FY 2007 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 2006
Exhibit R-2

BUDGET ACTIVITY: 03
PROGRAM ELEMENT: 0603236N
PROGRAM ELEMENT TITLE: WARFIGHTER SUSTAINMENT ADVANCED TECHNOLOGY

COST: (Dollars in Thousands)

Project Number & Title	FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
Total PE	90,154	106,927	82,035	113,390	105,453	108,793	116,140
2915 WARFIGHTER SUSTAINMENT ADVANCED TECHNOLOGY	55,222	61,459	82,035	113,390	105,453	108,793	116,140
3008 HIGH SPEED SEALIFT VESSEL	2,589	668	0	0	0	0	0
9999 CONGRESSIONAL PLUS-UPS	32,343	44,800	0	0	0	0	0

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Warfighter Sustainment Advanced Technology supports: Manpower and Personnel, Training, and Readiness; and the Future Joint Warfighting Capabilities identified by the Joint Chiefs of Staff. It supports the Future Naval Capabilities (FNC) Program in Airframe/Ship Corrosion; Turbine Engine Technologies; Littoral Combat; Sea Base Planning, Operations and Logistics; and Sea Base Mobility and Interfaces. It develops technologies that enable the Navy to better recruit, select, classify, assign, and manage its people; to train effectively and affordably in classroom settings, in simulated and actual environments, and while deployed; and to effect human systems integration into weapon systems. Other technologies enable reduced operating costs through life-extension of legacy systems and increased efficiency of future propulsion systems and improved diagnostic tools.

Within the Naval Transformation Roadmap, this investment supports the achievement of all the transformational capabilities of Sea Warrior and the transformational capabilities of: Ship to Objective Maneuver and Time Sensitive Strike required by Sea Strike; Littoral Sea Control and Anti-Sub Warfare required by Sea Shield; Compressed Deployment and Employment Times and Enhanced Sea-Borne Positioning of Assets required by Sea Basing; and Battlespace Integration required by FORCEnet.

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

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PROGRAM ELEMENT: 0603236N
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B. PROGRAM CHANGE SUMMARY:

	FY 2005	FY 2006	FY 2007
FY 2006 President's Budget Submission	91,665	68,540	82,623
Congressional Action	500	38,755	0
Congressional Undistributed Reductions/Rescissions	-76	-1,036	0
Execution Adjustments	-255	0	0
FY 2005 SBIR	-1,689	0	0
Program Adjustments	9	668	-3,300
Program Realignment	0	0	2,365
Rate Adjustments	0	0	347
FY 2007 President's Budget Submission	90,154	106,927	82,035

PROGRAM CHANGE SUMMARY EXPLANATION:
Technical: Not applicable.

Schedule: Not applicable.

C. OTHER PROGRAM FUNDING SUMMARY:
Not applicable.

D. ACQUISITION STRATEGY:
Not applicable.

E. PERFORMANCE METRICS:
Efforts within this PE support the FNC program and are monitored at two levels. At the lowest level, each is measured against technical and financial milestones on a monthly basis. Annually, each FNC project is reviewed in depth for technical and transition performance by CNR against requirements approved by the Navy's senior flag level Technical Oversight Group. Routine site visits to performing organizations are conducted to assess programmatic and technical progress. Most are reviewed annually or bi-annually by an independent board of visitors who assess the level and quality of the Science and Technology basis for the project. Several of

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these projects support specific Defense Technology Objectives established by the Director, Defense Research and Engineering (DDR&E) and receive a bi-annual technical and programmatic review under DDR&E's Technology Area Review Assessment Program.

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PROJECT NUMBER: 2915 PROJECT TITLE: WARFIGHTER SUSTAINMENT ADVANCED TECHNOLOGY

COST: (Dollars in Thousands)

Project Number & Title	FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
2915 WARFIGHTER SUSTAINMENT ADVANCED TECHNOLOGY	55,222	61,459	82,035	113,390	105,453	108,793	116,140

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Warfighter Sustainment Advanced Technology supports Manpower and Personnel, Training, and Readiness; and the Future Joint Warfighting Capabilities identified by the Joint Chiefs of Staff. This project supports the FNC Program in Airframe/Ship Corrosion; Turbine Engine Technologies; Littoral Combat; Sea Base Planning, Operations and Logistics; and Sea Base Mobility and Interfaces. This project develops technologies that enable the Navy to better recruit, select, classify, assign, and manage its people; to train effectively and affordably in classroom settings, in simulated and actual environments, and while deployed; and to effect human systems integration into weapon systems. Other technologies enable reduced operating costs through life-extension of legacy systems, increased efficiency of future propulsion systems and improved diagnostic tools. Within the Naval Transformation Roadmap, this investment supports the achievement of all the transformational capabilities of Sea Warrior and the transformational capabilities of Ship to Objective Maneuver and Time Sensitive Strike required by Sea Strike; Littoral Sea Control and Anti-Submarine Warfare required by Sea Shield; Compressed Deployment and Employment Times and Enhanced Sea-Borne Positioning of Assets required by Sea Basing; and Battlespace Integration required by FORCEnet.

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2005	FY 2006	FY 2007
SEA BASE PLANNING, OPERATIONS AND LOGISTICS	11,264	10,207	13,329

This activity includes support to the FNC Enabling Capabilities for Sea Base Collaborative Command and Control; Sea Base Integrated Operations; and Surface Connector Vehicle Transfer. Sea Basing will require more robust afloat command and control for sustainment activities. Logistics must integrate with the joint task

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force common operating picture, and provide awareness of mission supportability and readiness at an operational and tactical level. This activity will produce techniques and systems to support automated transfer of cargo from shipboard unload/onload point to stowage spaces. Technologies include high-strength composites, ship-motion compensation for force control-based systems, intelligent systems, and robotics.

FY 2006 - FY 2007 increase to support planned project transitions and reflects the effects of the realignment of FNC Program investments into Enabling Capabilities.

FY 2005 Accomplishments:

- Continued focus on the shipboard automated storage and retrieval system. Commenced building land based test module.
- Continued human amplification technology under compact agile material mover and completed the proof of concept demonstrator to support further developments.
- Continued efforts of software development for the afloat component of naval sustainment Command and Control (C2).
- Initiated prototype development to handle container movement aboard ship.

FY 2006 Plans:

- Continue all efforts of FY 2005.
- Complete automated storage and retrieval efforts with a demonstration of the land based test site and subsequent shipboard demonstration.
- Initiate concepts for high rate horizontal and vertical material movement within the Sea Base. (Previously reported under activity SEA BASE MOBILITY AND INTERFACES of this PE.)

FY 2007 Plans:

- Continue all efforts of FY 2006 less those noted as completed above.
- Complete efforts in human amplification technologies.

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- Complete efforts of software development for the afloat component of naval sustainment Command and Control (C2).
- Initiate efforts in interface ramp technologies for seabasing.
- Initiate efforts for improved cargo lashing/unlashing systems.

	FY 2005	FY 2006	FY 2007
SEA BASE MOBILITY AND INTERFACES	7,958	11,684	19,145

This activity includes support to the FNC Enabling Capabilities for Sea Base Mobility and Interfaces, and Maritime Preposition Force (Future) (MPF (F)) Marine Expeditionary Brigade (MEB) Force Closure. This activity improves the capability for transfer of personnel and cargo between Sea Base/Logistics vessels and unimproved beaches during high sea states. Capabilities being developed include propulsion technologies, cargo stabilization technologies, advanced hull form technologies and fabrication of lightweight robust structures needed for sustained operations at high speed in a moderate seaway. This activity further supports the Sea Basing mission of marrying troops to equipment, and providing support to seaborne forces via surface distribution interfaces. It will improve current underway replenishment capabilities for transfer of cargo between Sea Base/Logistics vessels (large ship-to-ship) during high sea states, while increasing ship separation for safety.

FY 2005 - FY 2007 increases result from the planned initiation of projects to support the Navy's developing sea basing concept of operations, to support planned product transitions to new ship programs, and to reflect the realignment of FNC Program investments into Enabling Capabilities.

FY 2005 Accomplishments:

- Continued efforts on large to large vessel lift on/lift off capability.
- Completed design studies and conducted limited prototyping and model basin testing.
- Completed work in station keeping and scale demonstrations in a relevant environment.
- Initiated technology exploration in hydrodynamic impacts and design space trade studies.

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FY 2006 Plans:

- Continue all efforts of FY 2005 less those noted as completed above.
- Initiate work for a beachable high speed craft as a Sea Base mobility interface.
- Initiate work in small to large at-sea vessel interfaces.

FY 2007 Plans:

- Continue all efforts of FY 2006 less those noted as completed above.
- Initiate work for technology support 3rd generation individual blade control for heavy lift vertical air replacement platform.
- Initiate efforts to demonstrate large axial-flow waterjet technologies.

	FY 2005	FY 2006	FY 2007
FRICTION DRAG REDUCTION	0	0	2,497

This activity is a collaborative effort with the Defense Advanced Research Agency (DARPA) and the Program Executive Officer for Ships (PEO Ships). The objective is to unambiguously demonstrate the performance of large-scale predictive models that incorporate sufficient physics from first-principles models on a large or full-scale ship test vehicle.

FY 2006 - 2007 increase due to program start up.

FY 2007 Plans:

- Initiate design of an optimal implementation of additive-based drag reduction technology using large-scale predictive models.

	FY 2005	FY 2006	FY 2007
SEA BASING	0	5,254	9,320

This activity includes advancement of technologies to support the design and development of Sea Basing

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Innovative Naval Prototypes. Areas include design and development of various Sea Basing prototypes in the areas of high speed, shallow draft and beachable connectors; vessel to vessel interfaces; and automated and integrated warehousing.

2005 - 2006 increase due to program start up.
2006 - 2007 increase due to initiation of further efforts.

FY 2006 Plans:

• Initiate prototype designs in the areas of high speed, shallow draft and beachable connectors; vessel to vessel interfaces; and automated and integrated warehousing.
• Initiate advanced technology development of selected Sea Basing technologies which would support prototype design. Technologies include: lift cushion seal challenges such as lightweight, high strength, long wear materials; variable geometry/retractability; sea state four capability as well as lighter weight, more efficient lift fans; automatic connector/mating systems; innovative seal systems; vertical/horizontal transition of conveyance and autonomous; and low power consumption intraship transport systems.

FY 2007 Plans:

• Continue all efforts of FY 2006.
• Initiate detailed design of Sea Basing prototypes implementing systems integration and utilizing selected technologies from FY 2006 development.
• Initiate prototype construction of selected systems of technologies from FY 2006. Technologies include: low power consumption intra-ship transport systems, autonomous vertical/horizontal transition of material conveyance systems, innovative high-rate personnel transfer systems, at-sea motion stabilization systems, and surface effect lift efficiency.
• Initiate prototype demonstration and at-sea test plans.

	FY 2005	FY 2006	FY 2007
MANPOWER AND PERSONNEL DEVELOPMENT	2,924	3,071	6,998

This activity provides Navy personnel system managers with the ability to attract and retain the right people and to place them in jobs that best use their skills, training, and experience. Application of modeling and

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simulation, mathematical optimization, advanced testing, statistical forecasting, information visualization, data warehousing, data cleansing, web-based knowledge management, and human performance measurement technologies enhances Fleet readiness and reduces personnel costs.

FY 2006 - 2007 increase due to planned completion of integration projects vital to the Navy's "Strategy for Our People".

FY 2005 Accomplishments:

- Continued Non-Cognitive Measures of Personality and Social Competency related to teamwork, Navy adaptability, leadership, and job performance to be applied in personnel selection and classification.
- Continued Career Case Manager Technologies, which integrates intelligent agents, simulation models, and statistical methods to support Sailor/Marine career planning and decision making.
- Continued Distribution Incentive System, which incorporates the economic methods, business rules, and incentive structures to incentivize traditionally difficult-to-fill assignments or locations.
- Continued Web Based Marketplace for Sailors and Jobs, the computational operating environment in which the command, broker, and Sailor cognitive agents will interface to distribute and assign military personnel.
- Completed Attrition Reduction Technologies.
- Completed Enterprise Management System.

FY 2006 Plans:

- Continue all efforts of FY 2005 less those noted as completed above.
- Complete Non-Cognitive Measures.
- Complete Career Case Manager Technologies.
- Complete Distribution Incentive System.
- Initiate Integrated Whole Person Assessment, which integrates Attrition Reduction Technologies, Non-Cognitive Measures, and Rating Identification Engine (RIDE)/Job and Occupational Interest in the Navy (JOIN).
- Initiate Integrated Sailor/Marine Career Management System, which integrates Career Case Manager Technologies Distribution Incentive System.
- Initiate development of advancement and retention analytical tools for Comprehensive Optimal Manpower & Personnel Analytical Support System (COMPASS), formerly titled Integrated Personnel Situational Monitoring, Analysis, and Response Technologies.

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FY 2007 Plans:

- Complete advanced development of Cultures and Values Selection for integration with other selection and classification measures.
- Complete Integrated Whole Person Assessment.
- Complete Web Based Marketplace.
- Complete Integrated Sailor/Marine Career Management System.
- Complete COMPASS.

	FY 2005	FY 2006	FY 2007
TRAINING SYSTEMS	12,965	12,484	12,045

This activity improves mission effectiveness and safety by applying both simulation and instructional technology to the design of affordable education and training methods and systems. Improved training efficiency and cost-effectiveness is achieved by applying operations research, modeling and simulation, and instructional, cognitive, and computer sciences to the logistics, development, delivery, evaluation, and execution of training.

FY 2005 - 2006 decrease due to planned completion of projects.

FY 2005 Accomplishments:

- Continued debriefing technologies.
- Continued advanced technologies for Interactive Electronic Technical Manuals.
- Continued focus on Virtual Technologies and Environments (VIRTE) Demonstration II, and performance assessment tools.
- Completed development of human performance assessment tools for Navy-wide distributed learning.
- Completed Battle Group Level Advanced Under Sea Warfare (USW) visualization systems.
- Completed alternate cockpit information display evaluations.
- Initiated VIRTE Demo III, which provides integrated virtual training across the full spectrum of combat.
- Initiated advanced technologies for collaborative network-centric visualization systems.

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• Initiated and completed architecture design for integrating Naval surface fire support and air Virtual At Sea Training technologies into a joint operations constellation that includes cross-echelon and multi-platform training.

FY 2006 Plans:

• Continue all efforts of FY 2005 less those noted as completed above.
• Complete debriefing technologies.
• Complete VIRTE Demonstration II.

FY 2007 Plans:

• Complete advanced technologies for Interactive Electronic Technical Manuals.
• Complete VIRTE Demonstration III.
• Complete advanced technologies for collaborative network-centric visualization systems.

	FY 2005	FY 2006	FY 2007
HUMAN SYSTEMS INTEGRATION	1,170	0	0

This effort supports the warfighter by designing affordable user-centered systems that are easy to use and train. Focus is on the application of a reusable user-centered design process to design a user interface to support user tasks, extract software requirements, and develop software design models.

FY 2005 - 2006 decrease due to program termination.

FY 2005 Accomplishments:

• Completed integration of Land Attack task and Human-Computer Interaction designs into Tactical Tomahawk Weapon Control System builds.
• Completed software architecture design to accommodate task-based user interface for Land Attack systems.

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	FY 2005	FY 2006	FY 2007
TURBINE ENGINE TECHNOLOGY - INTEGRATED HIGH PERFORMANCE TURBINE ENGINE TECHNOLOGY (IHPTET)/ VERSATILE AFFORDABLE ADVANCED TURBINE ENGINES (VAATE)	9,970	10,917	11,343

This activity provides integration and experimental engine testing of new gas turbine engine technologies to demonstrate readiness and reduce technical risk for entering engineering development. IHPTET is a tri-service program in which each service contributes established shares of advanced technology funding and laboratory resources to meet specified goals. This activity covers the Navy's share. The objective of VAATE is to develop and demonstrate versatile, durable, “intelligent” engine technologies for the spectrum of legacy, pipeline, and new military aircraft, rotorcraft, missiles, and unmanned air vehicles (UAVs). The VAATE goal is 10X improvement in turbine engine affordability (capability/cost) by 2017, with an interim goal of 6X by 2010.

FY 2005 Accomplishments:

- Continued Phase III Joint Turbine Advanced Gas Generator (JTAGG) development.
- Continued core test of Honeywell Engine and Systems (HES) demonstrator.
- Completed the Phase II Joint Technology Demonstrator Engine (JTDE), General Electric (GE)/Allison Advanced Development Company (AADC) demonstrator engine.
- Completed the Phase III JTDE (GE/AADC) and Pratt & Whitney (P&W) demonstrator engines.
- Initiated VAATE Phase I: Design, component development, integration and fabrication of Phase I demonstrator engines.

FY 2006 Plans:

- Continue all efforts of FY 2005 less those noted as completed above.
- Complete the Phase III JTAGG development and final core test of HES demonstrator.

FY 2007 Plans:

- Continue all efforts of FY 2006 less those noted as completed above.

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- Initiate testing of VAATE Phase I demonstrator engines with GE and P&W.

	FY 2005	FY 2006	FY 2007
AIRFRAME/SHIP CORROSION	4,528	3,908	5,360

This activity includes an integrated approach for the control of the effects of external and internal corrosion in Naval weapon systems. The work develops advanced, cost effective prevention and lifecycle management technologies. This is particularly significant to life extension for the aging fleet.

FY 2005 - FY 2006 decrease is due to rebalancing of FNC funding.
FY 2006 - FY 2007 increase is to fund planned completions.

FY 2005 Accomplishments:

- Continued development of road test method for Marine Corps vehicles.
- Continued development of single coat system for ship tanks (fuel tanks).
- Continued the development of Nondestructive Inspection (NDI) Technology for aircraft metal and composite structures to detect cracks and defects.
- Completed aircraft corrosion effort.
- Completed single coat system for ship tanks (potable water tank) and demonstrated on 10 salt water ballast tanks.
- Completed Corrosion Preventive Compounds (CPCs) and NDI technology for corrosion detection for aircraft structures.
- Initiated the development of single coat systems for Collection-Holding-Transfer (CHT) ship tanks.
- Initiated NDI technology for heat damage detection on composite materials.

FY 2006 Plans:

- Continue all efforts of FY 2005 less those noted as completed above.
- Complete single coat system for ship tanks (fuel tank) and demonstrate coatings on fuel tanks.

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FY 2007 Plans:

- Continue all efforts of FY 2006 less those noted as completed above.
- Complete road test methodology.
- Complete development of NDI technology for metals, composites and structures.
- Complete single coat system for ship tanks (CHT tank).

	FY 2005	FY 2006	FY 2007
LITTORAL COMBAT	4,443	3,934	1,998

The goal of Littoral Combat is the application of technologies to enhance the ability of the Navy/Marine Corps team to execute the Naval portion of a joint campaign in the littorals. This activity considers all the critical functions of warfighting: command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR), fires, maneuver, sustainment, force protection, and training. This activity includes support to the FNC Enabling Capabilities for: Reduce Support Costs 1, Advanced Naval Fires Technology Spiral 1, Combatant Commander (COCOM) to Marine Combat Identification (ID), Global Information Grid (GIG)-Compliant Networking, Hostile Fire Detection and Response Spiral 2, Position-Location-Information, Reduce Cost of Operations 1, Sea Base Collaborative Command and Control, Sea Base Mobility and Interfaces, and Sea Base Integrated Operations.

The funding profile from FY 2006 to FY 2007 reflects the reorganization of the FNC Program investments into Enabling Capabilities (EC). As a result of this reorganization, the funding for each EC has been aligned to a Budget Activity 2 and Budget Activity 3 PE as appropriate. This activity reflects the alignment of investments for the following EC: Battlefield Power.

FY 2005 Accomplishments:

- Continued development of Phase 1 of the Position Location Information (PLI) system technology development.
- Continued development of innovative relays for Beyond Line of Sight (BLOS) communications.
- Continued integration and demonstration of secure mobile network/wireless LAN technologies.
- Continued development effort for Organic Light Emitting Diode (OLED) display technologies.
- Continued development of a capability to rapidly generate a terrain database.

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- Continued modeling and testing of the advanced weapon materials technology efforts on the Expeditionary Fires Support System (EFSS) artillery and mortar systems.
- Continued development of advanced target acquisition (target hand off and target location) technologies for both mounted and dismounted applications. (Previous efforts funded by PE 0603782N)
- Continued development and integration of improved fire control systems for direct and indirect fire weapons. (Previous efforts funded by PE 0603640M)
- Initiated development of technology to enhance navigation in a Global Positioning System (GPS) denied environment.
- Initiated development of integrated vehicle self-defense system to defeat incoming Rocket Propelled Grenades (RPGs).

FY 2006 Plans:

- Continue all efforts of FY 2005.
- Continue development of lightweight computational fire control interface technology. (Previous effort funded by PE 0603782N; FY07 effort to be funded by PE 0603782N)
- Complete Phase 1 of the PLI system technology development.
- Complete development effort for OLED display technologies.
- Complete development of and transition a capability to rapidly generate a terrain database.
- Initiate Phase 2 of the PLI system technology development.

FY 2007 Plans:

- Continue all efforts of FY 2006 less those noted as completed above.
- Initiate development of lunchbox sized 500 – 1000W portable JP-8 fueled generator.

The following efforts transition in FY 2007 from PE 0603236N to various PEs as follows:

- Continue development of integrated vehicle self-defense system to defeat incoming RPGs. (realigned to PE 0603640M)
- Continue development of technology to enhance navigation in a GPS denied environment. (realigned to PE 0602131M)

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- Complete integration and demonstration of secure mobile network/wireless LAN technologies. (realigned to PE 0602131M)
- Complete testing of the advanced weapon materials technology efforts on the EFSS artillery and mortar systems. (realigned to PE 0602114N)
- Complete development and transition of advanced naval fires target acquisition technologies. (realigned to PE 0602114N)

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

NAVY RELATED RDT&E:
PE 0206624M - Marine Corps Combat Services Support
PE 0601103N - University Research Initiatives
PE 0601152N - In-House Laboratory Independent Research
PE 0601153N - Defense Research Sciences
PE 0602123N - Force Protection Applied Research
PE 0602236N - Warfighter Sustainment Applied Research
PE 0603512N - Carrier Systems Development
PE 0604703N - Personnel, Training, Simulation, and Human Factors
PE 0605013M – Information Technology Development
PE 0605152N - Studies and Analysis Support - Navy

NON NAVY RELATED RDT&E:
PE 0601102A - Defense Research Sciences
PE 0602211A - Aviation Technology
PE 0603003A - Aviation Advanced Technology
PE 0603007A - Manpower, Personnel and Training Advanced Technology
PE 0601102F - Defense Research Sciences
PE 0602203F - Aerospace Propulsion
PE 0603216F - Aerospace Propulsion and Power Technology

D. ACQUISITION STRATEGY:
Not applicable.

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Exhibit R-2a

BUDGET ACTIVITY: 03
PROGRAM ELEMENT: 0603236N PROGRAM ELEMENT TITLE: WARFIGHTER SUSTAINMENT ADVANCED TECHNOLOGY
PROJECT NUMBER: 3008 PROJECT TITLE: HIGH SPEED SEALIFT VESSEL

Project Number & Title	FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
3008 HIGH SPEED SEALIFT VESSEL	2,589	668	0	0	0	0	0

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Within the Naval Transformation Roadmap, this investment supports the achievement of Compressed Deployment and Employment Times and Enhanced Sea-Borne Positioning of Assets required by Sea Basing.

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2005	FY 2006	FY 2007
HIGH SPEED VESSEL	2,589	668	0

Within the Naval Transformation Roadmap, this investment supports the achievement of Compressed Deployment and Employment Times and Enhanced Sea-Borne Positioning of Assets required by Sea Basing.

FY 2005 Accomplishments:

Completed development of large composite test articles initiated in FY 2003 under the Composite High Speed Vessel program.

FY 2006 Plans:

Complete replacement of lost and damaged materials for the composite High Speed Vessel caused during Hurricane Katrina.

C. OTHER PROGRAM FUNDING SUMMARY:
0601153N - Defense Research Sciences
0602123N - Force Protection Applied Research

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0603123N - Force Protection Advanced Technology
0603758N - Navy Warfighting Experiments and Demonstrations

D. ACQUISITION STRATEGY:
Not applicable.

BUDGET ACTIVITY: 03
PROGRAM ELEMENT: 0603236N PROGRAM ELEMENT TITLE: WARFIGHTER SUSTAINMENT ADVANCED TECHNOLOGY
PROJECT NUMBER: 9999 PROJECT TITLE: Congressional Plus-Ups

CONGRESSIONAL PLUS-UPS:

	FY 2005	FY 2006
ASPHALT RECONDITIONER	1,646	0

This effort facilitated the application of GSB-88, which is a complex asphalt emulsion product specifically engineered to retard surface oxidation of asphalt pavement; monitored the performance of GSB-88 to prevent premature oxidation and corrosion of the asphalt infrastructure; and assessed cost savings in asphalt preservation cost.

	FY 2005	FY 2006
AUTOMATED CONTAINER AND CARGO HANDLING SYSTEM	1,928	2,000

FY 2005 - This effort designed, fabricated, and tested a full scale active AutoLog spreader bar system for lifting containers and cargo while at sea.

FY 2006 - This effort supports automated container and cargo handling system research.

	FY 2005	FY 2006
AUTONOMOUS SUSTAINMENT CARGO CONTAINER DELIVERY SYSTEM	0	1,000

This effort supports autonomous sustainment cargo delivery system research.

	FY 2005	FY 2006
CAFFING PROTECTION SYSTEM	1,357	0

This effort developed and transitioned a condition based monitoring technology for onboard detection, diagnostics, and prognostics of wire chaffing onboard Navy aircraft. The main tasks were to flight test a current prototype onboard an H-53 helicopter, and to enhance a previously developed prototype by increasing its sensitivity and reducing the interrogation time. Decaying, aged wiring is an insidious and usually unseen problem to aircraft maintainers and operators. With most aircraft wiring hidden from view, an enabling

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technology to detect wiring faults prior to electrical malfunction is urgently needed. Wiring defects are most often initially manifested by chaffing, followed by cumbersome, costly and time consuming repair.

	FY 2005	FY 2006
CRREST SKILL SET ANALYSIS	0	5,100

This effort supports CRREST skill set analysis research.

	FY 2005	FY 2006
CURVE PLATE TECHNOLOGY	0	1,000

This effort supports curve plate technology research.

	FY 2005	FY 2006
DAMAGE CONTROL ONBOARD SIMULATION	0	2,600

This effort supports damage control onboard simulation research.

	FY 2005	FY 2006
DEFENSE SYSTEMS MODERNIZATION AND SUSTAINMENT INITIATIVE	3,861	3,000

FY 2005 - The Asset Health Management area expanded from a single vehicle to the fleet level through co-funding with the Marine Corps Warfighting Laboratory. Integration of the system into Intelligent Maintenance began. Prognostic sensing and assessment technologies were expanded to electronic components. The effort developed the required reverse engineering/restoration technology for critical legacy components for ground and air vehicles.

FY 2006 - This effort supports defense systems modernization and sustainment initiative research.

	FY 2005	FY 2006
EXPEDITIONARY CRAFT	0	9,000

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This effort supports expeditionary craft research.

	FY 2005	FY 2006
EXPEDITIONARY LOGISTICS FOR THE 21ST CENTURY (EXLOG21)	2,893	0

This effort completed the Material Control Officer (MATCONOFF) software development and transitioned the product to the Space and Warfare Systems Office, PMW 151.

	FY 2005	FY 2006
HEET	4,822	4,500

FY 2005 - Note: This effort was previously titled "Energy and Environmental Technology".

This effort continued its partnership with the Naval Research Laboratory to test and develop advanced fuel cell systems for military and civilian application, and to explore and characterize sea-floor methane hydrates as a potential fuel source. The fuel cell activity focused on the development of strong industrial partnerships for providing access to state-of-the-art-fuel cells, and the use of the laboratory facility to characterize the performance and durability of cells and cell components for Navy applications.

FY 2006 This effort supports HEET research.

	FY 2005	FY 2006
INTEGRATED ASYMMETRIC URBAN WARFARE	0	1,000

This effort supports integrated asymmetric urban warfare research.

	FY 2005	FY 2006
INTEGRATED VEHICLE HEALTH MANAGEMENT SYSTEM	2,514	0

Note: This effort was previously titled "Integrated Aircraft Health Management".

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This effort demonstrated data interoperability software tools and diagnostic algorithms on F/A-18 E/F flight control actuators and propulsion system, as well as selected C-17, V-22 and/or commercial platform systems. The technology will enable reduced operating costs through life-extension of legacy systems and will enable improved diagnostic tools that will decrease the number of unnecessary parts removals.

	FY 2005	FY 2006
INTELLIGENT WORK MANAGEMENT	1,640	1,700

FY 2005 - This effort developed network technologies to significantly increase the speed and efficiency by which shipboard maintenance problems are identified, replacement parts are located, and maintenance personnel are assigned to address the problems.

FY 2006 - This effort supports intelligent work management research.

	FY 2005	FY 2006
LOW VOLUME PRODUCTIVITY	1,446	0

This effort established a laser repair facility which is fully robotic and which uses a higher power laser than was previously available. Such a facility enables the economical repair of shipboard components which are likely to reach a navy repair facility in very small numbers (frequently "one of a kind").

	FY 2005	FY 2006
MINE WARFARE TECHNOLOGY SOLUTIONS (MWTS)	2,507	0

This effort supported the development of metrics; analysis tools; and the assessment engineering concepts, processes, systems, and technologies for mine countermeasures missions. This effort emphasized the use of unmanned surface vehicles for mine countermeasures missions.

	FY 2005	FY 2006
MOTION-COUPLED VISUAL ENVIRONMENT (MOCOVE)	0	1,000

This effort supports Motion-Coupled Visual Environment (MOCOVE) research.

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	FY 2005	FY 2006
NADEP CHERRY POINT CTR FOR VERTICAL LIFT AIRCRAFT REPAIR AND MAIN. TECH PRG	1,933	0

This effort provided for science and technology insertion into a dedicated activity to identify, demonstrate, validate, and assist in implementing improved maintenance products, procedures, and processes into depot operations. The payoff of these technology advancements will be increased readiness by improving maintenance operations and decreasing maintenance cycle times for rotary wing aircraft.

	FY 2005	FY 2006
ONR VIRTUAL AT SEA TRAINING INITIATIVE	964	1,500

FY 2005 - This effort extended the Virtual At Sea Training (VAST) system to new warfighting arenas including battlegroup level Anti-submarine Warfare training and mission rehearsal, and Marine Corps indirect fire weapons training for the full artillery team.

FY 2006 - This effort supports the ONR Virtual at Sea Training Initiative.

	FY 2005	FY 2006
PHOTONIC MACHINING OF ELECTRONIC MATERIALS	0	1,000

This effort supports photonic machining of electronic materials research.

	FY 2005	FY 2006
PRECISION FABRICATION OF LARGE CURVED STEEL NAVY SHIP STRUCTURES	1,939	0

This effort used precision fabrication of large curved steel beams in the application of new concepts of hybrid stainless steel/composite construction to Navy ship structures. Hybrid ship construction will provide low magnetic signatures, increased survivability, low maintenance, and light weight for high speed ships for Littoral Combatant Ship applications. Application of precision fabrication using computer controlled welding

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and metrology to control weld distortions are key to low cost manufacturing.

	FY 2005	FY 2006
PROTECTIVE APPAREL TECHNOLOGY SYSTEMS	0	3,000

This effort supports protective apparel technology systems research.

	FY 2005	FY 2006
SEAPRINT	1,446	4,200

FY 2005 - Note: This effort was previously titled "IMPRINT".

Based on previously tested Human Systems Integration (HSI) specifications adopted from Army MANPRINT technology, this effort included additional test platforms to ascertain performance outcomes: controlling for cognitive and non-cognitive factors for each test subject group. Also there was an inclusion of meta-heuristic optimization algorithms to ascertain optimal performance outcomes subject to varying HSI tenets and test platforms.

FY 2006 - This effort supports SEAPRINT research.

	FY 2005	FY 2006
SHIPBOARD PERSONAL LOCATOR BEACON	0	1,100

This effort supports shipboard personal locator beacon research.

	FY 2005	FY 2006
ULTRASONIC CONSOLIDATION OF MATRIX COMPOSITES	964	0

This effort researched new composite materials to be used in advanced munitions.

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	FY 2005	FY 2006
VIGILANT NETWORK CENTRIC SECURITY DATA SYSTEM	483	0

This effort developed a computer security system for DoD wide application that provides an automatic identification access control and personnel tracking capability.

	FY 2005	FY 2006
WIRELESS SENSORS FOR NAVY AIRCRAFT	0	2,100

This effort supports research of wireless sensors for Navy aircraft.