Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Navy										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	9.140	4.223	4.579	5.200	9.779	4.605	4.570	4.778	4.888	Continuing	Continuing
0706: *EMC & RF Mgmt*	8.507	3.622	3.992	5.200	9.192	4.014	3.983	4.192	4.290	Continuing	Continuing
0739: *Navy C2 Top Level*	0.633	0.601	0.587	-	0.587	0.591	0.587	0.586	0.598	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) and Operation Enduring Freedom - Afghanistan (OEF-A) - Joint Emitters during the continuing OCO 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 and OEF-A: 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 2013 Navy					DATE: February 2012
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**
Previous President's Budget	4.013	4.228	4.674	-	4.674
Current President's Budget	9.140	4.223	4.579	5.200	9.779
Total Adjustments	5.127	-0.005	-0.095	5.200	5.105
• Congressional General Reductions	-	-0.005			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.050	-			
• Program Adjustments	5.200	-	-0.002	5.200	5.198
• Rate/Misc Adjustments	-	-	-0.093	-	-0.093
• Congressional General Reductions Adjustments	-0.023	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
0706: *EMC & RF Mgmt*	8.507	3.622	3.992	5.200	9.192	4.014	3.983	4.192	4.290	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 assesses the EMP survivability of all mission critical systems and funds development of 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 / OEF-A and Pre-Deployment OIF / OEF-A.

(f) FY13 Overseas Contingency Operations (OCO) Request: Combat Enabler in Theatre Operation Iraqi Freedom (OIF) and Operation Enduring Freedom - Afghanistan (OEF-A) - Joint Emitters during the continuing OCO operations was a source of debilitating electromagnetic interference to critical United States Navy (USN) Air Operations (OPS) and Ballistic Missile Defense (BMD) assets.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Title: AESOP (Integrated CPM and EMCAP)	0.691	0.700	0.692	-	0.692
Articles:	0	0	0		0

Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy		DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
FY 2011 Accomplishments: Institutionalized frequency management process for operational fleet by developing procedures that can be utilized by strike groups. Made recommendations to update existing combatant commands, and numbered fleet directives regarding spectrum use in their areas of responsibility. Coordinated with Navy stakeholders regarding impacts of spectrum relocation for systems (based on the National Broadband Plan (NBP). Updated the AESOP with the new radiation restrictions that reflect current legal requirements that resulted from spectrum re-allocations. ***FY 2012 Plans:*** Initiate frequency management coordination with NATO/Coalition partners to enhance operational capability of spectrum management analysis tools used by Operational Fleet. Continue to monitor the National Broadband Plan, provide analysis capability to support National Level recommendations, and update spectrum radiation restrictions. ***FY 2013 Base Plans:*** Continue frequency management coordination with NATO/Coalition partners to enhance operational capability of spectrum management applications used by Operational Fleet. Continue to monitor the National Broadband Plan, provide analysis capability to support National Level recommendations, and update spectrum radiation restrictions. Update the AESOP application with NATO/Coalition/National Spectrum requirements and distribute to all commands.					
Title: EMC Systems Engineering (SEMCIP)	1.500	1.030	1.000	-	1.000
Articles:	0	0	0		0
FY 2011 Accomplishments: Identified and characterized EMI which can debilitate the Combat capability of strike force capability and operational readiness. Focused in on Ku-Band Common Data Link (CDL) and next generation systems (Commercial Broadband SATCOM Program and High Frequency Synthetic Aperture Radar (HF SAR)). Evaluated the effectiveness of proposed EMI solutions and coordinate for procurement of final EMI fix. ***FY 2012 Plans:*** Continue efforts to identify and characterize EMI which can debilitate the Combat capability of strike force capability and operational readiness. Focus in on the next generation radars [i.e., AN/SPY-3 and the Multi-					

Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy		DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Function Radar (MFR)]. Evaluate the effectiveness of proposed EMI solutions and coordinate for procurement of final EMI fix. ***FY 2013 Base Plans:*** Continue efforts to identify and characterize EMI which can debilitate the Combat capability of strike force capability and operational readiness. Focus in on the Navy's Air and Missile Defense Radar (AMDR) program and consolidated Satellite Communications (SATCOM)/Communication stacked antenna technology. Evaluate the effectiveness of proposed EMI solutions and coordinate for integration/procurement of final EMI fix.					
Title: EMP Survivability ***Articles:*** ***FY 2011 Accomplishments:*** Developed and published EMP Certification process in accordance with Military Standard (MIL-STD) 188-125 High-Altitude Electromagnetic Pulse (HEMP) Protection for Ground-Based C41 Facilities. Supported 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. ***FY 2013 Base Plans:*** Investigate capabilities to improve shipboard corrosion resistance and ensure reduced life cycle costs of EMP hardening materials. Develop improved modeling capability to reduce hardness validation costs at ship delivery and over the lifetime of the system and platforms. Work with new ship program mangers to ensure best practices for EMP hardness are incorporated in system and ship design; publish best practice guide. Work with ship program managers to ensure appropriate EMP hardness assurance and maintenance programs are in place to maintain the designed-in EMP survivability.	1.001 0	1.050 0	1.200 0	-	1.200 0
Title: Advanced Technology ***Articles:*** ***FY 2011 Accomplishments:***	0.115 0	0.842 0	1.100 0	-	1.100 0

Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy		DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Initiated research into spectrum efficiency studies to allow radars and communication systems to operate compatible in the electromagnetic (EM) battlespace. Reviewed available technologies and publish an Information Dominance Roadmap for Electromagnetic Spectrum (EMS) Usage and Control. ***FY 2012 Plans:*** Continue research into spectrum efficiency studies to allow radars and communication systems to operate compatibly in the EM battle space. Develop a dynamic spectrum operations schema to collect information from spectrum dependent systems and allocate the electromagnetic spectrum - on the fly - mitigating electromagnetic interference. Demonstrate concept on a single platform or land-based test site. ***FY 2013 Base Plans:*** Publish Phase 2 of the Information Dominance Roadmap, detailing total ownership costs (TOC), and refine the action plan to identify top level Navy investments that will make a significant technological advancement in the effort to provide real-time spectrum operations. Initiate the acquisition processes and procedures, and architecture protocols to support the new schema, and issue to industry for review and comment. Publish new governance and standards to ensure new systems are developed with the correct interfaces to allow proper spectrum control.					
Title: Overseas Contingency Operations (OCO)	5.200	-	-	5.200	5.200
Articles:	8		0	8	8
FY 2011 Accomplishments: ($1.900) Combat Enabler in Theater (Overseas Contingency Operation - OCO) Operation Iraqi Freedom (OIF) and Operation Enduring Freedom - Afghanistan (OEF-A): Joint Emitters during the continuing OCO operations was a source of debilitating Electromagnetic Interference (EMI) to critical air operations and BMD assets. In response to FY11 OIF and OEF-A 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.					

Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy		DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
($3.300) In-Theater & Pre-Deployment (OCO) OIF and OEF-A: Funding to address impact of upgrades to deploying ships and development of an 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.					
FY 2013 Base Plans: N/A					
FY 2013 OCO Plans: ($2.200) Electromagnetic Interference (EMI) Reduction and Radio Frequency (RF) Management - Develops advanced technology to identify and reduce EMI sources from Navy systems and platforms. Combat Enabler in Theater: Joint Emitters during the OCO operations was a source of debilitating Electromagnetic Interference (EMI) to critical air operations and BMD assets. Funding will be used to expand afloat and ashore spectrum management tools to address the critical need for interoperability. USN/USMC integration promotes interoperability with the multi-national deployed forces fighting the OCO and decreases the risk of friendly fire incidents. 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 OCO OPS. ($3.000) Electromagnetic Interference (EMI) Reduction and Radio Frequency (RF) Management - Develops advanced technology to identify and reduce EMI sources from Navy systems and platforms. In-Theater & Pre-Deployment: Funding to address actions taken to restore units to a desired level of combat capability. Upgrades to deploying ships and development of EMI solution for the deploying strike group.					

Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy		DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
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. Evaluation of short-term and long-term EMI fix evaluation on deploying ships is required to determine optimum EMI solution.					
Accomplishments/Planned Programs Subtotals	8.507	3.622	3.992	5.200	9.192

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 2013 Navy			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
0739: *Navy C2 Top Level*	0.633	0.601	0.587	-	0.587	0.591	0.587	0.586	0.598	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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Title: Navy C2 Top Level	0.633	0.601	0.587	-	0.587
Articles:	0	0	0		0

FY 2011 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 2012 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 2013 Base Plans:

Continue to initiate and complete studies supporting resource and requirement decisions in the PPBE System. Conduct FORCEnet/Information Dominance Fleet experiments; FORCEnet/Information Dominance Architecture

Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy		DATE: February 2012
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
selection; evaluation of TTP and Research, Development, Test, and Evaluation (RDT&E) efforts with FORCEnet/ Information Dominance requirements. Begin evaluation of M&S tools and scenarios.					
Accomplishments/Planned Programs Subtotals	0.633	0.601	0.587	-	0.587

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, electronic warfare, and information dominance mission areas.