

UNCLASSIFIED

PE NUMBER: 0601103F
 PE TITLE: University Research Initiatives

Exhibit R-2, RDT&E Budget Item Justification	DATE February 2007
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BUDGET ACTIVITY 01 Basic Research	PE NUMBER AND TITLE 0601103F University Research Initiatives
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Cost (\$ in Millions)	FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	105.698	115.035	104.304	101.850	124.004	124.444	120.867	123.151	Continuing	TBD
5094 University Research Initiatives	105.698	115.035	104.304	101.850	124.004	124.444	120.867	123.151	Continuing	TBD

(U) **A. Mission Description and Budget Item Justification**
 This program supports defense-related basic research in a wide range of scientific and engineering disciplines pertinent to maintaining U.S. military technology superiority; enhances and promotes the education of U.S. scientists and engineers in disciplines critical to maintaining, advancing, and enabling future U.S. defense technologies; and assists universities in establishing superior instrumentation capabilities needed to improve the quality of defense-related research and education. A fundamental component of this program is the recognition that future technologies and technology exploitations require highly coordinated and concerted multi- and interdisciplinary efforts. Note: In FY 2007, Congress added \$4M for Single Chip Multi-Modal Nanosensors, \$1.8M for High Assurance Software Engineering, \$1M for High Temperature Hydrogen Energy Production, and \$1.1M for Partnership in Innovative Preparation for Educators and Students. This program is in Budget Activity 1, Basic Science, because it funds scientific study and experimentation.

(U) **B. Program Change Summary (\$ in Millions)**

	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) Previous President's Budget	108.757	107.571	107.931	117.225
(U) Current PBR/President's Budget	105.698	115.035	104.304	101.850
(U) Total Adjustments	-3.059			
(U) Congressional Program Reductions				
Congressional Rescissions	-0.003	-0.436		
Congressional Increases		7.900		
Reprogrammings				
SBIR/STTR Transfer	-3.056			

(U) **Significant Program Changes:**
 Not Applicable.

C. Performance Metrics
 (U) Under Development.

Exhibit R-2a, RDT&E Project Justification

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BUDGET ACTIVITY 01 Basic Research					PE NUMBER AND TITLE 0601103F University Research Initiatives			PROJECT NUMBER AND TITLE 5094 University Research Initiatives		
Cost (\$ in Millions)	FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total
5094 University Research Initiatives	105.698	115.035	104.304	101.850	124.004	124.444	120.867	123.151	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

(U) A. Mission Description and Budget Item Justification

This program supports defense-related basic research in a wide range of scientific and engineering disciplines pertinent to maintaining U.S. military technology superiority; enhances and promotes the education of U.S. scientists and engineers in disciplines critical to maintaining, advancing, and enabling future U.S. defense technologies; and assists universities in establishing superior instrumentation capabilities needed to improve the quality of defense-related research and education. A fundamental component of this program is the recognition that future technologies and technology exploitations require highly coordinated and concerted multi- and interdisciplinary efforts. Note: In FY 2007, Congress added \$4M for Single Chip Multi-Modal Nanosensors, \$1.8M for High Assurance Software Engineering, \$1M for High Temperature Hydrogen Energy Production, and \$1.1M for Partnership in Innovative Preparation for Educators and Students. This program is in Budget Activity 1, Basic Science, because it funds scientific study and experimentation.

(U) B. Accomplishments/Planned Program (\$ in Millions)

	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) MAJOR THRUST: Promote fundamental, multi- and interdisciplinary science and engineering research projects. Topics will be selected in scientific research areas related to transformational and high priority technologies, such as nanotechnology, sensor networks, intelligence information fusion, smart materials and structures, efficient energy and power conversion, high energy materials for propulsion and control, and enhancing human performance.	50.913	54.236	56.343	54.947
(U) In FY 2006: Funded competitive research awards at U.S. universities to focus on underpinning Air Force-related technologies usually not achievable through typical single investigator awards. Supported and recognized superior academic research through the Presidential Early Career Award for Scientists and Engineers (PECASE). Continued funding of multi-disciplinary programs begun in prior years.				
(U) In FY 2007: Continue to fund competitive research awards at U.S. universities to focus on underpinning Air Force-related technologies usually not achievable through typical single investigator awards. Continue to support and recognize superior academic researchers in the early stages of their career through PECASE. Continue funding of multi-disciplinary programs begun in prior years.				
(U) In FY 2008: Continue funding competitive research awards at U.S. universities to focus on underpinning Air Force-related technologies usually not achievable through typical single investigator awards. Continue to support and recognize superior academic researchers in the early stages of their career through PECASE. Continue funding of multi-disciplinary programs begun in prior years.				
(U) In FY 2009: Continue funding competitive research awards at U.S. universities to focus on underpinning Air Force-related technologies usually not achievable through typical single investigator awards.				

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(U) B. Accomplishments/Planned Program (\$ in Millions)	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	
Support and recognize superior academic research through the Presidential Early Career Award for Scientists and Engineers (PECASE). Continue funding of multi-disciplinary programs begun in prior years.					
(U) MAJOR THRUST: Support post-graduate, graduate, and undergraduate education in science and engineering disciplines at U.S. universities. National Defense Science and Engineering Graduate Program (NDSEG) Fellowships are awarded to train U.S citizens in science and engineering disciplines of military importance under a joint tri-Service and Office of the Director of Defense Research and Engineering competition.	35.077	37.650	36.325	35.470	
(U) In FY 2006: Awarded highly competitive NDSEG fellowships. Supported competitive awards for graduate and undergraduate research experiences including those established under the Awards to Stimulate and Support Undergraduate Research Education program. Continued to fund for awards made under prior year Department of Defense programs.					
(U) In FY 2007: Continue to award highly competitive NDSEG fellowships. Continue to support competitive awards for graduate and undergraduate research experiences including those established under the Awards to Stimulate and Support Undergraduate Research Education program. Continue funding for awards made under prior year Department of Defense programs.					
(U) In FY 2008: Continue to award highly competitive NDSEG fellowships. Continue to support competitive awards for graduate and undergraduate research experiences including those established under the Awards to Stimulate and Support Undergraduate Research Education program. Continue funding for awards made under prior year Department of Defense programs.					
(U) In FY 2009: Continue to award highly competitive NDSEG fellowships. Continue to support competitive awards for graduate and undergraduate research experiences including those established under the Awards to Stimulate and Support Undergraduate Research Education program. Continue funding for awards made under prior year Department of Defense programs.					
(U) MAJOR THRUST: Enhance the scientific and engineering research and education infrastructure and instrumentation at U.S. universities.	14.630	15.500	11.636	11.433	
(U) In FY 2006: Conducted the competition for U.S. universities to acquire state-of-the-art, high technology instrumentation and infrastructure to enhance research and educational capabilities under the Defense University Research Instrumentation Program.					

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(U) B. Accomplishments/Planned Program (\$ in Millions)		<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) In FY 2007: Continue to conduct the competition for U.S. universities to acquire state-of-the-art, high technology instrumentation and infrastructure to enhance research and educational capabilities under the Defense University Research Instrumentation Program.					
(U) In FY 2008: Continue to conduct the competition for U.S. universities to acquire state-of-the-art, high technology instrumentation and infrastructure to enhance research and educational capabilities under the Defense University Research Instrumentation Program.					
(U) In FY 2009: Continue to conduct the competition for U.S. universities to acquire state-of-the-art, high technology instrumentation and infrastructure to enhance research and educational capabilities under the Defense University Research Instrumentation Program.					
(U) CONGRESSIONAL ADD: 21st Century Information Operations Workforce		1.054	0.000	0.000	0.000
(U) In FY 2006: Supported an Information Operations curriculum to educate graduates and undergraduates in the field of intelligence.					
(U) In FY 2007: Not Applicable.					
(U) In FY 2008: Not Applicable.					
(U) In FY 2009: Not Applicable.					
(U) CONGRESSIONAL ADD: Bio/Nano Electronic Devices and Sensors		1.437	0.000	0.000	0.000
(U) In FY 2006: Developed and demonstrated a prototype 3-D magnetic memory device with high storage capabilities and a high data transfer rate on an erasable medium and also to determine the feasibility of transferring information on the surface of photosensitive proteins at the single-molecule level.					
(U) In FY 2007: Not Applicable					
(U) In FY 2008: Not Applicable					
(U) In FY 2009: Not Applicable					
(U) CONGRESSIONAL ADD: High Assurance Software Engineering		1.629	1.743	0.000	0.000
(U) In FY 2006: Conducted research in the security issues in information technology architectures and components. (Note: In FY 2006, it was called Secure and Assured Information Sharing)					
(U) In FY 2007: Continue research to develop software for information security					
(U) In FY 2008: Not Applicable					
(U) In FY 2009: Not Applicable					

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(U) B. Accomplishments/Planned Program (\$ in Millions)		<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	
(U)						
(U) CONGRESSIONAL ADD: Military Logistics Readiness		0.958	0.000	0.000	0.000	
(U) In FY 2006: Supported the Air Force crew systems personnel protection program.						
(U) In FY 2007: Not Applicable.						
(U) In FY 2008: Not Applicable						
(U) In FY 2009: Not Applicable						
(U)						
(U) CONGRESSIONAL ADD: Partnership in Innovative Preparation for Educators and Students (Note: In FY06, this add was in PE 61102F BPAC 2311 and called Network Information & Space Security)		0.000	1.065	0.000	0.000	
(U) In FY 2006: Not Applicable						
(U) In FY 2007: Conduct multi-disciplinary research associated with information network for educators and students						
(U) In FY 2008: Not Applicable						
(U) In FY 2009: Not Applicable						
(U)						
(U) CONGRESSIONAL ADD: Single Chip Multi-Modal Nanosensors		0.000	3.873	0.000	0.000	
(U) In FY 2006: Not Applicable						
(U) In FY 2007: Conduct research to develop single chip sensors for the detection of chemical and biological agents						
(U) In FY 2008: Not Applicable						
(U) In FY 2009: Not Applicable						
(U)						
(U) CONGRESSIONAL ADD: High Temperature Hydrogen Energy Production		0.000	0.968	0.000	0.000	
(U) In FY 2006: Not Applicable						
(U) In FY 2007: Conduct research to develop methods for hydrogen production						
(U) In FY 2008: Not Applicable						
(U) In FY 2009: Not Applicable						
(U) Total Cost		105.698	115.035	104.304	101.850	

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

	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Complete</u>							

(U) Related Activities:

(U) PE 0601102F, Defense

Research Sciences

This project has been coordinated through the Reliance 21 process to harmonize efforts and eliminate duplication.

(U) **D. Acquisition Strategy**

Not Applicable.