

# UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Navy										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	0.000	49.581	53.876	66.041	-	66.041	61.995	88.648	94.395	119.105	Continuing	Continuing
2918: Navy Warfighting Experiments and Demo	0.000	49.581	53.876	66.041	-	66.041	61.995	88.648	94.395	119.105	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) Naval Warfare Experimentation 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) Manufacturing Technology Science and Technology (S&T) to accelerate recently discovered manufacturing technologies to reduce the acquisition and ownership costs of current and future platforms.

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

Although the PE shows an overall decrease in FY16 from the FY15 PRESBUD due to higher Naval priorities, there is an increase in FY2016 to accommodate increased Naval Warfare Experimentation to support emergent opportunities to meet fleet needs with potential technology solutions and SwampWorks due to the increased research and fleet interest in the areas of Autonomy, Electromagnetic Warfare and the exploitation of unmanned systems. Also, in Manufacturing Technology the funds in FY 2016 (\$7.495M) and beyond have moved to new PE 0603680N Manufacturing Technology Program.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016 Base</b>	<b>FY 2016 OCO</b>	<b>FY 2016 Total</b>
Previous President's Budget	51.463	53.956	92.525	-	92.525
Current President's Budget	49.581	53.876	66.041	-	66.041
Total Adjustments	-1.882	-0.080	-26.484	-	-26.484
• Congressional General Reductions	-	-0.080			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.950	-			
• SBIR/STTR Transfer	-0.932	-			
• Program Adjustments	-	-	-18.989	-	-18.989

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Navy			Date: February 2015			
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				
• Rate/Misc Adjustments		-	-	-7.495	-	-7.495
<u>Change Summary Explanation</u> Technical: Not applicable.  Schedule: Not applicable.						

**UNCLASSIFIED**

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy										Date: February 2015		
Appropriation/Budget Activity 1319 / 3					R-1 Program Element (Number/Name) PE 0603758N / Navy Warfighting Exp & Demo				Project (Number/Name) 2918 / Navy Warfighting Experiments and Demo			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
2918: Navy Warfighting Experiments and Demo	-	49.581	53.876	66.041	-	66.041	61.995	88.648	94.395	119.105	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, FBE, LOEs and sea trial exercises.												
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: NAVAL WARFARE EXPERIMENTATION								18.420	19.690	21.688	-	21.688
Description: The objective of this project is to capitalize on recent technology breakthroughs to develop prototypes quickly and provide them to the warfighter for experimentation during laboratory and operational demonstrations, sea trials or LOEs.												
Funding increase in FY2015 to FY2016 will support emergent opportunities to meet fleet needs with potential technology solutions including demonstrations and experminetation with Directed Energy and High Energy Laser Weapons Systems.												
FY 2014 Accomplishments:												
- Continued concept based technology program efforts.												
- Continued experimentation efforts with technologies developed in SwampWorks/TechSolutions.												
- Continued to identify promising technology breakthroughs that can be prototyped and delivered to the warfighter for experimentation.												
- Continued development and demonstration of real time situational awareness technologies.												
- Continued technology experimentation for Total Ownership Cost (TOC) reduction.												
- Continued efforts to develop and demonstrate technologies to meet current or emerging operational needs.												
- Continued efforts to experiment and demonstrate technologies to meet current or emerging operational needs.												
- Developed, demonstrate and experiment with technologies to rapidly evaluate operational capabilities of new or recently developed technologies.												
FY 2015 Plans:												
- Initiate demonstrations and experimentation with Directed Energy (DE) and High Energy Laser (HEL) advanced weapons systems.												

**UNCLASSIFIED**

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy				Date: February 2015		
Appropriation/Budget Activity 1319 / 3		R-1 Program Element (Number/Name) PE 0603758N / Navy Warfighting Exp & Demo		Project (Number/Name) 2918 / Navy Warfighting Experiments and Demo		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
- Continue all efforts of FY2014 unless noted as completed above. <b>FY 2016 Base Plans:</b> - Continue all efforts of FY2015 unless noted as completed above. - Support emergent experimentation initiatives to support high impact pacific pivot efforts. - Increase command capacity to leverage fleet experimentation venues in order to optimize development efforts and gain greater fleet/force feedback of developing technologies. - Continue demonstrations and experimentation with Directed Energy (DE) and High Energy Laser (HEL) advanced weapons systems to support technology transision <b>FY 2016 OCO Plans:</b> N/A						
<b>Title:</b> OPERATIONS ANALYSIS <b>Description:</b> 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 wargaming, and the development of innovation strategies and messages resulting from these analyses. Recent work includes participation in SIMEX design, data collection and analysis events; wargame design in support of the ONR Office of Technology; analytical, strategic planning, and wargaming support; organizing and conducting workshops and symposia that increase innovation outreach; and participating in Red Teaming and conceptual analysis. <b>FY 2014 Accomplishments:</b> - Continued to conduct Military Utility Analyses of Future Naval Capability technologies. - Continued to conduct capability gaps analyses to identify areas that can be addressed with products from the S&T portfolio. - Continued to conduct SIMEX development, execution, data collection and analysis. - Continued to conduct war-game design in support of the ONR Office of Technology. <b>FY 2015 Plans:</b> - Continue all efforts of FY2014. <b>FY 2016 Base Plans:</b>		2.615	2.093	2.178	-	2.178

**UNCLASSIFIED**

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy				Date: February 2015		
Appropriation/Budget Activity 1319 / 3		R-1 Program Element (Number/Name) PE 0603758N / Navy Warfighting Exp & Demo		Project (Number/Name) 2918 / Navy Warfighting Experiments and Demo		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
- Continue all efforts of FY2015 unless.						
FY 2016 OCO Plans: N/A						
Title: SWAMPWORKS		17.635	20.216	32.159	-	32.159
Description: SwampWorks seeks to develop and demonstrate technologies that address emergent and enduring operational problems in an accelerated timeframe. Some of these technologies may end up in the hands of the warfighter for experimentation, or may culminate in a significant exercise that demonstrates capability then transitions into the Acquisition Program of Record (POR).						
The funding increase from FY 2014 to FY 2015 is largely due to the increased research and fleet interest in the areas of Autonomy, Electromagnetic Warfare and the exploitation of unmanned vehicles.						
Funding increase in FY2015 to FY2016 is due to the increased research and fleet interest in the areas of Autonomy, Electromagnetic Warfare and the exploitation of unmanned systems.						
FY 2014 Accomplishments: - Continued to identify enduring and emergent operational barriers identified by naval leadership and responded with relevant technology developments and demonstrations. - Continued disruptive commercial technology studies at varied military, government, and educational institutions. - Continued high risk/high payoff projects to explore significant leap-ahead capabilities. - Continued efforts to develop technologies to meet current or emerging operational needs. - Continued investment in submarine control surface technologies. - Continued investment in advanced electronic warfare technologies; projects are expected to be classified at a higher level. - Continued efforts to develop and demonstrate technologies to meet current or emerging operational needs to include vision enhancement, electronic warfare, diving technologies. - Continued efforts that develop and/or demonstrate advanced technologies in support of Fleet issue in an accelerated timeframe.						
FY 2015 Plans:						

**UNCLASSIFIED**

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy			Date: February 2015			
Appropriation/Budget Activity 1319 / 3	R-1 Program Element (Number/Name) PE 0603758N / Navy Warfighting Exp & Demo	Project (Number/Name) 2918 / Navy Warfighting Experiments and Demo				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
- Continue all efforts of FY2014 unless noted as completed above. <b>FY 2016 Base Plans:</b> - Continue all efforts of FY2015 unless noted as completed above. - Pursue emergent technology opportunities to support high impact pacific pivot efforts. - Initiate additional projects in the area of Autonomy, Electromagnetic Warfare and exploitation of unmanned systems <b>FY 2016 OCO Plans:</b> N/A						
<b>Title:</b> TECH SOLUTIONS <b>Description:</b> TechSolutions develops rapid response 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 as requests are received and are completed in approximately twelve to eighteen months, resulting in a prototype demonstration of TRL 6 or higher. <b>FY 2014 Accomplishments:</b> - Continued development of projects that provide solutions to problems identified by Science Advisors and the Fleet/Force to address emergent critical needs. - Developed, demonstrate and deliver technical solution prototypes to projects initiated in the previous fiscal year. - Continued development of additional projects that will provide solutions to address emergent critical needs. <b>FY 2015 Plans:</b> - Continue all efforts of FY2014 unless noted as completed above. <b>FY 2016 Base Plans:</b> - Continue all efforts of FY2015 unless noted as completed above. <b>FY 2016 OCO Plans:</b> N/A		9.123	9.742	10.016	-	10.016
<b>Title:</b> MANUFACTURING TECHNOLOGY S&T		1.788	2.135	-	-	-

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2016 Navy				<b>Date:</b> February 2015		
<b>Appropriation/Budget Activity</b> 1319 / 3		<b>R-1 Program Element (Number/Name)</b> PE 0603758N / Navy Warfighting Exp & Demo		<b>Project (Number/Name)</b> 2918 / Navy Warfighting Experiments and Demo		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>						
		<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016 Base</b>	<b>FY 2016 OCO</b>	<b>FY 2016 Total</b>
<p><b>Description:</b> The Manufacturing Technology S&amp;T program accelerates recently discovered manufacturing technologies to reduce the acquisition and ownership costs of current and future platforms which assists in meeting performance and platform affordability goals - both acquisition and life-cycle. This supports a critical goal of the Navy, meeting the affordability goals of major acquisition platforms, by accelerating emerging manufacturing technology.</p> <p>The funds in FY 2016 (\$7.495M) and beyond have moved to new PE 0603680N Manufacturing Technology Program. The funding has been distributed to R2 activities within that PE as follows: \$1.200 Composites Processing and Fabrication, \$0.957M to Electronics Processing and Fabrication, \$5.338M to Manufacturing Enterprise/Other.</p> <p><b>FY 2014 Accomplishments:</b> - Continued/accelerated recently discovered manufacturing technologies to reduce the acquisition and ownership costs of current and future platforms.</p> <p><b>FY 2015 Plans:</b> - Continue all efforts of FY2014 unless completed above.</p> <p><b>FY 2016 Base Plans:</b> - Funds moved to new PE 0603680N Manufacturing Technology Program PE. The funding has been distributed to R2 activities within that PE as follows: \$1.200 Composites Processing and Fabrication, \$0.957M to Electronics Processing and Fabrication, \$5.338M to Manufacturing Enterprise/Other.</p> <p><b>FY 2016 OCO Plans:</b> N/A</p>						
<b>Accomplishments/Planned Programs Subtotals</b>		49.581	53.876	66.041	-	66.041
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>Remarks</b>						
<b>D. Acquisition Strategy</b> Not applicable.						

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 3	R-1 Program Element (Number/Name) PE 0603758N / Navy Warfighting Exp & Demo	Project (Number/Name) 2918 / Navy Warfighting Experiments and Demo
<b>E. Performance Metrics</b> <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 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>		