| CLASSIFICATION: | UNCLASSIFIED | |
|---|---|---|

| EXHIBIT R-2, RDT&E BUDGET ITEM JUSTIFICATION | DATE<br>May 2009 |
|---|---|

| APPROPRIATION/BUDGET ACTIVITY<br><br>RDTEN/BA 6 | R-1 ITEM NOMENCLATURE<br>**0605866N/NAVY SPACE AND ELECTRONIC WARFARE (SEW) SUPPORT** |
|---|---|

| COST (In Millions) | FY 2008 | FY 2009 | FY 2010 |
|---|---|---|---|
| Total PE Cost | 2.366 | 2.698 | 2.703 |
| 0706 / EMC & RF Mgmt | 1.617 | 2.018 | 2.089 |
| 0739 / NAVY C4 TOP LEVEL RQMTS | 0.749 | 0.680 | 0.614 |

**A. MISSION DESCRIPTION:**

Project 0706, Electromagnetic Interference (EMI) Reduction and Radio Frequency (RF) Management - Develops advanced technology to identify and reduce EMI sources from Navy systems and platforms. Funding supports the FY2009 start of the Nuclear Electromagnetic Pulse (EMP) Survivability Program and a programmatic adjustment in FY2010 of Shipboard Electromagnetic Compatibility Improvement Program (SEMCIP), an element of the Electromagnetic Compatibility (EMC) Systems Engineering Program.

Project 0739, Navy Command, Control, Communications, Computers, and Intelligence (C4I) Top Level Requirements -This project provides analysis of both Fleet requirements and research and development technology to develop top-level plans and space systems in the Space and Electronic Warfare (SEW) mission area. The Space and Electronic Warfare Studies and Analysis Program (SEWSAP) supports analyses of Fleet requirements and research and development technology to develop top-level plans for operating Navy Command, Control, Communications, Intelligence, Surveillance and Reconnaissance (C4ISR) and space systems in the SEW mission area.

JUSTIFICATION FOR BUDGET ACTIVITY:

This program is funded under RDT&E MANAGEMENT SUPPORT because it supports the operations and installations required for general research and development use.

**B. PROGRAM CHANGE SUMMARY:**

| Funding: | **FY 2008** | **FY 2009** | **FY 2010** |
|---|---|---|---|
| FY09 President's Budget | 2.386 | 2.708 | 2.862 |
| FY10 President's Budget | 2.366 | 2.698 | 2.703 |
| Total Adjustments | (0.020) | (0.010) | (0.159) |
| | | | |
| (U) Summary of Adjustments | | | |
| Congressional Adjustments | 0.000 | (0.007) | 0.000 |
| SBIR/STTS/FTT Assessment | (0.018) | 0.000 | 0.000 |
| Program Adjustments | (0.002) | (0.001) | (0.146) |
| Rate/Misc Adjustments | 0.000 | (0.002) | (0.013) |
| Total | (0.020) | (0.010) | (0.159) |

| **EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION** | | DATE<br>May 2009 |
| --- | --- | --- |
| APPROPRIATION/BUDGET ACTIVITY<br><br>**RDTEN/BA 6** | PROGRAM ELEMENT NUMBER AND NAME<br>**0605866N/NAVY SPACE AND ELECTRONIC WARFARE (SEW)<br>SUPPORT** | PROJECT NUMBER AND NAME<br><br>**0706/EMC & RF Mgmt** |

| COST (In Millions) | FY 2008 | FY 2009 | FY 2010 |
| --- | --- | --- | --- |
| Project Cost | 1.617 | 2.018 | 2.089 |
| RDT&E Articles Qty | 0 | 0 | 0 |

**A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:**

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

(a) Automated spectrum capabilities will be enhanced that reflect current Fleet Operational Requirements and streamline Strike Force frequency management processes. Provide automated Spectrum Management (SM) Tools for development of Operational Task Communication and Radar/Weapon plans to support Fleet deployments, Exercises, and Contingency Operations. Provides identification and mitigation of EMI in Navy, NATO, Allied, Ashore and Joint Combat Operations.

(b) Supports the Shipboard Electromagnetic Compatibility Improvement Program (SEMCIP), an element of the Electromagnetic Compatibility (EMC) Systems Engineering Program to identify, engineer, and evaluate effectiveness of potential EMI corrections.

(c) Electromagnetic Pulse (EMP) Survivability Program provides for the Navy response to Secretary of Defense (SECDEF) tasking to assess the EMP survivability of all mission critical systems and to develop a hardness assurance and maintenance program. Develops improved modeling capability to reduce hardness validation costs at delivery and over the lifetime of the system/platform. Provides design criteria, test methodology, test limits, and survivability validation procedures for all Navy systems, ships, submarines and shore facilities.

(d) Advanced Technology: Investigates below deck electromagnetic environmental effects and develops the capability to perform remote spectrum monitoring and electromagnetic noise monitoring. Also, develops the tools and technologies for innovative and efficient spectrum use, and continues the development of relationships between measured EMI and system performance for selected communications systems.

R-1 Line Item No  151
PAGE 2 of 6

CLASSIFICATION:
**UNCLASSIFIED**

**EXHIBIT R-2a**
**RDT&E PROJECT JUSTIFICATION**

| APPROPRIATION/BUDGET ACTIVITY<br><br>RDTEN/BA 6 | PROGRAM ELEMENT NUMBER AND NAME<br>**0605866N/NAVY SPACE AND ELECTRONIC WARFARE (SEW)**<br>SUPPORT | PROJECT NUMBER AND NAME<br><br>**0706/EMC & RF Mgmt** |
|---|---|---|

**B. ACCOMPLISHMENTS/PLANNED PROGRAM:**

| | FY 2008 | FY 2009 | FY 2010 |
|---|---|---|---|
| **AESOP (Integrated CPM and EMCAP)** | 0.855 | 0.879 | 0.761 |
| RDT&E Articles Quantity | 0 | 0 | 0 |

FY 2008 Accomplishments - Developed interfaces for AESOP (Afloat Electromagnetic Spectrum Operations Program), and other automated tools to interface with evolving network protocols and to ensure currency for web based applications. Developed new algorithms for automated tools for new Navy Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) systems for both government and commercial communication systems being used by the Navy.

FY 2009 - Continuing development of interfaces for AESOP, and other automated tools to interface with evolving network protocols and to ensure currency for web based applications. Develop new algorithms for automated tools for new Navy C4ISR systems for both government and commercial communication systems being used by the Navy. Implement a set of web-based capabilities utilizing latest technologies (XML) and other data standards to optimize information exchange/usability. Institutionalize frequency management process for operational fleet by developing procedures that can be utilized by all Navy Strike Groups. Make recommendations to update existing combatant commands, and numbered fleets directives regarding spectrum use in their areas of responsibility. Coordinate with ranges regarding impacts of spectrum relocation for systems used during tests, such as telemetry and data collection. Update the AESOP with the new radiation restrictions that reflect current legal requirements that result from spectrum relocation worldwide.

| | FY 2008 | FY 2009 | FY 2010 |
|---|---|---|---|
| **EMP Survivability** | 0.005 | 0.928 | 1.000 |
| RDT&E Articles Quantity | 0 | 0 | 0 |

FY 2008 Accomplishments - Completed and delivered a technical summary report titled "Pulse Current Injection (PCI) Technique Applied to US Navy Ships for Electromagnetic Pulse (EMP) hardness Assurance; an Investigation and Historical Summary", dated 10 June 2008.

FY 2009 -2010 PLANS - Prepare EMP Survivability Assessment and EMP Hardness Maintenance Plans.  Prepare updates to OPNAVINST/NAVSEAINST for EMP Survivability based on the requirements of the new DODI 3150.9.  Develop computational electromagnetic modeling and simulation capabilities and alternative techniques to reduce hardness validation costs at delivery. Support Navy and DTRA in the development of a Maritime EMP Standard in accordance with ATSD/NCB memo 7 Apr 2007. This includes conducting a baseline EMP assessment of an LCAC in support of the Maritime Standard development.

| | FY 2008 | FY 2009 | FY 2010 |
|---|---|---|---|
| **Advanced Technology** | 0.757 | 0.211 | 0.328 |
| RDT&E Articles Quantity | 0 | 0 | 0 |

FY 2008 Accomplishments - Completed initial below decks Electromagnetic Environmental Effects (E3) characterization.  Selected spaces to date assessed aboard USS KEARSARGE (LHD 3) and USNS SACAGAWEA (TAKE 2); USS BATAAN (LHD 5), and USS ABRAHAM LINCOLN (CVN 72).

FY 2009 - 2010 PLANS - Continue below decks characterization; investigate availability of predictive software applications, and develop tools/technologies for managing the below decks electromagnetic environment (EME).

| | | |
|---|---|---|
| **EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION (CONTINUATION)** | | DATE<br>May 2009 |
| APPROPRIATION/BUDGET ACTIVITY<br><br>**RDTEN/BA 6** | PROGRAM ELEMENT NUMBER AND NAME<br>**0605866N/NAVY SPACE AND ELECTRONIC WARFARE (SEW) SUPPORT** | PROJECT NUMBER AND NAME<br><br>**0706/EMC & RF Mgmt** |

**C. OTHER PROGRAM FUNDING SUMMARY:**
Not Applicable


**D. ACQUISITION STRATEGY:**
Not Applicable

| **EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION** | | DATE<br>May 2009 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br><br>**RDTEN/BA 6** | PROGRAM ELEMENT NUMBER AND NAME<br>**0605866N/NAVY SPACE AND ELECTRONIC WARFARE (SEW) SUPPORT** | PROJECT NUMBER AND NAME<br><br>**0739/NAVY C4 TOP LEVEL RQMTS** |

| COST (In Millions) | FY 2008 | FY 2009 | FY 2010 |
|---|---|---|---|
| Project Cost | 0.749 | 0.680 | 0.614 |
| RDT&E Articles Qty | 0 | 0 | 0 |

**A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:**

This project provides analysis of both Fleet requirements and research and development technology, to develop top-level plans and space systems in the Space and Electronic Warfare (SEW) mission area. The Space and Electronic Warfare Studies and Analysis Program (SEWSAP) supports analyses of Fleet requirements and research and development technology to develop top-level plans for operating Navy Command, Control, Communications, Intelligence, Surveillance and Reconnaissance (C4ISR) and space systems in the SEW mission area.

Performance Metrics:

Conduct and report upon studies, plans and analysis of Fleet requirements for operating Navy C4ISR and space systems in the SEW mission area.

R-1 Line Item No 151
PAGE 5 of 6

CLASSIFICATION:
**UNCLASSIFIED**

**EXHIBIT R-2a**
**RDT&E PROJECT JUSTIFICATION**

| | EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION | DATE<br>May 2009 |
|---|---|---|

| APPROPRIATION/BUDGET ACTIVITY<br><br>RDTEN/BA 6 | PROGRAM ELEMENT NUMBER AND NAME<br>**0605866N/NAVY SPACE AND ELECTRONIC WARFARE**<br>**(SEW) SUPPORT** | PROJECT NUMBER AND NAME<br><br>**0739/NAVY C4 TOP LEVEL RQMTS** |
|---|---|---|

**B. ACCOMPLISHMENTS/PLANNED PROGRAM:**

| | FY 2008 | FY 2009 | FY 2010 |
|---|---|---|---|
| **NAVY C41 TOP LEVEL REQUIREMENTS** | 0.749 | 0.680 | 0.614 |
| RDT&E Articles Quantity | 0 | 0 | 0 |

FY 2008 ACCOMPLISHMENTS:  Initiated and completed studies supporting resource and requirement decisions in the Planning, Programming, and Budgeting Executing (PPBE) System;
FORCEnet Fleet experiments; FORCEnet Architecture selection; evaluation of Tactics, Techniques, and Procedures (TTP); alignment of Science and Technology (S&T) and Research
and Development, Test and Evaluation (RDT&E) efforts with FORCEnet requirements; evaluation and selection of Modeling and Simulation (M&S) tools and scenarios.

SEWSAP (1) applied previously-developed models and analytical methods to identify areas of highest sensitivity in Command, Control, Communications (C3) performance, (2)
extend previous architectural work on Naval operational functions and networks to detailed analyses of C3 and network requirements and, (3) extend previous system engineering
results to newly emerging implementation issues.

FY 2009 - 2010 PLANS: Continue initiating and completing studies supporting resource and requirement decisions in the Planning, Programming, Budgeting and Execution (PPBE)
System; FORCEnet Fleet experiments; FORCEnet Architecture selection; evaluation of Tactics, Techniques, and development, Test, and Evaluation (RDT&E) efforts with FORCEnet
requirements; evaluation and selection of Modeling and Simulation (M&S) tools and scenarios.

**C. OTHER PROGRAM FUNDING SUMMARY:**
Not Applicable

**D. ACQUISITION STRATEGY:**
Not Applicable

**E. MAJOR PERFORMERS:**