Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Navy										DATE: February 2010	
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*				R-1 ITEM NOMENCLATURE PE 0604707N: *SEW Architecture/Eng Support*							
COST ($ in Millions)	**FY 2009 Actual**	**FY 2010 Estimate**	**FY 2011 Base Estimate**	**FY 2011 OCO Estimate**	**FY 2011 Total Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
Total Program Element	46.251	40.328	34.793	0.000	34.793	43.166	43.123	45.037	48.924	Continuing	Continuing
0798: *OTH Targeting*	1.405	0.919	0.853	0.000	0.853	1.005	1.006	0.997	1.017	Continuing	Continuing
2144: *Space & Elec Warfare Engineering*	13.810	11.032	10.059	0.000	10.059	11.556	11.400	12.445	11.649	Continuing	Continuing
2357: *Maritime Battle Center*	30.238	28.377	23.881	0.000	23.881	30.605	30.717	31.595	36.258	Continuing	Continuing
9999: *Congressional Adds*	0.798	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.798

A. Mission Description and Budget Item Justification

This Program Element (PE) contains three projects: Maritime Battle Center (MBC), Over-the-Horizon Targeting (OTH-T), and Space and Electronic Warfare (SEW) Engineering. The MBC project (2357) focuses on fleet experimentation in order to eliminate warfighting gaps and validate Navy Concept of Operations (CONOPS) and doctrine. The MBC also manages the Sea Trial program of fleet experimentation that is administered by the Sea Trial Executive Steering Group (STESG). Both MBC and Sea Trial integrate emergent concepts and technologies through experiments, analysis, modeling and simulation to support warfighting capability development. Sea Trial experimentation is dedicated to providing solutions to near term (within the Fiscal Year Defense Plan) warfighting gaps through focused operational agent (Commander Second Fleet, Commander Third Fleet and Commander Naval Network Warfare Command) led experimentation. The flag level Sea Trial Executive Steering Group prioritizes proposed Sea Trial experiments annually. The MBC will also serve as the Navy representative to the Joint Battle Center and the battle labs of other services.

The OTH-T and SEW Engineering projects (0798 and 2144 respectively) are systems engineering non-acquisition programs to develop, test, implement technical authority, and validate naval Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) architectures to support naval missions in the Joint and Coalition Theater. The mission of these projects are carried out by multiple tasks that are used to ensure naval C4ISR Command and Control Warfare (C2W) components of SEW are effectively integrated into service-oriented architecture delivering net centric warfare capability. Additionally, these projects ensure that (1) the composite operational capabilities of SEW systems (not the individual component systems) conform to the naval C4ISR architecture and enhance warfighting capability as related to the objectives of National Defense Strategy, evolving joint visions and direction, such as net centric capability, and are guided by warfighter requirements; (2) that SEW systems and systems integration efforts involve leading-edge technology transfer of information processing technologies primarily through integration of government and commercial off-the-shelf (GOTS/COTS) products to enhance the Navy's operational capability, interoperability, warfighter effectiveness, flexible reconfiguration, as well as reduce costs; and (3) that SEW systems integration efforts promote the delivery of FORCEnet and the Navy's contribution to the Global Information Grid (GIG).

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Navy	DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604707N: *SEW Architecture/Eng Support*

The SEW Engineering project (2144) also includes efforts supporting the Maritime Domain Awareness (MDA) program. MDA is the effective understanding of anything associated with the global maritime domain that could impact the security, safety, economy, or environment of the United States.

Due to the number of efforts in this PE, the programs described are representative of the work included in this PE.

B. Program Change Summary ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	48.116	42.533	0.000	0.000	0.000
Current President's Budget	46.251	40.328	34.793	0.000	34.793
Total Adjustments	-1.865	-2.205	34.793	0.000	34.793
• Congressional General Reductions		-0.168			
• Congressional Directed Reductions		-2.000			
• Congressional Rescissions	0.000	-0.037			
• Congressional Adds		0.000			
• Congressional Directed Transfers		0.000			
• Reprogrammings	-0.946	0.000			
• SBIR/STTR Transfer	-0.919	0.000			
• Program Adjustments	0.000	0.000	34.793	0.000	34.793

Congressional Add Details ($ in Millions, and Includes General Reductions)

	FY 2009	FY 2010
Project: 9999: *Congressional Adds*		
Congressional Add: *Cross-Domain Network Access System*	0.798	0.000
Congressional Add Subtotals for Project: 9999	0.798	0.000
Congressional Add Totals for all Projects	0.798	0.000

Change Summary Explanation

Technical: Not applicable.

Schedule: Not applicable.

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Navy	DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604707N: *SEW Architecture/Eng Support*

FY11 from previous President's Budget is shown as zero because no FY11-15 data was presented in President's Budget 2010.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604707N: *SEW Architecture/Eng Support*	PROJECT 0798: *OTH Targeting*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
0798: *OTH Targeting*	1.405	0.919	0.853	0.000	0.853	1.005	1.006	0.997	1.017	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

The Allied Interoperability program determines allied and coalition C4 maritime operational gaps, to identify Doctrine, Organization, Training, Material, Leadership, Personnel and Facilities (DOTMLPF) solutions with the potential to fill those gaps, and to assess these solutions and associated concepts of operation in laboratory and at-sea environments. The OTH-T/Allied Interoperability program provides a virtual, global systems integration and test facility for Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) technology that supports the collection, transmission, correlation, and display of track data into common operational and tactical pictures in support of warfighting requirements. The common view of the battle space applies across the spectrum of warfare missions. However, technology and doctrine has changed radically. The first objective of the OTH-T/Allied Interoperability program is to transition the joint and Navy architectures and systems to state-of-the-art Commercial off the Shelf (COTS) and Government off the Shelf (GOTS) products that support network centric warfare. The second objective is to support development, integration, and joint interoperability of all National Security System (NSS), information technology, and C4I systems into cohesive war fighting capabilities. This support includes providing technical expertise afloat and ashore via a cadre of highly trained fleet dystems engineers in order to integrate, validate, and evaluate new OTH-T/Allied Interoperability capabilities during major fleet exercises and demonstrations. The OTH-T/Allied Interoperability program includes joint and coalition integration and testing in support of these war fighting capabilities, including interoperability testing of C4ISR equipments. Coalition and joint interoperability is critical for future maritime operations, especially with the Navy initiatives to expand Internet Protocol (IP) networking throughout the fleet via Consolidated Afloat Networks and Enterprise Services, Next Generation Networks and with the Global Information Grid. Currently, IP connectivity with coalition forces is limited, requiring extensive backhaul through ashore infrastructure. Higher bandwidth solutions suitable for use over tactical networks require development and assessment for emerging coalition and joint interoperability requirements, such as Naval Tactical Networking and Maritime Domain Awareness. Increases in data throughput are required for the effective exchange of rich data sets and services via service oriented architectures within the limitations of high frequency, ultra-high frequency and other portions of the radio frequency spectrum, coupled with appropriate information asssurance and computer network defense mechanisms. Development and assessment of potential solutions will integrate improved transmission control protocol/IP capabilities with the Advanced Digital Network Systems and existing international standards (e.g., NATO Standardization Agreement 5066). The continued development and refinement of advanced tactical networking technologies and protocols, as well as automatic link establishment standards, will provide for a significant improvement in data sharing within, and between, coalition maritime elements.

B. Accomplishments/Planned Program ($ in Millions)

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604707N: *SEW Architecture/Eng Support*	PROJECT 0798: *OTH Targeting*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
ACQUISITION WORKFORCE FUND *FY 2009 Accomplishments:* N/A	0.009	0.000	0.000	0.000	0.000
ADVANCED RELAY CAPABILITIES Prior to FY 2011, R-2a activity "ADVANCED RELAY CAPABILITIES" was divided between Advanced Relay/Wireless/Antenna Technologies and Subnet Relay. With Subnet Relay now a program of record, initiatives to improve the system and its operational use in the coalition context have started to mirror or become a subset of the FY 2010 Advanced Relay/Wireless/Antenna Technologies effort. Subnet Relay and Advanced Relay initiatives need to address multi-bearer routing, High Assurance Internet Protocol Encryption (HAIPE) and Service Oriented Architectures in a similar and integrated manner. For FY 2011 and out, these two efforts have been merged into one integrated program entitled ADVANCED RELAY CAPABILITIES. *FY 2011 Base Plans:* Continue the development and refinement of advanced relay capabilities that support Coalition Naval Tactical Networking (CNTN). Solutions will address advanced relay technologies, coalition routing architectures (with an emphasis on cipher text or "black core" routing), application architectures/ configurations and Information Assurance/Computer Network Defense (IA/CND) solutions that maximize network efficiency using multiple, dissimilar bearers in the CNTN environment on CENTRIXS. Integrate these advanced solutions with HAIPE devices and Service Oriented Architectures (SOA) in a coalition networking environment. Continue to progress the standardization of Subnet Relay into North Atlantic Treaty Organization Standardization Agreements (STANAGs) 4691 (Subnet Relay) and 5066 Edition 3 (HFIP/UHFIP multi hop). Continue to refine broadband solutions, such as wide-band ultrahigh frequency (UHF) and Spatially Aware Wireless Networking (SPAWN), which enhance throughput and promote allied interoperability. Assess the ability of these solutions to support Service Oriented Architectures. Exploit venues of opportunity, such as Trident Warrior, to	0.000	0.000	0.853	0.000	0.853

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604707N: *SEW Architecture/Eng Support*	PROJECT 0798: *OTH Targeting*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
evaluate and validate the individual technologies as well as integrated solutions through testing, trials and demonstrations.					
ADVANCED RELAY/WIRELESS/ANTENNA TECHNOLOGIES The decrease in FY 2011 is due to this activity being realigned to "Advanced Relay Capabilities." *FY 2009 Accomplishments:* Designed, fabricated and tested Generation 5 Spatially Aware Wireless Network (SPAWN) antennas in integrated form with wireless network equipment. Performed an Over-the-Horizon (OTH) field demonstration of SPAWN in Trident Warrior 2009. *FY 2010 Plans:* - Design, fabricate and test Generation 6 SPAWN antennas in an integrated form with wireless network equipment. Perform an OTH field demonstration of SPAWN in Trident Warrior or similar venue to include airborne relay platforms for a demonstration of high bandwidth Naval Tactical Networking. The demonstration will also include the integration of advanced relay technology with mobile ad hoc network (MANET) controllers and High Assurance Internet Protocol Encryption (HAIPE) devices on CENTRIXS. - Develop advanced routing, application and Information Assurance/Computer Network Defense (IA/CND) architectures and solutions for the coalition Naval Tactical Networking (NTN) environment that maximize network efficiency using multiple, dissimilar bearers.	0.652	0.718	0.000	0.000	0.000
SUBNET RELAY The decrease in FY 2011 is due to this activity being realigned to "Advanced Relay Capabilities."	0.152	0.201	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604707N: *SEW Architecture/Eng Support*	PROJECT 0798: *OTH Targeting*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: - Continued to refine Subnet Relay allied interoperability. Venues of opportunity will be exploited to validate and evaluate developed portions of Subnet Relay configurations through testing, trials, and demonstrations. - Completed field demonstration of Subnet Relay airborne deployment. *FY 2010 Plans:* As a part of the refinement of Subnet Relay allied interoperability, develop interoperable wide-band ultrahigh frequency solutions to enhance throughput and progress the standardization of Subnet Relay into a NATO Standardization Agreement. Exploit venues of opportunity to evaluate and validate developed portions of Wide-Band Subnet Relay configurations through testing, trials and demonstrations.					
INTEROPERABILITY VALIDATION *FY 2009 Accomplishments:* Continued to use the Reconfigurable Land Based Test Sites (RLBTS) and Over-the-Horizon Targeting (OTH-T) resources to validate Global Information Grid (GIG) technologies prior to shipboard installation, supported ten Net Ready-Key Performance Parameters (NR-KPP) Migration Plan Developments and four joint interoperability C4ISR certifications to ensure interoperability requirements between sensors, weapon systems and information systems were met.	0.101	0.000	0.000	0.000	0.000
SYSTEMS INTEGRATION & INTEROPERABILITY TESTING *FY 2009 Accomplishments:* Continued to conduct and participate in five overall joint and Navy integration and interoperability tests; facilitated two planning reviews for joint test and evaluations; participated in Joint Users Interoperability Communications Exercise, Joint Distributed Engineering Plant, and other joint test events.	0.272	0.000	0.000	0.000	0.000
TESTING OTH-T SYSTEMS	0.219	0.000	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604707N: *SEW Architecture/Eng Support*	PROJECT 0798: *OTH Targeting*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
The decrease in FY 2010 and out is due to the effort concluding in FY 2009. *FY 2009 Accomplishments:* Continued to conduct six developmental, integration, and certification tests of OTH-T and combat systems with tactical data exchanged over Common Operational Picture Common Synchronization Tools networks and other networks; three integration test events for Joint Command and Control, Combat Decision Systems, and collaboration technologies within the Global Information Grid. Tested to also address issues of fleet essential capabilities and emerging mission essential needs both for new, legacy, and technology refreshed systems. This included developmental testing between foint C2 systems and combat systems.					
Accomplishments/Planned Programs Subtotals	1.405	0.919	0.853	0.000	0.853

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

ADVANCED RELAY CAPABILITIES: In FY10 and FY11, the Allied Interoperability program will employ laboratory testing and at-sea demonstrations to assess specific technologies, operational concepts, and integrated Doctrine, Organization, Training, Material, Leadership, Personnel and Facilities (DOTMLPF) solutions pertaining to Coalition Naval Tactical Networking, Service Oriented Architectures, and Maritime Domain Awareness. These assessments will report on identified capability gaps, link capability gaps to technology/DOTMLPF gaps, identify technologies and DOTMLPF solutions considered ready for deployment and transition to a Program of Record to enhance Fleet war fighting capability and enhance allied and coalition interoperability.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604707N: *SEW Architecture/Eng Support*	PROJECT 0798: *OTH Targeting*

Test and Evaluation ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Advanced Relay Capabilities	Various/ Various	Various Various	11.210	0.919	Nov 2009	0.853	Jan 2011	0.000		0.853	0.000	12.982	Continuing
Interoperability Requirements	Various/ Various	Various Various	3.266	0.000		0.000		0.000		0.000	0.000	3.266	Continuing
T & E Tools Development	Various/ Various	Various Various	0.429	0.000		0.000		0.000		0.000	0.000	0.429	Continuing
Systems Int. & Interop. Testing (LBTN)	Various/ Various	Various Various	3.862	0.000		0.000		0.000		0.000	0.000	3.862	Continuing
Interoperability Validation	Various/ Various	Various Various	2.748	0.000		0.000		0.000		0.000	0.000	2.748	Continuing
Joint Interoperability	Various/ Various	Various Various	1.174	0.000		0.000		0.000		0.000	0.000	1.174	Continuing
Testing OTH-T Systems	Various/ Various	Various Various	3.069	0.000		0.000		0.000		0.000	0.000	3.069	Continuing
		Subtotal	25.758	0.919		0.853		0.000		0.853	0.000	27.530	

Remarks

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604707N: *SEW Architecture/Eng Support*	PROJECT 0798: *OTH Targeting*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2010 Cost	FY 2010 Award Date	FY 2011 Base Cost	FY 2011 Base Award Date	FY 2011 OCO Cost	FY 2011 OCO Award Date	FY 2011 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Engineering Support	Various/ Various	Various Various	0.000	0.000		0.000		0.000		0.000	0.000	0.000	Continuing
Program Management Support	Various/ Various	Various Various	1.468	0.000		0.000		0.000		0.000	0.000	1.468	Continuing
ACQ Workforce Fund	Various/ Various	Various Various	0.009	0.000		0.000		0.000		0.000	0.000	0.009	Continuing
		Subtotal	1.477	0.000		0.000		0.000		0.000	0.000	1.477	

Remarks

	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	27.235	0.919		0.853		0.000		0.853	0.000	29.007	

Remarks

Exhibit R-4, **RDT&E Schedule Profile:** PB 2011 Navy		**DATE:** February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604707N: *SEW Architecture/Eng Support*	**PROJECT** 0798: *OTH Targeting*

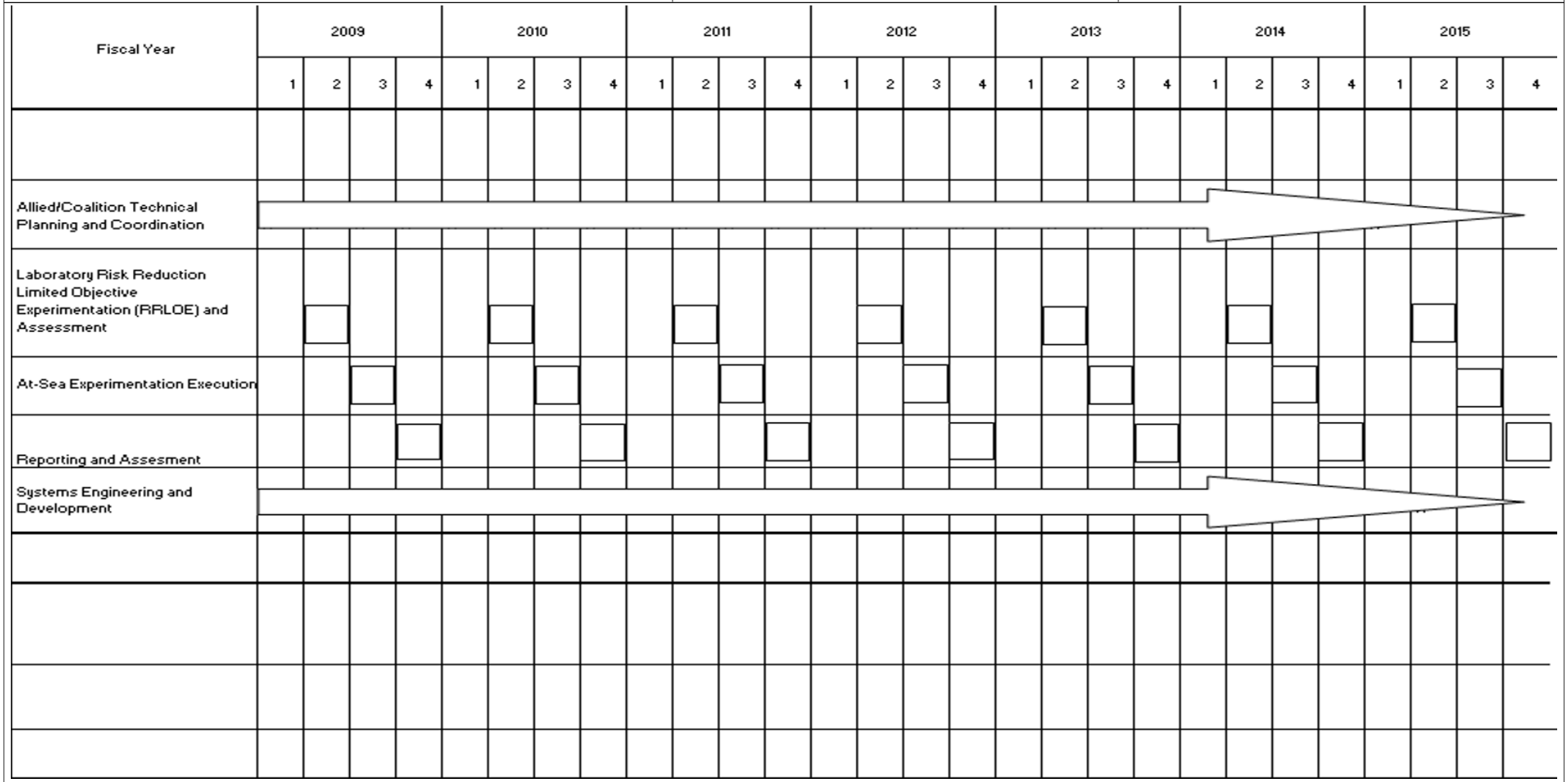

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604707N: *SEW Architecture/Eng Support*	**PROJECT** 0798: *OTH Targeting*

Schedule Details

	Start		End	
Event	**Quarter**	**Year**	**Quarter**	**Year**
Allied/Coalition Technical Planning and Coordination	1	2009	4	2015
Laboratory Risk Reduction Limited Objective Experimentation (RRLOE) and Assessment	2	2009	2	2015
At-Sea Experimentation Execution	3	2009	3	2015
Reporting and Assesment	4	2009	4	2015
Systems Engineering and Development	1	2009	4	2015

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604707N: *SEW Architecture/Eng Support*	PROJECT 2144: *Space & Elec Warfare Engineering*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
2144: *Space & Elec Warfare Engineering*	13.810	11.032	10.059	0.000	10.059	11.556	11.400	12.445	11.649	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

OPNAVINST 3050.23 defines the policy to fuse validated/approved Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) architectures and interoperability requirements with Joint requirements, milestones and program decisions. C4ISR integrated architectures/requirements are the underpinnings for all C4ISR mission areas and capabilities and, as such, requirements and acquisition processes have been reengineered to use these Integrated Architectures for decisional purposes and strategic planning. Furthermore, Office of the Secretary of Defense (OSD) has defined key programs/efforts Global Information Grid (GIG) Baseline Extension (BE), Joint Tactical Radio System (JTRS), Network Centric Enterprise Services (NCES), Information Assurance (IA) and standards that will drive and change the Navy's C4ISR integrated architectures and associated business processes for requirements, budgets and acquisition. To that end, the SEW provides two main functions: 1) Development of C4ISR Integrated Architecture Products and 2) Supporting C4ISR Systems Engineering processes and standards. The integrated architecture products are used to support the Navy's C4ISR budget process by providing the critical core architecture and enabling capabilities to the Warfighter. The C4ISR systems engineering processes and standards provide the construct for distributed C2 interoperability requirements analyses to identify capability shortfalls/gaps and for systems engineering to compare/test alternatives in a joint end-to-end environment while identifying associated Navy wide C4ISR implications. Processes include developing and applying criteria for use in Systems Engineering Technical Reviews mandated by Assistant Secretary of the Navy for Research, Development and Acquisition (ASN RDA) and providing technical input to governance bodies such as the FORCEnet Coordination Council and the Information Technology Management Council. This includes Human Systems Integration (HSI) to provide a mission-centered orientation to ensure effective operational employment of fielded capability. As joint concepts and OSD driving efforts/programs are matured/defined the Navy's C4ISR integrated architectures are refined and the supporting C4ISR Systems Engineering processes and standards work to engineer and enact C4ISR implementations Navy wide across all C4ISR mission areas.

Products provided:
1) C4ISR Integrated Architectures
- Integrated Architectures and Standards - Architecture Views (Operational Views, Service Views, Technical Views, System Views)
- Migration Roadmaps to the target Architectures
- Architecture technical authority, studies, interpretation assistance, and white papers

2) Supporting C4ISR Systems Engineering processes

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604707N: *SEW Architecture/Eng Support*	PROJECT 2144: *Space & Elec Warfare Engineering*

- Distributed C2 Interoperability Requirement Analysis - Gaps Analysis, Overlap Analysis, System Priority Lists, C4ISR Metrics and Models, Analysis of Alternatives, Requirements Database, Assessment Repository, Resource Implications Studies, Baseline Performance Models, Mission Task Analysis, Human Systems Integration (HSI) assessments.
- End-to-End Systems Engineering and Integrated Design - Operational feasibility studies, technical feasibility studies, technical roadmap engineering validations, Architectures and Assessment traceability matrices.
- Joint and Coalition interoperability trials - Joint End-to-End prototyping trials, and Joint/Coalition interoperability demonstrations, Interoperability assessments and metrics, and Interoperability studies via the Coalition Warrior Interoperability Demonstration (CWID). USN provides funding to the general CWID operating budget and participates by operating a US Navy demonstration site.

3) Compliance and alignment reports with Navy Enterprise Architecture/Data Strategy and Assistant Secretary of the Navy for Research, Development and Acquisition (ASN RDA) system engineering policies generated during Systems Engineering Technical Reviews.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
C4ISR ARCHITECTURE AND STANDARDS The decrease in FY 2010 and out is due to this effort being combined with C4ISR Systems Engineering. *FY 2009 Accomplishments:* - Conducted spiral development of the FORCEnet Integration Architecture including Operational, System, Service and Technical Views. - Conducted technical analysis to review Joint Capabilities Integration and Development System documentations. - Implemented technical authority for architecture and standards.	0.155	0.000	0.000	0.000	0.000
C4ISR SYSTEMS ENGINEERING FY 2009 and prior, funding for this effort was budgeted in PE 0604231N, Tactical Command System, Project 9123 (FORCEnet). In addition, sub projects C4ISR Architecture and Standards, Distributed C2 Interoperability Requirements Analysis, and End-To-End System Engineering and Integrated Design are combined under C4ISR Systems Engineering in FY 2010 and out.	0.000	5.229	4.400	0.000	4.400

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604707N: *SEW Architecture/Eng Support*	PROJECT 2144: *Space & Elec Warfare Engineering*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2010 Plans: - Navy C4ISR Transformation/Strategic Planning within Navy/Joint/Department of Defense (DoD) Framework: Assesses existing and emerging capabilities, develops and evaluates Navy-wide policies, plans, requirements, and compliance; develops integration and investment strategies; and accelerates innovation, testing, assessment and fielding of material and non-material solutions for enhanced operational capability, joint/allied/coalition interoperability and application/enforcement of enterprise requirements/architectures/standards toward greater Net-Centric Operations/Warfare (NCO/W) capability. - Implementing and validating FORCEnet requirements: Perform systems engineering technical reviews utilizing validated assessment tools, system engineering methodologies and Compliance Action Lists to ensure standard engineering processes (e.g., information assurance, data strategy, architecture, modeling, service oriented architecture development) are being developed and utilized to ensure FORCEnet compliance. *FY 2011 Base Plans:* - Navy C4ISR Transformation/Strategic Planning within Navy/Joint/Department of Defense (DoD) Framework: Assesses existing and emerging capabilities, develops and evaluates Navy-wide policies, plans, requirements, and compliance; develops integration and investment strategies; and accelerates innovation, testing, assessment and fielding of material and non-material solutions for enhanced operational capability, Joint/Allied/Coalition interoperability and application/enforcement of enterprise requirements/architectures/standards toward greater NCO/W capability. - Implementing and validating FORCEnet requirements: Perform systems engineering technical reviews utilizing validated assessment tools, system engineering methodologies and Compliance Action Lists to ensure standard engineering processes (e.g., information assurance, data strategy, architecture, modeling, SOA development) are being developed and utilized to ensure FORCEnet compliance.					
COALITION WARRIOR INTEROPERABILITY DEMONSTRATION (CWID)	1.916	1.290	1.700	0.000	1.700

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604707N: *SEW Architecture/Eng Support*	PROJECT 2144: *Space & Elec Warfare Engineering*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: - Executed Coalition Forces Maritime Component Commander role in conjunction with NORTHCOM. - Executed over coalition-secret networks with joint and coalition partners. Integrated warfighter subject matter experts (SMEs) from New Zealand, Germany, and the U.S. Navy. In addition, executed the Homeland Defense (HLD)/Homeland Security (HLS) Coalition Warrior Interoperability Demonstration (CWID) site in conjunction with Academia (San Diego State University) and multiple federal (FBI, DEA, DHS) and state and local agencies (local law enforcement, city government, business and community leaders, non-governmental organizations (NGOs), parks service, first responders, faith leaders, etc.). Inter-governmental agency interoperability remained a cornerstone of the CWID charter. - Directed, executed, and hosted both CWID 09 venues/sites at NORTHCOM and San Diego State University (integrating their Department of Homeland Security Graduate Study and Research Programs). - Evaluated over 20 key technologies for Interoperability, Security, and Warfighter Utility at the Navy-directed sites alone, with over 220 (two to five times the amount of other service sites) decision makers (flag, SES, industry) and other stakeholders from U.S. and joint military, academia, and civil sectors participating in the experiment. *FY 2010 Plans:* - CWID will de-scope its current joint and navy effort to focus exclusively on joint capability gaps. As directed by the CWID Joint Management Office (JMO), funding will be provided to the various joint organizations for execution of the joint portions of the CWID effort. - The Navy site will evaluate known Navy capability gaps and will perform demonstration management, planning, installation/de-installation, security certification and accreditation, infrastructure (networks, crypto, laboratories, etc.), data collection and analysis, final report, and documentation.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604707N: *SEW Architecture/Eng Support*	PROJECT 2144: *Space & Elec Warfare Engineering*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 Base Plans: - CWID will demonstrate state-of-the-industry technologies in an operationally relevant lab based environment to inform DoD Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) design efforts.					
DISTRIBUTED C2 INTEROPERABILITY REQUIREMENTS ANALYSIS The decrease in FY 2010 and out is due to this effort being combined with C4ISR Systems Engineering. *FY 2009 Accomplishments:* - 2020-2026 Model C4ISR architectures for 3 Major Combat Operations / Mission areas supported of force level assessments for 5 Navy analytic issues / Capability Based Assessments (CBA). Supported NCW Level 3 block builds. FORCEnet Capability List (FCL) efforts continued to develop a web-based software system required to implement the FCL. It provided the direct correlation of joint interoperable capabilities to activities, functions, and systems mapped to Mission Essential Tasks (METs). It provided linkages to the metrics assessing value of systems relevance to joint interoperable capability, functions, and associated tasks and activities. FY 2009 OCO: - Not applicable	1.051	0.000	0.000	0.000	0.000
END-TO-END SYSTEM ENGINEERING AND INTEGRATED DESIGN The decrease in FY 2010 and out is due to this effort being combined with C4ISR Systems Engineering. *FY 2009 Accomplishments:* - Continued to provide systems engineering support to apply end-to-end integrated architectures across the Naval Enterprise.	0.155	0.000	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604707N: *SEW Architecture/Eng Support*	PROJECT 2144: *Space & Elec Warfare Engineering*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Continued to provide training for Team SPAWAR personnel on how to meet interoperability certification requirements. - Continued to work with ASN RDA on implementation of the Integration & Interoperability Management Plan (I&IMP). - Implemented the CTE CONOPS/effort with emphasis on linking Team SPAWAR labs and facilities to Naval Enterprise labs and facilities. - Supported Team SPAWAR PMs in development and implementation of Joint Capabilities Integration and Development System (JCIDS) documents, ISPs and NR-KPPs through the Systems Engineering Technical Review (SETR) process.					
JOINT RAPID ARCHITECTURE EXPERIMENTATION (JRAE) The decrease in FY 2010 and out is due to the effort concluding in FY 2009. *FY 2009 Accomplishments:* - JRAE's focus is on experimenting with near term, end-to-end material solutions that the Services plan to field in the next one to four years and ensuring the end-to-end architectures are interoperable. Built on successes from JRAE 07 (NCES ABAC) and JRAE 08 (Cryptographic Binding of Metadata) to demonstrate a layered Information Assurance (IA) solution with Maritime Domain Awareness Continental U.S. (MDA CONUS) Port and Coastal Surveillance Systems (P&CS). This experiment leverages National Security Agency (NSA) expertise and support to deliver cutting edge Multi-Level Security Service Oriented Architecture (MLS SOA) solutions that can be utilized to address wide ranging warfighter and civil capability gaps. Successfully demonstrated operational capability for a civil user of MDA CONUS Port and Coastal data (United States Coast Guard Operations Center and Port of San Diego Law Enforcement Operations Center) to access only that information they are allowed to see based upon their security clearance. Provides for trusted user changes (the affiliation of the track to Friendly [Blue Force]) and assured system tagging (changed data disappears from the civil authority display). JRAE, via this	0.290	0.000	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604707N: *SEW Architecture/Eng Support*	PROJECT 2144: *Space & Elec Warfare Engineering*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
experiment, demonstrated cutting edge Multi Level Security (MLS) capability with an operational system used by military and civil agencies in a Service Oriented Architecture (SOA) environment.					
MARITIME DOMAIN AWARENESS (MDA) The decrease in FY 2010 and out is due to the effort being realigned to program element 0604231N, project 2351. *FY 2009 Accomplishments:* Provided systems engineering support for the MDA acceleration initiative to include: - Architecture: Interim Authority to Operate (IATO) for Comprehensive Maritime Awareness (CMA), Google and Extended-Maritime Intercept Operations (EMIO) Afloat Database Server (EADS) - Capability demonstrations: Coalition Warrior Interoperability Demonstration (CWID), Joint Rapid Architecture Experimentation (JRAE), Joint Capabilities Technology Demonstration (JCTD), Advanced Concept Technology Demonstration (ACTD) - Completed the extended fielding of prototypes: Naval Forces Europe (NAVEUR), Pacific Fleet (PACFLT), Maritime Intelligence Fusion Center, Pacific (MFICPAC), Maritime Intelligence Fusion Center, Atlantic (MFICLANT), Navy, Central Command (NAVCENT), Office of Naval Intelligence (ONI), and Joint Interagency Task Force-South (JIATF-S). - Provided Acquisition Workforce support.	6.861	0.000	0.000	0.000	0.000
SYSTEMS ENGINEERING AND INTEGRATION REVITALIZATION *FY 2009 Accomplishments:* - Developed and improved systems engineering models, tools, and databases to improve the quality of C4ISR products. - Developed the Systems Engineering Technical Review database. - Initiated the systems engineering plan e-Builder. - Initiated the measurement repository and analysis database.	0.927	1.264	1.108	0.000	1.108

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604707N: *SEW Architecture/Eng Support*	PROJECT 2144: *Space & Elec Warfare Engineering*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 OCO: - Not applicable *FY 2010 Plans:* - Certify competency standards for systems engineering qualification. - Deliver an assessment of systems engineering capability and recommend improvements. - Increase access to systems engineering training resources. *FY 2011 Base Plans:* - Implement system engineering capability recommendations. - Provide increased access to systems engineering training resources.					
SYSTEMS ENGINEERING STANDARDS AND PROCESSES *FY 2009 Accomplishments:* - Combined existing stovepiped data systems into integrated operational pictures across programs of record. - Developed prototypes and excursions of emerging C4ISR systems for use in potential product enhancements. - Enabled excursions from existing ISR systems to use existing sensors to solve non-traditional problems. - Integrated existing technologies in novel ways to substantially increase systems capabilities at low risk. - Reduced network bandwidth overhead and inefficiencies. *FY 2010 Plans:* - Develop processes, model, and collect data to link probability of program success to systems engineering performance. - Improve process for using modeling and simulation in Systems Engineering Technical Review.	2.384	3.249	2.851	0.000	2.851

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604707N: *SEW Architecture/Eng Support*	PROJECT 2144: *Space & Elec Warfare Engineering*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Improve linkage between requirements analysis and enterprise architecture products. *FY 2011 Base Plans:* - Define the interfaces between program office systems engineering and enterprise systems engineering and optimize the total value of systems engineering in product delivery. - Develop processes to inject systems engineering discipline into the acquisition cycle earlier. - Incorporate lessons learned from recent and emerging program issues.					
ACQUISITION WORKFORCE FUND *FY 2009 Accomplishments:* FY 2009: Funded DoD Acquisition Workforce Fund.	0.071	0.000	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals	13.810	11.032	10.059	0.000	10.059

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

In FY10 and FY11, the SEW engineering program will employ rigorous and consistent system engineering planning practices to develop architecture-based, model-validated solutions, plans, and recommendations for enterprise-wide network reconciliation, common platform networks, and standardized operation center configuration.

COALITION WARRIOR INTEROPERABILITY DEMONSTRATION (CWID) Performance Metrics: Three key metrics: (1) Interoperability and compliance with Naval, Joint, Coalition and other Non-Governmental Organization (NGO) architectures, systems and equipment; (2) Compliance with Defense Information Services Agency (DISA), National Security Agency (NSA), and other Joint and Coalition Information Assurance and Security standards; and (3) Warfighter utility assessment across the joint and coalition spectrum. Specific metrics validate performance of individual technologies participating in CWID.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604707N: *SEW Architecture/Eng Support*	PROJECT 2144: *Space & Elec Warfare Engineering*

Support ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	Various/ Various	Various Various	4.554	0.000		0.000		0.000		0.000	0.000	4.554	Continuing
SEW/C4I Technology Integration	Various/ Various	Various Various	12.985	0.000		0.000		0.000		0.000	0.000	12.985	Continuing
MDA Prototype SE Support	Various/ Various	Various Various	17.376	0.000		0.000		0.000		0.000	0.000	17.376	Continuing
Systems Engineering & Integreation Revitalization	Various/ Various	Various Various	0.927	1.264	Feb 2010	1.108	Feb 2011	0.000		1.108	Continuing	Continuing	Continuing
Systems engineering Standards & Processes	Various/ Various	Various Various	2.384	3.249	Feb 2010	2.851	Feb 2011	0.000		2.851	Continuing	Continuing	Continuing
Systems A&E and Validation	Various/ Various	Various Various	13.188	0.000		0.000		0.000		0.000	0.000	13.188	Continuing
Distributed C2 Interoperability Requirement analysis	Various/ Various	Various Various	16.583	0.000		0.000		0.000		0.000	0.000	16.583	Continuing
C4ISR Architecture and Standards	Various/ Various	Various Various	14.268	0.000		0.000		0.000		0.000	0.000	14.268	Continuing
End-to-End System Engineering and Integrated Design	Various/ Various	Various Various	10.994	0.000		0.000		0.000		0.000	0.000	10.994	Continuing
Info. Repository/Naval Architecture	Various/ Various	Various Various	4.000	0.000		0.000		0.000		0.000	0.000	4.000	Continuing
C4ISR Systems Engineering	Various/ Various	Various Various	0.000	5.229	Feb 2010	4.400	Feb 2011	0.000		4.400	Continuing	Continuing	Continuing
		Subtotal	97.259	9.742		8.359		0.000		8.359			

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604707N: *SEW Architecture/Eng Support*	PROJECT 2144: *Space & Elec Warfare Engineering*	

Support ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Test and Evaluation ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SEW Eng/CWID	Various/ Various	Various Various	28.881	1.290	Dec 2009	1.700	Dec 2010	0.000		1.700	Continuing	Continuing	Continuing
SEW Eng/JRAE	Various/ Various	Various Various	15.978	0.000		0.000		0.000		0.000	0.000	15.978	Continuing
		Subtotal	44.859	1.290		1.700		0.000		1.700			

Remarks

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604707N: *SEW Architecture/Eng Support*	PROJECT 2144: *Space & Elec Warfare Engineering*

Management Services ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ACQ Workforce Fund	Various/ Various	Various Various	0.071	0.000		0.000		0.000		0.000	0.000	0.071	Continuing
		Subtotal	0.071	0.000		0.000		0.000		0.000	0.000	0.071	

Remarks

	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	142.189	11.032		10.059		0.000		10.059			

Remarks

Exhibit R-4, **RDT&E Schedule Profile:** PB 2011 Navy			**DATE:** February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604707N: *SEW Architecture/Eng Support*	**PROJECT** 2144: *Space & Elec Warfare Engineering*	

Fiscal Year					2009				2010				2011				2012				2013				2014				2015			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CWID: Schedule as directed by the Joint Management Office (JMO) during execution year.																																

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604707N: *SEW Architecture/Eng Support*	**PROJECT** 2144: *Space & Elec Warfare Engineering*

Schedule Details

	Start		End	
Event	**Quarter**	**Year**	**Quarter**	**Year**
CWID: Schedule as directed by the Joint Management Office (JMO) during execution year.	1	2009	4	2015

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604707N: *SEW Architecture/Eng Support*	PROJECT 2357: *Maritime Battle Center*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
2357: *Maritime Battle Center*	30.238	28.377	23.881	0.000	23.881	30.605	30.717	31.595	36.258	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

The mission of the Maritime Battle Center (MBC) is the development of new or improved warfighting capabilities through Sea Trial, the fleet's experimentation process. The MBC's program evaluates and validates emerging Navy concept of operations, doctrine and technologies through focused experimentation, rigorous analysis and assessment. Sea Trial experimentation, on the other hand, is dedicated to providing solutions to near term (within the Fiscal Year Defense Plan) war fighting gaps. The flag level Sea Trial Executive Steering Group (STESG prioritizes and approves the Sea Trial's annual execution plan.

The MBC acts as the executive agent to conduct and coordinate experiments that are focused on both technological and non-technological solutions to warfighting gaps across all naval warfare areas. The MBC is involved in all facets of experimentation including planning, systems engineering and integration, execution, data collection, analysis, and assessment for fleet experiments, limited objective experiments, limited technical experiments, wargames, seminars and workshops. The MBC supports the early and sustained involvement of Joint Warfighters in refining the technologies and the tactics, techniques, and procedures needed in the Joint fight.

This program historically does not meet established execution benchmarks. MBC experimentation differs from other Research, Development, Test and Evaluation (RDT&E) programs because it is based upon Fleet operational availability vice independently scheduled through warfighting labs. Because Fleet experimentation frequently must occur during the spring AND summer operational schedules, the overall RDT&E obligation/expenditure rates do not align with OSD practice. As a result, MBC's obligation rates do not begin to approach benchmark until the program nears the fiscal year's end while its expenditure rates generally do not approach benchmark until midway through the second year of its appropriation.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FBE ANALYSIS AND CORE SUPPORT	30.238	28.377	23.881	0.000	23.881
Because of the synergistic relationship between NWDC's Maritime Battle Center experimentation efforts and the Fleet's Sea Trial experimentation efforts, funding for both endeavors have been combined					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
under one project, the Maritime Battle Center. The Sea Trial aspect of this project's mission is driven by the priorities of the designated Operational Agents, Commander Second Fleet for Sea Strike and Seabasing, Commander Third Fleet for Sea Shield, and Commander Naval Network Warfare Command for FORCEnet. The priorities of these Operational Agents are further prioritized and approved by the Sea Trial Executive Steering Group (STESG) in conjunction with Commander U.S. Fleet Forces. *FY 2009 Accomplishments:* - Continued participation in JFCOM experimentation continuum. - Continued Limited Objective Experiments. - Continued CONOPS Development Experiments. - Completed Submarine Automated Identification System Buoy experiment. - Completed the FY09 spiral of the multi-year series of Maritime Operations Center experiments. - Completed the FY09 spiral of the multi-year series of Intelligence, Surveillance and Reconnaissance (ISR) Support to the Maritime Operations Center experiments. - Completed the FY09 spiral of the multi-year series of Networking of Military Operations Center experiments. - Completed the FY09 spiral of the multi-year series of Network Operations, Information Operations and Space Support experiments. - Completed the FY09 spiral of the multi-year series of Information Assurance/Computer Network Defense experiments. - Completed the FY09 spiral of the multi-year series of Electronic Warfare Improvement experiments. - Completed the FY09 spiral of the multi-year series of Maritime Domain Awareness experiments. - Completed the FY09 spiral of the multi-year series of Coalition Networks experiments. - Completed the FY09 spiral of the multi-year series of Unclassified Common Operational Picture (COP) experiments. - Completed the FY09 spiral of the multi-year series of Bandwidth Optimization experiments. - Completed the FY09 spiral of the multi-year series of Network Instrumentation and Visualization experiments.					

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Completed the FY09 spiral of the multi-year series of Offensive Information Operations experiments. - Completed the FY09 spiral of the multi-year series of Cross Domain Solution experiments. - Completed the FY09 spiral of the multi-year series of Command and Control/Real-Time Collaboration experiments. - Cancelled the Surface Meteorological and Oceanographic experiment. - Cancelled the Global Ocean Forecasting experiment. - Cancelled the FY09 spiral of the multi-year series of Persistent Day/Night Tracking experiments. - Executed Sea Trial Experiments, War Games, and Seminars. - Initiated the Sonar/Radar Data Comparison experiment. - Initiated the Maritime Domain Awareness Analyst Tools experiment. - Initiated the Millimeter Wave Chaff experiment. - Initiated the Surface Action Group Modeling experiment. - Initiated the Harpoon Seeker Modeling in an Electronic Attack environment experiment. - Initiated the Fast Attack Craft/Fast Inshore Attack Craft experiment. - Initiated the first of the multi-year series of Littoral Force Protection experiments. - Initiated the final spiral of the multi-year series of Tactical Tomahawk 3rd Party Targeting experiments. - Initiated the FY09 spiral of the multi-year series of Surface Ship Periscope Detection experiments. - Initiated the FY09 spiral of the multi-year series of Submarine Unmanned Aerial System experiments. - Initiated the FY09 spiral of the multi-year series of Submarine Communications at Speed and Depth experiments. - Initiated the FY09 spiral of the multi-year series of Mine Countermeasures in Support of Homeland Defense experiments. - Initiated the FY09 spiral of the multi-year series of Littoral Combat Ship Mine Warfare Mission Modules experiments. - Initiated the FY09 spiral of the multi-year series of Naval Obscurant experiments. - Initiated the FY09 spiral of the multi-year series of SPIKE experiments. - Initiated and completed the FY09 spiral of the multi-year series of Remote Monitoring experiments.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Initiated and completed the FY09 spiral of the multi-year series of Extended Maritime Interception Operations experiments. - Initiated the Sonar Active Target Evaluation experiment. - Initiated the FY09 spiral of the multi-year series of Project Guillotine experiments. - Initiated the FY09 spiral of the multi-year series of Submarine/Unmanned Underwater Vehicle Communications experiments. Acquisition Workforce Fund - Funded DoD Acquisition Workforce Fund. *FY 2010 Plans:* Items listed below represent some of the experiments in the approved Execution Plan 10, but adjustments will be made during FY10 as high priority pop-ups are added and other experiments are cancelled or delayed for various reasons. - Continue all FY 2009 efforts less those noted as completed above. - Initiate and execute Sea Trial Experiments, War Games, and Seminars. - Initiate and complete the ASW Employment of Emerging Technology experiment. - Initiate and complete the FY10 spiral of the multi-year series of Computer Network Defense experiments. - Initiate and complete the FY10 spiral of the multi-year series of Electronic Warfare Improvement experiments. - Initiate and complete the FY10 spiral of the multi-year series of Persistent ISR (Intelligence, Surveillance and Reconnaissance) experiments. - Initiate and complete the FY10 spiral of the multi-year series of Globally Networked Maritime Operations Center experiments. - Initiate and complete the Palantir experiment.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Initiate and complete the FY10 spiral of the multi-year series of Operational Level Command and Control experiments. - Initiate and complete the CONOPS for Employment of Unmanned Surface Vessels for Force Protection experiment. - Initiate and complete the FY10 spiral of the multi-year series of Maritime Domain Awareness experiments. - Initiate and complete the FY10 spiral of the multi-year series of Long Range Anti-Ship Missile Weapon experiments. - Initiate and complete the Tactical Tomahawk/Network Enabled Weapon experiment. - Initiate and complete the FY10 spiral of the multi-year series of Naval Oceanography Mine Warfare Center Employment of Emerging Technology experiments. - Initiate and complete the FY10 spiral of the multi-year series of Fusion Correlation experiments. - Initiate and complete the ASW Distributed Force experiment. - Initiate and complete the Tactical Tomahawk Ship to Objective Maneuver Coordination experiment. - Initiate and complete the JFMCC-MEB Command and Control experiment. - Initiate and complete the Non-Lethal Weapons for Expeditionary Maritime Forces experiment. - Initiate and complete the FY10 spiral of the multi-year series of Coalition Information Sharing experiments. - Initiate and complete the Compact Low Frequency Active Off-Board Active Source Expendable experiment. - Initiate and complete the FY10 spiral of the multi-year series of Electric E-Fields experiments. - Initiate and complete the FY10 spiral of the Unmanned Surface Vehicle Decoys experiments. - Initiate and complete the ASW Non-Traditional Sensor experiment. - Initiate and complete the Maritime Force Application/Fires Computer Information Environment experiment. - Initiate and complete the FY10 spiral of the multi-year series of Navy Laser Weapons Systems experiments. - Initiate and complete the Carrier Strike Group/Surface Action Group Takedown experiment.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604707N: *SEW Architecture/Eng Support*	PROJECT 2357: *Maritime Battle Center*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Initiate and complete the Seabasing Wargame. - Initiate and complete the FY10 spiral of the multi-year series of Data Throughput experiments. - Initiate and complete the FY10 spiral of the multi-year series of Tactical Communications experiments. - Initiate and complete the FY10 spiral of the multi-year series of Offensive Information Operations experiments. - Initiate and complete the FY10 spiral of the multi-year series of Network Management experiments. - Initiate and complete the FY10 spiral of the multi-year series of Real-Time Collaboration experiments. - Initiate and complete the FY10 spiral of the multi-year series of Submarine Launched Small Tactical Unmanned Aerial Systems experiments. - Initiate and complete the Lethal Weapons for Expeditionary Maritime Forces experiments. - Initiate and complete the FY10 spiral of the multi-year series of Satellite Communications experiments. - Initiate and complete the APS-145 Counter Deceptive Electronic Attack experiment. - Initiate and complete the Sealift 10 Navy Logistics Cell experiment. - Initiate and complete the FY10 spiral of the multi-year series of Information Assurance experiments. - Initiate and complete the Logistics Common Operating Picture experiment. - Initiate and complete the FY10 spiral of the multi-year series of Naval Obscurant System experiments. - Initiate and complete the Over the Horizon Detection of Naval Radar experiment. - Initiate and complete the FY10 spiral of the multi-year series of Cross Domain Solutions experiments. - Initiate and complete the Reconfigurable Autonomous Classification System experiment. *FY 2011 Base Plans:* - Continue all FY 2010 efforts less those noted as completed above. - Initiate and execute Sea Trial Experiments, War Games, and Seminars based on the Execution Plan 11, currently being developed.					
Accomplishments/Planned Programs Subtotals	30.238	28.377	23.881	0.000	23.881

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Maritime Battle Center:

- Refine concepts and identify key performance levels necessary for implementation.
- Demonstrate feasibility and discriminate among competing concepts and implementation alternatives.
- Understand potential military effectiveness and risk.
- Evaluate how much of the new capability and attendant force structure is needed.
- Learn how to operate the new force and combine it with the legacy force.
- Develop recommended Doctrine, Organization, Training, Materiel, Leadership, and Personnel (DOTMLP) changes.
- Develop fleet warfighting requirements for submission to the OPNAV Navy Capabilities Development Process (NCDP) to inform Navy acquisition decisions.
- Integrate emergent concepts and technologies, leading to rapid introduction of needed warfighting capabilities in the fleet.
- Rapidly mature Sea Shield, Sea Strike, Sea Basing, and FORCEnet concepts, technologies, and doctrine.
- Focus on near, mid and long term warfighting challenges to realize increased warfighting effectiveness.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604707N: *SEW Architecture/Eng Support*	PROJECT 2357: *Maritime Battle Center*	

Test and Evaluation ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
System Test and Evaluation	Various/ Various	Various Various	222.324	23.953		19.882		0.000		19.882	Continuing	Continuing	Continuing
		Subtotal	222.324	23.953		19.882		0.000		19.882			

Remarks

Management Services ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	Various/ Various	Various Various	45.639	4.424		3.999		0.000		3.999	Continuing	Continuing	Continuing
ACQ Workforce Fund	Various/ Various	Various Various	0.148	0.000		0.000		0.000		0.000	0.000	0.148	Continuing
		Subtotal	45.787	4.424		3.999		0.000		3.999			

Remarks

	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	268.111	28.377		23.881		0.000		23.881			

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604707N: *SEW Architecture/Eng Support*	PROJECT 2357: *Maritime Battle Center*	

	Total Prior Years Cost	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Remarks								

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604707N: *SEW Architecture/Eng Support*	PROJECT 9999: *Congressional Adds*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
9999: *Congressional Adds*	0.798	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.798
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

Congressional Add

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010
Congressional Add: Cross-Domain Network Access System *FY 2009 Accomplishments:* Using an existing, government-accredited COTS product, developed a secure communications system that can be employed outside standard secure facilities in unclassified areas. The solution must run on standard ordinary hardware platforms, such as laptops, and have no residual evidence of secure communication activity. It must support conventional text and commonly used software applications such as office productivity applications. In its classified state, it must run on a trusted operating system and be accreditable by appropriate authorities resulting in an authority to operate (ATO) on military and intelligence networks.	0.798	0.000
Congressional Adds Subtotals	0.798	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Congressional Add

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604707N: *SEW Architecture/Eng Support*	**PROJECT** 9999: *Congressional Adds*

E. Performance Metrics

Congressional Add