FY 2005 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 2004
Exhibit R-2

BA: 04 PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: Space and Electronic Warfare (SEW) Architecture/Eng Support

COST: (Dollars in Thousands)

Project Number & Title	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate
R2357 MARITIME BATTLE CENTER	18,710	19,465	14,539	14,968	18,001	18,358	18,722
R9364 ADVANCED WIRELESS NETWORK	0	3,461	0	0	0	0	0
X0798 OTH TARGETING	2,011	1,567	1,713	1,620	1,985	2,025	2,065
X2144 Propulsion Tech Demonstration	11,258	9,910	9,691	11,437	12,452	12,702	12,960
X9054 IT-21 BLOCK 1 C4ISR COMPUTING EQUIPMENT UPGRADE	1,619	0	0	0	0	0	0
X9365 COALITION WARFARE PROGRAM (CWP) OPERATIONAL ASSESS	0	2,769	0	0	0	0	0
Totals	33,598	37,172	25,943	28,025	32,438	33,085	33,747

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 projects are systems engineering non-acquisition programs with the objectives of developing, testing, and validating Naval Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) architectures to support Naval missions in Joint and Coalition Theater. The mission of this PE is carried out by multiple tasks that are used to ensure Naval C4ISR Command and Control Warfare (C2W) components of SEW are effectively integrated into the C4ISR architectures. Additionally the program ensures that (1) the composite operational capabilities of SEW systems (not the individual component systems) conform to the Naval C4ISR architecture as related to the objectives of National Defense Strategy and evolving joint visions and direction, such as Joint Vision 2010 (JV 2010), "Copernicus…C4ISR for the 21st Century," "Forward…From the Sea," C4I For the Warrior, and the Defense Science Board Summer Study Task Force on Information Architecture for the Battlefield and are guided by Commander In Chief (CINC) requirements; (2) that SEW systems and systems integration effort involves 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, flexible reconfiguration, as well as reduce costs; and (3) that SEW systems integration efforts support Expeditionary C5 Grid (EC5G) to provide the foundation for FORCEnet and the Navy's contribution to the Global Information Grid. The MBC is a distributed organization focusing on experimentation concept development and analysis tasks are coordinated by the Navy Warfare Development Command. The MBC will also act as the Navy representative to the Joint Battle Center and the Battle Labs of other services.

PROGRAM CHANGE SUMMARY:

	FY 2003	FY 2004	FY 2005
FY 2004-2005 President's Budget Submission	32,565	31,369	26,366
Cong. Rescissions/Adjustments/Undist.Reductions	-337	-442	0
Congressional Actions	0	6,300	0
Execution Adjustments	1,370	0	0
Inflation Savings	0	0	-85
Rate Adjustments	0	-28	-22
SPAWAR Service Cost Center Adjustments	0	-27	-30
Technical Adjustments	0	0	-286
FY 2005 President's Budget Submission	33,598	37,172	25,943

PROGRAM CHANGE SUMMARY EXPLANATION:
Technical: Not applicable

Schedule: Not applicable

FY 2005 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 2004
Exhibit R-2a

BA: 04 PROGRAM ELEMENT: 0604707N PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support
PROJECT NUMBER: R2357 PROJECT TITLE: MARITIME BATTLE CENTER

COST: (Dollars in Thousands)

Project Number & Title	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate
R2357 MARITIME BATTLE CENTER	18,710	19,465	14,539	14,968	18,001	18,358	18,722

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The mission of the MBC is to execute the Naval Warfare Innovation Process. The process takes concepts developed by the Strategic Studies Group and approved by the Chief of Naval Operations into Fleet Battle Experiments; conducts preliminary sub-scale experiments and technological demonstrations focused on the advanced engineering and operational system development of systems related to all conflict levels of Littoral Battlespace. The MBC environment is a network centric environment that links the existing "core" Naval facilities to the Marine Corps Warfighting Lab (MCWL), the Joint Battle Center/Federated Battle Lab, and technologists in industry and academia. The MBC is essential to the evolution of combat capabilities since it is the engine for validating the new network centric warfare techniques in conjunction with the Sea Based Battle Laboratories (SBBL), Science & Technology (S&T) initiatives and other initiatives that originate with the operating forces. The MBC supports the early and sustained involvement of Joint Warfighters in refining the technology to meet the tactics, techniques, and procedures needed for 2010-2020 Littoral Battlespace. The MBC will have multiple roles since it is a crosscutting organization involved in several facets of concept, platform, weapons, weapon systems and Information Technologies (IT), Information System (IS) and Information Management (IM) systems development and integration. These include collaborative planning, operational experimentation planning and execution, technology transition/acquisition support, systems engineering and integration, technology assimilation and operational demonstrations.

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2003	FY 2004	FY 2005
FBE Analysis and Core Support	18,710	19,465	14,539

FY 2003 Accomplishments:

• Fleet Battle Experiment (FBE) Kilo objectives were to explore new and innovative warfare doctrine, organization, and materiel; assess their feasibility; and evaluate their utility. FBE-K combined experimental Tactics, Techniques, and Procedures (TTP) with new technologies, and also explored innovative ways to use existing technologies to enhance the warfighter's capabilities. The ultimate objective was to provide evidential data that would lead to analytical insights to support specific Doctrine, Organization, Training, Material, Leadership and Education, Personnel, and Facilities (DOTMLEPF) change package recommendations. The selection of warfighting initiatives was driven by the guidance of the Naval Transformation Roadmap, the tenets of Sea Power 21, the warfighting priorities of Commander, Fleet Forces Command (CFFC), Commander US Pacific Fleet (PACOM), Commander Seventh Fleet (C7F), Navy Warfare Development Command (NWDC) concept development, and previous NWDC experimentation. Thus the initiatives were developed on the firm foundation of Sea Trial guidance, the warfighting priorities of senior operational commanders, a conceptual view of the battlespace of the future, and as part of an experimentation campaign continuum. FBE-K focused on four initiative areas to enhance the warfighter's capabilities:

(1) Information Operations (IO),
(2) Area Air Defense Commander System (AADCS),
(3) Anti-Submarine Warfare (ASW), and
(4) Fires.

Initiative areas (1)-(3) are part of Sea Power 21's Sea Shield operational concept to assure access throughout the battlespace for the Joint Force and to project a defense around friends, allies, coalition and the Joint Forces. Initiative (4) is part of the Sea Strike operational concept to project decisive and persistent offensive power anywhere required and to launch immediate, agile, and sustainable operations from the sea.

• The Information Operations (IO) initiative explored both a strategy and a framework for implementing a robust, layered defense to protect the depth and breadth of information and its infrastructure required to support the afloat Joint Task Force (JTF) Commander. This Computer Network Defense-in-Depth (CNDiD) strategy included the employment of an advanced Network Intrusion Detection System (NIDS) and visualization tools. A denial of service detection and mitigation tool complemented this defensive framework.

• In Theater Air and Missile Defense (TAMD), an initiative on the AADCS involved observing and assessing the applicability, usefulness, and effectiveness of the draft C7F AADCS Tactical Memorandum (TACMEMO) in supporting the Joint Force Air Component Commander (JFACC). The AADCS TACMEMO contained a general description of this operational level planning and real time monitoring tool's systems architecture and functionality, a Command and Control (C2) process description, and the anticipated command relationships during the use of the AADCS by JFACC/Area Air Defense Commander (AADC) while embarked on USS BLUE RIDGE (LCC 19), the C7F Command Ship. The TAMD initiative also explored the use of Builder II, a prototype Radio Frequency (RF) propagation analysis system that incorporates actual meteorological data for sensor and RF transmitter range and susceptibility predictions.

• The ASW initiatives experimented with planning and C2 procedures, including interactions between the Theater ASW Commander (TASWC) and the local ASWC. New technologies supporting improving Situational Awareness (SA) included the Experimental Common Undersea Picture (XCUP) and integration of Low Frequency Active sonar (LFA) in coordinated ASW operations.

• The Fires initiatives addressed procedures that incorporate the Joint Fires Network (JFN) family of systems into the war fighting processes of a sea-based JTF commander. One initiative examined the refinement of C7F JFN Concept of Operations (CONOPS) as well as Time Sensitive Targeting (TST) Standard Operating Procedures (SOP). In addition, a coalition initiative was to establish and examine requirements for utilizing a distributed maritime sensor and fires network that integrated a coalition engagement node into the network.

• Distributed Command and Control Limited Objective Experiments. Continuum looks at Sea Trial's "Innovation to the warfighter… rapid prototyping, concept development, and coordinated experimentation".

FY 2004 Plans:

• Fleet Battle Experiment Lima.
• Sea Viking 04 Advanced Warfighting Experiment.
• Joint Force Maritime Component Commander Workshop.

- Joint Force Maritime Component Commander War Game.
- Distributed Collaborative Environment Limited Objective Series (3 events).
- Silent Hammer Limited Objective Experiment.
- Dominant Undersea Warfare Limited Objective Experiment.
- Littoral Combat Ship Mission Module Limited Objective Experiments.
- High Speed Vessel Limited Objective Experiments.
- Undersea Warfare Wargame.
- Predictive Analysis Workshop.

FY 2005 Plans:

- Support Fleet Battle Experiment Mike.
- Continue the Joint Forces Command (JFCOM) experimentation events.
- Continue the Limited Objective Experiments.
- Execute Sea Trial experiments, wargames and seminars.

C. OTHER PROGRAM FUNDING SUMMARY:

Not applicable.

D. ACQUISITION STRATEGY:

Not applicable.

FY 2005 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 2004

Exhibit R-3

BA: 04 PROGRAM ELEMENT: 0604707N PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support

PROJECT NUMBER: R2357 PROJECT TITLE: MARITIME BATTLE CENTER

Exhibit R-3 Cost Analysis (page 1)									Date: FEBRUARY 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E,N			PROGRAM ELEMENT 0604707N						PROJECT NAME AND NUMBER Maritime Battle Center R2357			
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY-03 Cost	FY-03 Award Date	FY-04 Cost	FY-04 Award Date	FY-05 Cost	FY-05 Award Date	Cost To Comp.	Total Cost	Target Value of Contract
System Test and Evaluation	Various	Various	65773	15624	Various	15753	Various	11900		CONT	CONT	CONT
Subtotal T&E			65773	15624		15753		11900		CONT	CONT	CONT
Remarks												
Program Management	Various	Various	14820	3086	Various	3712	Various	2639		CONT	CONT	CONT
Subtotal Management			14820	3086		3712		2639		CONT	CONT	CONT
Remarks												
Total Cost			80593	18710		19465		14539		CONT	CONT	CONT

FY 2005 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 2004

Exhibit R-2a

BA: 04 PROGRAM ELEMENT: 0604707N PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support

PROJECT NUMBER: X0798 PROJECT TITLE: OTH TARGETING

Project Number & Title	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate
X0798 OTH TARGETING	2,011	1,567	1,713	1,620	1,985	2,025	2,065

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFCATION: The Over-the-Horizon Targeting (OTH-T) program provides a virtual, global systems integration and test facility for Information Technology for the 21st Century (IT-21) C4ISR technology that supports the collection, transmission, correlation, and display of track data into a Common Operational Picture (COP) in support of warfighting requirements. This effort was originally undertaken to support targeting of over-the-horizon weapons such as the TOMAHAWK cruise missile. The common view of the battle space that was provided to the war fighter by OTH-T has been applied across the spectrum of warfare missions; however, the technology and doctrine on which it was based has changed radically in recent years. The result is that the first goal of the OTH-T program is to transition the OTH-T architectures and systems from older Military Standard (MIL-STD) technologies to COTS (Commercial Off the Shelf) and GOTS (Government Off the Shelf) based technologies that support Network Centric Warfare and the Navy's plan to support JV 2020 implementing IT-21 technology. The second goal of the OTH-T program is to support integration and interoperability of all C4I systems into warfighting capabilities. This support includes providing technical expertise afloat and ashore via a cadre of highly-trained Fleet Systems Engineers who ensure smooth integration of new capabilities to enhance OTH-T during major Fleet exercises and demonstrations which are used to validate and evaluate developed portions of configuration. The OTH-T program integration and testing in support of warfighting capabilities includes interoperability testing for both MIL-STD and IT-21 COTS equipment for submarines, surface, and land based components. Allied interoperability is important for future naval operations. Funding will allow for development of subnet relay protocols and automatic link establishment standards, which will provide for a significant improvement within and between battlegroups.

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2003	FY 2004	FY 2005
BF E-MAIL	228	0	0

• Integrated code combination techniques developed during previous fiscal year into internationally agreed High Frequency (HF) data profiles for significant improvement in guarantee of delivery of email attachments in poor propagation conditions associated with the HF medium. Exploited HF Full Duplex protocols and adaptive compression techniques to greatly improve data throughput. FY03 converted primary transmission protocol to Transmission Control Protocol/Integrated Protocol (TCP/IP).

	FY 2003	FY 2004	FY 2005
Subnet Relay	256	664	733

• Exploit and coordinate subnet relay protocols and multi frequency band channels to provide greater data throughput in the HF and UHF Line-of-Sight Radio Frequency (RF) mediums. Exploit HF Beyond-Line-of-Site and Extended-Line-of-Sight ground – and sky – waveforms to improve long range tactical communications. Adapt IP Quality of Service (QOS), Voice over IP (VoIP), and Internet Protocol Video Teleconference (IP VTC (H.323)) protocols to subnet relay communications.

	FY 2003	FY 2004	FY 2005
ALE Development	227	0	0

• Exploited Automatic Link Establishment (ALE) standard to support integration and interoperability of multi-level coalition forces to enhance OTH-T capabilities in a Network Centric Warfare environment. Adapted ALE toward future implementation as integral part of Joint Tactical Radio System (JTRS) for allied interoperability.

	FY 2003	FY 2004	FY 2005
Systems Integration & Interoperability Testing	424	424	453

• Conduct systems integration and interoperability (Navy and Joint) testing, using the facilities of the Land Based Test Network (LBTN). The Reconfigurable Land Based Test Sites (RLBTS) have been expanded to validate

plans and execute integration tests for IT-21 networks to Global Command and Control System-Maritime (GCCS-M) and for other C4ISR systems, participate in Distributed Engineering Plant (DEP) certification testing, by providing GCCS-M nodes and network infrastructure during the test and collecting track data. Provide the key C4ISR node to the DEP. A key component of the IT-21 virtual joint test network for RDT&E testing. Provides Common Operation Picture (COP) development in the joint environment. Provides resources for Advanced Tomahawk Weapons Control System (ATWCS), Tactical Tomahawk Weapons Control System (TTWCS) and GCCS-M integration.

	FY 2003	FY 2004	FY 2005
Interoperability Validation	528	144	156

• Worked with the Fleet staffs and Naval Doctrine Command to develop policy and doctrine for operations of NVI in support of Network Centric Warfare objectives. Served as technical expert in researching the Fleet's technical questions and providing information. Conducted systems integration and interoperability testing using the facilities of the LBTN. Provide test and validation of 100% of Net Ready – Key Performance Parameters (NR-KPPs) to ensure interoperability between sensors, weapon systems and information systems are met. Through Family of Systems (FoS) and System of Systems (SoS) testing along with coordinated testing effort with JITC and other test agencies and OTH-T resources to bring this testing together.

	FY 2003	FY 2004	FY 2005
Testing OTH-T Systems	348	335	371

• Conduct integration testing and certification, in accordance with OPNAVINST 9410.5, of OTH-T and combat systems with tactical data exchanged over COP Synchronization Tools (CST) networks and other networks. These CST networks will operate within battle groups and to ashore nodes while other networks will continue to use Battle Group Database Management (BGDBM). Integration testing to include testing of GCCS-M and Combat Decision Systems (CDS) two-way interfaces. Testing to also address issues of Time Critical Strike for example TTWCS, Fleet essential capabilities and emerging mission essential needs both for new, legacy, and technology refreshed systems.

C. OTHER PROGRAM FUNDING SUMMARY:

RELATED RDT&E:
SEW Architecture/Engineering Support program element is related to all Naval C4I related efforts.

D. ACQUISITION STRATEGY:

Not applicable.

FY 2005 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 2004

Exhibit R-3

BA: 04 PROGRAM ELEMENT: 0604707N PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support

PROJECT NUMBER: X0798 PROJECT TITLE: OTH TARGETING

Exhibit R-3 Cost Analysis (page 2)									Date: FEBRUARY 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E,N			PROGRAM ELEMENT 0604707N						PROJECT NAME AND NUMBER OTH Targeting X0798			
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY-03 Cost	FY-03 Award Date	FY-04 Cost	FY-04 Award Date	FY-05 Cost	FY-05 Award Date	Cost To Comp.	Total Cost	Target Value of Contract
System Test and Evaluation	Various	Various	3648								3648	
Interoperability Requirements	Various	Various	3266								3266	
T & E Tools Development	Various	Various	429								429	
Systems Int. & Interop. Testing (LBTN)	Various	Various	887	417	Various	424	Various	453	Various	CONT	CONT	
Interoperability Validation	Various	Various	1343	517	Various	144	Various	156	Various	CONT	CONT	
Joint Interoperability	Various	Various	1174								1174	
Testing OTH-T Systems	Various	Various	640	362	Various	335	Various	371	Various	CONT	CONT	
Subtotal T&E			11387	1296		903		980		0	14566	
Remarks												
Contractor Engineering Support											0	
Government Engineering Support	Various	Various	2063	715	Various	664	Various	733	Various	CONT	CONT	
Program Management Support	Various	Various	1468								1468	
Travel											0	
Transportation											0	
Subtotal Management			3531	715		664		733		0	5643	CONT
Remarks												
Total Cost			14918	2011		1567		1713		0	20209	CONT

FY 2005 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 2004
Exhibit R-2a

BA: 04 PROGRAM ELEMENT: 0604707N PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support
PROJECT NUMBER: X2144 PROJECT TITLE: PROPULSION TECH DEMONSTRATION

Project Number & Title	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate
X2144 Propulsion Tech Demonstration	11,258	9,910	9,691	11,437	12,452	12,702	12,960

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFCATION: OPNAVINST 3050.23 directs the alignment and responsibility of Navy requirements generation and resource planning, and modifies the Navy's Planning Programming Budgeting System (PPBS) process to focus on capability-driven warfighting requirements (establishment of the Mission Capability Package (MCP) process). It further defines the policy to fuse validated/approved architectures and interoperability requirements with Joint requirements, milestones and program decisions. Sea Power 21 is the Chief of Naval Operation's (CNO) initiative to meet these Joint transformational objectives. FORCEnet (Fn) is one of the four pillars of Sea Power 21 and focuses on C4ISR systems transformation. The CNO N6/N7 has designated the Space and Naval Warfare Systems Command (SPAWARSYSCOM) as the FORCEnet Chief Engineer (CHENG) with the following responsibilities: (1) develop C4ISR systems requirements, architectures, standards, configurations, capability integrations and compliance/validations for FORCENet, (2) ensure that Naval solutions are derived from and/or interoperate with Joint, Coalition and other Federal C4ISR systems, and (3) maintain subject matter expertise on how C4ISR systems will fit within the greater Sea Power 21 pillars of Sea Shield, Sea Strike and Sea Basing. To execute the FORCEnet CHENG responsibilities, SPAWAR requires the following key efforts; C4ISR - Requirements Analysis and Assessments, C4ISR Architecture and Standards, and Target Design Generation. Execution of the above tasks is required to meet CNO's objectives for Sea Power 21. The results will be used by CNO N6/N7 and Commander, Fleet Forces Command (CFFC) to support the re-alignment and adjustments to Naval programs. In addition, these products are required to support Joint Forces Command (JFCOM) requirements.

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2003	FY 2004	FY 2005
JWID	2,731	1,732	1,968

• CJCSI 6260.01B directs all Services to provide funds to support Joint Warrior Interoperability Demonstrations (JWID). JWIDs integrate maturing system developments, military and commercial technologies that support enhanced operational capabilities in key Fleet, joint and coalition priority areas and Joint Mission Area (JMA) Assessment Thrust Areas with a combined force structure into the annual JWID. Beginning in FY 2003, JWID's advance technology introduction supports the goals and objectives of Joint Vision 2020, Fleet, joint and coalition priorities, and identifies relevant potential solutions for Allied C4I Interoperability and Coalition Operations.

	FY 2003	FY 2004	FY 2005
EC5G	4,712	3,866	4,194

• Demonstrated/validated EC5G networking and communication capabilities required to support all warfare missions (i.e. Theater Air and Missile Defense (TAMD), Time Critical Strike (TCS), Undersea Submarine Warfare (USW), etc.) and support operations. Optimized experimentation, Science and Technology (S&T), and acquisition to transform the tactical/operational network infrastructure for FORCEnet and Network-Centric Operations and provided the Navy's contribution to the Global Information Grid. Focus areas include Ashore Network Backbone Infrastructure, Wireless Line-of-Sight Networking, RF Connectivity and Throughput, Tactical Advanced Data Integration Links System (TADILS) Gateway, Composite Networking, Information Assurance, Automated Network Services, Aerial Communications Package, Allied/Coalition Interoperability. The FY03 demonstration/validation of Expeditionary C5 Grid (EC5G) networking and communication capabilities occurred via an operational Fleet Based experiment.

• EC5G will conduct Joint Rapid Architecture Experimentation (JRAE) via the associated Joint Limited Objective Experiments known as Joint RAPTORs. These joint efforts will build on prior year knowledge gained in C4ISR architecture issues but with specific focus on joint interoperability at the tactical level. In FY04, EC5G will conduct five Joint RAPTOR events with the Army and Air Force in coordination with JFCOM's JBMC2: Joint RAPTOR 04-1- Joint Enterprise Services Interoperability Experiment (Mar 04); Joint RAPTOR 04-2 - FORCEnet/Future Combat System (FCS) Interoperability Experiment (May/June 04); Joint RAPTOR 04-3 – Joint Expeditionary Force Experiment (JEFX) Air Force/Army/Navy Experiment (Summer 04) (Close Air Support, Battle

Force Testing (BFT)); Joint RAPTOR 04-4 - Navy/Army/Air Force Global Information Grid (GIG) Transformation Experiment (Sept 04); Joint RAPTOR –4-5 – Joint Time Sensitive Targeting (TST) (Sept 04). EC5G will provide analysis, metrics and measurable outcomes that will be fed back into Navy Programs of Record and Joint Architecture Products and Assessments (I.e. JFCOM Joint Battle Management Command and Control (JBMC2)) to ensure a joint Foundation for FORCEnet.

• The EC5G Joint RAPTOR efforts will be driven by JFCOM interoperability risk areas at the horizontal (tactical) level as identified by the Joint Architecture efforts under the JFCOM JBMC2 effort. The EC5G Joint Rapid Architecture Experimentation (via the Joint RAPTOR Limited Objective Experiments) will be used to prototype the "to be" FORCEnet architecture and integrate and experiment with the Army's FCS/Future Force and the Air Force's C2 Constellation architecture to promote joint interoperability between the services next generation tactical C4ISR architectures.

	FY 2003	FY 2004	FY 2005
C4ISR Requirements Analysis and Assessments	972	1,099	900

• In FY 2003, performed POM06 SYSCOM assessments as directed by CNO N6-7 business rules on the gaps and overlaps of performance, and provided recommendations.

• Beginning in FY 2004, lead complete SYSCOM assessments of systems in Comms/Networks, Commanding Officer's Tactical Plot (COTP), and Intelligence, Surveillance and Reconnaissance (ISR) Mission Capability Plans (MCPs). Participate in SYSCOM MCP assessments led by other SYSCOMs for Strike, Shield, and Basing SP-21 pillars. Initiate requirements analysis that will provide a feed for Navy Tool for Interoperability and Rick Assessment (NTIRA). Develop the network related Measures of Effectiveness (MOEs) and Measures of Performance (MOPs) that can be used to assess combat effects and funding impacts of changes to FORCEnet architecture. Establish Baseline performance models. Expand analysis to other systems that will identify dependencies of the C4I Architecture, with follow up evaluations in FY 2005.

	FY 2003	FY 2004	FY 2005
C4ISR Architecture and Standards	1,770	2,001	1,637

• In FY 2003, developed Architecture and Standards, ver 1. Developed Analysis of Alternatives (AOA) for beyond line of sight (BLOS) network. Performed proof of concept.

• Beginning in FY 2004, provide the groundwork for developing the overarching FORCEnet architecture as outlined in Sea power-21 for SEA Strike, Sea Shield, Sea Basing, including FORCEnet standards. Provide FORCEnet Design Studies and support systems that will integrate unique C2 of a BF that will allow operators to take advantage of the data from various sources over the C4I information grid. Review Joint & Cross service requirements which will be incorporated in the FORCEnet Architecture in FY 2005.

	FY 2003	FY 2004	FY 2005
FORCEnet Design Generation & Integration	1,073	1,212	992

• In FY 2003, investigated and provided recommendations for Information Assurance (IA) and network consolidation. Reviewed and developed a communication roadmap, identified shortfalls and made recommendations to address gaps.

• Beginning in FY 2004, decompose validated Joint operational requirements and perform engineering analysis to determine the appropriate technical solutions. Provide end-to-end engineering assessment of proposed FORCEnet and C4ISR architectural products to ensure operational and technical feasibility. Provide system engineering support to ensure respective Land Based Test Facilities (LBTF) requirements definition are met. Provide system engineering to PEO Pilot Programs which ensures FORCEnet Architecture is developed in specific targeted programs. Provide FORCEnet proof of concept to current legacy architecture which will increase Service-Oriented Architecture (SOA) opportunities.

C. OTHER PROGRAM FUNDING SUMMARY:

Not applicable.

D. ACQUISITION STRATEGY:

Not applicable.

FY 2005 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 2004

Exhibit R-3

BA: 04 PROGRAM ELEMENT: 0604707N PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support

PROJECT NUMBER: X2144 PROJECT TITLE: PROPULSION TECH DEMONSTRATION

Exhibit R-3 Cost Analysis (page 1)												Date: FEBRUARY 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E,N			PROGRAM ELEMENT 0604707N									PROJECT NAME AND NUMBER Propulsion Tech Demonstration X2144
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY-03 Cost	FY-03 Award Date	FY-04 Cost	FY-04 Award Date	FY-05 Cost	FY-05 Award Date	Cost To Comp.	Total Cost	Target Value of Contract
Primary Hardware Developmentn											0	
Ancillary Hardware Developmentn											0	
Systems Engineering											0	
Licenses											0	
Tooling											0	
GFE											0	
Award Fees											0	
Subtotal Product Development			0	0		0		0		0	0	
Remarks												
Development Support	Various	Various	4554								4554	
SEW/C4I Technology Integration	Various	Various	12985								12985	
Systems A&E and Validation	Various	Various	13188								13188	
C4ISR Req Analysis & Assessments	Various	Various	4984	972	Various	1099	Various	900	Various		7955	
C4ISR Architecture and Standards	Various	Various	1187	1770	Various	2001	Various	1637	Various		6595	
FORCEnet Design Generation & Integration	Various	Various	4544	1073	Various	1212	Various	992	Various		7821	
Info. Repository/Naval Architecture	Various	Various	4000									
Navy Collaborative Int.	Various	Various										

FY 2005 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 2004

Exhibit R-3

BA: 04 PROGRAM ELEMENT: 0604707N PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support

PROJECT NUMBER: X2144 PROJECT TITLE: PROPULSION TECH DEMONSTRATION

Subtotal Support			45442	3815		4312		3529		0	57098	
Remarks												

Exhibit R-3 Cost Analysis (page 2)									Date: FEBRUARY 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E,N			PROGRAM ELEMENT 0604707N						PROJECT NAME AND NUMBER Propulsion Tech Demonstration X2144			
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY-03 Cost	FY-03 Award Date	FY-04 Cost	FY-04 Award Date	FY-05 Cost	FY-05 Award Date	Cost To Comp.	Total Cost	Target Value of Contract
SEW Eng/JWID	Various	Various	12889	2731	Various	1732	Various	1968	Various	CONT	CONT	CONT
SEW Eng/EC5G	Various	Various		4712	Various	3866	Various	4194	Various	CONT	CONT	CONT
Subtotal T&E			12889	7443		5598		6162		0	32092	CONT
Remarks												
Contractor Engineering Support											0	
Government Engineering Support											0	
Program Management Support											0	
Travel											0	
Transportation											0	
Subtotal Management			0	0		0		0		0	0	
Remarks												
Total Cost			58331	11258		9910		9691		0	89190	

CONGRESSIONAL PLUS-UPS:

R9364	FY 2003	FY 2004
Advanced Wireless Network	0	3,461

Advanced Wireless Network will be used to design and develop a flexible, reconfigurable wireless communications network that combines advanced antennas, a software radio, mobile networking protocols and real-time resource management. It will have the ability to provide an adaptive, reconfigurable, mobile wireless network for Navy ships and Marine Corps forces ashore. The benefits will be enhanced Navy battle group and Marine Corps mobile network operations and extended over-the-horizon communications connectivity.

X9054	FY 2003	FY 2004
IT-21 BLOCK 1 C4ISR COMPUTING EQUIPMENT UPGRADE	1,619	0

This program is funded under DEMONSTRATION & VALIDATION because it develops and integrates hardware for experimental tests related to specific ship or aircraft applications. It also develops a virtual demonstration and validation environment across Navy for C4ISR.

FY2003 ACCOMPLISHMENTS:
• Researched current C4ISR software applications and designed an integration approach for transition from legacy networks to an enterprise solution. Implement the C4ISR-T Systems Design effort that incorporated the AN/UYQ-70 rack design.
• Developed an overarching Q-70 BLK system integration, test plan and validation that ensures the Q-70 racks were fully integrated and tested.
• Developed hardware baseline for integration into the Q-70 servers. Integration included standardized configuration, integrated documentation and integrated software applications.
• Developed and implemented an Integrated Logistics Support (ILS) Plan ensuring provisioning, training, technical manuals, support and test equipment (S&TE), Planned Maintenance System (PMS) availability, and other ILS requirements were met.

X9365	FY 2003	FY 2004
Coalition Warfare Program (CWP) Operational Assessment	0	2,769

The Coalition Warfare Project integrates, federates and secures IT systems of multiple operating systems and security domains to improve information sharing and collaboration between services, coalitions, and other organizations and agencies. The system combines network-centric server clusters, Ultra Thin Clients (UTCs) or traditional PCs, and a robust security solution of Evaluation Assurance Level (EAL4) certified trusted operating systems and hardware Virtual Private Network (VPNs). It is an open-system architecture (OSA) so that any operating system and application can be quickly integrated into the system allowing for rapid scalability and flexibility. The security solution provides an avant-garde ability to rapidly reconfigure networks of various security domains and communities of interest (COI) in near-real time globally. On a single display, multiple applications and multiple security domains can be viewed. The system also reduces space, weight, heat and total ownership costs. This project will establish interoperability across domains, applications and operating system platforms.

Systems Engineering
• Research and develop an architecture, which integrates, federates and secures IT systems of multiple operating systems and security domains and improve information sharing and collaboration between services, coalitions, and other organizations and agencies. The systems combine network-centric server clusters, UTCs and/or traditional PC, and a robust security solution consisting of EAL4 certified trusted operating systems and hardware VPNs.

Test and Evaluation
• Provide Systems Tests and Evaluations to ensure this project provides the Navy with a cross-domain security solution for coalition collaboration, which includes the ability to provide for dynamic reconfiguration of coalition networks and secure information data exchange to deliver the right information, to the right warfighter at the right time.

Interoperability Validation
• Interoperability Validation 445k (SSC-SD)
Validate interoperability between joint, coalition, State Department, HLS/HLD, and other agencies/organizations by providing a means to share data and collaborate across domains and COI within domains.