

UNCLASSIFIED

FY 2001 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

Date: February 2000

BUDGET ACTIVITY: 3

PROGRAM ELEMENT: 0603712N

PROGRAM ELEMENT TITLE: Environmental Quality & Logistics Advanced Technology

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1999 ACTUAL	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
R1910 Logistics Engineering Advanced Demonstrations (LEAD)	15,922	18,411	18,680	19,282	18,946	19,394	19,239	CONT.	CONT.
R2206 Environmental Requirements Advanced Technology (ERAT)	4,145	5,194	5,322	5,961	5,902	5,849	5,767	CONT.	CONT.
R2384 Visualization of Technical Information	98	74	0	0	0	0	0	0	2,071
R2498 Visualization of Technical Information	1,936	2,984	0	0	0	0	0	0	4,920
R2719 Allegheny Ballistics Laboratory	0	994	0	0	0	0	0	0	994
TOTAL	22,101	27,657	24,002	25,243	24,848	25,243	25,006	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This Program Element funds the Navy's advanced technology development core efforts in environmental quality and logistics. The focus is on Navy-unique aspects of these technologies. The Logistics Engineering Advanced Demonstrations (LEAD) project supports, maintains and upgrades Navy systems and processes. It extends systems life cycles and streamlines processes to increase reliability and reduce operations. Environmental Requirements Advanced Technology (ERAT) an environmental quality project is aimed at demonstrating ways to reduce shipboard pollution, remediation of harbors and shore facilities, and improve industrial treatment processes. Program response to

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affordability requirements includes research and development on antifouling hull coatings, waterfront structures, amphibious logistics, maintenance, electronics logistics and replenishment. The program directly support the proposed Future Naval Capabilities in Total Ownership Cost and Expeditionary Logistics.

(U) The Navy S&T program includes projects that focus and have attributes that enhance the affordability of warfighting systems.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is budgeted within the ADVANCED TECHNOLOGY DEVELOPMENT Budget Activity because it encompasses design, development, simulation, or experimental testing of prototype hardware to validate technological feasibility and concept of operations and reduce technological risk prior to initiation of a new acquisition program or transition to an ongoing acquisition program.

(U) PROGRAM CHANGE SUMMARY:

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
(U) FY 2000 President's Budget:	23,373	23,809	22,513
(U) Appropriated Value:	-	27,809	-

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(U) Adjustments from FY 2000 PRESBDG:

Program Adjustments	0	0	+1,785
SBIR/STTR Transfer	-228	0	0
Execution Adjustments	-941	0	0
Inflation Rate Adjustment	-103	0	0
Congressional Rescissions	0	-152	0
Various Rate Adjustments	0	0	-287
SSP	0	0	-9
Congressional Adds:			
Visualization of Technical Information	0	3,000	0
Allegheny Ballistics Laboratory	0	1,000	0
(U) FY 2001 PRESBDG Submission:	22,101	27,657	24,002

(U) CHANGE SUMMARY EXPLANATION:

- Schedule: Not applicable.
- Technical: Not applicable.

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R1910 Logistics Engineering Advanced Demonstrations (LEAD)	15,922	18,411	18,680	19,282	18,946	19,394	19,239	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project develops technologies to support vital and integral logistics aspects of Joint Mission Areas, specifically in Support & Infrastructure and Readiness. Science and Technology investment in logistics assures affordable technologies that provide rapid deployment, replenishment, and sustainment of Naval and other combat forces in peacetime and wartime operations. Other needs addressed include reducing life cycle and maintenance costs while increasing system capability and readiness. This project also responds to several Defense Technology Area Plan (DTAP) goals, including Materials & Process and Ground & Sea Vehicles. This project responds to Defense Science & Technology Strategy Areas including: Affordability, Dual Use, and Strong Technology Base. The LEAD project improves weapon system readiness and supportability through development of advanced logistics technology. Tasks in this project typically fall into the following categories per the Defense Logistics Agency: Supply, Maintenance, Transportation, and Engineering. This project facilitates transition of concepts from Applied Research to higher development categories or directly to the fleet.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1999 ACCOMPLISHMENTS:

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PROGRAM ELEMENT TITLE: Environmental Quality

PROJECT TITLE: Logistics Engineering Advanced

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Demonstration (LEAD)

- (U) Condition Based Maintenance (CBM):
 - (U) Completed development of aircraft corrosion sensor system utilizing a radio transceiver and a lap-top computer for the implementation of condition based maintenance.
 - (U) Evaluated corrosion sensors based on corrosion potential measurements in the ballast tanks of operating ships for the implementation of condition based maintenance.
- (U) Real Time Infrared (RTIR):
 - (U) Continued optics upgrade fabrication, and performed system integration for RTIR Test Set. A series of hardware demonstrations were begun to offer potential transition partners the opportunity to observe the qualities of the test set which will make it a useful tool for in-field testing of weapons systems.
- (U) Battery Charger/Analyzer:
 - (U) Developed battery diagnostics and charge technology that will reduce maintenance and extend the service life of the batteries. Development of a nickel-cadmium diagnostic algorithm was completed; lead-acid and nickel-cadmium software were developed.
- (U) D-Day Mobile Fuel Distribution:
 - (U) Developed and demonstrated light weight, high strength, collapsible, fluid containers and rapid fluid transfer mechanisms to provide the capability for expeditious ship-to-shore movement of fuel and other liquids during the initial stages of an amphibious assault. System requirements and interfaces for each of the proposed systems were completed.
- (U) Low Cost Radio Frequency (RF) Power Measurement Devices:

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PROJECT TITLE: Logistics Engineering Advanced

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Demonstration (LEAD)

- (U) Produced RF power measurements devices to achieve improved affordability by reducing initial acquisition cost, reducing logistics manpower, minimizing life-cycle cost of power measurement equipment, improving maintenance techniques and processes, and reducing personnel injury/material damage. Demonstrated the operation and performance of a micromachined power sensor and Effective Isotropic Radiated Power (EIRP) detection elements and subsystems in chip form.
- (U) Naval Total Asset Visibility (NTAV):
 - (U) Continued to demonstrate the concepts of wide-area asset visibility using (RFID) technology and interoperability with logistics command and control systems. Completed system criteria definition; completed system integration elements of satellite communications, remote maintenance monitoring, and Combat Service Support Operations Center (CSSOC).
- (U) Affordable Green Energetics:
 - (U) Demonstrated twin-screw extruder processing of BAMO-AMMO Thermoplastic Elastomer (TPE) based propellants. Demonstrated recycling processes for TPE-based propellants and TPE-based explosives in the laboratory. Conducted 5" gun firing at Dahlgren test range and 5" static rocket motor firing on a Thiokol Propulsion test stand using TPE-based propellants. Estimated life cycle cost of TPE-based propellants and TPE-based explosives in the Extended Range Guided Munition (ERGM) will be 15% less than conventional propellants and explosives.
- (U) Technology Assessment Management Tool
 - (U) Developed a comprehensive capability to proactively manage all aspects of support and sustainment of military systems whether the system or support is government derived or commercial. This task developed

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PROGRAM ELEMENT TITLE: Environmental Quality

PROJECT TITLE: Logistics Engineering Advanced

& Logistics Advanced Technology

Demonstration (LEAD)

methodologies, processes, and techniques to make current and future weapons systems and infrastructures more affordable by increasing systems life cycle, decreasing cost of support, and increasing operational effectiveness through modernization.

- (U) Arc Fault Wire Protection
 - (U) Developed the ability to detect a 400Hz power wire insulation failure which could ignite a fire on the ground or in the air. This affordable arc fault detection reduced the maintenance time to find the damaged wire to be repaired by 35%.
- (U) Autonomous Marine Booster Pump (AMBP)
 - (U) Developed a reliable, automated pressure boosting mechanism to permit ship-to-shore transfer of bulk liquids from extended standoff distances during the assault phase of an amphibious operation where shallow beach gradients, subsequent standoff distances, and rapid installation are critical factors. AMBP conceptual designs have been refined and analysis and benchtop testing have been conducted to validate concept feasibility.
- (U) Pier Lateral Stability
 - (U) Developed non-destructive diagnostic techniques coupled with computer modeling to rapidly assess pier capacity to resist lateral loads imposed by berthing impact, wind, and current on berthed vessels, or by earthquakes. The project increased flexibility of berthing vessels. Fewer in-port movements of vessels will be required to accommodate re-supply and intermediate maintenance functions.
- (U) High Sea State Shipboard Crane Technology

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PROGRAM ELEMENT TITLE: Environmental Quality
& Logistics Advanced Technology

PROJECT TITLE: Logistics Engineering Advanced
Demonstration (LEAD)

- (U) Developed enhanced capabilities and reduced training requirements for advanced shipboard crane to facilitate loading/unloading operations in sea states 3 and above.
- (U) Waterfront Structures Repairs and Upgrades
 - (U) Completed demonstration of improved performance of new technology for waterfront structures. Demonstrated ability of laminate quality and strain monitoring systems to assess load safety of upgraded hybrid concrete/composite structures. Demonstrated corrosion stabilization system.
- (U) SEAWAY
 - (U) Developed adaptive command and control to planning and execution of Joint Logistics Over-the-Shore/maritime logistic operations by applying the Integrated Cooperative Decision-Making (ICDM) framework. This task responded to the demand for responsive sea-based support to Joint Vision 2010, particularly the requirement to enable ship-to-objective maneuver (STOM), deep inland operations, and a reduced logistic footprint ashore.
- (U) Ship-Based Theatre Logistics Management and Distribution
 - (U) Developed a maritime logistic and sea basing support system for the management of theatre logistics using agent-based collaborative planning technology. This task: projected, planned and directed the flow of supplies during sea base operations within the sea base, from ship to shore, and/or from ship to inland objectives; visualize cargo items on a theater-wide basis; projected availability ashore of any item stowed in vessels destined for or located within the contingency area.
- (U) Proton Exchange Membrane (PEM) Fuel Cell Using Synthetic Logistic Fuel

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PROJECT TITLE: Logistics Engineering Advanced
Demonstration (LEAD)

- Demonstrated the possibility of using synthetic fuels to power PEM fuel cells. At present, fuel cells are powered by natural gas. Logistically, batteries can be replaced on-shore or on-board with the added benefit that a fuel cell provides energy at constant voltage until all the fuel is consumed.
 - (U) AutoLog Advanced Model Development and Demonstration
 - Developed a land- and sea-based container handling capability through a new class of Large Cable Array Robots (LCARs). The task will provide an approach to controlling the motion of containers suspended from cranes in sea state 3 and higher.
2. (U) FY 2000 PLAN:
- (U) CBM:
 - (U) Evaluate radio-monitored corrosion sensor in naval H-60 helicopters and initiate evaluation in naval P-3 aircraft for the implementation of condition based maintenance.
 - (U) Continue evaluation on corrosion sensors based on corrosion potential measurements in ballast tanks of operating naval ships for the implementation of condition based maintenance.
 - (U) Real-Time Infrared Test Set
 - (U) Continue development of technology for in-field testing of weapons systems. This technology will increase the ability to isolate faults at lower levels in the logistics maintenance structure, reduce required time for maintenance, and decrease the number of sensor and seeker test systems required in the logistics chain necessary to provide a given degree of operational readiness.

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Demonstration (LEAD)

- (U) D-Day Mobile Fuel Distribution
 - (U) Develop and demonstrate light-weight, high-strength, collapsible fluid containers and rapid fluid transfer mechanisms to provide the capability for expeditious ship-to-shore movement of fuel and other liquids during the initial stages of an amphibious assault.
- (U) Low Cost RF Power Measurement Devices
 - (U) Produce RF power measurements devices to achieve improved affordability by reducing initial acquisition cost, reducing logistics manpower, minimizing life-cycle cost of power measurement equipment, improving maintenance techniques and processes, and reducing personnel injury/material damage.
- (U) Naval Total Asset Visibility
 - (U) Continue to demonstrate the concepts of wide-area asset visibility using RFID technology and interoperability with logistics command and control systems.
- (U) Affordable Green Energetics
 - (U) Affordable High Lethality Green Energetic Materials will demonstrate propellents and explosives which can lower the life-cycle cost of ordnance systems by reducing the waste and pollution created during manufacture and loading of the materials and by reducing the waste and pollution created during the demilitarization of the propellants and explosives at the end of the useful life of ordnance.
- (U) Technology Assessment Management Tool
 - (U) Develop a comprehensive capability to proactively manage all aspects of support and sustainment of military systems whether the system or support is government derived or commercial.

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Demonstration (LEAD)

- (U) Arc Fault Wire Protection
 - (U) Develop the ability to detect a 400Hz power wire insulation failure which could ignite a fire on the ground or in the air.
- (U) Autonomous Marine Booster Pump (AMBP)
 - (U) Develop a reliable, automated pressure boosting mechanism to permit ship-to-shore transfer of bulk liquids from extended standoff distances during the assault phase of an amphibious operation.
- (U) Pier Lateral Stability
 - (U) Develop non-destructive techniques coupled with computer modeling to rapidly assess pier capacity to resist lateral loads imposed by berthing impact, wind, and current on berthed vessels, or by earthquakes.
- (U) High Sea State Shipboard Crane Technology
 - (U) Develop enhanced capabilities and reduced training requirements for advanced shipboard crane to facilitate loading/unloading operations in sea states 3 and above.
- (U) SEAWAY
 - (U) Develop adaptive command and control to planning and execution of Joint Logistics Over-the-Shore/maritime logistic operations by applying the Integrated Cooperative Decision-Making (ICDM) framework. This task responds to the demand for responsive sea-based support to Joint Vision 2010, particularly the requirement to enable ship-to-objective maneuver (STOM), deep inland operations, and a reduced logistic footprint ashore.
- (U) AIRWAY

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PROGRAM ELEMENT TITLE: Environmental Quality
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PROJECT TITLE: Logistics Engineering Advanced
Demonstration (LEAD)

- (U) Develop adaptive command and control to planning and execution of Joint Logistics Over-the-Shore/aircraft logistic operations by applying the Integrated Cooperative Decision-Making (ICDM) framework. This task assists the logistics support effort of moving men and material from ship to shore and inter-theater operation.
- (U) Ship-Based Theatre Logistics Management and Distribution
 - (U) Continue the development of a maritime logistic and sea basing support system for the management of theatre logistics using agent-based collaborative planning technology. This task would: project, plan and direct the flow of supplies during sea base operations within the sea base, from ship to shore, and/or from ship to inland objectives; visualize cargo items on a theater-wide basis; project availability ashore of any item stowed in vessels destined for or located within the contingency area. In conjunction with SEAWAY a demonstration of visibility is planned.
- (U) AutoLog Advanced Model Development and Demonstration
 - Develop a land- and sea-based container handling capability through a new class of Large Cable Array Robots (LCARs). The task will provide an approach to controlling the motion of containers suspended from cranes in sea state 3 and higher.
- (U) Collaborative Infrastructure Assessment Tool
 - (U) Demonstrate port infrastructure planning tool with user conflict resolution capabilities. This technology would optimize operations and Navy infrastructure, lowering operational costs.
- (U) Seabased Logistic Modeling & Simulation
 - (U) Develop a sea-based logistics technology assessment tool with intelligence.

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PROJECT NUMBER: R1910

PROGRAM ELEMENT TITLE: Environmental Quality
& Logistics Advanced Technology

PROJECT TITLE: Logistics Engineering Advanced
Demonstration (LEAD)

- (U) Submersible Cache:
 - (U) Develop a near-shore submersible fuel and dry cargo cache to provide immediate moveable logistics facility, extend range of Sea Base transporters, and provide uninterrupted supply for troops ashore.

3. FY 2001 PLAN

- (U) High Sea State Shipboard Crane Technology
 - (U) Continue to develop enhanced capabilities and reduced training requirements for advanced shipboard crane to facilitate loading/unloading operations in sea states 3 and above. In particular, the control system will be refined.
- (U) SEAWAY
 - (U) Continue to develop adaptive command and control to planning and execution of Joint Logistics Over-the-Shore/maritime logistic operations by applying the Integrated Cooperative Decision-Making (ICDM) framework. This task responds to the demand for responsive sea-based support to Joint Vision 2010, particularly the requirement to enable ship-to-objective maneuver (STOM), deep inland operations, and a reduced logistic footprint ashore. A fully capable working system suitable for use and evaluation in CinC exercises will be completed.
- (U) AIRWAY
 - (U) Continue to develop adaptive command and control to planning and execution of Joint Logistics Over-the-Shore/aircraft logistic operations by applying the Integrated Cooperative Decision-Making (ICDM) framework. A demonstration is planned for proof of feasibility.

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PROJECT TITLE: Logistics Engineering Advanced
Demonstration (LEAD)

- (U) Ship-Based Theatre Logistics Management and Distribution
 - (U) Continue the development of a maritime logistic and sea basing support system for the management of theatre logistics using agent-based collaborative planning technology. This task would: project, plan and direct the flow of supplies during sea base operations within the sea base, from ship to shore, and/or from ship to inland objectives; visualize cargo items on a theater-wide basis; project availability ashore of any item stowed in vessels destined for or located within the contingency area. This task in conjunction with SEAWAY will provide support to CinC exercises.
- (U) AutoLog Advanced Model Development and Demonstration
 - Continue to develop a land- and sea-based container handling capability through a new class of Large Cable Array Robots (LCARs). The task will provide an approach to controlling the motion of containers suspended from cranes in sea state 3 and higher. The developed algorithms will be demonstrated, both on land and aboard ship.
- (U) Collaborative Infrastructure Assessment Tool
 - (U) Apply port infrastructure planning tool to Norfolk Naval Station and Naval Shipyard Bremerton. This technology would optimize operations and Navy infrastructure, lowering operational costs.
- (U) Arc Fault Wire Protection
 - (U) Continue to develop the ability to detect a 400Hz power wire insulation failure which could ignite a fire on the ground or in the air. Prevent the occurrence of an Arc Fault through the use of sensors and specially tailored circuit breakers.
- (U) Technology Assessment Management Tool

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PROJECT TITLE: Logistics Engineering Advanced
Demonstration (LEAD)

- Refine the capability to proactively manage all aspects of support and sustainment of military systems through the use of intelligent agents, whether the system or support is government derived or commercial.
- (U) Submersible Cache
 - Select the structure most suitable for a near-shore submersible fuel and dry cargo cache to provide immediate moveable logistics facility, extend range of Sea Base transporters, and provide uninterrupted supply for troops ashore.
- (U) Magnetostrictive Actuators
 - (U) Demonstrate magnetostrictive actuators for cargo/weapons elevator doors, reducing the quantity of components by 50%, eliminate hydraulic fluids, reduce maintenance hours, and reduce total ownership costs.
- (U) Shipboard Integrated Logistics System (SILS)
 - (U) Demonstrate integrated system of processes, sensors, diagnostics, condition-based maintenance and technical manuals to improve the quality, timeliness, and accuracy of logistics as well as decrease the cost by automating manpower-intensive tasks.
- (U) Strategic and Tactical Integrated Logistics System (STILS)
 - (U) Demonstration of a strategic and tactical integrated logistics system.
- (U) Integration of Logistics with Operations Planning
 - (U) This project will develop the support tools needed to identify the logistics requirements of the planned operation, as well as present and future readiness of the available logistic assets and processes. Intelligent

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Demonstration (LEAD)

agents will search the appropriate databases created by the Strategic and Tactical Integrated Logistics System and will provide to the program planner the feasible options, with their specific costs while paying attention to the details of the planned operations.

B. (U) PROGRAM CHANGE SUMMARY: See total program change summary for P.E.

C. (U) OTHER PROGRAM FUNDING SUMMARY: Not applicable.

(U) RELATED RDT&E:

(U) PE 0601153N (Defense Research Sciences)

(U) PE 0602233N (Human Systems Technology)

(U) PE 0602234N (Materials, Electronics, and Computer Technology)

(U) PE 0603792N (Advanced Technology Transition)

D. (U) SCHEDULE PROFILE: Not applicable.

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(U) COST (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1999 ACTUAL	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
R2206 Environmental Requirements Advanced Technology (ERAT)	4,145	5,194	5,322	5,961	5,902	5,849	5,767	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project develops enabling technologies to support vital and integral Joint Mission Areas, specifically in Support & Infrastructure and Readiness for environmental protection. Science and Technology (S&T) investment in environmental technologies assures lowering operational costs, minimizing future adverse environmental impacts, enhancing deployment capabilities and attaining acceptable environmental standards in the production and use of platforms. Only by reducing or eliminating hazardous materials and those processes that generate hazardous by-products can the Department of Defense begin to lower overall compliance and cleanup costs. This project also addresses Defense Technology Area Plan (DTAP) concerns relating to restriction on peacetime Naval operations and the cost of complying with environmental protection laws. This project is essential to fulfilling the DTAP goals including: reducing the volume of shipboard and facility hazardous waste disposal by 50 percent by the year 2000; demonstrating advanced biological treatment of organic waste to reduce costs by 50 percent and accurately monitoring and predicting noise impacts on marine species by the year 2002; and eliminating all polluted waste water discharges from ships and exceeding Marine Pollution (MARPOL) criteria worldwide by the year 2005.

(U) This project supports near-term advances in support of the four Project Reliance environmental quality pillars: Pollution Prevention, Clean-up, Conservation, and Compliance. Primary focus will be on minimizing shipboard pollution, remediation of harbors and shore facilities, and improved methods of industrial waste treatment.

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BUDGET ACTIVITY: 3 PROGRAM ELEMENT: 0603712N PROJECT NUMBER: R2206
PROGRAM ELEMENT TITLE: Environmental Quality & PROJECT TITLE: Environmental Requirements
Logistics Advanced Technology Advanced Technology

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1999 ACCOMPLISHMENTS:

- (U) Initiated demonstration of new generation, low leaching, self-polishing, copper anti-fouling (AF) coatings for use as Marine Pollution Control Devices (MPCD) under the Uniform National Discharge Standards (UNDS) initiative.
- (U) Continued multi-national program for full-scale pierside treatment demonstration of shipboard-generated blackwater and graywater by advanced combined aeration and membrane technologies.
- (U) Continued demonstration of thermoacoustic technology for shipboard cooling applications. The 3-ton thermoacoustic cooler eliminates the dependence on ozone-depleting substances and global warming substances for cooling and has only one moving part for enhanced reliability.
- (U) Continued demonstration of mitigation technologies for minimizing the impact of Navy acoustic operations on protected marine mammals and development of safety criteria for marine mammals and other endangered species.
- (U) Completed integration and demonstration of hull sensors, cleaning tools and toxic paint capture and treatment technologies with an underwater hull maintenance vehicle (UHMV); transition to Advanced Development Program (PE 0603721N) for further integration (NAVSEA 03R) and implementation (SEA 00C).
- (U) Completion of the Living Marine Resources Information System for tracking and prediction of marine mammal occurrences; transition to the Oceanographic and Atmospheric Master Library, CNO 45, NAVOCEANO & CNMOC, and PE 0603721N for enhanced development.

3. (U) FY 2000 PLAN:

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PROGRAM ELEMENT TITLE: Environmental Quality & PROJECT TITLE: Environmental Requirements
Logistics Advanced Technology Advanced Technology

- (U) Initiate demonstration of air pollutant emission control and containment technologies as substitutes for open burning/open detonation and non-contained rocket testing, and for reduced NOx, Sox (types of nitrogen and sulfur compounds) and hazardous airborne particulates (HAP) emissions from Navy jet engines. These tasks are in support of establishing environmentally-compliant platforms and shore support operations.
- (U) Initiate demonstration of embedded sensor technology for hazardous material shelf life assessment and extension. This technology demonstration supports Navy requirements to reduce hazardous waste generation, disposal costs and environmental liability.
- (U) Initiate demonstration of drydock automated painting, overspray capture and treatment technologies for the elimination of VOC and HAP emissions during ship painting operations and to comply with environmental pollutant emissions regulations.
- (U) Initiate demonstration of active/passive sonobuoy technology for the detection of marine mammals. This technology mitigates the impact of fleet activities on marine mammals for compliance with the Marine Mammal Protection Act and Endangered Species Act.
- (U) Continued demonstration of new generation, low leaching, self-polishing, copper anti-fouling (AF) coatings for use as Marine Pollution Control Devices (MPCD) under the Uniform National Discharge Standards (UNDS) initiative.
- (U) Completed multi-national program for full-scale pierside treatment demonstration of shipboard-generated blackwater and graywater by advanced combined aeration and membrane technologies.
- (U) Completed demonstration of thermoacoustic technology for shipboard cooling applications. The 3-ton thermoacoustic cooler eliminates the dependence on ozone-depleting substances and global warming substances for cooling and has only one moving part for enhanced reliability.

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Budget Item Justification
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FY 2001 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

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- (U) Demonstration of mitigation technologies for minimizing the impact of Navy acoustic operations on protected marine mammals and development of acoustic safety criteria for marine mammals and other endangered species; transition to CNO N45, NAVOCEANO & CNMOC, and PE 0603712N for enhanced development.

3. (U) FY 2001 PLAN

- (U) Initiate demonstration of shipboard pollution prevention technologies for suitability as Marine Pollution Control Devices (MPCD) in support of the Uniform National Discharge Standards (UNDS).
- (U) Initiate demonstration of advanced technologies for the mitigation of harmful effects of Navy operations on threatened marine mammals and other endangered species in order to insure unimpeded Fleet training, testing, and deployment.
- (U) Continue demonstration of air pollutant emission control and containment technologies as substitute for open burning/open detonation and non-contained rocket testing, and for reduced NOx, SOx and HAP emissions from Navy jet engines. These tasks are in support of establishing environmentally-compliant platforms and short support operations.
- (U) Continue demonstration of embedded sensor technology for hazardous material shelf life assessment and extension. This technology demonstration supports Navy requirements to reduce hazardous waste generation, disposal costs and environmental liability.
- (U) Continue integration and demonstration of dry-dock automated painting, overspray capture and treatment technologies for the elimination of VOC and HAP emissions during ship painting operations and to comply with environmental pollutant emissions regulations.
- (U) Continue demonstration of active/passive sonobuoy technology for the detection of marine mammals. This technology mitigates the impact of fleet activities on marine mammals for compliance with the Marine Mammal Protection Act and Endangered Species Act.

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- (U) Complete demonstration of new generation, low-leaching, self-polishing, copper anti-fouling (AF) coatings for use as Marine Pollution Control Devices (MPCD) under the Uniform National Discharge Standards (UNDS) initiative; transition to SEA 03M for qualification and implementation.

- B. (U) PROGRAM CHANGE SUMMARY: See total program change summary for P.E.
C. (U) OTHER PROGRAM FUNDING SUMMARY: Not applicable.

(U) RELATED RDT&E:

- (U) PE 0601153N (Defense Research Sciences)
- (U) PE 0602121N (Surface Ship Technology)
- (U) PE 0602233N (Human Systems Technology)
- (U) PE 0602234N (Materials, Electronics, and Computer Technology)
- (U) PE 0603792N (Advanced Technology Transition)

- D. (U) SCHEDULE PROFILE: Not applicable.

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