Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 6: *RDT&E Management Support*				R-1 ITEM NOMENCLATURE PE 0605866N: *Navy Space & Electr Warfare Supt*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	2.506	9.213	4.228	-	4.228	4.674	4.780	4.814	5.053	Continuing	Continuing
0706: *EMC & RF Mgmt*	1.956	8.558	3.627	-	3.627	4.088	4.186	4.219	4.458	Continuing	Continuing
0739: *Navy C2 Top Level*	0.550	0.655	0.601	-	0.601	0.586	0.594	0.595	0.595	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project 0706, Electromagnetic Interference (EMI) Reduction and Radio Frequency (RF) Management: Develops advanced technology to identify and reduce EMI sources from Navy systems 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 Shipboard Electromagnetic Compatibility Improvement Program (SEMCIP) is 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.

Overseas Contingency Operations (OCO) Request: Combat Enabler in Theatre Operation Iraqi Freedom (OIF) - Joint Emitters during the continuing OIF operations was a source of debilitating electromagnetic interference to critical United States Navy (USN) Air Operations (OPS) and Ballistic Missile Defense (BMD) assets.

In-Theater and Pre-Deployment OIF: Will address impact of upgrades to deploying ships and development of electromagnetic interference solutions for the deploying strike group.

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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0605866N: *Navy Space & Electr Warfare Supt*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	2.659	4.013	4.789	-	4.789
Current President's Budget	2.506	9.213	4.228	-	4.228
Total Adjustments	-0.153	5.200	-0.561	-	-0.561
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.094	-			
• Program Adjustments	-	5.200	-0.209	-	-0.209
• Section 219 Reprogramming	-0.047	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.352	-	-0.352
• Congressional General Reductions Adjustments	-0.012	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605866N: *Navy Space & Electr Warfare Supt*	PROJECT 0706: *EMC & RF Mgmt*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0706: *EMC & RF Mgmt*	1.956	8.558	3.627	-	3.627	4.088	4.186	4.219	4.458	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	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 to comply with fleet operational requirements and streamline Strike Force frequency management processes. It will provide automated Spectrum Management (SM) tools for development of operational task communication and radar/weapon plans to support fleet deployments, exercises, contingency operations, and the war on terrorism. It will provide identification and mitigation of EMI in Navy, North Atlantic Treaty Organization (NATO), Allied, Ashore and Joint Combat Operations.

(b) It will support 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 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.

(e) FY11 OCO Planned Program funds will be used for Combat Enabler in Theater OIF and Pre-Deployment OIF.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Title: AESOP (Integrated CPM and EMCAP)	0.704	0.722	1.000
Articles:	0	0	0
FY 2010 Accomplishments: Continued development of interfaces for Afloat Electromagnetic Spectrum Operations Program (AESOP), and other automated tools to interface with evolving network protocols and to ensure currency for web-based applications. Developed new algorithms			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
for automated tools for new Navy C4ISR systems for both government and commercial communication systems. Implemented a set of web-based capabilities utilizing latest technologies Extensible Markup Language (XML) and other data standards to optimize information exchange and usability. ***FY 2011 Plans:*** Institutionalize frequency management process for operational fleet by developing procedures that can be utilized by strike groups. Make recommendations to update existing combatant commands, and numbered fleet 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 2012 Plans:*** Initiate frequency management coordination with NATO/Coalition partners to enhance operational capability of spectrum management analysis tools that can be utilized by all Navy Strike Groups. Make recommendations to combatant commands, and numbered fleets concerning NATO/Coalition spectrum use in respective areas of responsibility. Update the AESOP with NATO/ Coalition requirements and distribute to all commands.			
Title: EMC Systems Engineering (SEMCIP) ***Articles:*** ***FY 2011 Plans:*** Identify and characterize EMI which can debilitate the Combat capability of strike force capability and operational readiness. Focus in on Ku-Band Common Data Link (CDL) and next generation systems (Commercial Broadband SATCOM Program and High Frequency Synthetic Aperture Radar (HF SAR)). Evaluate the effectiveness of proposed EMI solutions and coordinate for procurement of final EMI fix. ***FY 2012 Plans:*** Identify and characterize EMI which can debilitate the Combat capability of strike force capability and operational readiness. Focus in on the next generation radars AN/SPY-3 and the Multi-Function Radar (MFR). Evaluate the effectiveness of proposed EMI solutions and coordinate for procurement of final EMI fix.	- 	1.500 0	1.230 0
Title: EMP Survivability ***Articles:*** ***FY 2010 Accomplishments:***	0.980 0	1.021 0	1.050 0

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605866N: *Navy Space & Electr Warfare Supt*	PROJECT 0706: *EMC & RF Mgmt*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Prepared EMP Survivability Assessment and EMP Hardness Maintenance Plan. Prepared instruction updates on EMP survivability. Developed modeling capabilities and alternative techniques to reduce hardness validation costs at delivery. ***FY 2011 Plans:*** Develop and publish EMP Certification process in accordance with Military Standard (MIL-STD) 188-125 High-Altitude Electromagnetic Pulse (HEMP) Protection for Ground-Based C41 Facilities. Support Navy and Defense Threat Reduction Agency (DTRA) in the development of a Maritime EMP Standard. ***FY 2012 Plans:*** Continue development of a Maritime EMP Standard. Perform shipboard testing aboard decommissioned platforms to attain required parametric information to complete standard requirements. Support development of new technologies to harden ashore sites and mission critical systems from a nuclear blast.			
Title: Advanced Technology	0.272	0.115	0.347
Articles:	0	0	0
FY 2010 Accomplishments: Continued below decks characterization, investigate predictive application, and developed tools and technologies for spectrum usage. ***FY 2011 Plans:*** Initiate research into spectrum efficiency studies to allow radars and communication systems to operate compatible in the electromagnetic battle space. Develop spectrum efficiency guides for use by program managers in the development of the next generation systems (radars and communication systems) for use aboard ships and submarines. ***FY 2012 Plans:*** Complete spectrum efficiency studies. Using previously developed guides, issue military specification for use by program offices and program managers in the development of the next generation systems (radars and communication systems). In support of the Navy Information Dominance concept, initiate technology studies to develop "smart chip" devices that will permit systems to connect to the Global Information Grid (GIG). These smart chip devices will provide technical and spectral information about systems connecting to the GIG. Develop net-centric and self sensing shipboard applications (systems) that can sense the electromagnetic environment and shift in frequency to avoid interference. Develop a dynamic spectrum operations schema to collect information from the smart chip devices and allocate the electromagnetic spectrum - on the fly - mitigating electromagnetic interference.			
Title: Overseas Contingency Operations (OCO)	-	5.200	-
Articles:		0	

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
FY 2011 Plans: ($1.900) Combat Enabler in Theater (Overseas Contingency Operation - OCO) Operation Iraqi Freedom (OIF): Joint Emitters during the continuing OIF operations was a source of debilitating Electro Magnetic Interference (EMI) to critical air operations and BMD assets. In response to FY11 OIF requirements, funding will be used to expand afloat and ashore spectrum management tools to address the critical need for interoperability with the USMC's spectrum management applications and put into place a joint capability for the warfighter. USN/USMC integration promotes interoperability with the multi-national deployed forces fighting the OCO and decreases the risk of friendly fire incidents. Accurate and timely information on the interoperability of USN and USMC systems provided by this Joint Capability leverages the response of both the USN and USMC to OCO. Increased situational awareness, reduction of interference, and restored mission capability are all expected benefits of the improved processes and procedures. The requested funds will deliver a Joint capability system that allows group planning and execution, information data discovery, data interoperability, and data fusion to USN and USMC forces directly supporting OIF and the OCO. Data tasking and deliverables are classified. ($3.300) In-Theater & Pre-Deployment (OCO) OIF: Funding to address impact of upgrades to deploying ships and development of EMI solution for the deploying strike group. This funding will be used to evaluate and mitigate potential EMI problems that may be introduced as the fleet continues to field additional variants of combat systems and commission new ships. Timely development of EMI solutions restores combat capability lost due to EMI. In theater requirements demand an acceleration of the development of EMI solutions & prototype hardware (in theater) in order to prompt EMI mitigation. Evaluation of short-term and long-term EMI fix evaluation on deploying ships is required to determine optimum EMI solution. Funds requested support the procurement and installation of EMI Solutions within 12 months for strike groups and independent deployers. Higher operating tempo and incremental costs associated with increased pace of Fleet Deployments drive an accelerated response to the development of EMI Fixes which then supports higher usage of equipment (rate of return) and extends communication capabilities.			
Accomplishments/Planned Programs Subtotals	1.956	8.558	3.627

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

An acquisition strategy is not required.

E. Performance Metrics

Performance metrics will consist of quarterly program reviews.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605866N: *Navy Space & Electr Warfare Supt*	PROJECT 0739: *Navy C2 Top Level*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0739: *Navy C2 Top Level*	0.550	0.655	0.601	-	0.601	0.586	0.594	0.595	0.595	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	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.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Title: Navy C2 Top Level	0.550	0.655	0.601
Articles:	0	0	0
FY 2010 Accomplishments: Initiated and completed studies supporting resource and requirement decisions in the Planning, Programming, and Budgeting Execution (PPBE) System; FORCEnet Fleet experiments; FORCEnet Architecture selection; evaluation of Tactics, Techniques and Procedures (TTP); alignment of Science and Technology (S&T) and Research, 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 2011 Plans: Initiate studies supporting resource and requirement decisions in the PPBE System. Conduct FORCEnet Fleet experiments; FORCEnet Architecture selection; evaluation of TTP and Research, Development, Test, and Evaluation (RDT&E) efforts with FORCEnet requirements. Begin evaluation of M&S tools and scenarios.			
FY 2012 Plans: Continue to initiate and complete studies supporting resource and requirement decisions in the PPBE System. Conduct FORCEnet Fleet experiments, FORCEnet Architecture selection, and evaluate TTP and Research, Development, Test, and Evaluation (RDT&E) efforts with FORCEnet requirements. Complete evaluation of M&S tools and scenarios.			
Accomplishments/Planned Programs Subtotals	0.550	0.655	0.601

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605866N: *Navy Space & Electr Warfare Supt*	PROJECT 0739: *Navy C2 Top Level*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

An acquisition strategy is not required.

E. Performance Metrics

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