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| Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy  |             |         |         |              |  |               |         |         |         | Date: February 2018 |                  |            |
|---|-------------|---------|---------|--------------|--|---------------|---------|---------|---------|---------------------|------------------|------------|
| Appropriation/Budget Activity<br>1319: Research, Development, Test & Evaluation, Navy / BA 3: Advanced Technology Development (ATD) |             |         |         |              | R-1 Program Element (Number/Name)<br>PE 0603758N / Navy Warfighting Exp & Demo |               |         |         |         |                     |                  |            |
| COST (\$ in Millions)   | Prior Years | FY 2017 | FY 2018 | FY 2019 Base | FY 2019 OCO  | FY 2019 Total | FY 2020 | FY 2021 | FY 2022 | FY 2023             | Cost To Complete | Total Cost |
| Total Program Element   | 0.000       | 67.965  | 64.889  | 0.000        | -  | 0.000         | 0.000   | 0.000   | 0.000   | 0.000               | 0.000            | 132.854    |
| 2918: Navy Warfighting Experiments and Demo   | 0.000       | 67.965  | 64.889  | 0.000        | -  | 0.000         | 0.000   | 0.000   | 0.000   | 0.000               | 0.000            | 132.854    |

## Note

The funding decrease from FY18 to FY19 reflects the realignment and consolidation of resources from the current Program Element (PE) and Project 2918 into the new FY19 Navy Advanced Technology Development (ATD) PE 0603671N, and the Navy Advanced Technology Project 3433. Specific efforts transferred from this PE include all planned continuing and initiating research associated with the Naval Warfare Experimentation, Operations Analysis, Swampworks, Tech Solutions, and Precision Strike Technology research efforts.

## 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.

A new activity was moved into this PE in 2018 - Precision Strike Technology, formerly funded in PE 0603114N Power Projection Advanced Technology.

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| Appropriation/Budget Activity   |         | R-1 Program Element (Number/Name)         |              |                     |               |
| 1319: Research, Development, Test & Evaluation, Navy / BA 3: Advanced Technology Development (ATD)                    |         | PE 0603758N / Navy Warfighting Exp & Demo |              |                     |               |
| B. Program Change Summary (\$ in Millions)  | FY 2017 | FY 2018                                   | FY 2019 Base | FY 2019 OCO         | FY 2019 Total |
| Previous President's Budget   | 60.550  | 64.889                                    | 68.128       | -                   | 68.128        |
| Current President's Budget  | 67.965  | 64.889                                    | 0.000        | -                   | 0.000         |
| Total Adjustments   | 7.415   | 0.000                                     | -68.128      | -                   | -68.128       |
| • Congressional General Reductions  | -       | -   |              |                     |               |
| • Congressional Directed Reductions   | -       | -   |              |                     |               |
| • Congressional Rescissions   | -       | -   |              |                     |               |
| • Congressional Adds  | -       | -   |              |                     |               |
| • Congressional Directed Transfers  | -       | -   |              |                     |               |
| • Reprogrammings  | 9.214   | 0.000                                     |              |                     |               |
| • SBIR/STTR Transfer  | -0.764  | 0.000                                     |              |                     |               |
| • Program Adjustments   | 0.000   | 0.000                                     | -68.128      | -                   | -68.128       |
| • Rate/Misc Adjustments   | 0.000   | 0.000                                     | 0.000        | -                   | 0.000         |
| • Congressional General Reductions Adjustments  | -0.035  | -   | -            | -                   | -             |
| • Congressional Directed Reductions Adjustments   | -1.000  | -   | -            | -                   | -             |
| <b>Change Summary Explanation</b>   |         |   |              |                     |               |
| The FY 2019 funding decrease reflects the realignment of funding to PE 0603671N Navy Advanced Technology Development. |         |   |              |                     |               |
| Technical: Not applicable.  |         |   |              |                     |               |
| Schedule: Not applicable.   |         |   |              |                     |               |

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| Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy   |             |         |         |              |  |               |         |         |   | Date: February 2018 |                  |               |
| Appropriation/Budget Activity<br>1319 / 3   |             |         |         |              | R-1 Program Element (Number/Name)<br>PE 0603758N / Navy Warfighting Exp & Demo |               |         |         | Project (Number/Name)<br>2918 / Navy Warfighting Experiments and Demo |                     |                  |               |
| 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    |
| 2918: Navy Warfighting Experiments and Demo   | 0.000       | 67.965  | 64.889  | 0.000        | -  | 0.000         | 0.000   | 0.000   | 0.000   | 0.000               | 0.000            | 132.854       |
| Note<br>The funding decrease from FY18 to FY19 reflects the realignment and consolidation of resources from the current Program Element (PE) and Project 2918 into the new FY19 Navy Advanced Technology Development (ATD) PE 0603671N, and the Navy Advanced Technology Project 3433. Specific efforts transferred from this PE include all planned continuing and initiating research associated with the Naval Warfare Experimentation, Operations Analysis, Swampworks, Tech Solutions, and Precision Strike Technology research efforts. |             |         |         |              |  |               |         |         |   |                     |                  |               |
| A. Mission Description and Budget Item Justification<br>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 2017 | FY 2018   | FY 2019 Base        | FY 2019 OCO      | FY 2019 Total |
| Title: NAVAL WARFARE EXPERIMENTATION  |             |         |         |              |  |               |         | 30.902  | 18.731  | 0.000               | 0.000            | 0.000         |
| 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.                          |             |         |         |              |  |               |         |         |   |                     |                  |               |
| FY 2018 Plans:<br>- Continue efforts to address the priorities of the Chief of Naval Research and the Chief of Naval Operations   |             |         |         |              |  |               |         |         |   |                     |                  |               |
| FY 2019 Base Plans:<br>N/A  |             |         |         |              |  |               |         |         |   |                     |                  |               |
| FY 2019 OCO Plans:<br>N/A   |             |         |         |              |  |               |         |         |   |                     |                  |               |
| FY 2018 to FY 2019 Increase/Decrease Statement:   |             |         |         |              |  |               |         |         |   |                     |                  |               |

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| Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy  |  |  |         | Date: February 2018   |             |               |
| Appropriation/Budget Activity<br>1319 / 3  |  | R-1 Program Element (Number/Name)<br>PE 0603758N / Navy Warfighting Exp & Demo |         | Project (Number/Name)<br>2918 / Navy Warfighting Experiments and Demo |             |               |
| B. Accomplishments/Planned Programs (\$ in Millions)   |  | FY 2017  | FY 2018 | FY 2019 Base  | FY 2019 OCO | FY 2019 Total |
| The funding decrease from FY18 to FY19 reflects the realignment and consolidation of resources from the current Program Element (PE) and Project 2918 into the new FY19 Navy Advanced Technology Development (ATD) PE 0603671N, and the Navy Advanced Technology Project 3433.   |  |  |         |   |             |               |
| <b>Title:</b> OPERATIONS ANALYSIS<br><br><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 SIMulation EXercise (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.<br><br><b>FY 2018 Plans:</b><br>- Conducte a wargame to identify capability needs for the medium displacement unmanned surface vehicle, utilize operational personnel to ensure S&T solutions are focused on capabilities needed for unmanned systems.<br>- Continue efforts in support of Fleet/Force.<br><br><b>FY 2019 Base Plans:</b><br>N/A<br><br><b>FY 2019 OCO Plans:</b><br>N/A<br><br><b>FY 2018 to FY 2019 Increase/Decrease Statement:</b><br>The funding decrease from FY18 to FY19 reflects the realignment and consolidation of resources from the current Program Element (PE) and Project 2918 into the new FY19 Navy Advanced Technology Development (ATD) PE 0603671N, and the Navy Advanced Technology Project 3433. |  | 3.019  | 2.017   | 0.000   | 0.000       | 0.000         |
| <b>Title:</b> SWAMPWORKS<br><br><b>Description:</b> SwampWorks seeks to develop and demonstrate technologies that address emergent and enduring operational problems in an accelerated timeframe. The general nature of these efforts are high   |  | 24.341   | 22.563  | 0.000   | 0.000       | 0.000         |

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| B. Accomplishments/Planned Programs (\$ in Millions)  |  | FY 2017  | FY 2018 | FY 2019 Base  | FY 2019 OCO | FY 2019 Total |
| risk/high reward and constitute a leap ahead in capability or technology. 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 then transitions into the Acquisition Program of Record (POR).<br><br><b>FY 2018 Plans:</b><br>- Continue all efforts of FY 2017.<br>- Initiate 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).<br>- Under the leadership of the Director of Research at ONR, 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, brief exploratory studies can be performed to examine the maturation of the technology proposed before making substantial investments. The SwampWorks program has substantial flexibility in planning and execution which includes a streamlined approval process to allow for the shortest possible technology development timeframe. The balance of the S&T projects that will start in FY18 will be identified during FY18 as the needs of the warfighters, for investments in this portfolio, evolve or change. SwampWorks is not limited to any set of technology areas. The portfolio is open to great ideas all year long and invests in innovative technology development that will ultimately provide a dramatic improvement for the warfighter.<br><br><b>FY 2019 Base Plans:</b><br>N/A<br><br><b>FY 2019 OCO Plans:</b><br>N/A<br><br><b>FY 2018 to FY 2019 Increase/Decrease Statement:</b><br>The funding decrease from FY18 to FY19 reflects the realignment and consolidation of resources from the current Program Element (PE) and Project 2918 into the new FY19 Navy Advanced Technology Development (ATD) PE 0603671N, and the Navy Advanced Technology Project 3433. |  |  |         |   |             |               |
| Title: TECH SOLUTIONS   |  | 9.703  | 9.186   | 0.000   | 0.000       | 0.000         |
| 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  |  |  |         |   |             |               |

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| Appropriation/Budget Activity<br>1319 / 3  |  | R-1 Program Element (Number/Name)<br>PE 0603758N / Navy Warfighting Exp & Demo |         | Project (Number/Name)<br>2918 / Navy Warfighting Experiments and Demo |             |               |
| B. Accomplishments/Planned Programs (\$ in Millions)   |  | FY 2017  | FY 2018 | FY 2019 Base  | FY 2019 OCO | FY 2019 Total |
| 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 Technology Readiness Level (TRL) 6 or higher.<br><br><b>FY 2018 Plans:</b><br>- Continue development of projects that will provide solutions to address emergent critical needs.<br>- Continue rapid response S&T projects in direct support of Fleet/Force needs.<br><br><b>FY 2019 Base Plans:</b><br>N/A<br><br><b>FY 2019 OCO Plans:</b><br>N/A<br><br><b>FY 2018 to FY 2019 Increase/Decrease Statement:</b><br>The funding decrease from FY18 to FY19 reflects the realignment and consolidation of resources from the current Program Element (PE) and Project 2918 into the new FY19 Navy Advanced Technology Development (ATD) PE 0603671N, and the Navy Advanced Technology Project 3433.   |  |  |         |   |             |               |
| <b>Title:</b> PRECISION STRIKE TECHNOLOGY<br><br><b>Description:</b> 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 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.<br><br>Prior to FY 2018, this effort was funded in PE 0603114N Power Projection Advanced Technology Development<br><br><b>FY 2018 Plans:</b><br>Efforts in this area support Naval Precision Strike Operations, providing the Navy capability to quickly locate, target, and strike critical targets.<br><br><b>FY 2019 Base Plans:</b> |  | 0.000  | 12.392  | 0.000   | 0.000       | 0.000         |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Navy  |   |  | <b>Date:</b> February 2018 |                     |                    |                      |
| <b>Appropriation/Budget Activity</b><br>1319 / 3  | <b>R-1 Program Element (Number/Name)</b><br>PE 0603758N / Navy Warfighting Exp & Demo | <b>Project (Number/Name)</b><br>2918 / Navy Warfighting Experiments and Demo |                            |                     |                    |                      |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   |   |  |                            |                     |                    |                      |
|   |   | <b>FY 2017</b>   | <b>FY 2018</b>             | <b>FY 2019 Base</b> | <b>FY 2019 OCO</b> | <b>FY 2019 Total</b> |
| N/A   |   |  |                            |                     |                    |                      |
| <b>FY 2019 OCO Plans:</b>   |   |  |                            |                     |                    |                      |
| N/A   |   |  |                            |                     |                    |                      |
| <b>FY 2018 to FY 2019 Increase/Decrease Statement:</b>  |   |  |                            |                     |                    |                      |
| The funding decrease from FY18 to FY19 reflects the realignment and consolidation of resources from the current Program Element (PE) and Project 2918 into the new FY19 Navy Advanced Technology Development (ATD) PE 0603671N, and the Navy Advanced Technology Project 3433.  |   |  |                            |                     |                    |                      |
| <b>Accomplishments/Planned Programs Subtotals</b>   |   | 67.965   | 64.889                     | 0.000               | 0.000              | 0.000                |
| <b>C. Other Program Funding Summary (\$ in Millions)</b>  |   |  |                            |                     |                    |                      |
| N/A   |   |  |                            |                     |                    |                      |
| <b>Remarks</b>  |   |  |                            |                     |                    |                      |
| <b>D. Acquisition Strategy</b>  |   |  |                            |                     |                    |                      |
| Not applicable.   |   |  |                            |                     |                    |                      |
| <b>E. Performance Metrics</b>   |   |  |                            |                     |                    |                      |
| 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. |   |  |                            |                     |                    |                      |