-proposed capability concepts and needs, as well as foster advancements in naval warfighting capabilities. With an emphasis on rapidly prototyping mature technologies, the project is intended to expedite the development, exploration and fielding of technology and engineering prototypes to provide advanced warfighting capabilities, new technologies and engineering innovations across all Naval warfighting domains. Concepts and enabling technologies include but are not limited to; directed energy weapons, hypersonics, unmanned systems, artificial intelligence, machine learning, and multi-domain operations.

Specific projects under this project number will be selected and executed in accordance with the Department of the Navy (DoN) Accelerated Acquisition Process as described in SECNAVINST 5000.42. The Secretary of the Navy will notify Congress prior to initiation of a project under this project number in accordance with the requirements established in Section 216 of the FY 2017 National Defense Authorization Act.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Rapid Prototype Development, Experimentation and Demonstration	1.000	25.876	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2018 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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 0385 / *Rapid Prototype Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Project 0385 funding supports the SURTASS-E Rapid Prototyping, Experimentation and Demonstration (RPED) project which will provide a modular, flexible, and rapidly deployable mobile acoustic wide-area surveillance capability for installation aboard a vessel of opportunity (VOO). The project will deliver and demonstrate one system consisting of International Organization for Standardization containerized mission system ship set, installed on a VOO. Specific FY18 activities include: design and development of the SURTASS-E winch and handling system; procurement of long lead sub-systems for the command, control, communications, computers and intelligence (C4I) van; mission system hardware and software development and integration; VOO assessment, leasing and platform evaluation; VOO installation hardware; towed array towing hardware; acoustic processing development; and system level ship integration and performance assessment . Project 0385 will support additional emergent FY2018 RPED initiatives, as designated by the Accelerated Acquisition Board of Directors (AABoD) in accordance with SECNAVINST 5000.42 to expedite the development, exploration and fielding of technology and engineering prototypes to provide advanced warfighting capabilities, new technologies and engineering innovations across all Naval warfighting domains. ***FY 2019 Base Plans:*** N/A ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** The funding decrease from FY2018 to FY2019 reflects the realignment of requirements and associated resources from Program Element (PE) 0603382N ADVANCED COMBAT SYSTEMS TECH, Project Unit (PU) 0385 Rapid Prototype Development to PE 0604030N Rapid Prototyping, Experimentation and Demonstration, PU 0399 0385 Rapid Prototype Development.					
Accomplishments/Planned Programs Subtotals	1.000	25.876	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 0385 / *Rapid Prototype Development*

D. Acquisition Strategy

Projects identified for execution under this project number are non-acquisition programs. Each project will develop a project plan to support project execution. Project plans will include a project schedule and technical requirements and objectives to measure project performance. The selected technical solutions will be demonstrated in operationally relevant environments to assess their ability to meet warfighter requirements. Project deliverables include actual integrated hardware/software prototype systems, CONOPS, requirements, test reports, technical data, and associated doctrine, organization, training, leadership and education, and personnel aspects necessary to support decision making. These deliverables will be used to support project disposition decisions to include transition of technologies to acquisition, further refinement of the technology, or termination and reinvestment of remaining funds to other technologies that add military value.

E. Performance Metrics

Performance metrics are specific to each of the projects funded. All will include measures identified in the Statement of Objectives (SOO), including completions, successes, terminations, and iterative prototype cycle times reported against schedules and deliverables stated in the requirement documents.

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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 0385 / *Rapid Prototype Development*

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
Mission System HW/SW	SS/CPFF	John Hopkins : Maryland	0.000	0.000		7.700	Mar 2018	0.000		-		0.000	7.700	15.400	-
VOO Evaluation	WR	Military Sealift Command : Norfolk, Va	0.000	0.000		3.300	Mar 2018	0.000		-		0.000	3.300	6.600	-
Winch Design and Procurement	WR	NAVFAC : California	0.000	0.000		3.300	Mar 2018	0.000		-		0.000	3.300	6.600	-
Towed Army Test Equip and VOO Assessment	WR	NSWC : Carderock, Md	0.000	0.000		0.700	Mar 2018	0.000		-		0.000	0.700	1.400	-
C41 Suite Development and Integration	WR	NAWC : Panama City, Fl	0.000	0.000		3.600	Mar 2018	0.000		-		0.000	3.600	7.200	-
Prototype Development, Experimentation and Demonstration	Various	Va : TBD	0.000	1.000	Nov 2017	0.000	Mar 2018	0.000		-		0.000	0.000	1.000	-
VOO Installation Hardware	C/CPFF	Oceaneering Intl : San Diego, Ca	0.000	0.000		0.400	Mar 2018	0.000		-		0.000	0.400	0.800	-
Common Support Modules Dev Integration	MIPR	PMS 420 : Washington, DC	0.000	0.000		4.100	Jun 2018	0.000		-		0.000	5.000	9.100	-
Towed System Shore Support	WR	SSC Lant : Little Creek, Va	0.000	0.000		1.000	Mar 2018	0.000		-		0.000	1.000	2.000	-
Prototype Dev, Experiemt & Demonstration	Various	Various : Various	0.000	0.000		1.776	Mar 2018	0.000		-		0.000	0.000	1.776	-
		Subtotal	0.000	1.000		25.876		0.000		-		0.000	25.000	51.876	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	1.000		25.876		0.000		-		0.000	25.000	51.876	N/A

Remarks

Support and Test and Evaluation costs are directly associated with the delivery of the primary product and included in the product development cost category for rapid prototype development, experimentation and demonstration cost categories.

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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 0385 / *Rapid Prototype Development*

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Proj 0385																												
Prototype Development, Experimentation and Demonstration									[redacted]																			

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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 0385 / *Rapid Prototype Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0385				
Prototype Development, Experimentation and Demonstration	1	2019	4	2020

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 0603382N / *Advanced Combat Systems Tech*	Project (Number/Name) 0399 / *Unmanned Rapid Prototype Development*	

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
0399: *Unmanned Rapid Prototype Development*	0.000	1.000	15.361	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	16.361
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

The funding decrease from FY2018 to FY2019 reflects the realignment of requirements and associated resources from Program Element (PE) 0603382N ADVANCED COMBAT SYSTEMS TECH, Project Unit (PU) 0399 Unmanned Rapid Prototype Development to PE 0604030N Rapid Prototyping, Experimentation and Demonstration, PU 0385 Rapid Prototype Development.

A. Mission Description and Budget Item Justification

Department of Navy (DON) leadership has acknowledged that maintaining maritime superiority depends in part on our ability to accelerate the speed of warfighting and technological innovations in order to extend our advantage to offset our adversaries' growing capabilities. It is fundamental to the DON's efforts to improve our acquisition outcomes. This project is aligned with, and in direct response to, calls for increased prototyping and experimentation in USD(AT&L)'s Better Buying Power 3.0, Secretary of the Navy's (SECNAV) Task Force Innovation direction, and the CNO direction to achieve High Velocity Learning at Every Level. These efforts will reinvigorate and increase the use of prototyping to rapidly field new warfighting capabilities, concepts and technologies, and engineering solutions.

The Rapid Prototype Development project funds a strategic focus on rapid prototyping of innovative combat system technologies and engineering innovations to explore Fleet-proposed capability concepts and needs, as well as foster advancements in naval warfighting capabilities. With an emphasis on rapidly prototyping mature technologies, the project is intended to expedite the development, exploration and fielding of technology and engineering prototypes to provide advanced warfighting capabilities, new technologies and engineering innovations across all Naval warfighting domains. Concepts and enabling technologies include but are not limited to; directed energy weapons, hypersonics, unmanned systems, artificial intelligence, machine learning, and multi-domain operations.

Specific projects under this project number will be selected and executed in accordance with the Department of the Navy (DoN) Accelerated Acquisition Process as described in SECNAVINST 5000.42. The Secretary of the Navy will notify Congress prior to initiation of a project under this project number in accordance with the requirements established in Section 216 of the FY 2017 National Defense Authorization Act.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Unmanned Rapid Prototype Development, Experimentation and Demonstration	1.000	15.361	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Department of Navy (DON) leadership has acknowledged that maintaining maritime superiority depends in part on our ability to accelerate the speed of warfighting and technological innovations in order to					

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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 0399 / *Unmanned Rapid Prototype Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total

extend our advantage to offset our adversaries' growing capabilities. It is fundamental to the DON's efforts to improve our acquisition outcomes. This project is aligned with, and in direct response to, calls for increased prototyping and experimentation in USD(AT&L)'s Better Buying Power 3.0, Secretary of the Navy's (SECNAV) Task Force Innovation direction, and the CNO direction to achieve High Velocity Learning at Every Level. These efforts will reinvigorate and increase the use of prototyping to rapidly field new warfighting capabilities, concepts and technologies, and engineering solutions.

The Unmanned Rapid Prototype Development project funds a strategic focus on rapid prototyping of innovative combat system technologies and engineering innovations to explore Fleet-proposed capability concepts and needs, as well as foster advancements in naval warfighting capabilities. With an emphasis on rapidly prototyping mature technologies, the project is intended to expedite the development, exploration and fielding of technology and engineering prototypes to provide advanced warfighting capabilities, new technologies and engineering innovations across all Naval warfighting domains.

Specific projects under this project number will be selected and executed in accordance with the Department of the Navy (DoN) Accelerated Acquisition Process as described in SECNAVINST 5000.42. The Secretary of the Navy will notify Congress prior to initiation of a project under this project number in accordance with the requirements established in Section 216 of the FY 2017 National Defense Authorization Act.

FY 2018 Plans:
Support FY2018 RPED initiatives, as designated by the AABoD, to expedite the development, exploration and fielding of technology and engineering prototypes to provide advanced warfighting capabilities, new technologies and engineering innovations across all Naval warfighting domains.

FY 2019 Base Plans:
Not applicable.

FY 2019 OCO Plans:
N/A

FY 2018 to FY 2019 Increase/Decrease Statement:
The funding decrease from FY2018 to FY2019 reflects the realignment of requirements and associated resources from Program Element (PE) 0603382N ADVANCED COMBAT SYSTEMS TECH, Project Unit (PU) 0399 Unmanned Rapid Prototype Development to PE 0604030N Rapid Prototyping, Experimentation and

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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 0399 / *Unmanned Rapid Prototype Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Demonstration, PU 0385 Rapid Prototype Development. This realignment programmed to provide maximum funding flexibility for DoN Accelerated Acquisition Board of Directors (AABoD) designated Rapid Prototyping, Experimentation and Demonstration (RPED) projects.					
Accomplishments/Planned Programs Subtotals	1.000	15.361	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Projects identified for execution under this project number are non-acquisition programs. Each project will develop a project plan to support project execution. Project plans will include a project schedule and technical requirements and objectives to measure project performance. The selected technical solutions will be demonstrated in operationally relevant environments to assess their ability to meet warfighter requirements. Project deliverables include actual integrated hardware/software prototype systems, CONOPS, requirements, test reports, technical data, and associated doctrine, organization, training, leadership and education, and personnel aspects necessary to support decision making. These decisions include the transition of technologies to acquisition, further refinement of the technology, or termination and reinvestment of remaining funds to other technologies that add military value.

E. Performance Metrics

Performance metrics are specific to each of the projects funded. All will include measures identified in the Statement of Objectives (SOO), including completions, successes, terminations, and iterative prototype cycle times reported against schedules and deliverables stated in the requirement documents.

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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 0399 / *Unmanned Rapid Prototype Development*

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
Prototype Development, Experiementation and Demonstration	Various	Various : Various	0.000	1.000	Jul 2017	15.361	Mar 2018	0.000		-		0.000	0.000	16.361	-
		Subtotal	0.000	1.000		15.361		0.000		-		0.000	0.000	16.361	N/A

Remarks

Support and Test and Evaluation costs are directly associated with the delivery of the primary product and included in the product development cost category for rapid prototype development, experimentation and demonstration cost categories.

	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	1.000		15.361		0.000		-		0.000	0.000	16.361	N/A

Remarks

Support and Test and Evaluation costs are directly associated with the delivery of the primary product and included in the product development cost category for rapid prototype development, experimentation and demonstration cost categories.

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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 0399 / *Unmanned Rapid Prototype Development*

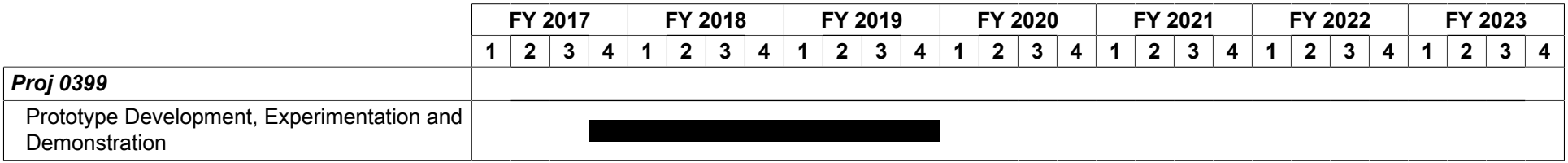

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 0399 / *Unmanned Rapid Prototype Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0399				
Prototype Development, Experimentation and Demonstration	4	2017	4	2019

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 0603382N / *Advanced Combat Systems Tech*	Project (Number/Name) 3422 / *SHARC Surface Platform*	

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
3422: *SHARC Surface Platform*	0.000	0.000	6.775	9.935	-	9.935	11.445	13.459	2.968	0.000	0.000	44.582
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The SHARC demonstration project is part of the Department of Defense Third Offset Strategy as one element in the Sensor Grid category for 24/7 autonomy infused Situational Awareness (SA). This project will purchase Commercial-off-the-Shelf SHARC Platforms (wave gliders) and integrate four (4) unique Government-owned classified mission payloads focused on the detection of threats. These capabilities will enable CONOPS development in an operationally relevant environment to demonstrate how these technologies can improve the SA to the battlespace Commanders.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Sensor Hosting Autonomous Remote Craft (SHARC)	0.000	6.775	9.935	0.000	9.935
Articles:	-	-	-	-	-
Description: This is a new project beginning in FY2018 - This project will demonstrate the warfighting utility of multiple, simultaneous, wideband data links for signal and imagery data transmission between host assets and Operational level processing systems.					
FY 2018 Plans: Emerging technologies and engineering innovations from Naval/DoD research and development and industry, will be integrated to demonstrate secure and reliable collection, analysis, and fusion of ISR and targeting data from organic assets and sensors. This project will demonstrate the warfighting utility of multiple, simultaneous, wideband data links for signal and imagery data transmission between host assets and Operational level processing systems. Additionally, technologies providing Tactical level access to host asset ISR data will be demonstrated. This project will integrate mature technologies developed in the areas of low probability of intercept and detection (LPI/LPD) techniques, high data rate exchange, long-range multi-band and wideband links, networked nodes and software-defined modes, encryption, and signal processing modules. Additional details are available at higher classification levels.					
FY 2019 Base Plans: Complete requirements analysis and update component and subsystem specifications as required. Procure required SHARC platforms to include additional platforms to meet USPACOM emergent requirements. SPAWAR SSC Charleston will conduct initial integration and functional lab testing of classified payloads. The Maritime					

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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 3422 / *SHARC Surface Platform*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Surveillance Systems (MSS) Program Office (PEO SUBS, PMS-485) will initiate and coordinate the development of system level test plans and conduct initial system level test and evaluation to assess performance. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase in FY2019 base funding is required to enhance capabilities for additional SHARC platforms and to support emergent USPACOM requirements.					
Accomplishments/Planned Programs Subtotals	0.000	6.775	9.935	0.000	9.935

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The Maritime Surveillance Systems (MSS) Program Office (PEO SUB PMS 485) will procure commercial wave gliders from Boeing Liquid Robotics Division (FFP Contract) and TBD Government organizations and Contractors for sensor systems X,Y,Z (CPFF). PMS 485 will task SPAWAR SSC Charleston to refurbish two type V sensor systems and for the engineering and technical integration, testing, and demonstration support. Sensors V,X,Y, and Z are all classified payloads.

E. Performance Metrics

Performance metrics are specific to each of the projects funded. All will include measures identified in the Statement of Objectives (SOO), including completions, successes, terminations, and iterative prototype cycle times reported against schedules and deliverables stated in the requirement documents.

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 0603382N / *Advanced Combat Systems Tech*	Project (Number/Name) 3422 / *SHARC Surface Platform*	

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
Requirements analysis	MIPR	Naval Weapons Development Center : Norfolk, VA	0.000	0.000		0.105	Oct 2017	0.050	Oct 2018	-		0.050	0.000	0.155	-
Requirements analysis	MIPR	PMS-485 Maritime Surveillance System : Washington Navy Yard, DC	0.000	0.000		0.190	Oct 2017	0.050	Oct 2018	-		0.050	0.000	0.240	-
Requirements analysis	MIPR	SPAWAR SSC : North Charleston, SC	0.000	0.000		0.600	Oct 2017	0.200	Oct 2018	-		0.200	0.000	0.800	-
Purchase COTS SHARC platforms	C/FP	PMS-485 Maritime Surveillance System : Washington Navy Yard, DC	0.000	0.000		1.440	Jan 2018	4.135	Dec 2018	-		4.135	0.000	5.575	-
Procure and mature Sensor technologies	C/CPFF	SPAWAR SSC : North Charleston, SC	0.000	0.000		1.740	Jan 2018	0.000	Dec 2018	-		0.000	0.000	1.740	-
5. Build/Assemble/ Integrate Phase/Lab Test	C/BA	SPAWAR SSC : North Charleston, SC	0.000	0.000		1.750	Mar 2018	4.000	Mar 2019	-		4.000	0.000	5.750	-
		Subtotal	0.000	0.000		5.825		8.435		-		8.435	0.000	14.260	N/A

Test and Evaluation ($ 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
Test & Evaluation Phase	MIPR	Naval Weapons Development Center : Norfolk, VA	0.000	0.000		0.250	Oct 2017	0.400	Mar 2019	-		0.400	0.000	0.650	-
Test & Evaluation Phase	MIPR	PMS-485 Maritime Surveillance System : Washington Navy Yard, DC	0.000	0.000		0.200	Oct 2017	0.300	Mar 2019	-		0.300	0.000	0.500	-
Test & Evaluation Phase	MIPR	SPAWAR SSC : North Charleston, SC	0.000	0.000		0.200	Oct 2017	0.300	Mar 2019	-		0.300	0.000	0.500	-
		Subtotal	0.000	0.000		0.650		1.000		-		1.000	0.000	1.650	N/A

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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 3422 / *SHARC Surface Platform*

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
Government Oversight and Manage Project	MIPR	PMS-485 Maritime Surveillance System : Washington Navy Yard, DC	0.000	0.000		0.300	Oct 2017	0.500	Oct 2018	-		0.500	0.000	0.800	-
		Subtotal	0.000	0.000		0.300		0.500		-		0.500	0.000	0.800	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		6.775		9.935		-		9.935	0.000	16.710	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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 3422 / *SHARC Surface Platform*

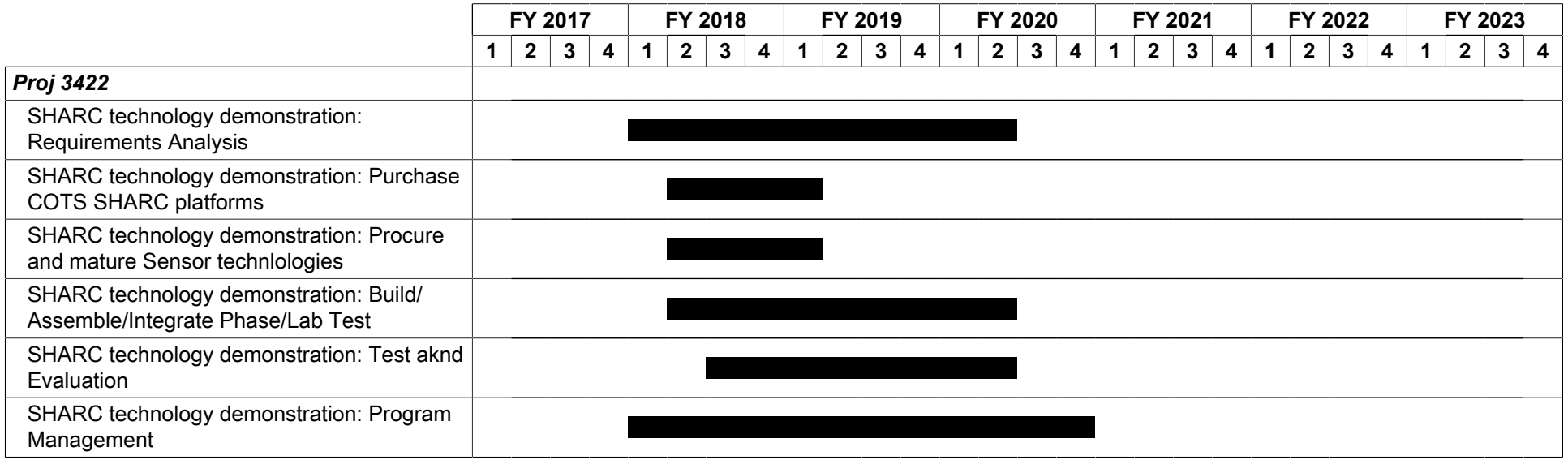

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 3422 / *SHARC Surface Platform*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3422				
SHARC technology demonstration: Requirements Analysis	1	2018	2	2020
SHARC technology demonstration: Purchase COTS SHARC platforms	2	2018	1	2019
SHARC technology demonstration: Procure and mature Sensor technlologies	2	2018	1	2019
SHARC technology demonstration: Build/Assemble/Integrate Phase/Lab Test	2	2018	2	2020
SHARC technology demonstration: Test aknd Evaluation	3	2018	2	2020
SHARC technology demonstration: Program Management	1	2018	4	2020

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 0603382N / *Advanced Combat Systems Tech*	Project (Number/Name) 3423 / *LOCUST*	

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
3423: *LOCUST*	0.000	0.000	3.500	3.454	-	3.454	2.960	5.948	7.940	8.103	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Project 3423 - Low Cost Unmanned Air Systems (UAS) Swarming Technology (LOCUST)

A. Mission Description and Budget Item Justification

The LOCUST demonstration is part of the Department of Defense Third Offset Strategy as one element in the Effector Grid category for small autonomous systems. LOCUST leverages the BA-3 Innovative Naval Prototype program developing and demonstrating swarming technology. The BA-3 effort is developing both the air vehicle, UAS swarming behaviors, and miniaturized sensor systems. ONR has demonstrated an autonomous system capable of launching 33 UASs in 40 seconds and flying them in a coordinated swarm. This BA-4 effort is trailing the BA-3 demonstration of technologies by a fiscal quarter and then demonstrating the technology in operationally relevant environments with military mission applications.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: LOCUST	0.000	3.500	3.454	0.000	3.454
Articles:	-	-	-	-	-
Description: This is a new project in FY2018 - Demonstrate mixed-initiative UAV swarming behaviors, enable the development of payload appropriate CONOPS/TTPs for Many Vehicle/Many Salvo swarms, and provide unmanned system capability to degrade threat Integrated Air Defense Systems (IADS) in support of follow-on manned system operations.					
FY 2018 Plans: Integrate and demonstrate a scalable system of inexpensive, commoditized Unmanned Aerial Vehicles (UAVs) with swarming behaviors providing two distinct mission capabilities. Phase 1 will develop and demonstrate both air- and ground-launched counter-Improvised Explosive Device (IED) and communications jamming capabilities to support a Marine Corps unit. Phase 2 will develop and demonstrate an unmanned undersea vehicle (UUV)-launched Swarm for counter-Integrated Air Defense Systems (IADS) in support of naval units. This project will demonstrate mixed-initiative UAV swarming behaviors developed by the BA-3 activity, enable the development of payload appropriate CONOPS/TTPs for Many Vehicle/Many Salvo swarms, and provide unmanned system					

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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 3423 / *LOCUST*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
capability to degrade threat IADS in support of follow-on manned system operations. Additional details are available at higher classification levels. ***FY 2019 Base Plans:*** The Marine Corps Warfighting Laboratory, Air Combat Elements Branch (MCWL ACE) will lead the completion of Phase I integration and test activities to assess functional performance of LOCUST Counter-IED subsystems and components installed on the MV-22 and USMC M-RZR or M-RZR trailer. Conduct system-level experimentation and demonstration of the prototype system. The Center for Naval Analysis will assess system performance for both the air- and ground-based LOCUST Counter-IED system and develop Concepts of Operations (CONOPS) and Tactics, Techniques, and Procedures (TTP) to support future USMC operations. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** No significant change from FY2018 to FY2019.					
Accomplishments/Planned Programs Subtotals	0.000	3.500	3.454	0.000	3.454

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

There are two phases for this non-acquisition project.

Phase 1 - Marine Corps Warfighting Laboratory (MCWL) Air Combat Element (ACE) will lead the Phase I effort in FY18 & 19. MCWL will procure additional launchers, LOCUST platforms and payloads. MCWL will work with the Common Launch Tube Program of Record to procure the multiple missile Common Launch Tube. MCWL will task NAWC AD to help integrate the launcher system onto the MV-22 and support flight test and flight certification. MCWL will use a supporting Warfare Center to integrate the launcher onto a Marine Corps Program of Record M-RZR or M-RZR trailer. MCWL ACE will closely coordinate with the BA-3 LOCUST program manager to procure the new 6" diameter, additive manufactured, air frame (purchase through BA-3 activity contract). MCWL Experimental Division will define CONOPS/TTPs, the experimental parameters and measures of effectiveness, and operational experiments suitable to apply the capability in a relevant operational environment to evaluate the military utility of the system to a small Marine Corps maneuver element. The Center for Naval Analysis will consolidate the post demonstration report for the systems military utility.

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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 3423 / *LOCUST*

Phase II -ONR Code 30 will lead a Counter Integrated Air Defense System (IADS) in FY20 -22 to demonstrate the advantages of small swarming UAVs against IADS defenses. ONR Code 30 will work with the Naval Warfare Development Center (NWDC) to develop CONOPS / TTPS for this mission capability and fleet experimentation. NSWC Panama City Division (NSWC PCD) will provide operational and logistics support for the launch and recovery of the vehicles. This phase is delayed for two fiscal years to allow the INP to develop the miniaturized payloads required for an operational demo. This effort will mature the payloads for operational employment.

E. Performance Metrics

MCWL Experimental Division will define CONOPS/TTPs, the experimental parameters and measures of effectiveness, and operational experiments suitable to apply the capability in a relevant operational environment to evaluate the military utility of the system to a small Marine Corps maneuver element.

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 0603382N / *Advanced Combat Systems Tech*	Project (Number/Name) 3423 / *LOCUST*	

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
Requirements Analysis	MIPR	Marine Corps Warfighting Lab : Quantico, VA	0.000	0.000		0.500	Oct 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Integration and Test	MIPR	Marine Corps Warfighting Lab : Quantico, VA	0.000	0.000		3.000	Jan 2018	0.954	Jan 2019	-		0.954	0.000	3.954	-
Conduct Prototype Experiment	MIPR	Marine Corps Warfighting Lab : Quantica, VA	0.000	0.000		0.000		1.000	Jun 2019	-		1.000	0.000	1.000	-
Assess Technical Performance	C/FP	Center for Naval Analyses : Arlington, VA	0.000	0.000		0.000		0.500	Aug 2019	-		0.500	0.000	0.500	-
CONOP/TTP refinement	C/FP	Center for Naval Analyses : Arlington, VA	0.000	0.000		0.000		1.000	Sep 2019	-		1.000	0.000	1.000	-
		Subtotal	0.000	0.000		3.500		3.454		-		3.454	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		3.500		3.454		-		3.454	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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 3423 / *LOCUST*

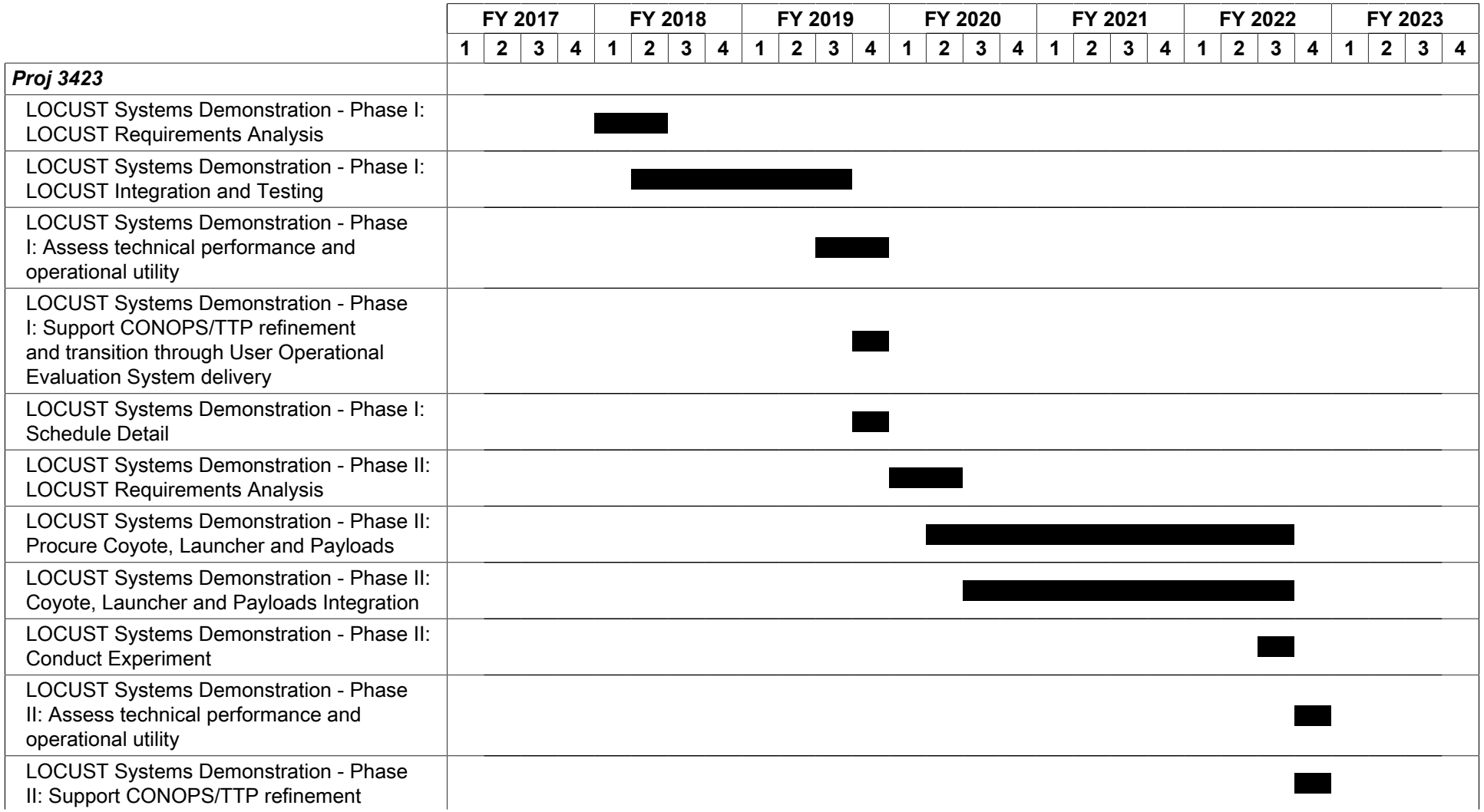

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 3423 / *LOCUST*

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
and transition through User Operational Evaluation System delivery																												

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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 3423 / *LOCUST*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3423				
LOCUST Systems Demonstration - Phase I: LOCUST Requirements Analysis	1	2018	2	2018
LOCUST Systems Demonstration - Phase I: LOCUST Integration and Testing	2	2018	3	2019
LOCUST Systems Demonstration - Phase I: Assess technical performance and operational utility	3	2019	4	2019
LOCUST Systems Demonstration - Phase I: Support CONOPS/TTP refinement and transition through User Operational Evaluation System delivery	4	2019	4	2019
LOCUST Systems Demonstration - Phase I: Schedule Detail	4	2019	4	2019
LOCUST Systems Demonstration - Phase II: LOCUST Requirements Analysis	1	2020	2	2020
LOCUST Systems Demonstration - Phase II: Procure Coyote, Launcher and Payloads	2	2020	3	2022
LOCUST Systems Demonstration - Phase II: Coyote, Launcher and Payloads Integration	3	2020	3	2022
LOCUST Systems Demonstration - Phase II: Conduct Experiment	3	2022	3	2022
LOCUST Systems Demonstration - Phase II: Assess technical performance and operational utility	4	2022	4	2022
LOCUST Systems Demonstration - Phase II: Support CONOPS/TTP refinement and transition through User Operational Evaluation System delivery	4	2022	4	2022

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 0603382N / *Advanced Combat Systems Tech*	Project (Number/Name) 3424 / *Heterogeneous Collaborative Unmanned Systems (HCUS)*	

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
3424: *Heterogeneous Collaborative Unmanned Systems (HCUS)*	0.000	0.000	8.000	7.896	-	7.896	3.922	0.000	0.000	0.000	0.000	19.818
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

This is a new project in FY2018 - Develop integrated, adaptable systems of low cost, heterogeneous unmanned platforms capable of autonomous, collaborative behaviors to execute an operational naval mission.

A. Mission Description and Budget Item Justification

The HCUS demonstration is part of the Department of Defense Third Offset Strategy as one element in the Effector Grid category for small autonomous systems. HCUS provides autonomous, tactical monitoring of an adversary's port-sized littoral area for an extended period of time with capability to apply limited offensive effects on-demand. Vehicles and sensors are intended to be used in contested environments - employing local communications nets, autonomous vehicle behavior, low bandwidth command links and local navigation with no requirement for GPS input.

HCUS systems can be encapsulated and deployed as a single payload, or a small number of payload packages designed for specific missions. The payloads can be carried into theater by various manned or unmanned platforms depending on the degree of stealth required. A week-long project demonstration will simulate covert deployment, operations of autonomous UAVs over the area of interest, data exfiltration to a remote operator, autonomous UAV recharging via USVs and/or UUVs, deployment of unmanned ground sensors for persistent sensing, and remote operator on-demand offensive attack on a simulated target.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Heterogeneous Collaborative Unmanned Systems (HCUS)	0.000	8.000	7.896	0.000	7.896
Articles:	-	-	-	-	-
FY 2018 Plans: Develop integrated, adaptable systems of low cost, heterogeneous unmanned platforms capable of autonomous, collaborative behaviors to execute an operational naval mission. This project leverages low cost UAV, UUV, and USV advancements in additive manufacturing, advanced autonomy, commercial components, and advanced sensing technologies. HCUS components are rapidly producible, expendable assets employed to minimize risk to manned platforms while increasing mission station time as recovery and return-to-base are not required. Additional details are available at higher classification levels.					
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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 3424 / *Heterogeneous Collaborative Unmanned Systems (HCUS)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Conduct Government program management and oversight of HCUS development activities. Johns Hopkins University Applied Physics Laboratory, in conjunction with NSWC Dahlgren Division, will complete HCUS system-level design and integration and commence manufacturing of initial HCUS systems. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** No significant change from FY2018 to FY2019					
Accomplishments/Planned Programs Subtotals	0.000	8.000	7.896	0.000	7.896

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

NSWCDD will provide Government oversight to the project and develop a multi-domain mission planning system compatible with the Aegis Combat System and Ship Self Defense System (SSDS) capable of tasking the JHU-APL autonomous systems. University Affiliated Research Center John Hopkins University: Applied Physics Laboratory will be responsible for the design and development of additive manufactured quad-copters, UUV launch system for UAV launch, low-profile USVs with commercial sensor systems, and unattended ground sensors (UGS) with a UGS deployment capability, the network backbone and long haul communications back to a combat system or Maritime Operations Center.

E. Performance Metrics

Performance metrics are specific to each of the projects funded. All will include measures identified in the Statement of Objectives (SOO), including completions, successes, terminations, and iterative prototype cycle times reported against schedules and deliverables stated in the requirement documents.

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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 3424 / *Heterogeneous Collaborative Unmanned Systems (HCUS)*

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
HCUS System Development	MIPR	JHU-APL : Laurel, MD	0.000	0.000		6.000	Oct 2017	4.450	Oct 2018	-		4.450	0.000	10.450	-
HCUS System Development	MIPR	Naval Surface Warfare Center DD : Dahlgren, VA	0.000	0.000		1.500	Oct 2017	2.946	Oct 2018	-		2.946	0.000	4.446	-
		Subtotal	0.000	0.000		7.500		7.396		-		7.396	0.000	14.896	N/A

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
Government Management and Oversight	MIPR	Naval Surface Warfare Center DD : Dahlgren, VA	0.000	0.000		0.500	Oct 2017	0.500	Oct 2018	-		0.500	0.000	1.000	-
		Subtotal	0.000	0.000		0.500		0.500		-		0.500	0.000	1.000	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		8.000		7.896		-		7.896	0.000	15.896	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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 3424 / *Heterogeneous Collaborative Unmanned Systems (HCUS)*

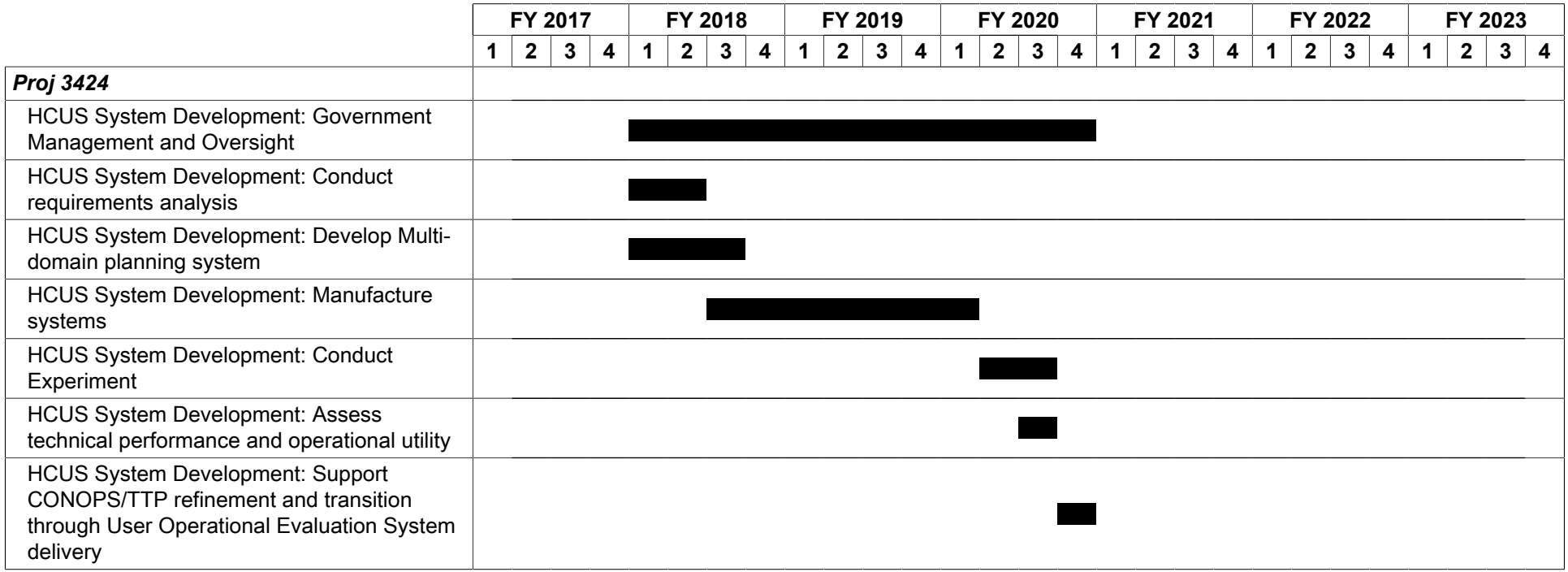

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 3424 / *Heterogeneous Collaborative Unmanned Systems (HCUS)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3424				
HCUS System Development: Government Management and Oversight	1	2018	4	2020
HCUS System Development: Conduct requirements analysis	1	2018	2	2018
HCUS System Development: Develop Multi-domain planning system	1	2018	3	2018
HCUS System Development: Manufacture systems	3	2018	1	2020
HCUS System Development: Conduct Experiment	2	2020	3	2020
HCUS System Development: Assess technical performance and operational utility	3	2020	3	2020
HCUS System Development: Support CONOPS/TTP refinement and transition through User Operational Evaluation System delivery	4	2020	4	2020

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 0603382N / *Advanced Combat Systems Tech*	Project (Number/Name) 3437 / *EMW/SEWIP/SSEE Accelerator*	

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
3437: *EMW/SEWIP/SSEE Accelerator*	0.000	0.000	0.000	21.584	-	21.584	23.771	23.773	0.000	0.000	0.000	69.128
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

This is a new project in FY2019 - Electromagnetic Maneuver Warfare/Surface Electronic Warfare Improvement Program to improve real time Electro-Magnetic Maneuver Warfare operations.

A. Mission Description and Budget Item Justification

The Electromagnetic Maneuver Warfare/Surface Electronic Warfare Improvement Program/Ship's Signals Exploitation Equipment (EMW/SEWIP/SSEE) Accelerator is part of the Department of Defense Third Offset Strategy to improve real time Electro-Magnetic Maneuver Warfare operations. EMW/SEWIP/SSEE Accelerator leverages the S&T Budget Activity (BA)-3 Electro-Magnetic Maneuver Warfare technology developments specifically in cross platform operations. The BA-3 effort is developing high speed sensor and electro-magnetic networking, real time spectrum operations and passive targeting technologies. ONR has demonstrated elements of next generation networking, passive tracking, and cross platform combat system coordination. This BA-4 effort is trailing the BA-3 demonstration of technologies deploying and demonstrating the technology in operationally relevant environments with military mission applications. The deployment will allow the ONR to significantly reduce risk, incorporate early warfighter improvements and test with real world data and scenarios.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: EMW/SEWIP/SSEE Accelerator	0.000	0.000	21.584	0.000	21.584
Articles:	-	-	-	-	-
Description: EMW/SEWIP/SSEE accelerator builds off of two BA-3 efforts: Surface platform arrays, radios and control software were developed under the Multi-Link CDL System Future Naval Capability and airborne relay were developed within the High Altitude Relay and Routing Future Naval Capability. To date ONR has demonstrated 4-beam CDL surface arrays, radios and controls via land based motion simulators, while the airborne relay functionality has been demonstrated on a P-3 platform in a relevant environment. This is a new project for this PE in FY2019 to develop integrated cross platform active and passive sensing solutions, next generation network and real time spectrum operations.					
FY 2018 Plans: N/A					
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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 3437 / *EMW/SEWIP/SSEE Accelerator*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Develop and test a multi-beam next generation network allowing significantly more throughputs with low latency designed for cross platform combat system integration, applications to coordinate multiple disparate Electronic Warfare (EW) systems, passive targeting algorithms and real time spectrum operations. This technology accelerator will operationally field 3 shipsets for trials and evaluation. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** This is a new project in FY2019					
Accomplishments/Planned Programs Subtotals	0.000	0.000	21.584	0.000	21.584

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Projects identified for execution under this project number are non-acquisition programs. Each project will develop a project plan to support project execution. Project plans will include a project schedule and technical requirements and objectives to measure project performance. Based on prior BA-3 work prototype contracts are in place and can be used to develop hardware for at sea trials. Software and ship installation will are expected to use a combination of existing shipyard contracts and government field activities.

E. Performance Metrics

Performance metrics are specific to each of the projects funded. All will include measures identified in the objective statements, including completions, successes, terminations, and iterative development prototype cycle times.

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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 3437 / *EMW/SEWIP/SSEE Accelerator*

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
Prototype Development	MIPR	NSWC : various	0.000	0.000		0.000		9.084	Oct 2018	-		9.084	0.000	9.084	-
Prototype Development	PO	NAWC : various	0.000	0.000		0.000		5.000	Oct 2018	-		5.000	0.000	5.000	-
Prototype Development	MIPR	SUPSHIP : Bath Maine	0.000	0.000		0.000		3.000	Oct 2018	-		3.000	0.000	3.000	-
Prototype Development	MIPR	NRL : Washington, DC	0.000	0.000		0.000		4.500	Oct 2018	-		4.500	0.000	4.500	-
		Subtotal	0.000	0.000		0.000		21.584		-		21.584	0.000	21.584	N/A

Remarks

NSWC: Prototype development of shipboard next generation networking apertures and EMW cross platform software.
NAWC: Prototype development of airborne next generation apertures and networking software.
SUPSHIP: Installation and testing of Cross platform EMW accelerator prototype on 2 Navy test vessels.
NRL: Installation and testing of Cross platform EMW accelerator prototype on Navy maritime patrol aircraft.

	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		21.584		-		21.584	0.000	21.584	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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 3437 / *EMW/SEWIP/SSEE Accelerator*

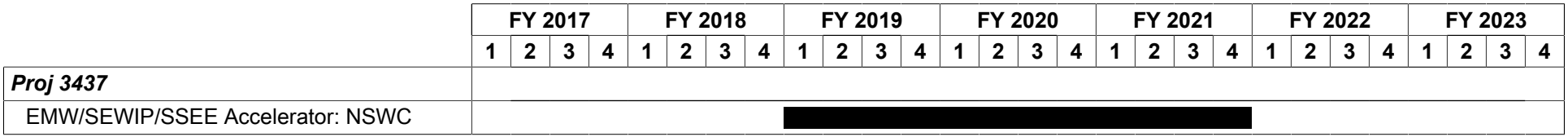

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 3437 / *EMW/SEWIP/SSEE Accelerator*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3437				
EMW/SEWIP/SSEE Accelerator: NSWC	1	2019	4	2021

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 0603382N / *Advanced Combat Systems Tech*	Project (Number/Name) 3438 / *Innovative Naval Prototype (INP) Transition (6.4)*	

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
3438: *Innovative Naval Prototype (INP) Transition (6.4)*	0.000	0.000	0.000	15.059	-	15.059	23.203	30.229	33.524	40.811	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

This is a new project unit (PU) in FY2019. This PU is intended to provide advanced component development and prototyping for selected technologies maturing out of or supporting ONR's Leap Ahead Technology (LA-Tech) and Innovative Naval Prototype (INP) BA3 portfolio.

A. Mission Description and Budget Item Justification

The efforts described in this mission area address the advanced component development and prototype demonstration associated with ONR's Innovative Naval Prototypes (INP) Program and the Leap Ahead Technology (LA-Tech) investments. INP and LA-Tech investments represent game changing technologies with the potential to revolutionize operational concepts. They are disruptive in nature as they would dramatically change the way naval forces fight. INPs and LA-Techs push the imagination of our nation's technical talent to deliver transformational warfighting capabilities. Successful demonstrations are intended to present the Department of the Navy with a programmatic challenge as these new capabilities can lead to the obsolescence of existing capabilities and significant decisions as to the path forward for integrating the new technological capabilities into the warfighting systems of the future.

ONR manages a continuum of INP and LA-Tech development from BA2 to BA3 to BA4. The goal of these BA4 investments is to further mature development and expend efforts necessary to evaluate integrated technologies, representative modes or prototype systems in high fidelity and realistic operating environments. This BA4 investment includes system specific efforts that help expedite technology transition from the laboratory to operational use. Emphasis is on proving component and subsystem maturity prior to integration in major and complex systems and may involve risk reduction initiatives. Projects in this category involve efforts prior to Milestone B and are referred to as advanced component development activities and include technology demonstrations. It is the goal of these projects to achieve Technology Readiness Levels 6 or 7. Successful experimentation and demonstration highlights the viability of new technological capabilities that could be implemented if an acquisition program were to be established to support further development. The portfolio is periodically refreshed through the selection of new INPs and LA-Tech investments as existing ones are completed.

INP, LA-Tech, and supporting technology investments may include R-2 Activities mission areas such as Unmanned and Autonomous Systems, Directed Energy / Electric Weapons, Electromagnetic Maneuver Warfare, Cyber Warfare, and Undersea Warfare.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Unmanned and Autonomous Systems: Advanced ASW sensor array package for medium sized unmanned surface vehicles.	0.000	0.000	5.347	0.000	5.347
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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 3438 / *Innovative Naval Prototype (INP) Transition (6.4)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Description: This is a new project beginning in FY2019 that will develop, integrate, experiment and demonstrate onboard a medium sized unmanned surface vehicle an advanced ASW sensor array package. This package is intended to be used on a platform being developed with Innovative Prototype (INP) and Leap Ahead Technology (LA-Tech) investments. That platform will serve as host for a wide variety of operationally focused capability payloads such as the advance ASW sensor array package being developed in this activity. These warfighter focused packages will enable Unmanned and Autonomous Systems platforms to support the requirement to augment manned systems with less expensive, unmanned, fully autonomous systems that can operate in all domains. ***FY 2018 Plans:*** N/A ***FY 2019 Base Plans:*** Initiate advanced component hardware and software development and the necessary system-to-hull integration which will lead to a prototype demonstration, in an operational environment, of an advanced ASW sensor array package capable of operational use onboard a medium sized autonomous, unmanned surface vehicle. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** This is a new project beginning in FY2019.					
Title: Unmanned and Autonomous Systems: Advanced ASW kinetic effects package for medium sized unmanned surface vehicle. ***Articles:***	0.000 -	0.000 -	5.712 -	0.000 -	5.712 -
Description: This is a new project beginning in FY2019 that will develop, integrate, experiment and demonstrate onboard a medium sized unmanned surface vehicle an advanced ASW kinetic effects package. This capability package is intended to be used on a platform being developed with Innovative Prototype (INP) and Leap Ahead Technology (LA-Tech) investments. That platform will serve as host for a wide variety of operationally focused capability payloads such as the advance ASW kinetic effects package being developed in this activity. These warfighter focused packages will enable Unmanned and Autonomous Systems platforms to support the requirement to augment manned systems with less expensive, unmanned, fully autonomous systems that can operate in all domains.					

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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 3438 / *Innovative Naval Prototype (INP) Transition (6.4)*

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: N/A ***FY 2019 Base Plans:*** Initiate advanced component development and the necessary system-to-hull integration which will lead to prototype demonstration, in an operational environment, of an advanced ASW kinetic effects package capable of operational use onboard a medium sized autonomous, unmanned surface vehicle. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** This is a new project beginning in FY2019.					
Title: Unmanned and Autonomous Systems: Advanced aerial lift package for medium sized unmanned surface vehicle. ***Articles:*** ***Description:*** This is a new project beginning in FY2019 that will develop, integrate, experiment and demonstrate onboard a medium sized unmanned surface vehicle an advanced aerial lift package. This capability package will dramatically increase the range of regard of various sensor payloads that will be carried aloft. It is intended to be used on a platform being developed with Innovative Prototype (INP) and Leap Ahead Technology (LA-Tech) investments. That platform will serve as host for a wide variety of operationally focused capability payloads such as the advance aerial lift package being developed in this activity. These warfighter focused payloads will enable Unmanned and Autonomous Systems platforms to support the requirement to augment manned systems with less expensive, unmanned, fully autonomous systems that can operate in all domains. ***FY 2018 Plans:*** N/A ***FY 2019 Base Plans:*** Initiate advanced component hardware development and the necessary system-to-hull integration which will lead to prototype demonstration, in an operational environment, of an advanced aerial lift package capable of operational use onboard a medium sized autonomous, unmanned surface vehicle. ***FY 2019 OCO Plans:***	0.000 -	0.000 -	4.000 -	0.000 -	4.000 -

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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 3438 / *Innovative Naval Prototype (INP) Transition (6.4)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** This is a new project beginning in FY2019.					
Accomplishments/Planned Programs Subtotals	0.000	0.000	15.059	0.000	15.059

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The projects identified for execution are non-acquisition programs. The Office of Naval Research will provide Government oversight to the projects. Each project will develop a project plan to support execution. Project plans will include a schedule and the necessary technical requirements and objectives to measure and evaluate performance. Additionally, each project will be subjected to experimentation then demonstrated in operationally relevant environments to assess their ability to meet warfighter requirements. Project deliverables will include the actual integrated hardware/software prototype systems, test reports, and technical data, necessary to support decision making. These decisions include the transition of technologies to acquisition, further refinement of the technology, or termination and reinvestment of remaining funds to other technologies that add military value.

E. Performance Metrics

In all cases, the technologies being developed within this PE support the Department of the Navy INP and Leap Ahead Programs and are managed at the Office of Naval Research. The primary technological metrics used in this PE involve experiments and tests that demonstrate, in an operationally relevant environment, the proof of concept for the technological capability being developed. Technology development is informed by periodic interaction with Naval warfighters, resource sponsors and the acquisition community. At the lowest level, each project is evaluated against technical and financial milestones on a frequent basis. Annually, each project is reviewed in depth for technical performance and development status by the Chief of Naval Research. Department of the Navy leadership is briefed on the portfolio's status by the Chief of Naval Research.

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 0603382N / *Advanced Combat Systems Tech*	Project (Number/Name) 3438 / *Innovative Naval Prototype (INP) Transition (6.4)*	

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
Advanced ASW sensor payload	MIPR	NUWC : Newport, Rhode Island	0.000	0.000		0.000		1.308	Oct 2018	-		1.308	Continuing	Continuing	Continuing
Advanced ASW sensor payload	MIPR	JHU-APL : Columbia, Maryland	0.000	0.000		0.000		1.308	Oct 2018	-		1.308	Continuing	Continuing	Continuing
Advanced ASW sensor payload	MIPR	SSC-PAC : San Diego, California	0.000	0.000		0.000		1.308	Oct 2018	-		1.308	Continuing	Continuing	Continuing
Advanced ASW sensor payload	MIPR	NASA Jet Propulsion Lab : Pasedena, California	0.000	0.000		0.000		1.300	Oct 2018	-		1.300	Continuing	Continuing	Continuing
Advanced ASW kinetic payload	MIPR	PSU -ARL : State College, Pennsylvania	0.000	0.000		0.000		4.111	Oct 2018	-		4.111	Continuing	Continuing	Continuing
Advanced ASW kinetic payload	MIPR	SSC-PAC : San Diego, California	0.000	0.000		0.000		0.900	Oct 2018	-		0.900	Continuing	Continuing	Continuing
Advanced ASW kinetic payload	MIPR	NASA Jet Propulsion Lab : Pasedena, California	0.000	0.000		0.000		0.900	Oct 2018	-		0.900	Continuing	Continuing	Continuing
Advanced aerial lift payload	MIPR	NSWC-CD : Bethesda, Maryland	0.000	0.000		0.000		1.308	Oct 2018	-		1.308	Continuing	Continuing	Continuing
Advanced aerial lift payload	MIPR	NASA Jet Propulsion Lab : Pasedena, California	0.000	0.000		0.000		1.308	Oct 2018	-		1.308	Continuing	Continuing	Continuing
Advanced aerial lift payload	MIPR	SSC-PAC : San Diego, California	0.000	0.000		0.000		1.308	Oct 2018	-		1.308	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.000		15.059		-		15.059	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		15.059		-		15.059	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 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 3438 / *Innovative Naval Prototype (INP) Transition (6.4)*

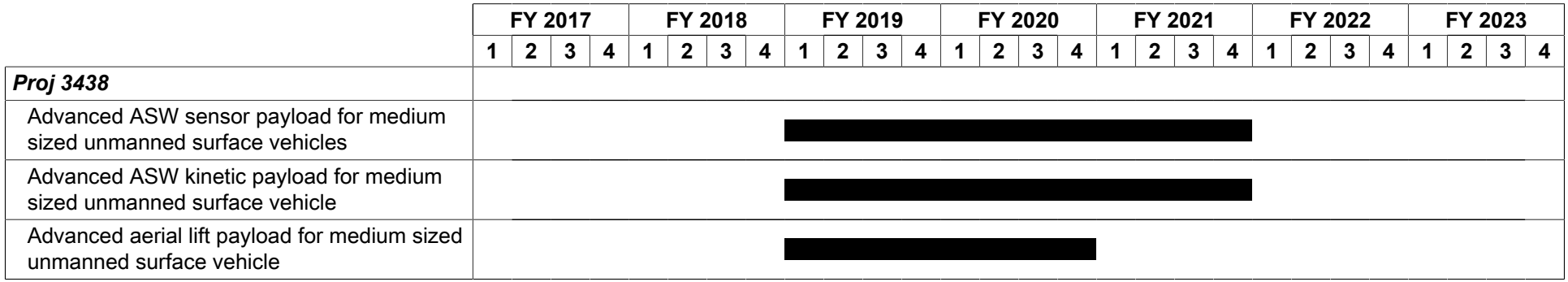

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603382N / *Advanced Combat Systems Tech*	**Project (Number/Name)** 3438 / *Innovative Naval Prototype (INP) Transition (6.4)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3438				
Advanced ASW sensor payload for medium sized unmanned surface vehicles	1	2019	4	2021
Advanced ASW kinetic payload for medium sized unmanned surface vehicle	1	2019	4	2021
Advanced aerial lift payload for medium sized unmanned surface vehicle	1	2019	4	2020