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Exhibit R-2, PB 2010 Air Force RDT&E Budget Item Justification **DATE:** May 2009

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE					
3600 - Research, Development, Test & Evaluation, Air Force/BA 1 - Basic Research					PE 0601103F University Research Initiatives					
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	116.567	137.056	132.249						Continuing	Continuing
615094: University Research Initiatives	116.567	137.056	132.249						Continuing	Continuing

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. This program is in Budget Activity 1, Basic Science, because it funds scientific study and experimentation

B. Program Change Summary (\$ in Millions)

	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>
Previous President's Budget	119.938	125.949	130.938	
Current BES/President's Budget	116.567	137.056	132.249	
Total Adjustments	-3.371	11.107	0.000	
Congressional Program Reductions	0.000	0.000		
Congressional Rescissions	0.000	-0.373		
Total Congressional Increases	0.000	14.840		
Total Reprogrammings	0.000	-3.360		
SBIR/STTR Transfer	-3.371	0.000		

Change Summary Explanation

Note: In FY 2009, Congress added \$1.6 million for Aerodynamic Wind Tunnel Upgrade, \$1.28 million for Battle Space: Reducing Military Decision Cycles, \$3.0 million for Cyber Security laboratory at Louisiana Tech University, \$1.2 million for High Temperature Hydrogen Energy Production Facility, \$0.8 million for Partnership in Innovative Preparation for Educators and Students (PIPES) and the Space Education Consortium (SEC), \$1.6 million for Secure Grids for Network Centric Operations, \$0.4 million for Unmanned aerial systems mission planning and operation center, \$0.8M Rapid Prototyping and Nanotechnology Initiative, \$0.8M Lean Management Research Initiative at Air Mobility Wing MacDill AFB.

C. Performance Metrics

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(U) Under Development.		

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APPROPRIATION/BUDGET ACTIVITY 3600 - Research, Development, Test & Evaluation, Air Force/BA 1 - Basic Research				R-1 ITEM NOMENCLATURE PE 0601103F University Research Initiatives					PROJECT NUMBER 615094	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
615094: University Research Initiatives	116.567	137.056	132.249						Continuing	Continuing
A. Mission Description and Budget Item Justification N/A										
B. Accomplishments/Planned Program (\$ in Millions)							FY 2008	FY 2009	FY 2010	FY 2011
<p>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, and high energy materials for propulsion and control.</p> <p>In FY 2008: 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 researchers in the early stages of their career through the Presidential Early Career Award for Scientists and Engineers (PECASE) program. Continued funding of multi-disciplinary programs initially awarded in prior years.</p> <p>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. Support and recognize superior academic researchers in the early stages of their career through the PECASE program. Continue funding of multi-disciplinary programs initially awarded in prior years.</p> <p>In FY 2010: 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. Support and recognize superior academic researchers in the early stages of their career through the PECASE program. Continue funding of multi-disciplinary programs initially awarded in prior years.</p>							54.117	71.312	73.338	

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B. Accomplishments/Planned Program (\$ in Millions)			FY 2008	FY 2009	FY 2010	FY 2011
<p>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.</p> <p>In FY 2008: 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 (ASSURE) program. Continued funding for awards made under prior year Department of Defense programs.</p> <p>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 ASSURE program. Continue funding for awards made under prior year Department of Defense programs.</p> <p>In FY 2010: Continue to award highly competitive NDSEG fellowships. Continue to support competitive awards for graduate and undergraduate research experiences including those established under the ASSURE program. Continue funding for awards made under prior year Department of Defense programs.</p>			35.304	40.685	43.932	
<p>MAJOR THRUST: Enhance the scientific and engineering research through advanced education infrastructure and instrumentation at U.S. universities.</p> <p>In FY 2008: 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 (DURIP).</p> <p>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 DURIP.</p>			11.309	13.579	14.979	

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B. Accomplishments/Planned Program (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
In FY 2010: 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 DURIP.				
<p>CONGRESSIONAL ADD: Partnership in Innovative Preparation for Educators and Students.</p> <p>In FY 2008: Conducted multi-disciplinary research associated with information network for educators and students.</p> <p>In FY 2009: Continue multi-disciplinary research associated with information network for educators and students.</p> <p>In FY 2010: Not Applicable.</p>	1.544	0.800	0.000	
<p>CONGRESSIONAL ADD: High Temperature Hydrogen Energy Production.</p> <p>In FY 2008: Conducted research to develop methods for hydrogen production.</p> <p>In FY 2009: Continue to conduct research to develop methods for hydrogen production.</p> <p>In FY 2010: Not Applicable.</p>	0.965	1.200	0.000	
<p>CONGRESSIONAL ADD: Battle Space Reducing Military Decision Cycles.</p> <p>In FY 2008: Developed decision making tool that can result in rapid and effective analyses of battlefield situational elements and recommendation for response.</p>	2.318	1.280	0.000	

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B. Accomplishments/Planned Program (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
In FY 2009:Continued developing decision making tools that can result in rapid and effective analyses of battlefield situational elements and recommendation for response. In FY 2010: Not Applicable.				
CONGRESSIONAL ADD: Frank R. Seaver Science and Engineering Complex. In FY 2008: Supported the Frank R. Seaver Science and Engineering Complex in conducting basic research in science and engineering disciplines. In FY 2009: Not Applicable. In FY 2010: Not Applicable.	0.965	0.000	0.000	
CONGRESSIONAL ADD: Secure Grid Research. In FY 2008: Conducted research on the security issues in information technology architectures and components. In FY 2009: Continue to conduct research on the security issues in information technology architectures and components. In FY 2010: Not Applicable.	2.318	1.600	0.000	
CONGRESSIONAL ADD: University Research Initiatives.	7.727	0.000	0.000	

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B. Accomplishments/Planned Program (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
In FY 2008: Conducted university research and support post-graduate, graduate, and undergraduate education in science and engineering disciplines. In FY 2009: Not Applicable. In FY 2010: Not Applicable.				
CONGRESSIONAL ADD: Aerodynamic Wind Tunnel Upgrade Initiative In FY 2008: Not Applicable. In FY 2009: Support major facility renovation and diagnostic capability acquisition for the University of Arizona Wind Tunnel. In FY 2010: Not Applicable.	0.000	1.600	0.000	
CONGRESSIONAL ADD: Cyber Security Laboratory at Louisiana Tech University FY 2008: Not Applicable. FY 2009: Focus on new and theoretically sound profiling techniques for detection and identification of terrorists and cyber attacks. FY 2010: Not Applicable.	0.000	3.000	0.000	

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B. Accomplishments/Planned Program (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
<p>CONGRESSIONAL ADD: Lean Management System Research Initiative at Air Mobility Wing MacDill AFB</p> <p>FY 2008: Not Applicable.</p> <p>FY 2009: Facilitate civilian education and training program at the base.</p> <p>FY 2010: Not Applicable.</p>	0.000	0.800	0.000	
<p>CONGRESSIONAL ADD: Rapid Prototyping and Nanotechnology Initiative</p> <p>FY 2008: Not Applicable.</p> <p>FY 2009: Conduct rapid prototyping and automatic construction of physical objects with 3D printers, stereolithography machines or special laser sintering systems</p> <p>FY 2010: Not Applicable.</p>	0.000	0.800	0.000	
<p>CONGRESSIONAL ADD: Unmanned Aerial Systems Mission Planning and Operation Center</p> <p>FY 2008: Not Applicable.</p> <p>FY 2009: The Unmanned Aerial Systems (UAS) Mission Planning and Operation Center will work with the Great Plains Joint Regional Training Center to train Guard personnel in mission planning and aircraft operation using the CQ-10 Snowgoose UAS platform owned by the Guard for homeland security and disaster missions.</p> <p>FY 2010: Not Applicable.</p>	0.000	0.400	0.000	

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C. Other Program Funding Summary (\$ in Millions)										
	<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>FY 2014</u>	<u>FY 2015</u>	Cost To Complete	Total Cost
Activity Not Provided/ Related Activities:	0.000	0.000							Continuing	Continuing
PE 0601102F/ Defense Research Sciences.	0.000	0.000							Continuing	Continuing
D. Acquisition Strategy										
Not Applicable.										
E. Performance Metrics										
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.										

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