| Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Navy | | | | | | | | | | | Date: March 2024 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Appropriation/Budget Activity<br>1319: *Research, Development, Test & Evaluation, Navy I* BA 6: *RDT&E Management Support* | | | | | R-1 Program Element (Number/Name)<br>PE 0605866N *I Navy Space & Electr Warfare Supt* | | | | | | | |
| **COST ($ in Millions)** | **Prior Years** | **FY 2023** | **FY 2024** | **FY 2025 Base** | **FY 2025 OCO** | **FY 2025 Total** | **FY 2026** | **FY 2027** | **FY 2028** | **FY 2029** | **Cost To Complete** | **Total Cost** |
| Total Program Element | 0.000 | 26.405 | 27.504 | 23.668 | - | 23.668 | 27.441 | 27.397 | 27.222 | 27.802 | Continuing | Continuing |
| 0706: *EMC & RF Mgmt* | 0.000 | 2.572 | 2.686 | 2.522 | - | 2.522 | 2.588 | 2.625 | 2.670 | 2.724 | Continuing | Continuing |
| 3239: *Real-Time Spectrum Operations (RTSO)* | 0.000 | 23.833 | 24.818 | 21.146 | - | 21.146 | 24.853 | 24.772 | 24.552 | 25.078 | Continuing | Continuing |

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

Project 0706, Electromagnetic Compatibility (EMC) and Radio Frequency (RF) Management Program. This project develops tools, processes, EMC Criteria for Navy Systems, and algorithms to identify and mitigate Electromagnetic Interference (EMI) sources for Navy systems and platforms.

Project 3239, The Real-Time Spectrum Operations (RTSO) program researches and develops software to automate analyses of the electromagnetic (EM) environmental effects (E3) between shipboard transmitters and receivers and the interactions of the EM systems with the other systems installed on units within a strike group. RTSO develops and updates numerical models, algorithms, data bases, and software aiding and supporting warfighter spectrum planning, sensing and monitoring of the EM environment, EM spectrum characterization and prediction, and managing and maneuvering within the EM spectrum.

| **B. Program Change Summary ($ in Millions)** | **FY 2023** | **FY 2024** | **FY 2025 Base** | **FY 2025 OCO** | **FY 2025 Total** |
|---|---|---|---|---|---|
| Previous President's Budget | 27.172 | 27.504 | 27.435 | - | 27.435 |
| Current President's Budget | 26.405 | 27.504 | 23.668 | - | 23.668 |
| Total Adjustments | -0.767 | 0.000 | -3.767 | - | -3.767 |
| • Congressional General Reductions | - | - | | | |
| • Congressional Directed Reductions | - | - | | | |
| • Congressional Rescissions | - | - | | | |
| • Congressional Adds | - | - | | | |
| • Congressional Directed Transfers | - | - | | | |
| • Reprogrammings | - | - | | | |
| • SBIR/STTR Transfer | -0.767 | 0.000 | | | |
| • Program Adjustments | 0.000 | 0.000 | -3.768 | - | -3.768 |
| • Rate/Misc Adjustments | 0.000 | 0.000 | 0.001 | - | 0.001 |

**Change Summary Explanation**

Funding:

-$3.768M programmatic reduction to fund higher Department priorities.
+$0.001 Rate/Misc Adjustments.

| Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy | | | Date: March 2024 |
|---|---|---|---|
| Appropriation/Budget Activity<br>1319 / 6 | R-1 Program Element (Number/Name)<br>PE 0605866N / *Navy Space & Electr Warfare Supt* | Project (Number/Name)<br>0706 / *EMC & RF Mgmt* | |

| COST ($ in Millions) | Prior Years | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total | FY 2026 | FY 2027 | FY 2028 | FY 2029 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0706: *EMC & RF Mgmt* | 0.000 | 2.572 | 2.686 | 2.522 | - | 2.522 | 2.588 | 2.625 | 2.670 | 2.724 | Continuing | Continuing |
| Quantity of RDT&E Articles | | - | - | - | - | - | - | - | - | - | | |

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

Electromagnetic Compatibility (EMC) and Radio Frequency (RF) Management Program. This project develops tools, processes, and algorithms to identify and mitigate Electromagnetic Interference (EMI) sources for Navy systems and platforms.

(a) It will support the research, development, testing, and evaluation of electromagnetic compatibility criteria and frequency management to support afloat electromagnetic spectrum operations. The RF EMC criteria will be enhanced to include new RF systems and to comply with fleet operational requirements and streamline Strike Force frequency management processes. It will provide automated Spectrum Management (SM) compatibility criteria for development of operational task communication and radar/weapon plans to support fleet deployments, exercises, and contingency operations. It will provide identification and mitigation of EMI in Navy, North Atlantic Treaty Organization (NATO), Allied, Ashore and Joint Combat Operations. It will provide analysis related to spectrum reallocation proposals to assess impacts on Navy operations and systems, as well as for the Spectrum Supportability Risk Assessments. It will assist numbered fleet commands and DoD commands with determination of EMC criteria and processes to maximize ships' ability to operate in contested and congested environments.

(b) It will support the Shipboard Electromagnetic Compatibility Improvement Program (SEMCIP) to identify, engineer, and evaluate effectiveness of potential EMI corrections. The program also characterizes and quantifies the operational impact of EMI problems on system's mission performance.

(c) It will support the Nuclear Electromagnetic Pulse (EMP) Survivability Program. The program assesses the EMP survivability of all mission critical systems and funds development of a hardness assurance and maintenance program. It will develop improved modeling capability to reduce hardness validation costs at delivery and over the lifetime of the system/platform. The program develops new and updated design criteria, test methodology, test limits, and survivability validation procedures for all Navy systems, ships, submarines and shore facilities.

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total |
|---|---|---|---|---|---|
| ***Title:*** RF Management | 0.385 | 0.409 | 0.351 | 0.000 | 0.351 |
| ***Articles:*** | - | - | - | - | - |
| ***FY 2024 Plans:***<br>- Provide engineering analyses and recommendations for updating Littoral Radiation Restrictions for numbered fleet areas of responsibility. Document the worldwide Littoral Radiation Restrictions and provide to the fleet and to Real-Time Spectrum Operations (RTSO). | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy | | Date: March 2024 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 6 | **R-1 Program Element (Number/Name)**<br>PE 0605866N / *Navy Space & Electr Warfare Supt* | **Project (Number/Name)**<br>0706 / *EMC & RF Mgmt* |

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total |
|---|---|---|---|---|---|
| - Continue to conduct engineering analyses and testing to determine EMC criteria for Navy assets, such as AN/SPN-50.<br>- Document EMC criteria in NAVSEA Operational Publication S9407-AA-GYE-010/(S) OP-3840 "Electromagnetic Compatibility Criteria for Navy Systems (U)".<br>- Continue to revise and update Standing Operational Tasking (OPTASK) Communications Plans to accommodate Navy equipment and host nation regulations.<br>- Continue to provide impact assessments and analysis for new spectrum-dependent equipment, spectrum policy updates, and changing geopolitical conditions.<br>- Serve as the Navy's subject matter experts for spectrum de-confliction, EMC, and tactical spectrum management within Navy, DoD, and external components.<br>- Represent Navy tactical spectrum management requirements in various working groups and venues, including Electromagnetic Battle Management (EMBM), electromagnetic maneuver warfare (EMW), and electromagnetic spectrum<br>operations (EMSO) efforts. Integrate Navy spectrum management requirements into joint and DoD enterprise architectures and processes. | | | | | |
| ***FY 2025 Base Plans:***<br>- Provide engineering analyses and recommendations for updating Littoral Radiation Restrictions for numbered fleet areas of responsibility. Document the worldwide Littoral Radiation Restrictions and provide to the fleet and to Real-Time Spectrum Operations (RTSO).<br>- Continue to conduct engineering analyses and testing to determine EMC criteria for Navy assets, such as AN/SPN-50.<br>- Document EMC criteria in NAVSEA Operational Publication S9407-AA-GYE-010/(S) OP-3840 "Electromagnetic Compatibility Criteria for Navy Systems (U)".<br>- Continue to revise and update Standing Operational Tasking (OPTASK) Communications Plans to accommodate Navy equipment and host nation regulations.<br>- Continue to provide impact assessments and analysis for new spectrum-dependent equipment, spectrum policy updates, and changing geopolitical conditions.<br>- Serve as the Navy's subject matter experts for spectrum de-confliction, EMC, and tactical spectrum management within Navy, DoD, and external components.<br>- Represent Navy tactical spectrum management requirements in various working groups and venues, including Electromagnetic Battle Management (EMBM), electromagnetic maneuver warfare (EMW), and electromagnetic spectrum | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy | | Date: March 2024 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 6 | **R-1 Program Element (Number/Name)**<br>PE 0605866N / *Navy Space & Electr Warfare Supt* | **Project (Number/Name)**<br>0706 / *EMC & RF Mgmt* |

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total |
|---|---|---|---|---|---|
| operations (EMSO) efforts. Integrate Navy spectrum management requirements into joint and DoD enterprise architectures and processes.<br>***FY 2025 OCO Plans:***<br>N/A<br>***FY 2024 to FY 2025 Increase/Decrease Statement:***<br>No significant change. | | | | | |
| ***Title:*** Shipboard Electromagnetic Compatibility Improvement Program (SEMCIP) | 1.233 | 1.307 | 1.201 | 0.000 | 1.201 |
| ***Articles:*** | - | - | - | - | - |
| ***FY 2024 Plans:***<br>- Continue characterization of technical impacts of new, high priority shipboard EMI problems reported and predicted from to date.<br>- Continue to develop new EMI fixes and evaluate their effectiveness in mitigating shipboard EMI.<br>- Continue to implement Unmanned Bit Error Rate Test (UBERT) capability into Ship EMC Certification to characterize EMI impacts on SATCOM links.<br>- Continue to evaluate Unmanned Bit Error Rate Test (UBERT) capability for adaptive, shipboard EBEM replacement modem.<br>- Continue to evaluate and improve autonomous EMI detection capabilities for radar and communication systems in order to reduce test<br>time and quantify likelihood over extended periods, like ship underway periods or operational deployments.<br>- Continue development and implementation of high frequency (HF) intermodulation (IMI) test methods and standards, and<br>alternate test methods applicable to digital HF receivers.<br>***FY 2025 Base Plans:***<br>- Continue characterization of technical impacts of new, high priority shipboard EMI problems reported and predicted from to date.<br>- Continue to develop new EMI fixes and evaluate their effectiveness in mitigating shipboard EMI.<br>- Continue to implement Unmanned Bit Error Rate Test (UBERT) capability into Ship EMC Certification to characterize EMI impacts on SATCOM links.<br>- Continue to evaluate Unmanned Bit Error Rate Test (UBERT) capability for adaptive, shipboard EBEM replacement modem. | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy | | Date: March 2024 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 6 | **R-1 Program Element (Number/Name)**<br>PE 0605866N / *Navy Space & Electr Warfare Supt* | **Project (Number/Name)**<br>0706 / *EMC & RF Mgmt* |

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total |
|---|---|---|---|---|---|
| - Continue to evaluate and improve autonomous EMI detection capabilities for radar and communication systems in order to reduce test<br>time and quantify likelihood over extended periods, like ship underway periods or operational deployments.<br>- Continue development and implementation of high frequency (HF) intermodulation (IMI) test methods and standards, and<br>alternate test methods applicable to digital HF receivers.<br>***FY 2025 OCO Plans:***<br>N/A<br>***FY 2024 to FY 2025 Increase/Decrease Statement:***<br>Slight decrease reflects reduced engineering hours for fixing engineering and evaluation investigations for EMI. | | | | | |
| ***Title:*** Electromagnetic Pulse (EMP) Survivability | 0.954 | 0.970 | 0.970 | 0.000 | 0.970 |
| ***Articles:*** | - | - | - | - | - |
| ***FY 2024 Plans:***<br>- Continue research, development and refinement of new Hybrid-Based High Altitude Electrometric Pulse (HEMP) evaluation technique to evaluate HEMP hardness of navy ships via a low-cost, low potential for equipment damage and quicker method of analysis (decreasing costs in the performance of tests) and identify potential EMP vulnerabilities and mitigating solutions.<br>- Continue research, development and investigation of small, inexpensive measurement devices for incorporation into Hybrid-Based HEMP evaluation methodology.<br>- Continue to validate Cable Shield Transfer Impedance in-situ testing for evaluating shipboard cables.<br>- Continue to investigate Parametric Cable measurement techniques.<br>- Continue to investigate usage of magneto-optic media High Altitude Electrometric Pulse (HEMP)-Induced Current Sensors to observe magnetic-field onboard ships using swept continuous wave testing.<br>- Research and develop integration of Continuous Wave Antenna into EXpanded EMP Test - Capabilities (EXEMPT C) effort for ship High Altitude Electrometric Pulse (HEMP) health testing and demonstration.<br>- Integrate Digital Data re-construction of magnetic tapes to computer format from the early 1990's Electromagnetic Pulse Radio Frequency (RF) Environment Simulator for Ships (EMPRESS) II into the validation of Computational Electromagnetics modeling.<br>***FY 2025 Base Plans:***<br>- Continue research, development and refinement of new Hybrid-Based High Altitude Electrometric Pulse (HEMP) evaluation technique to evaluate HEMP hardness of navy ships via a low-cost, low potential for | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy | | Date: March 2024 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 6 | **R-1 Program Element (Number/Name)**<br>PE 0605866N / *Navy Space & Electr Warfare Supt* | **Project (Number/Name)**<br>0706 / *EMC & RF Mgmt* |

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total |
|---|---|---|---|---|---|
| equipment damage and quicker method of analysis (decreasing costs in the performance of tests) and identify potential EMP vulnerabilities and mitigating solutions.<br>- Continue research, development and investigation of small, inexpensive measurement devices for incorporation into Hybrid-Based HEMP evaluation methodology.<br>- Continue to validate Cable Shield Transfer Impedance in-situ testing for evaluating shipboard cables.<br>- Continue to investigate Parametric Cable measurement techniques.<br>- Continue to investigate usage of magneto-optic media High Altitude Electrometric Pulse (HEMP)-Induced Current Sensors to observe magnetic-field onboard ships using swept continuous wave testing.<br>- Research and develop integration of Continuous Wave Antenna into EXpanded EMP Test - Capabilities (EXEMPT C) effort for ship High Altitude Electrometric Pulse (HEMP) health testing and demonstration.<br>- Integrate Digital Data re-construction of magnetic tapes to computer format from the early 1990's Electromagnetic Pulse Radio Frequency (RF) Environment Simulator for Ships (EMPRESS) II into the validation of Computational Electromagnetics modeling.<br>***FY 2025 OCO Plans:***<br>N/A | | | | | |
| **Accomplishments/Planned Programs Subtotals** | 2.572 | 2.686 | 2.522 | 0.000 | 2.522 |

**C. Other Program Funding Summary ($ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

N/A

| Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy | | | | | | | | | | | Date: March 2024 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Appropriation/Budget Activity<br>1319 / 6 | | | | | R-1 Program Element (Number/Name)<br>PE 0605866N / *Navy Space & Electr Warfare Supt* | | | | Project (Number/Name)<br>3239 / *Real-Time Spectrum Operations (RTSO)* | | | |
| **COST ($ in Millions)** | **Prior Years** | **FY 2023** | **FY 2024** | **FY 2025 Base** | **FY 2025 OCO** | **FY 2025 Total** | **FY 2026** | **FY 2027** | **FY 2028** | **FY 2029** | **Cost To Complete** | **Total Cost** |
| 3239: *Real-Time Spectrum Operations (RTSO)* | 0.000 | 23.833 | 24.818 | 21.146 | - | 21.146 | 24.853 | 24.772 | 24.552 | 25.078 | Continuing | Continuing |
| Quantity of RDT&E Articles | | - | - | - | - | - | - | - | - | - | | |

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

Real-Time Spectrum Operations (RTSO) develops tools, processes, and algorithms to conduct spectrum planning, spectrum sensing and monitoring of the electromagnetic (EM) environment; to characterize and predict electromagnetic (EM) environmental effects (E3); and to manage and maneuver to avoid and mitigate electromagnetic interference (EMI) and EM vulnerability of Navy platforms.

RTSO supports Navy and Marine Corps EM Spectrum Operations for global spectrum usage and allocation planning. RTSO researches the effects between shipboard transmitters and receivers and EM system interactions with the other systems installed on units within a strike group. RTSO developed a capability to sense and monitor shipboard EM spectrum usage and validate spectrum plans to support Emissions Control (EMCON) within the strike group. RTSO software validates and displays spectrum plan compliance with a spectrum common operational picture. This EM spectrum management aid, combined with an Own Force Monitoring (OFM) sensor input, supports Battlespace Awareness and Information Operations. These self-awareness and validation capabilities greatly enhance the Navy's ability to perform command and control of the EM spectrum warfighting domain.

FY 2025 RTSO will complete development of a permanent solution to for non-permanent Spectral Warrior systems, detecting electromagnetic interference (EMI) of satellite communications and integration efforts to deploy Own Force Monitoring (OFM) capability to non-Ship's Signal Exploitation Equipment (SSEE) platforms. (Details held at a higher classification). RTSO will complete testing, integration, and transition of SSEE OFM capability to non-SSEE platforms. Fielding designs will meet critical Fleet requirements for EMCON validation and Tactical Situation (TACSIT) management on all non-SSEE capable ships, to meet validated OFM capability requirements outlined in U.S. Fleet Forces Command / Commander, U.S. Pacific Fleet RTSO requirements. RTSO will complete transition efforts for an OFM capability integrated with SSEE systems on surface combatants and force level platforms to meet validated OFM capability requirements outlined in U.S. Fleet Forces Command / Commander, U.S. Pacific Fleet RTSO Requirements.

RTSO will continue research, development, enhancement and refinement of RTSO software cloud architecture, spectrum common operational picture (COP), live data ingest, detection and counter-detection (1-to-1), time slide, and network nodes. RTSO will continue research and development of proof-of-concept capabilities for spectrum mission planning decision aids and intelligent sectoring/cut-outs for radiating systems. RTSO will continue research and development efforts for models to estimate effective RF performance ranges of spectrum dependent systems in the complex electromagnetic environment (one-on-one and multi-on-one effects).

RTSO will continue to participate in Limited Objective Experiments (LOEs) to demonstrate incremental capability to Fleet users and continue development of a software architecture supporting mission module delivery of RTSO capability on all platforms. RTSO will finalize RTSO v2.2 release to afloat Fleet users in a cloud environment, including integration testing, cybersecurity authorization, and completing deployment configurations for all deployment environments. RTSO will continue engineering work to validate current design for at least seven different ship classes and engineering research and development integrating RTSO software and outputs with other

| Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy | | Date: March 2024 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 6 | **R-1 Program Element (Number/Name)**<br>PE 0605866N / *Navy Space & Electr Warfare Supt* | **Project (Number/Name)**<br>3239 / *Real-Time Spectrum Operations (RTSO)* |

software applications. RTSO will hold fleet user engagements to gain sailor feedback on latest software capabilities to improve usability, functionality, and applicability to user requirements.

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total |
|---|---|---|---|---|---|
| ***Title:*** Real-Time Spectrum Operations (RTSO) | 23.833 | 24.818 | 21.146 | 0.000 | 21.146 |
| ***Articles:*** | - | - | - | - | - |
| ***FY 2024 Plans:***<br>- Continue developing a permanent solution for non-permanent Spectral Warrior systems, detecting electromagnetic interference (EMI) of satellite communications and integration efforts to deploy Own Force Monitoring (OFM) capability to non- Ship's Signal Exploitation Equipment (SSEE) platforms. (Details held at a higher classification)<br>- Continue testing, integration, and transition of SSEE OFM capability to non-SSEE platforms. Fielding designs will meet critical Fleet requirements for EMCON validation and Tactical Situation (TACSIT) management on all non-SSEE capable ships, to meet validated OFM capability requirements outlined in U.S. Fleet Forces Command / Commander, U.S. Pacific Fleet RTSO Requirements<br>- Continue transition efforts for an OFM capability integrated with SSEE systems on surface combatants and force level platforms to meet validated OFM capability requirements outlined in U.S. Fleet Forces Command / Commander, U.S. Pacific Fleet RTSO requirements<br>- Continue research, development, enhancement and refinement of RTSO software cloud architecture, spectrum common operational picture (COP), live data ingest, detection and counter-detection (1-to-1), time slide, and network nodes<br>- Continue research and development of proof-of-concept capabilities for spectrum mission planning decision aids and intelligent sectoring/cut-outs for radiating systems<br>- Continue research and development efforts for models to estimate effective RF performance ranges of spectrum dependent systems in the complex electromagnetic environment (one-on-one and multi-on-one effects)<br>- Continue to participate in Limited Objective Experiments (LOEs) to demonstrate incremental capability to Fleet users<br>- Continue development of a software architecture supporting mission module delivery of RTSO capability on all platforms<br>- Finalize RTSO v2.1 release to afloat Fleet users in a cloud environment, including integration testing, cybersecurity authorization, and completing deployment configurations for all deployment environments<br>- Begin engineering work to validate current design for at least seven different ship classes. | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy | | Date: March 2024 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 6 | **R-1 Program Element (Number/Name)**<br>PE 0605866N / *Navy Space & Electr Warfare Supt* | **Project (Number/Name)**<br>3239 / *Real-Time Spectrum Operations (RTSO)* |

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total |
|---|---|---|---|---|---|
| - Begin engineering research and development integrating RTSO software and outputs with other software applications<br>- Hold fleet user engagements to gain sailor feedback on latest software capabilities to improve usability, functionality, and applicability to user requirements | | | | | |
| ***FY 2025 Base Plans:***<br>- Complete development of a permanent solution to for non-permanent Spectral Warrior systems, detecting electromagnetic interference (EMI) of satellite communications and integration efforts to deploy Own Force Monitoring (OFM) capability to non-Ship's Signal Exploitation Equipment (SSEE) platforms. (Details held at a higher classification).<br>- Complete testing, integration, and transition of SSEE OFM capability to non-SSEE platforms. Fielding designs will meet critical Fleet requirements for EMCON validation and Tactical Situation (TACSIT) management on all non-SSEE capable ships, to meet validated OFM capability requirements outlined in U.S. Fleet Forces Command / Commander, U.S. Pacific Fleet RTSO requirements.<br>- Complete transition efforts for an OFM capability integrated with SSEE systems on surface combatants and force level platforms to meet validated OFM capability requirements outlined in U.S. Fleet Forces Command / Commander, U.S. Pacific Fleet RTSO Requirements.<br>- Continue research, development, enhancement and refinement of RTSO software cloud architecture, spectrum common operational picture (COP), live data ingest, detection and counter-detection (1-to-1), time slide, and network nodes.<br>- Continue research and development of proof-of-concept capabilities for spectrum mission planning decision aids and intelligent sectoring/cut-outs for radiating systems.<br>- Continue research and development efforts for models to estimate effective RF performance ranges of spectrum dependent systems in the complex electromagnetic environment (one-on-one and multi-on-one effects).<br>- Continue to participate in Limited Objective Experiments (LOEs) to demonstrate incremental capability to Fleet users.<br>- Continue development of a software architecture supporting mission module delivery of RTSO capability on all platforms.<br>- Finalize RTSO v2.2 release to afloat Fleet users in a cloud environment, including integration testing, cybersecurity authorization, and completing deployment configurations for all deployment environments.<br>- Continue engineering work to validate current design for at least seven different ship classes. | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy | | Date: March 2024 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 6 | **R-1 Program Element (Number/Name)**<br>PE 0605866N / *Navy Space & Electr Warfar e Supt* | **Project (Number/Name)**<br>3239 / *Real-Time Spectrum Operations (RTSO)* |

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total |
|---|---|---|---|---|---|
| - Continue engineering research and development integrating RTSO software and outputs with other software applications.<br>- Hold fleet user engagements to gain sailor feedback on latest software capabilities to improve usability, functionality, and applicability to user requirements.<br>***FY 2025 OCO Plans:***<br>N/A<br>***FY 2024 to FY 2025 Increase/Decrease Statement:***<br>RTSO decrease from FY 2024 to FY 2025 (-$3.672M) is due the completion of the permanent solution for the Spectral Warrior replacement and the completion of the testing, integration, and transition of Own Force Monitoring (OFM) capability to non-Ship's Signal Exploitation Equipment (SSEE) platforms. | | | | | |
| **Accomplishments/Planned Programs Subtotals** | 23.833 | 24.818 | 21.146 | 0.000 | 21.146 |

**C. Other Program Funding Summary ($ in Millions)**

| Line Item | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total | FY 2026 | FY 2027 | FY 2028 | FY 2029 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| • OPN/2360: *Shipboard IW Exploit* | 289.972 | 379.230 | 362.099 | - | 362.099 | 391.730 | 442.440 | 476.080 | 487.689 | Continuing | Continuing |

**Remarks**

**D. Acquisition Strategy**

N/A