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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy										Date: March 2019		
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 3: Advanced Technology Development (ATD)					R-1 Program Element (Number/Name) PE 0603758N / Navy Warfighting Exp & Demo							
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	0.000	63.867	65.885	67.739	-	67.739	67.925	69.235	86.161	86.513	Continuing	Continuing
2918: Navy Warfighting Experiments and Demo	0.000	63.867	65.885	67.739	-	67.739	67.925	69.235	86.161	86.513	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Program Element (PE) addresses the development of recent technology breakthroughs to meet current operational needs from a subscale proof-of-principle into a full-scale prototype for warfighter experimentation during laboratory and operational demonstrations, Fleet Battle Experiments (FBE), Limited Objective Experiments (LOEs) and sea trial exercises. The key aspects of this PE are divided into four areas: (1) SwampWorks develops and demonstrates newly invented or recently discovered technologies that address emergent and enduring operational problems in an accelerated timeframe; (2) ONR Experimentation (OE) develops rapid prototypes and provides them to the warfighter for experimentation during laboratory and operational demonstrations; (3) TechSolutions develops rapid response science and technology prototypes addressing Fleet/Force needs identified by Sailors and Marines at the deckplate level; (4) Operations Analysis provides the Navy and Marine Corps the means to identify capability needs that can be addressed with science and technology solutions; and (5) support for the Naval Precision Strike Operations, providing the Navy capability to quickly locate, target, and strike critical targets.

Due to the number of efforts in this PE, the programs described herein are representative of the work included in this PE.

B. Program Change Summary (\$ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	64.889	0.000	0.000	-	0.000
Current President's Budget	63.867	65.885	67.739	-	67.739
Total Adjustments	-1.022	65.885	67.739	-	67.739
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	65.885			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.022	0.000			
• Program Adjustments	0.000	0.000	67.739	-	67.739
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000

Change Summary Explanation

Program change reflects return of original PE structure and increased investment in Precision Strike Technology

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Technical: Not applicable. Schedule: Not applicable.		

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COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
2918: Navy Warfighting Experiments and Demo	0.000	63.867	65.885	67.739	-	67.739	67.925	69.235	86.161	86.513	Continuing	Continuing

A. Mission Description and Budget Item Justification

This project focuses on the development of recent technology breakthroughs to meet current operational needs from a subscale proof-of-principle into a full-scale prototype for warfighter experimentation during laboratory and operational demonstrations, Fleet Battle Experiments (FBEs), Limited Objective Experiments (LOEs) and sea trial exercises.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
<div><div>Title: NAVAL WARFARE EXPERIMENTATION</div><div>Description: The objective of this project is to capitalize on recent technology breakthroughs to develop and integrate components including subsystems into prototypes quickly. These technologies are provided to the warfighter for experimentation, field experiments, and/or tests in simulated or actual environments. The use of Navy Warfare Development Command (NWDC) Fleet Experimentation (FLEX) events is encouraged and the net results are to gain the knowledge that only an experiment can provide.</div><div>FY 2019 Plans: Continue efforts from FY18 that were in progress within PE 0603758N Navy Warfare Experimentation and initiate new efforts to address the priorities of the Chief of Naval Research and the Chief of Naval Operations. Efforts will be conducted within areas such as Augmented Warfighter, Integrated & Distributed Forces, Operational Endurance, Sensing & Sense-Making, and Scalable Lethality.</div><div>FY 2020 Base Plans: Expand operational experimentation efforts through the creation and maintenance of an Experimentation and Analysis Opportunities catalog for use by the Naval Research Enterprise (NRE) in order to develop a prioritized list of concept investigations that will result in operational experimentation in the form of tests, demonstrations, and large and small scale experimentation that will address emerging operational needs. Early Technology Readiness Level concept investigations with Fleet and Force input will be conducted to establish concept</div></div>	18.731	20.602	20.608	0.000	20.608

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
potential, and inform NRE investment decisions. Additionally, experimentation will be used as an excursion to address additional warfighter needs or mitigate capability delivery risk.						
FY 2020 OCO Plans: N/A						
FY 2019 to FY 2020 Increase/Decrease Statement: There is no significant change from FY 2019 to FY 2020						
Title: OPERATIONS ANALYSIS		2.017	2.216	2.204	0.000	2.204
Description: The objective of this project is to provide operational analysis through studies, analyses, gaming and experimentation to identify Navy and Marine Corps capability needs that can be addressed with S&T solutions. The effort includes core analysis of S&T programs, military utility/capability gaps analyses, war gaming, structured experimentation events, the articulation of the results of that analysis and war gaming, and the development of innovation strategies and messages resulting from these analyses.						
FY 2019 Plans: Conduct war games, Technology Innovation Games and technology analysis efforts to inform ONR S&T initiatives in such areas as Augmented Warfighter, Integrated & Distributed Forces, Operational Endurance, Sensing & Sense-Making, and Scalable Lethality.						
FY 2020 Base Plans: Conduct warfighter workshops to discover new concepts and issues and identify new focus areas for S&T development guided by the warfighter. Additionally, conduct Concept of Employment Development to explore existing or new S&T into training or exercises to improve effectiveness. Also conduct Concept of Operations development to explore how operational objectives or capabilities can be met with existing or new S&T. Additionally, work with the Navy Warfare Development Command in order to conduct Technology Innovation Games that help inform Science and Technology program capabilities.						
FY 2020 OCO Plans: N/A						
FY 2019 to FY 2020 Increase/Decrease Statement: There is no significant change from FY 2019 to FY 2020.						
Title: SWAMPWORKS		21.541	22.383	22.430	0.000	22.430

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B. Accomplishments/Planned Programs (\$ in Millions)				FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
<p>Description: The objective of this portfolio is to explore and develop high-risk technologies and concepts that advance naval warfighters capabilities. Short studies can be performed to examine the maturity and potential efficacy of a proposed technology before making substantial investments. The program has substantial programmatic flexibility and is not limited to any set of technology areas. Ultimately, the goal is to provide a dramatic improvement for the warfighter. Some of these technologies may become part of a follow-on technology development, may end up in the hands of the warfighter for Fleet/Force experimentation, or may culminate in a significant Fleet/Force exercise that demonstrates capability that transitions into the Acquisition Program of Record (POR).</p> <p>FY 2019 Plans: Continue projects in response to the Chief of Naval Research and the Chief of Naval Operations priorities as well as technologies of interest for the Pacific Area of Responsibility (AOR). The SwampWorks portfolio explores high-risk, disruptive, and innovative technologies and concepts, and provides a venue to develop innovative technologies. All SwampWorks activities are targeted towards advancing the capabilities of naval warfighters. Because of the portfolio's high-risk nature. While the portfolio is open to a wide variety of technology areas, some focus is applied to areas such as initiatives in such areas as Augmented Warfighter, Integrated & Distributed Forces, Operational Endurance, Sensing & Sense-Making, and Scalable Lethality. The balance of the S&T projects that will start in FY19 will be identified during FY19 as the needs of the warfighters, for investments in this portfolio, evolve or change.</p> <p>FY 2020 Base Plans: The balance of the S&T projects that will start in FY20 will be identified during FY20 as the needs of the warfighters, for investments in this portfolio, evolve or change. SwampWorks projects will be based on input from Naval Research Enterprise stakeholders (including the Naval enterprises, the combatant commands, OPNAV and Headquarters Marine Corps) and will be designed to exploit breakthroughs in science and technology in order to deliver maximum warfighting benefit to our sailors and marines. SwampWorks projects will be aligned with shared priorities throughout the whole of RDT&E in order to quickly advance new capabilities from discovery to deployment across the warfighting domains.</p> <p>FY 2020 OCO Plans: N/A</p> <p>FY 2019 to FY 2020 Increase/Decrease Statement:</p>								

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
There is no significant change from FY 2019 to FY 2020.						
Title: TECH SOLUTIONS		9.186	10.184	10.126	0.000	10.126
Description: TechSolutions develops rapid response Science and Technology (S&T) solutions to immediate Fleet/Force needs identified by individual warfighters at the deckplate level. Sailors, Marines and Science Advisors submit their issues throughout the year via the TechSolutions website, email, phone, or chain of command. Projects are initiated from such requests and are completed in approximately twelve months, concluding with a prototype demonstration.						
FY 2019 Plans: This program will conduct new S&T developments based on Fleet/Force interactions and expressed warfighter needs. The program will be readily available to support the mission of the fleet by responding to Sailors/Marines need for technology. Developments will be undertaken to deliver rapid response solutions so warfighters can achieve mission success and perform their duties better, faster, or easier by leveraging technology that has recently been developed or is emergent. Demonstrations will be conducted with warfighters at the conclusion of developments to assess the utility of the technology and understand what steps remain to achieve transition.						
FY 2020 Base Plans: This program will conduct new S&T developments based on Fleet/Force interactions and expressed warfighter needs. The program will be readily available to support the mission of the fleet by responding to Sailors/Marines need for technology. Developments will be undertaken to deliver rapid response solutions so warfighters can achieve mission success and perform their duties safer, more effectively and more efficiently by leveraging technology that has recently been developed or is emergent. Demonstrations will be conducted with warfighters at the conclusion of developments to assess the utility of the technology and understand what steps remain to achieve transition.						
FY 2020 OCO Plans: N/A						
FY 2019 to FY 2020 Increase/Decrease Statement: There is no significant change from FY 2019 to FY 2020.						
Title: PRECISION STRIKE TECHNOLOGY		12.392	10.500	12.371	0.000	12.371
Description: The efforts described in this Activity are based on investment directions as defined in the Naval S&T Strategic Plan approved by the Science & Technology Corporate Board of 20 January 2015. This strategy						

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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2018	FY 2019	FY 2020 Base
<p>is based on needs and capabilities from Navy and Marine Corps guidance and input from the Naval Research Enterprise (NRE) stakeholders (including the Naval enterprises, the combatant commands, the Chief of Naval Operations (CNO), and Headquarters Marine Corps). It provides the vision and key objectives for the essential science and technology efforts that will enable the continued supremacy of U.S. Naval forces in the 21st century. The Strategy focuses and aligns Naval S&T with Naval missions and future capability needs that address the complex challenges presented by both rising peer competitors and irregular/asymmetric warfare.</p> <p>FY 2019 Plans: Conduct kill-chain studies to identify and recommend engineering trades to enable weapon system interoperability and data fusion alternatives. These studies assess engineering feasibility of various kill-chain options and assess the capability provided.</p> <p>FY 2020 Base Plans: Efforts in this area support Naval Precision Strike Operations, providing the Navy capability to quickly locate, target, and strike critical targets. Ongoing efforts include conducting kill-chain studies to identify and recommend engineering trades to enable weapon system interoperability and data fusion alternatives. These studies assess engineering feasibility of various kill-chain options and assess the capability provided.</p> <p>FY 2020 OCO Plans: N/A</p> <p>FY 2019 to FY 2020 Increase/Decrease Statement: FY 2019 to FY 2020 increase supports additional investment in research of weapon system interoperability and data fusion alternatives for naval precision strike capabilities.</p>					
Accomplishments/Planned Programs Subtotals			63.867	65.885	67.739
C. Other Program Funding Summary (\$ in Millions) N/A					
Remarks					
D. Acquisition Strategy Not applicable.					

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E. Performance Metrics <p>Overall metric goals are to transition the 6.3 advanced technology projects into acquisition programs of record, demonstrate successful technologies to enable new operational concepts, and enable the production of technology products such as proofs of concept and manufacturing packages. The performance of the work funded in this PE is reviewed at several levels to ensure that the investment is relevant and productive. At the macroscopic level, the investment is coordinated with Navy Warfare Development Command and Commander, Fleet Forces Command to address the goals and objectives identified for sea trials and Limited Objective Experiments (LOEs). At the microscopic level, the work funded in this PE is reviewed periodically by the Program Manager to ensure the investment is meeting the goals defined for each project. This review includes feedback collected from the warfighter community on all sea trials and LOEs to support the Program Manager's assessment of the value and relevance of each investment. Furthermore, the entire program is reviewed yearly by the Chief of Naval Research.</p>		