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

BA: 03 PROGRAM ELEMENT: 0603235N
PROGRAM ELEMENT TITLE: Common Picture Advanced Technology

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
R2919 Communications Security	35,558	68,417	79,521	62,624	60,080	56,314	57,470
R9020 Vessel Tracking	0	4,351	0	0	0	0	0
R9145 Command Center Visualization	6,668	0	0	0	0	0	0
R9146 Improved Shipboard Combat Information Center	3,430	0	0	0	0	0	0
R9315 CONSOLIDATED UNDERSEA SITUATIONAL AWARENESS SYS (CUSAS)	0	3,955	0	0	0	0	0
R9316 SHIPBOARD AUTOMATED RECONSTRUCTION CAPABILITY (SHARC)	0	1,978	0	0	0	0	0
R9317 TECHNOLOGY INSERTION SUPPORT	0	989	0	0	0	0	0
Totals	45,656	79,690	79,521	62,624	60,080	56,314	57,470

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This Program Element (PE) addresses the advanced technology development, test and evaluation of a dynamic distributed common picture that will improve situational awareness across command echelons. The goal is to refine technologies that exploit information and networking technology to ensure mission success in an unpredictable warfighting environment. It creates network centric capability by demonstrating technologies that support seamless information services afloat and ashore; collaborative decision-making among geographically dispersed warfighters; a common, consistent view of the battlespace geared to user requirements; system interoperability with coalition forces; real-time information access with quality of service guarantees; and information assurance. Technologies of interest provide access to, and automated processing of, information necessary to make decisions that lead to decisive, precise, desired engagement outcomes. The payoff is access to tailored information in near real time with corresponding increases in speed of command, improved decision-making, and reduction in manpower. The Common

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Picture Program supports the Knowledge Superiority and Assurance (KSA), Missile Defense (MD), Littoral Anti-Submarine Warfare (ASW), and Fleet/Force Protection (FFP) Future Naval Capabilities (FNC). In the context of the Naval Transformation Roadmap construct, this investment will achieve capabilities required by FORCEnet, "Persistent Intelligence, Surveillance, and Reconnaissance," "Time Sensitive Strike," "Sea Based Information Operations," "Sea Strike" Ship-to-Objective Maneuver, and "Sea Shield" Theater Air and Missile Defense.

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

PROGRAM CHANGE SUMMARY:

	FY 2003	FY 2004	FY 2005
FY 2004-2005 President's Budget Submission	47,262	69,194	73,620
Cong. Rescissions/Adjustments/Undist Reductions	0	-904	0
Congressional Actions	0	11,400	0
Execution Adjustments	-1,337	0	0
Inflation Savings	0	0	-238
Rate Adjustments	0	0	6
SBIR Assessment	-269	0	0
Technical Adjustments	0	0	6,133
FY 2005 President's Budget Submission	45,656	79,690	79,521

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: 03 PROGRAM ELEMENT: 0603235N PROGRAM ELEMENT TITLE: Common Picture Advanced Technology

PROJECT NUMBER: R2919 PROJECT TITLE: Communications Security

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
R2919 Communications Security	35,558	68,417	79,521	62,624	60,080	56,314	57,470

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project addresses the advanced technology development, test and evaluation of a dynamic distributed common picture based on emergent technologies that will improve situational awareness across command echelons. The goal is to refine technologies that exploit information and networking technology to ensure mission success in an unpredictable warfighting environment. It creates network centric capability by demonstrating technologies that support seamless information services afloat and ashore; collaborative decision-making among geographically dispersed warfighters; a common, consistent view of the battlespace geared to user requirements; system interoperability with coalition forces; real-time information access with quality of service guarantees; and information assurance. Technologies of interest provide access to, and automated processing of, information necessary to make decisions that lead to decisive, precise, desired engagement outcomes. The payoff is access to tailored information in near real time with corresponding increases in speed of command, improved decision-making, and reduction in manpower. The Common Picture Program supports the Knowledge Superiority and Assurance (KSA), Missile Defense (MD), Littoral Anti-Submarine Warfare (ASW), and Fleet/Force Protection (FFP) Future Naval Capabilities (FNC). In the context of the Naval Transformation Roadmap construct, this investment will achieve capabilities required by FORCEnet, "Persistent Intelligence, Surveillance, and Reconnaissance," "Time Sensitive Strike," "Sea Based Information Operations," "Sea Strike" Ship-to-Objective Maneuver, and "Sea Shield" Theater Air and Missile Defense.

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

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2003	FY 2004	FY 2005
Knowledge Superiority and Assurance (KSA)	14,179	24,364	44,184

Knowledge Superiority and Assurance explores fundamental technologies that enhance the Navy's capability to exploit, manage and integrate complex, heterogeneous, multi-source information for the next generation common picture through 1) Common Consistent Knowledge; 2) Dynamically Managed, Interoperable, High-Capacity Connectivity; and 3) Time-Sensitive Decision Making. Common Consistent Knowledge addresses the needs of operating forces for common picture information in the planning, monitoring, and re-planning cycle of operational and tactical force employment. Dynamically Managed, Interoperable, High-Capacity Connectivity addresses wireless network technology critical to the performance and robustness of Naval communications by providing higher data rates, expanded coverage to disadvantaged platforms, and improved bandwidth management. Time-Sensitive Decision Making supports tactical operations where the timeliness and accuracy of decisions is crucial to the successful and efficient application of available forces.

FY 2003 Accomplishments:

- Conducted at sea demonstrations of the Integrated Decision Support System Product Suite (IDSSP).
- Continued demonstrations of the Multi-National Virtual Operation Network (MNVOC) between UK and US platforms.
- Continued refining and testing the Link 16 time-slot allocation protocol and the features of the Virtual Information Center Technologies for Open Source Requirements by improving the filters needed to retrieve diverse information.
- Continued development of a Joint Mission Planning System for Expeditionary Forces Surface Assault Planning.
- Continued demonstrations of distributed collaborative planning and execution tools to support the Commander In Chief Twenty-First Century Advanced Concept Technology Demons (CINC 21 ACTD).
- Initiated development of software and system certification of secure web servers to share tactical multiple media data products with coalition forces.

FY 2004 Plans:

- Continue at-sea demonstrations of Link 16 dynamic reconfiguration, the CINC 21 Advanced Concept Technology Demonstration (ACTD) and the Multi-National Virtual Operational Network.
- Develop large scale end-to-end demonstrations that integrate multiple technologies under development (e.g., IDSSP, MNVOC) to allow focus on increased speed and quality of command decisions through visualization, knowledge management, network monitoring, and collaboration tailored to command decision points; enabling dispersed decision-makers to synchronize operations and assess alternatives through groupware and collaborative work sessions; enabling integration and information sharing across commands through a web-based crisis management tool; and supporting faster than real-time course of action development with

simulations and models.
• Develop an extensible data management framework and tactical management system to support a wide range of joint mission application developers, permitting seamless and rapid integration of ISR data sources into a common picture.
• Demonstrate the capability to access, update and maintain the common operation picture (COP) through an integrated and interoperable set of software applications.
• Demonstrate the Battle Force Email High Frequency (HF) Local Area Network system, already deployed on 200 US ships and 100 allied ships, to carry Internet Protocol (IP) data over HF (and other Line of Site Systems) to complement satellite communications assets.

FY 2005 Plans:

• Demonstrate command decision-making, dynamically managed connectivity (e.g., Link 16 and other initiatives), and collaborative planning (CINC 21 ACTD), as well as replanning and rehearsals of operational and tactical forces.
• Continue to conduct large scale integrated end-to-end demonstrations of initiatives focusing on course of action analysis.
• Demonstrate the capability to manage complex, heterogeneous information through advanced information search, retrieval and management techniques and user-tailorable situation-at-a-glance visualization technology to enable cross-force and cross-echelon situational awareness.
• Integrate software and conduct a Joint Limited Technology Experiment to demonstrate Joint Real Time Coordinated Engagement (JRCE) in the Global Information Grid (GIG) environment, enabling coordination and application of strike assets in real time.
• Continue to demonstrate dynamic bandwidth management for legacy communications systems to support battleforce networking.
• Expand the development of satellite communications phased arrays so surface platforms can connect to multiple communications platforms simultaneously, supporting frequency diversity and allowing submarines to participate in Network Centric Warfare.
• Develop an Integrated Autonomous Network Management (IANM) prototype system to support assessment and optimization of network performance in real time.
• Develop software tools, procedures and protocols that enable the analysis, validation and verification of information so that adversaries cannot corrupt software, data and information on Naval networks.

	FY 2003	FY 2004	FY 2005
USCG Vessel Tracking	0	9,523	10,670

Details are of a higher classification.

	FY 2003	FY 2004	FY 2005
Multi-Source Integration (MSI) and Combat Identification (CID)	3,150	4,567	9,125

This activity describes S&T projects of the Missile Defense Future Naval Capability (FNC) program: Multi-Source Integration (MSI), Advanced Sensor Netting Technology (ASNT), and Composite Combat Identification (CCID).

FY 2003 Accomplishments:

• Transitioned initial MSI capability (funded in this PE in FY 2002) to the E-2C acquisition program in December 2002. This will enable satellite communications (SATCOM) delivered intelligence data to appear on the E-2C tactical display.
• Continued demonstration of Composite Combat Identification (CCID) algorithms to correlate and fuse Cooperative Engagement Capability (CEC) data with intelligence, surveillance and reconnaissance (ISR) data processed aboard EP-3E aircraft and Ship Signal Exploitation Equipment (SSEE)-equipped surface ships. Also continued CCID project development of common ID reasoning algorithm for the naval open architecture combat system.

FY 2004 Plans:

• Resume demonstration of advanced MSI algorithms begun in FY2003 in PE 0602235N to integrate radio frequency (RF) sensors, Identification Friend or Foe (IFF) data, Cooperative Engagement Capability (CEC), Joint Tactical Information Distribution System (JTIDS), and correlate SATCOM data to the integrated track file in the E-2C mission computer.
• Continue demonstration and testing of algorithms for an advanced sensor netting technology (ASNT) project begun in FY 2002 in PE 0602235N for integration of electronic warfare support (ES) data into CEC.
• Complete demonstration of CCID algorithms for use in reconnaissance aircraft. Continue development of similar algorithms for shipboard SSEE and a common identification (ID) reasoning capability for the naval open architecture combat system.

FY 2005 Plans:

• Continue operational demonstration and testing of MSI algorithms for the E-2C aircraft using data sets portraying increasingly complex scenarios and sensor/source mixes. Also ensure MSI will meet requirements and standards for the naval open architecture combat system.
• Continue operational demonstration and testing of Advanced Sensor Networking Technology (ASNT) algorithms for the CEC program. Tests will include passing of ID attributes with air tracks and measuring impact on CEC bandwidth and timing. Also ensure ASNT meets the requirements for CEC Block II.
• Continue development of and demonstrate the Composite Combat Identification (CCID) common reasoning algorithm in an open architecture environment in preparation for subsystem integration, operational experimentation, and transition to the naval open architecture combat system. Also continue development and initiate demonstrations of CCID algorithms for the SSEE in land-based facilities.

	FY 2003	FY 2004	FY 2005
Platform Protection/Electronic Warfare Systems	3,650	8,293	7,544

This activity supports the Fleet/Force Protection (FFP) Future Naval Capability (FNC). Currently, small surface, ground-based and airborne platforms have little-to-no Situational Awareness (SA) capability, which jeopardizes their battlefield effectiveness and combat survivability. This activity develops the Electronic Warfare Integrated System for Small Platforms (EWISSP), a compact small platform electronic warfare capability providing radio frequency (RF), electro-optic (EO) and infrared (IR) sensors for platforms such as smaller ships, expeditionary fighting vehicles (EFV), and surveillance aircraft. This activity integrates successful proof-of-concept hardware and software developed under PE 0602235N into systems suitable for capability demonstration under Naval environments and tactical conditions. The SA system, a subset of EWISSP, addresses several small surface platform self-protection system integration requirements and employs monolithic micro/integrated circuit (MMIC) devices and a new antenna to form a compact, low volume/lightweight system that provides accurate hemispheric direction finding and self-protection.

FY 2003 Accomplishments:

• Concluded EWISSP Phase I and began Phase II acceptance testing of the Shipboard Laser Acquisition System (SBLAS).
• Conducted 90 degree system testing.
• Fabricated and integrated component modules.
• Delivered the Laser Warning receiver (LWR) to Naval Research Labatory (NRL) for mating to an optimized analog filter.

- Assembled the first Bi-Stem unit to demonstrate structural rigidity and payload capacity.
- Conducted optical injection tests to measure laser power transfer efficiency into the Bi-Stem's fiber optic line.

FY 2004 Plans:

Continue EWISSP Phase II. Some specific plans include:
- Demonstrate the application of advanced technology to increase the survivability of the Marine Expeditionary Fighting Vehicle (EFV).
- Development of the SA and Electronic Attack (EA) subsystems that operate in the Millimeter Wave (MMW), RF, EO, and IR regions will begin with subsystem initial assembly and integration.
- Testing of a prototype flexible mast for MMW and EO sensors will be performed in parallel with compatibility testing with existing and/or planned basic physical and electrical designs and features of host platforms.
- Integration of the EWISSP with the EFV will continue and involve a significant effort due to limited space and power available in the EFV as well as severe restrictions on modifications to the vehicle's exterior configuration.

FY 2005 Plans:

Complete development and demonstrations of EWISSP Phase II. Some specific plans include:
- Phase II will continue with the assembly and integration of SA and EA subsystems. Focus will be on hardware and software integration at the subsystem level.
- Incremental testing of subsystems will be conducted as they are assembled to ensure technical performance requirements are being met.
- As part of the transition effort, configuration management of the design will be implemented to track development and integration progress and identify technology insertion points.

	FY 2003	FY 2004	FY 2005
Global Positioning System (GPS) & Navigation Technology	5,000	5,000	5,000

This activity enhances GPS anti-jam (AJ) capabilities and develops other technologies to provide alternative navigation methods. In the GPS AJ area, Space-Time Adaptive Processing (STAP) is being pursued to remove the operational risks associated with enemy jamming of GPS functions. Also, the next generation GPS receiver will be programmed with M-code; therefore, both the next generation M-code and the existing C/Y-codes must be used at the same time frame. Office of Naval Research (ONR) initiated a transitional receiver which will

accommodate both the C/Y- and M-codes. The alternative navigation methods investigated include GPS receivers with a tightly coupled Inertial Navigation System (INS); organic Link-16 relative navigation; gravity gradiometer development, used in a terrain-following concept; and an electro-optic accelerometer developed as an improved element in INS. This activity also develops the atomic clock for inclusion in Naval Systems. The atomic clock efforts include small, low-cost Rubidium (Rb), Coherent Population Trapping (CPT) atomic clock development. These areas will provide alternatives to GPS navigation and alternatives to the availability of precision, GPS-provided, time transfer.

FY 2003 Accomplishments:

- Initiated Scalable Multi-Element STAP; adaptive array will suppress jamming signals in the receiver.
- Developed Atom Interferometer Gravity Gradiometer that reduced size of the optical and electronic control units.
- Examined modifications to Link-16 that could provide the spatial and temporal precision needed when GPS is denied.
- Initiated the Differential GPS Navigation with Link-16 (DGPS) effort to increase positional accuracy and data reliability.
- Initiated fabrication of a 10 cubic centimeter Rb CPT Atomic Clock to improve time transfer in military platforms.

FY 2004 Plans:

- Develop a 7-element STAP dual polarization receiver antenna.
- Develop a Field Programmable Gate Array (FPGA) GPS software receiver which can adapt to “near-far” reception in real time operation to take advantage of pseudolites.
- Concentrate on GPS requirements when both M- and C/Y-codes need to be hosted in a single receiver with a minimum disruption for Navy users, i.e., Application Specific Integrated Circuit (ASIC) design continuation.
- Initiate a new gravity gradiometer effort to use the principle of the vibrating beam accelerometer.
- Adapt Electro-optic Accelerometer effort into a practical Inertial Measurement Unit for embedded inertial measurement in hybrid GPS.
- Implement Link-16 Relative Navigation with corrections to latencies in precision time transfer.
- Demonstrate accuracy of the DGPS effort at a test range.

FY 2005 Plans:

- Continue NRL's Vibrating Beam Accelerometer (VBA) gravity gradiometer.
- Apply Electro-optic Accelerometer effort to several DOD miniature electro-mechanical system (MEMS) Inertial Measurement Unit (IMU) efforts.
- Demonstrate Differential GPS Navigation with Link-16 in a test bed capable of hosting an integrated Navigation System and Time Refinement System.
- Test Scalable Multi-Element STAP-based Adaptive Array with dual polarization.
- Demonstrate Raytheon's Integrated GPS/INS with improved anti-jam margin for tracking GPS signals in strong interference environments.
- Simulate GPS M- and C/Y-code input to refine specifications for multi-code ASIC development.
- Combine optical and electronic subsystems of the ultra-miniature Rb CPT clock. Complete clock.

	FY 2003	FY 2004	FY 2005
Information Security Research	1,998	1,998	1,998

The goal of this activity is to protect the Navy and Joint information infrastructure from hostile exploitation and attack. This requires situational awareness of network assets and operations. This activity focuses, in part, on integrating successful proof of concept research prototypes developed under PE 0602235N. The goal is to develop tools, techniques and methodologies in order to: improve network resistance to denial of service attacks; improve indications and warnings of suspect activities; conduct traffic analysis; monitor and assess network status and health; identify new capabilities to analyze and network vulnerabilities and attacks; measure the effectiveness of Information Assurance (IA) protective measures; and improve the quality and level of certification of IA software.

FY 2003 Accomplishments:

- Developed and validated secure group network protocols for peer-to-peer trusted hosts, as well as developing tools and methodologies to formally prove assurance properties and to enable data analysis from passive monitoring of intrusive network behaviors.
- Continued examination of the tools, techniques, and methodologies that will ensure network survivability.
- Continued the development of the Naval Research Lab (NRL) Network Pump, to support transferring data securely from a lower to a higher level of classification, and to enable built-in self-test and to be field-upgradeable.

FY 2004 Plans:

• Continue to develop and validate secure group network protocols within a small enclave, as well as develop the tools and methodologies to formally prove and verify scaleable assurance properties and to enable correlated analysis from passive monitoring of intrusive network behaviors in near real-time.
• Continue to examine the tools, techniques, and methodologies that will ensure secure network survivability and resistance to denial of service attacks.
• Continue development of the NRL Network Pump, including development of methodologies to securely transfer data from a higher to lower level of classification, including stronger connection authentication and secure administration capabilities.

FY 2005 Plans:

• Continue to develop and validate scaleable secure group network protocols for trusted coalition partners along with the tools and methodologies to prove and certify assurance properties about information sharing and to enable correlated statistical analysis of pro-active monitoring of intrusive network behaviors in near real-time.
• Continue to examine the tools, techniques, and methodologies that will ensure secure network survivability, security, and resistance to denial of service attacks while deterring traffic analysis.
• Complete development, demonstration, and common criteria evaluation of the NRL Network Pump for its ability to transfer data securely from high to lower levels of classification across dissimilar networks while providing strong authentication and secure administration capabilities.

	FY 2003	FY 2004	FY 2005
Marine Mammals	1,055	1,000	1,000

This initiative provides data and technology for making informed decisions regarding the interaction of Naval activities with protected marine life and habitats to enable platform operation and force projection, and maximize use of Navy training ranges within environmental constraints. Ensure Navy compliance with national environmental laws, Executive Order 12114, and SECNAVINST 5090.1.b while still maintaining full operational and training exercise capabilities.

FY 2003 Accomplishments:

• Integrated passive acoustic marine mammal monitoring (M3R) detection technology with existing Navy assets and initiated operator training at the Atlantic Undersea Test and Evaluation Center (AUTEC).
• Synthesized an acoustic safety criteria model based on existing temporary threshold shift (TTS) data to predict impact of Navy sound sources on marine mammals.

FY 2004 Plans:

• Integrate M3R tracking technology with existing range assets and complete operator training at AUTEC while continuing data collection and analysis to calibrate passive technology with visual surveys. Assess M3R capabilities for the Navy range wide tactical theater training assessment planning (TAP) with N45. Collect TTS data to determine time/energy trade-off and recovery rates for long duration sound exposures and multiple pings typical of Navy operations and training.

FY 2005 Plans:

• Develop and test M3R classification software for identification of marine mammal species and populations. Complete demonstration of M3R at AUTEC and begin installations at other Navy ranges.
• Establish an Acoustic Safety Criteria Model for multiple sonar pings based on TTS data for recovery rates and long duration sound exposures.

	FY 2003	FY 2004	FY 2005
Integrated Anti-Submarine Warfare (IASW)	1,890	0	0

Integrated Anti-Submarine Warfare (IASW) supporting the Littoral Anti-Submarine Warfare (LASW) Future Naval Capability (FNC). Develop a common Anti-Submarine Warfare (ASW) tactical and environmental picture to improve detecting, tracking, and classifying subsurface platforms while reducing false alarms and increasing the timeliness of inputs to the common undersea picture. Technologies include cross platform data fusion; common sensor performance predictions across platforms; capturing sensor performance uncertainty; command and control and tactical level data fusion; decision aids and displays for Anti Submarine Warfare (ASW). These technologies provide input to the common tactical and environmental ASW picture, significantly enhancing ASW effectiveness. Achieving transformation to network-centric capabilities in the ASW environment has proven difficult because of restricted connectivity to submarine platforms and bottom-deployed systems. Advances in data fusion, decision aids, and display technologies are needed to fully achieve network-centric ASW.

FY 2003 Accomplishments:

• Delivered inter- and intra-platform engines for fusion of Distant Thunder data.

FY 2004 Plans:

Not applicable.

FY 2005 Plans:

Not applicable.

	FY 2003	FY 2004	FY 2005
Extending the Littoral Battlespace/JTF Warnet	1,000	0	0

Extending the Littoral Battlespace (ELB) Advanced Concept Technology Demonstration (ACTD) transition phase was re-focused and re-named Joint Task Force Wide Area Relay Network (JTF WARNET). It is designed to bring tactical level network connectivity and data interoperability of a Joint Task Force across all services. This activity demonstrates enhanced integrated command, control/fires, and targeting capability in support of dispersed units, thus enabling common situational awareness, enhanced access to joint fires and facilitating dynamic maneuver while reducing fratricides.

FY 2003 Accomplishments:

• Completed end-to-end field demonstration of JTF WARNET components with a pre-deployment exercise to prepare for FY 2004 operational deployment, and implemented transition agreements to acquisition programs of record.

FY 2004 Plans:

Not applicable.

FY 2005 Plans:

Not applicable.

	FY 2003	FY 2004	FY 2005
Joint Program Office Special Technology Countermeasures	3,636	13,672	0

Details are of a higher classification.

C. OTHER PROGRAM FUNDING SUMMARY:
RELATED RDT&E:

PE 0601153N (Defense Research Sciences)
PE 0602114N (Power Projection Applied Research)
PE 0602123N (Force Protection Applied Research)
PE 0602131M (Marine Corps Landing Force Technology)
PE 0602235N (Common Picture Applied Research)
PE 0602271N (RF Systems Applied Research)
PE 0603123N (Force Protection Advanced Technology)
PE 0603271N (RF Systems Advanced Technology)
PE 0603609N (Conventional Munitions)
PE 0603640M (Marine Corps Advanced Technology Demonstrations)
PE 0603658N (Cooperative Engagement)
PE 0604307N (Surface Combatant Combat System Engineering)
PE 0604518N (Combat Information Center Conversion)
PE 0204152N (E-2 Squadrons)
PE 0205601N (HARM Improvement)
PE 0206313M (Marine Corps Communications Systems)
PE 0303140N (Information Systems Security Program)
PE 0308610N (Modeling and Simulation and Support)

NON-NAVY RELATED RDT&E:

PE 0603750D8Z (Advanced Concept Technology Demonstrations)

D. ACQUISITION STRATEGY:
Not applicable

BA: 03 PROGRAM ELEMENT: 0603235N PROGRAM ELEMENT TITLE: Common Picture Advanced Technology
PROJECT NUMBER: Various PROJECT TITLE: Congressional Plus-Ups

CONGRESSIONAL PLUS-UPS:

R9020	FY 2003	FY 2004
VESSEL TRACKING	0	4,351

This effort will determine and develop the optimum technology mix for identification, surveillance, and tracking of maritime vessels. The effort will develop high resolution radar techniques from multiple aspects to verify and validate automated information system data fields. This effort will emphasize small craft tracking and automatic target recognition -- key surface Navy needs for operations in the littorals and harbor areas.

R9145	FY 2003	FY 2004
COMMAND CENTER VISUALIZATION	6,668	0

This effort integrated and explored various automated information gathering, integration, and visualization techniques for integrating and presenting large amounts of multi media time sensitive information to the operator standing watch in operational command centers. This prototype command center visualization system demonstrated the capability of emerging technologies to further automate and improve the warfighting operations of a command center resulting in improved speed of command and improve operational effectiveness with reduced manpower levels.

R9146	FY 2003	FY 2004
IMPROVED SHIPBOARD COMBAT INFORMATION CENTER (CIC)	3,430	0

This effort integrated and explored various decision-making and display technologies for improving the CIC. This prototype system demonstrated the capability of emerging technologies to further automate and improve the warfighting operations of surface ship combatants. The system has technologies that were re-configured depending on mission and tasking requirements and allowed CIC watchstanders to better receive, comprehend and respond to incoming data during combat operations. An improved shipboard CIC system streamlined and integrated information workflow, yielding improved speed of decision-making and improved operational effectiveness in combat situations.

R9315	FY 2003	FY 2004
CONSOLIDATED UNDERSEA SITUATIONAL AWARENESS SYSTEM (CUSAS)	0	3,955

This effort is a decision-support system that provides knowledge superiority to undersea warfare forces through the use of advanced, interactive software. Developed initially as a DARPA-sponsored effort, CUSAS offers enormous transformational advantages to fleet operators as it helps to remove the fog of war with a high fidelity 2D and 3D presentation augmented with real-time tactical intelligent agent-based recommendations in a user-friendly format. The use of intelligent software agents is a major, new enabler that provides timely, effective and efficient decision support under conditions of overwhelming and uncertain data. It offers fleet operators a significant opportunity to address one of their most vexing requirements – the need for a consistent, accurate and timely situational understanding of the battlespace by a submerged submarine. In addition, CUSAS is designed to assist operators with recommended actions in response to complex tactical developments that involve significant uncertainty.

R9316	FY 2003	FY 2004
SHIPBOARD AUTOMATED RECONSTRUCTION CAPABILITY (SHARC)	0	1,978

This system will assist submarine operators to plan, execute and evaluate highly complex tactical and covert submarine missions. SHARC is designed to capture and dynamically present all relevant operational data such as ship’s logs (deck, quartermaster’s, sonar, communications, and engineering), casualty and intelligence reports, environmental summary with fire control solutions, ship’s track history indicating heading, speed, depth, as well as the Commanding Officer’s narrative. This automatic data capture and visual replay will allow a submarine’s commander and crew to accurately reconstruct high interest events experienced during the mission. This capability will permit the ship to conduct post-analysis of encounters in near real-time and to provide the intelligence community with pre-processed data that will enable more rapid and accurate analysis of interactions of operational value. Currently, this task is done manually, using a process that is inefficient and susceptible to errors and omissions. Additionally, SHARC will greatly enhance one of the most fundamental and necessary ship functions – continuous operational improvement through reviewing and critiquing previous missions.

R9317	FY 2003	FY 2004
TECHNOLOGY INSERTION SUPPORT	0	989

This effort will investigate new information technologies which will require testing and evaluation of

applications throughout the Joint services.