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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy **DATE:** February 2011

APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE							
1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 1: <i>Basic Research</i>				PE 0601103N: <i>University Research Initiatives</i>							
COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	99.098	108.679	113.157	-	113.157	121.996	121.109	123.650	125.752	Continuing	Continuing
0000: <i>University Research Initiatives</i>	95.911	108.679	113.157	-	113.157	121.996	121.109	123.650	125.752	Continuing	Continuing
9999: <i>Congressional Adds</i>	3.187	-	-	-	-	-	-	-	-	0.000	3.187

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 enable the U.S. Navy to maintain technological superiority, and for university research infrastructure to acquire research instrumentation needed to maintain and improve the quality of university research important to the Navy. Multidisciplinary University Research Initiative (MURI) efforts involve teams of researchers investigating high priority topics and opportunities 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 into Naval applications. The Defense University Research Instrumentation Program (DURIP) supports university research infrastructure essential to high quality Navy relevant research. The instrumentation program complements other Navy research programs by supporting the purchase of high cost research instrumentation that is necessary to carry out cutting-edge research. The program supports Presidential Early Career Awards for Scientists and Engineers (PECASE), 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.

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

B. Program Change Summary (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	102.246	108.679	113.157	-	113.157
Current President's Budget	99.098	108.679	113.157	-	113.157
Total Adjustments	-3.148	-	-	-	-
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-0.074	-			
• SBIR/STTR Transfer	-3.072	-			
• Program Adjustments	-	-			
• Congressional General Reductions Adjustments	-0.002	-			

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Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: 9999: *Congressional Adds*

Congressional Add: *Assured Critical Apps and Infrastructure Sec Ctr*

Congressional Add: *Ship Model Testing*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

FY 2010	FY 2011
1.195	-
1.992	-
3.187	-
3.187	-

Change Summary Explanation

Technical: N/A

Schedule: N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy **DATE:** February 2011

APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 1: <i>Basic Research</i>				R-1 ITEM NOMENCLATURE PE 0601103N: <i>University Research Initiatives</i>				PROJECT 0000: <i>University Research Initiatives</i>			
COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0000: <i>University Research Initiatives</i>	95.911	108.679	113.157	-	113.157	121.996	121.109	123.650	125.752	Continuing	Continuing

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 of the U.S. Navy and for university research infrastructure to acquire instrumentation needed to maintain and improve the quality of university research important to the Navy. MURI 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 into Naval applications. The DURIP project supports university research infrastructure essential to high quality Navy relevant research. The instrumentation project complements other Navy research programs by supporting the purchase of high cost research instrumentation that is necessary to carry out cutting-edge research. The PECASE project supports 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 Programs (\$ in Millions)

	FY 2010	FY 2011	FY 2012
Title: DEFENSE UNIVERSITY RESEARCH INSTRUMENTATION PROGRAM (DURIP)	21.332	16.831	18.994
<p>Description: DURIP funds are provided to universities to purchase relatively high cost research instrumentation that is normally not included in single-investigator type research grants. Individual grants range from \$50K to \$1M. The DURIP program is an Office of the Secretary of Defense (OSD) interest item and OSD directs that funding for the DURIP efforts be awarded after OSD announces the awardees, which typically takes place towards the second half of the fiscal year. In turn, universities need to purchase the instrumentation and take delivery before any billings are generated. It frequently takes several months for delivery and billing to be completed.</p> <p>FY 2011 program decreases to allow for an increase in the MURI and PECASE programs to accommodate OSD directed initiatives. FY 2012 program increases to allow for an increased number of grants in the DURIP program. In past years, more outstanding proposals have been received than could be funded.</p> <p>FY 2010 Accomplishments: - Conducted competition for 61 research instrumentation awards to universities.</p> <p>FY 2011 Plans: - Conduct competition for research instrumentation awards to universities.</p> <p>FY 2012 Plans:</p>			

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2010	FY 2011
- Conduct competition for research instrumentation awards to universities.			
Title: MULTIDISCIPLINARY UNIVERSITY RESEARCH INITIATIVE (MURI)		70.555	86.133
<p>Description: Research efforts include high priority topics that intersect more than one traditional discipline. MURI topics are selected to address Naval Science and Technology (S&T) Focus Areas as described in the Naval S&T Strategic Plan. The MURI program is an OSD interest item and OSD directs that funding for the MURI efforts be awarded after OSD announces the awardees, which typically takes place towards the second half of the fiscal year. Since the MURI program funds academic researchers, execution of the efforts typically ramps up during the summer academic break months. MURI projects make significant contributions to Navy and DoD objectives by; speeding up scientific programs by cross-fertilization of ideas, hastening the transition of basic research to practical applications, and training students in cross-disciplinary approaches to science and engineering research of importance to DoD.</p> <p>The increase from FY 2011 and out is due to OSD direction to increase peer-reviewed basic research in order to develop innovative solutions and to enhance the science and engineering personnel base.</p> <p>FY 2010 Accomplishments:</p> <ul style="list-style-type: none"> - Conducted competition for new MURI awards to address selected high priority Naval S&T areas, transformational initiatives, and grand challenges, including strategically important DoD research areas. Ten high priority research topics were identified for publication in a BAA to solicit proposals. These topics addressed optical metamaterials, autonomous systems, propagating electromagnetic (E/M) and pressure waves, biofuels, dielectric energy storage, image understanding, electronic devices, fluid dynamics, and signatures in the littorals. - Continued MURI projects begun in prior years. <p>FY 2011 Plans:</p> <ul style="list-style-type: none"> - Conduct competition for new MURI awards to address selected high priority Naval S&T areas, transformational initiatives, and grand challenges, including strategically important DoD research areas. Approximately nine high priority research topics will be identified for publication in a BAA to solicit proposals. - Continue MURI projects begun in prior years. <p>FY 2012 Plans:</p> <ul style="list-style-type: none"> - Conduct competition for new MURI awards to address selected high priority Naval S&T areas, transformational initiatives, and grand challenges, including strategically important DoD research areas. Approximately eight high priority research topics will be identified for publication in a BAA to solicit proposals. 		87.067	

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2010	FY 2011	FY 2012
- Continue MURI projects begun in prior years.				
Title: PRESIDENTIAL EARLY CAREER AWARDS (PECASE) Description: PECASE awards are made to academic scientists early in their research career for extremely prestigious single-investigator research in areas of vital importance to the Navy. Awards provide national recognition and research grants of up to \$200K per year for five years. OSD, with policy and oversight responsibility for the PECASE program, directed that the number of PECASE awards be increased to a maximum of six new awards per year. FY 2011 to FY 2012 funding increase reflects the fiscal impact of OSD's direction. An increase in the number of awards permits a larger number of these outstanding researchers to contribute to the DoN S&T requirements. FY 2010 Accomplishments: - Selected six outstanding university researchers to receive the five-year PECASE research award to conduct research of importance to the Navy. - Continued PECASE programs begun in earlier years. FY 2011 Plans: - Select six 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 2012 Plans: - Select six 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.		4.024	5.715	7.096
Accomplishments/Planned Programs Subtotals		95.911	108.679	113.157
C. Other Program Funding Summary (\$ in Millions) N/A				
D. Acquisition Strategy Not applicable.				
E. Performance Metrics This University Research Initiative seeks to improve the quality of defense research conducted by universities and supports the education of engineers and scientists in disciplines critical to national defense needs. The initiative is a collection of specialized research programs performed by academic research institutions. Individual				

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<p>project metrics are tailored to the needs of specific applied research and advanced development programs. Example metrics include extending the life of Thermal Barrier Coatings for transition to the Enterprise and Platform Enablers Future Naval Capability program. It is projected that the life time of Thermal Barrier Coating on Turbine Blades can be doubled. The National Research Council of the National Academies of Science and Engineering's Congressionally directed "Assessment of Department of Defense Basic Research" concluded that the DoD is managing its basic research program effectively.</p>		

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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	3.187	-	-	-	-	-	-	-	-	0.000	3.187

A. Mission Description and Budget Item Justification

This project shows Congressional Adds to this Program Element.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2010	FY 2011
<i>Congressional Add:</i> Assured Critical Apps and Infrastructure Sec Ctr	1.195	-
<i>FY 2010 Accomplishments:</i> This effort provided for investigation into new application and infrastructure security. Results from basic research into assured critical application and infrastructure security from various universities were prototyped, and tested.		
<i>Congressional Add:</i> Ship Model Testing	1.992	-
<i>FY 2010 Accomplishments:</i> This effort provided basic research applicable to new hull forms the Navy is developing or fielding at the ship model testing facility at Webb Institute.		
Congressional Adds Subtotals	3.187	-

C. Other Program Funding Summary (\$ in Millions)

N/A

D. Acquisition Strategy

Not applicable.

E. Performance Metrics

This project shows Congressional Adds to this Program Element.