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**Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy** **Date:** May 2017

| <b>Appropriation/Budget Activity</b><br>1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> |             |         |         |              | <b>R-1 Program Element (Number/Name)</b><br>PE 0303354N / <i>ASW Systems Development - MIP</i> |               |         |         |         |         |                  |            |
|---|-------------|---------|---------|--------------|--|---------------|---------|---------|---------|---------|------------------|------------|
| COST (\$ in Millions)   | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO  | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| Total Program Element   | 26.708      | 9.835   | 9.110   | 8.278        | -  | 8.278         | 8.967   | 9.084   | 9.267   | 9.452   | Continuing       | Continuing |
| 0490: <i>Airborne Acoustic Intelligence (AAI)</i>   | 26.708      | 9.835   | 9.110   | 8.278        | -  | 8.278         | 8.967   | 9.084   | 9.267   | 9.452   | Continuing       | Continuing |

**A. Mission Description and Budget Item Justification**

The mission of Airborne ASW Intelligence (AAI) (CNO Project K-0416) is to provide advanced Anti-Submarine Warfare (ASW) capabilities through rapid development of new technology and prototype mechanisms for the collection of ASW related intelligence. This includes full spectrum intelligence collections and cataloging of current targets of interest. The program develops and swiftly deploys disruptive innovation to counter emerging threats in order to maintain the United States' current undersea warfare superiority. AAI employs the capability to quickly reconstruct and analyze passive and active measurements of submarine vulnerabilities providing actionable intelligence to fleet commanders. The AAI data collection program provides full spectrum intelligence data essential for the design and development of advanced sensors, weapon systems, environmental models, and tactical decision aids. AAI collection systems are installed and employed on uniquely configured aircraft, specially configured ground support facilities, ships, and other assets as required for the collection, processing, exfiltration, and dissemination of undersea intelligence. AAI includes recording systems, advanced detection and tracking systems, specially designed sensors, advanced processing systems and techniques, and specially derived tactics.

This is a Military Intelligence Program (MIP).

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ADVANCED COMPONENT DEVELOPMENT AND PROTOTYPES because it includes all efforts necessary to evaluate integrated technologies, representative models or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2016</b> | <b>FY 2017</b> | <b>FY 2018 Base</b> | <b>FY 2018 OCO</b> | <b>FY 2018 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 9.835          | 9.110          | 8.336               | -                  | 8.336                |
| Current President's Budget                        | 9.835          | 9.110          | 8.278               | -                  | 8.278                |
| Total Adjustments                                 | 0.000          | 0.000          | -0.058              | -                  | -0.058               |
| • Congressional General Reductions                | -              | -              |                     |                    |                      |
| • Congressional Directed Reductions               | -              | -              |                     |                    |                      |
| • Congressional Rescissions                       | -              | -              |                     |                    |                      |
| • Congressional Adds                              | -              | -              |                     |                    |                      |
| • Congressional Directed Transfers                | -              | -              |                     |                    |                      |
| • Reprogrammings                                  | -              | -              |                     |                    |                      |
| • SBIR/STTR Transfer                              | -              | -              |                     |                    |                      |
| • Rate/Misc Adjustments                           | 0.000          | 0.000          | -0.058              | -                  | -0.058               |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> FY 2018 Navy   |  | <b>Date:</b> May 2017 |
| <b>Appropriation/Budget Activity</b><br>1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0303354N / <i>ASW Systems Development - MIP</i> |                       |
| <b><u>Change Summary Explanation</u></b><br>Technical: Not Applicable<br>Schedule: Not Applicable   |  |                       |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> FY 2018 Navy |                    |                |                |                     |  |                      |                |                |   | <b>Date:</b> May 2017 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>1319 / 4                   |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0303354N / ASW Systems Development<br>- MIP |                      |                |                | <b>Project (Number/Name)</b><br>0490 / Airborne Acoustic Intelligence (AAI) |                       |                         |                   |
| <b>COST (\$ in Millions)</b>                                       | <b>Prior Years</b> | <b>FY 2016</b> | <b>FY 2017</b> | <b>FY 2018 Base</b> | <b>FY 2018 OCO</b>   | <b>FY 2018 Total</b> | <b>FY 2019</b> | <b>FY 2020</b> | <b>FY 2021</b>  | <b>FY 2022</b>        | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 0490: Airborne Acoustic Intelligence (AAI)                         | 26.708             | 9.835          | 9.110          | 8.278               | -  | 8.278                | 8.967          | 9.084          | 9.267   | 9.452                 | Continuing              | Continuing        |
| Quantity of RDT&E Articles   |                    | -              | -              | -                   | -  | -                    | -              | -              | -   | -                     |                         |                   |

**A. Mission Description and Budget Item Justification**

The mission of Airborne ASW Intelligence (AAI)(CNO Project K-0416) is to provide advanced Anti-Submarine Warfare (ASW) capabilities through rapid development of new technology and prototype mechanisms for the collection of ASW related intelligence. This includes full spectrum intelligence collections and cataloging of current targets of interest. The program develops and swiftly deploys disruptive innovation to counter emerging threats in order to maintain the United States' current undersea warfare superiority. AAI employs the capability to quickly reconstruct and analyze passive and active measurements of submarine vulnerabilities providing actionable intelligence to fleet commanders. The AAI data collection program provides full spectrum intelligence data essential for the design and development of advanced sensors, weapon systems, environmental models, and tactical decision aids. AAI collection systems are installed and employed on uniquely configured aircraft, specially configured ground support facilities, ships, and other assets as required for the collection, processing, exfiltration, and dissemination of undersea intelligence. AAI includes recording systems, advanced detection and tracking systems, specially designed sensors, advanced processing systems and techniques, and specially derived tactics.

This is a Military Intelligence Program (MIP).

**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

|   | <b>FY 2016</b> | <b>FY 2017</b> | <b>FY 2018 Base</b> | <b>FY 2018 OCO</b> | <b>FY 2018 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| <b>Title:</b> Systems Engineering / Aircraft Mods Active Acoustic Program   | 1.767          | 1.670          | 1.551               | 0.000              | 1.551                |
| <b>Articles:</b>  | -              | -              | -                   | -                  | -                    |
| <b>FY 2016 Accomplishments:</b><br>Engineering support of Acoustic Intelligence (ACINT) Collection Suites for certified AAI collection platforms and management of full spectrum database. Continued upgrades for unique airborne avionics and post mission processing capabilities for ACINT/MASINT (Measurement and Signature Intelligence) requirements. Science and technology research in development of new systems. Field ACS kits in support of P-8A deployments. |                |                |                     |                    |                      |
| <b>FY 2017 Plans:</b><br>Engineering support of Acoustic Intelligence (ACINT) Collection Suites for certified AAI collection platforms and management of full spectrum database. Continued upgrades for unique airborne avionics and post mission   |                |                |                     |                    |                      |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> FY 2018 Navy |  | <b>Date:</b> May 2017   |
| <b>Appropriation/Budget Activity</b><br>1319 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0303354N / ASW Systems Development<br>- MIP | <b>Project (Number/Name)</b><br>0490 / Airborne Acoustic Intelligence (AAI) |

| <b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>   | <b>FY 2016</b> | <b>FY 2017</b> | <b>FY 2018 Base</b> | <b>FY 2018 OCO</b> | <b>FY 2018 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| <p>processing capabilities for ACINT/MASINT (Measurement and Signature Intelligence) requirements. Science and technology research in development of new systems. Field ACS kits in support of P-8A deployments.</p> <p><b>FY 2018 Base Plans:</b><br/>Engineering support of Acoustic Intelligence (ACINT) Collection Suites for certified AAI collection platforms and management of full spectrum database. Engineering support for design upgrades to ACINT Collection Suites for certified AAI collection platforms. Evaluate additional P-8 aircraft sensor station for in-flight analysis of ACINT. Continue evaluation of Fleet software releases for Office of Naval Intelligence(ONI) certification aboard ASW collection platforms. Continued upgrades and development for unique airborne avionics and sensors. Continue fielding ACS kits in support of P-8A deployments.</p> <p><b>FY 2018 OCO Plans:</b><br/>N/A</p>   |                |                |                     |                    |                      |
| <p><b>Title:</b> Data Collection and Analysis</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2016 Accomplishments:</b><br/>Data collection support at Operational Wings. Ongoing collection of high interest acoustic and non-acoustic data in support of MASINT/ONI threat assessment requirements. Characterization, analysis and certification of the upgraded Fleet MASINT collection assets. Reduction, Analysis and Fleet Rapid Feedback. Conduct special operations support. Essential performance modeling and evaluation for advanced technology sensor systems design and Fleet tactics development. Develop post mission analysis hardware, software and processes in response to evolving enemy capabilities.</p> <p><b>FY 2017 Plans:</b><br/>Data collection support at Operational Wings. Ongoing collection of high interest acoustic and non-acoustic data in support of MASINT/ONI threat assessment requirements. Characterization, analysis and certification of the upgraded Fleet MASINT collection assets. Reduction, Analysis and Fleet Rapid Feedback. Conduct special operations support. Essential performance modeling and evaluation for advanced technology sensor systems design and Fleet tactics development. Develop post mission analysis hardware, software and processes in response to evolving enemy capabilities.</p> <p><b>FY 2018 Base Plans:</b><br/>Data collection support at Operational Wings. Ongoing collection of high interest acoustic and non-acoustic data in support of MASINT/ONI threat assessment requirements. Characterization, analysis and certification of the</p> | 1.064          | 1.085          | 1.035               | 0.000              | 1.035                |
|   | -              | -              | -                   | -                  | -                    |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> FY 2018 Navy   |  |   | <b>Date:</b> May 2017 |                     |                    |                      |
| <b>Appropriation/Budget Activity</b><br>1319 / 4   | <b>R-1 Program Element (Number/Name)</b><br>PE 0303354N / ASW Systems Development<br>- MIP | <b>Project (Number/Name)</b><br>0490 / Airborne Acoustic Intelligence (AAI) |                       |                     |                    |                      |
| <b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>  |  |   |                       |                     |                    |                      |
|  |  | <b>FY 2016</b>  | <b>FY 2017</b>        | <b>FY 2018 Base</b> | <b>FY 2018 OCO</b> | <b>FY 2018 Total</b> |
| upgraded Fleet MASINT collection assets. Reduction, Analysis and Fleet Rapid Feedback. Conduct special operations support. Essential performance modeling and evaluation for advanced technology sensor systems design and Fleet tactics development. Develop post mission analysis hardware, software and processes in response to evolving enemy capabilities. |  |   |                       |                     |                    |                      |
| <b>FY 2018 OCO Plans:</b><br>N/A   |  |   |                       |                     |                    |                      |
| <b>Title:</b> Active Measurement Validation  |  | 0.150   | 0.150                 | 0.138               | 0.000              | 0.138                |
|  |  | <b>Articles:</b>  | -                     | -                   | -                  | -                    |
| <b>FY 2016 Accomplishments:</b><br>Active Measurement Validation of targets of interest. Provides the acoustic analysis of echo characterization (which includes: signal excess measurements, peak frequency, trend analysis and pulse duration measurements) and target strength.   |  |   |                       |                     |                    |                      |
| <b>FY 2017 Plans:</b><br>Active Measurement Validation of targets of interest. Provides the acoustic analysis of echo characterization (which includes: signal excess measurements, peak frequency, trend analysis and pulse duration measurements) and target strength.   |  |   |                       |                     |                    |                      |
| <b>FY 2018 Base Plans:</b><br>Active Measurement Validation of targets of interest. Provides the acoustic analysis of echo characterization (which includes: signal excess measurements, peak frequency, trend analysis and pulse duration measurements) and target strength.  |  |   |                       |                     |                    |                      |
| <b>FY 2018 OCO Plans:</b><br>N/A   |  |   |                       |                     |                    |                      |
| <b>Title:</b> Navy Underwater Active Multiple Ping (NUAMP) Product Development   |  | 6.854   | 6.205                 | 5.554               | 0.000              | 5.554                |
|  |  | <b>Articles:</b>  | -                     | -                   | -                  | -                    |
| <b>FY 2016 Accomplishments:</b><br>Complete full qualification and certification efforts for the initial Navy Underwater Active Multiple Ping (NUAMP) sonic frequencies. Continue sonic frequency design, development, integration and test for additional sonic frequencies of the NUAMP sonobuoy family.   |  |   |                       |                     |                    |                      |
| <b>FY 2017 Plans:</b>  |  |   |                       |                     |                    |                      |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> FY 2018 Navy |  | <b>Date:</b> May 2017  |
| <b>Appropriation/Budget Activity</b><br>1319 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0303354N / <i>ASW Systems Development</i><br>- <i>MIP</i> | <b>Project (Number/Name)</b><br>0490 / <i>Airborne Acoustic Intelligence (AAI)</i> |

| <b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>  | <b>FY 2016</b> | <b>FY 2017</b> | <b>FY 2018 Base</b> | <b>FY 2018 OCO</b> | <b>FY 2018 Total</b> |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| <p>Complete full qualification and certification efforts for the second Navy Underwater Active Multiple Ping (NUAMP) sonic frequencies. Continue sonic frequency design, development, integration and test for additional sonic frequencies of the NUAMP sonobuoy family.</p> <p><b>FY 2018 Base Plans:</b><br/>Continue sonic frequency design, development, integration and test for additional sonic frequencies of the NUAMP sonobuoy family.</p> <p><b>FY 2018 OCO Plans:</b><br/>N/A</p> |                |                |                     |                    |                      |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 9.835          | 9.110          | 8.278               | 0.000              | 8.278                |

**C. Other Program Funding Summary (\$ in Millions)**  
N/A

**Remarks**

**D. Acquisition Strategy**  
Airborne ASW Intelligence (AAI) is a CNO Special Project. The included technology developments are primarily in-house with contractor participation through existing vehicles.

**E. Performance Metrics**  
Provide engineering to support Sound Pressure Level (SPL) recording. Provide data collection support at Operation Wings. Perform Active Measurement Validation of targets of interest.