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

BA: 01 PROGRAM ELEMENT: 0601103N
PROGRAM ELEMENT TITLE: University Research Initiatives

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
University Research Initiatives	0	91,489	83,508	75,980	72,963	74,618	75,975

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program includes support for multidisciplinary basic research in a wide range of scientific and engineering disciplines that are important for maintaining the technological superiority for the U.S. Navy and for university research infrastructure by acquiring research instrumentation needed to maintain and improve the quality of university research important to the Navy. Multidisciplinary research efforts involve teams of researchers investigating high priority topics that intersect more than one traditional technical discipline. For many military problems, this multidisciplinary approach serves to stimulate innovations, accelerate research progress and expedite transition of results to Naval applications. The Defense University Research Instrumentation Program (DURIP) supports university research infrastructure essential to high quality Navy relevant research. The instrumentation program complements the research program by supporting the purchase of high cost research instrumentation that is necessary to carry out cutting-edge research. In addition, the program also supports Presidential Early Career Awards for Scientists and Engineers (PECASE), which are single investigator research efforts performed by outstanding academic scientists and engineers early in their research careers. This program provides the knowledge base, scientific concepts, and technological advances for the maintenance of naval power and national security.

The program was transferred from RDT&E, Defense-Wide, University Research Initiative, PE 0601103D8Z.

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

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

BA: 01 PROGRAM ELEMENT: 0601103N
PROGRAM ELEMENT TITLE: University Research Initiatives

PROGRAM CHANGE SUMMARY:

	FY 2003	FY 2004	FY 2005
FY 2004-2005 President's Budget Submission	0	70,669	76,843
Cong. Rescissions/Adjustments/Undist.Reductions	0	-1,030	0
Congressional Actions	0	21,850	0
Inflation Savings	0	0	-271
Technical Adjustments	0	0	6,936
FY 2005 President's Budget Submission	0	91,489	83,508

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: 01 PROGRAM ELEMENT: 0601103N PROGRAM ELEMENT TITLE: University Research Initiatives

PROJECT TITLE: University Research Initiatives

COST: (Dollars in Thousands)

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A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project includes support for multidisciplinary basic research in a wide range of scientific and engineering disciplines that are important for maintaining the technological superiority for the U.S. Navy and for university research infrastructure by acquiring research instrumentation needed to maintain and improve the quality of university research important to the Navy. Multidisciplinary research efforts involve teams of researchers investigating high priority topics that intersect more than one traditional technical discipline. For many military problems, this multidisciplinary approach serves to stimulate innovations, accelerate research progress and expedite transition of results to Naval applications. The Defense University Research Instrumentation Project (DURIP) supports university research infrastructure essential to high quality Navy relevant research. The instrumentation project complements the research project by supporting the purchase of high cost research instrumentation that is necessary to carry out cutting-edge research. In addition, the project also supports Presidential Early Career Awards for Scientists and Engineers (PECASE), which are single investigator research efforts performed by outstanding academic scientists and engineers early in their research careers. This project provides the knowledge base, scientific concepts, and technological advances for the maintenance of Naval power and national security.

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2003	FY 2004	FY 2005
Multidisciplinary University Research (MURI)	0	55,658	59,000

Research efforts include high priority topics that intersect more than one traditional discipline. Multidisciplinary University Research Initiative (MURI) topics are selected to address high priority science and technology directions of the Department of the Navy, including the four ONR Grand Challenges (Naval Battlespace Awareness, Electric Power Sources for the Navy and Marine Corps, Naval Materials by Design, and

Multifunctional Electronics for Intelligent Naval Sensors).

FY 2003 Accomplishments:
• Not applicable. Efforts funded within RDT&E, Defense Wide University Research Initiative, PE 0601103D8Z.

FY 2004 Plans:
• Conduct competition for new multidisciplinary research awards to address selected high priority naval science and technology areas, transformational initiatives, and grand challenges, including strategically important DoD research areas, such as bioengineering sciences, nanoscience, multifunctional materials and structures, information dominance, propulsion and energetic sciences, human performance sciences, advanced surveillance and knowledge architectures, and power and energy technologies. Continue MURI programs begun in prior years.

FY 2005 Plans:
• A competition for multidisciplinary basic research awards will focus on capability-based topical areas to provide enhanced capabilities for future Navy and Marine Corps warfighting needs, including the war on terrorism. Continue MURI programs begun in prior years.

	FY 2003	FY 2004	FY 2005
Defense University Research Instrumentation Program	0	13,112	23,398

Defense University Research Instrumentation Program (DURIP) funds are provided to universities to purchase relatively high cost research instrumentation that is normally not included in single-investigator type research grants, such as radio propagation measurement systems, instrument for fabrication and characterization of advanced electronic devices, sensor arrays for oceanography, ocean flow measurement systems, autonomous ocean profiling systems, hydrodynamic sound source localization systems, tunable lasers for near field microscopy, and instruments for material characterization.

FY 2003 Accomplishments:
• Not applicable. Efforts funded within RDT&E, Defense-Wide, University Research Initiative, PE 0601103D8Z.

FY 2004 Plans:
• Conduct competition for approximately 60 research instrumentation awards to universities.

FY 2005 Plans:
• Conduct competition for approximately 105 research instrumentation awards to universities. Increased FY 2005 funding for DURIP returns program to previous levels (e.g., FY 2001 and FY 2002).

	FY 2003	FY 2004	FY 2005
Presidential Early Career Awards	0	1,110	1,110

Extremely prestigious, presidential-rank, single-investigator research awards in areas of importance to the Navy, to recognize and encourage outstanding academic scientists and engineers early in their research career.

FY 2003 Accomplishments:
• Not applicable. Efforts funded within RDT&E, Defense-Wide, University Research Initiative, PE 0601103D8Z.

FY 2004 Plans:
• Select two outstanding university researchers to receive the five-year PECASE research award to conduct research of importance to the Navy. Continue PECASE programs begun in earlier years.

FY 2005 Plans:
• Select two outstanding university researchers to receive the five-year PECASE research award to conduct research of importance to the Navy. Continue PECASE programs begun in earlier years.

CONGRESSIONAL PLUS-UPS:

	FY 2003	FY 2004
ARMED FORCES FOOD SAFETY AND SECURITY RESEARCH	0	2,769

This funding will support efforts in food safety and security research for the armed forces.

	FY 2003	FY 2004
CENTER FOR MARITIME SYSTEMS	0	3,560

This effort will develop a state of the art tow tank with enhanced measurement accuracy to improve knowledge of performance metrics of innovative hull forms to aid in the design of fast efficient ships without the need for extensive prototype testing.

	FY 2003	FY 2004
CENTER FOR NANOSCIENCE AND NANOMATERIALS	0	2,967

This effort will develop new concepts for improved materials, novel structures, and integrated, multifunctional materials and structures with potential dual use applications for homeland security.

	FY 2003	FY 2004
CENTER FOR SOUTHERN TROPICAL ADVANCED REMOTE SENSING	0	4,945

This effort will develop a ground station to receive remote sensing data from commercial satellites to enhance the intelligence, surveillance, and reconnaissance mission of US SouthCom.

	FY 2003	FY 2004
LOW TEMPERATURE RESEARCH CENTER	0	989

This effort supports basic research into the properties of materials at very low temperatures.

	FY 2003	FY 2004
MEMS SENSOR FOR ROLLING ELEMENT BEARINGS	0	1,434

This effort will support development of a one-chip sensor solution for determining temperature, vibration, strain, and angular rotation in rolling element bearings.

	FY 2003	FY 2004
NANOMATERIALS FOR HIGH PERFORMANCE COATING APPLICATIONS	0	989

This effort will support basic research in the area of nanoparticle based coatings and thin films to aid in the development of coatings to improve marine hull fouling prevention, corrosion protection, stealth, and protection from chemical and biological weapons agents.

	FY 2003	FY 2004
NEURAL ENGINEERING FOR HUMAN RESPONSE AUGMENTATION	0	989

This effort will support basic research in the area of human neural networks by employing microscale devices that allow real-time analyses of human brain nerve signals. This effort will explore the feasibility of humans controlling autonomous devices via brain activity.

	FY 2003	FY 2004
SURA COASTAL OCEAN OBSERVATION PROGRAM (SCOOP)	0	2,967

This effort supports the development of a network of sensors and linked computers as part of the Southeastern Universities Research Association (SURA) Coastal Ocean Observing Program which will fully integrate several observing systems in the southern region. This network will provide data, in real-time and at high speed, for more reliable, accurate, and timely information to help guide effective coastal stewardship, plan for extreme events, facilitate safe maritime operations, and support coastal military security.

C. OTHER PROGRAM FUNDING SUMMARY: Not Applicable.

D. ACQUISITION STRATEGY: Not Applicable.