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<b>Exhibit R-2, PB 2010 Air Force RDT&amp;E Budget Item Justification</b>								<b>DATE:</b> May 2009		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 3600 - Research, Development, Test & Evaluation, Air Force/BA 3 - Advanced Technology Development (ATD)					<b>R-1 ITEM NOMENCLATURE</b> PE 0603199F Sustainment Science and Technology (S&T)					
<b>COST (\$ in Millions)</b>	<b>FY 2008 Actual</b>	<b>FY 2009 Estimate</b>	<b>FY 2010 Estimate</b>	<b>FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	0.000	0.000	2.955						Continuing	Continuing
635351: Technology Sustainment	0.000	0.000	2.955						Continuing	Continuing
<b>Note</b>										
Note: This program represents increased emphasis on sustainment technologies previously addressed within the individual S&T programs and is not a new start.										
<b>A. Mission Description and Budget Item Justification</b>										
This program develops and demonstrates sustainment technologies for transition into Air Force systems to increase readiness and reduce life cycle costs. Technologies matured and demonstrated in this program impact affordability and availability of fielded and future aerospace weapon systems by extending service life, ensuring flight safety, reducing sustainment costs, and ensuring mission readiness and capability. This program develops and demonstrates technologies that can be implemented to address operational sustainment issues on existing systems as well as supports new system sustainability through demonstration of technologies related to robust life cycle management, system design, fleet management decision making, and mission capability. Studies are conducted to identify and analyze design methodologies that focus on "building" in sustainability into future applications.										
This program is in Budget Activity 3, Advanced Technology Development, since it develops and demonstrates technologies for sustainment of existing and future aerospace vehicle system upgrades and/or new system developments that have military utility and address warfighter needs.										

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**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	0.000	0.000	0.000	
Current BES/President's Budget	0.000	0.000	2.955	
Total Adjustments	0.000	0.000	0.000	
Congressional Program Reductions	0.000	0.000		
Congressional Rescissions	0.000	0.000		
Total Congressional Increases	0.000	0.000		
Total Reprogrammings	0.000	0.000		
SBIR/STTR Transfer	0.000	0.000		

**Change Summary Explanation**

This program represents increased emphasis on sustainment technologies previously addressed within the individual S&T programs and is not a new start.

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<b>COST (\$ in Millions)</b>	<b>FY 2008 Actual</b>	<b>FY 2009 Estimate</b>	<b>FY 2010 Estimate</b>	<b>FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
635351: Technology Sustainment	0.000	0.000	2.955						Continuing	Continuing

**Note**

Note: This program represents increased emphasis on sustainment technologies previously addressed within the individual S&T programs and is not a new start.

**A. Mission Description and Budget Item Justification**

N/A

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

	<b>FY 2008</b>	<b>FY 2009</b>	<b>FY 2010</b>	<b>FY 2011</b>
<p><b>MAJOR THRUST:</b> Develop, demonstrate, and transition system health prediction technologies to guide field and depot level maintenance action requirements, providing the capability to improve state awareness, diagnostics, prediction of failure and remaining useful life at the component and system level, and determine system current and future health status and mission capability, increasing readiness and reducing life cycle costs. Conduct studies and analyses to "design" in sustainability into future applications</p> <p>In FY 2008: Not Applicable.</p> <p>In FY 2009: Not Applicable.</p> <p>In FY 2010: Develop and demonstrate fatigue/corrosion diagnostics sensors and algorithms for interpreting sensor data. Verify capability of state of the art reasoners to assess component health. Verify and validate real time material state awareness capability for turbine engine and airframe structural components. Demonstrate real time diagnostic technologies and develop life prediction model capability to support risk based decision making and prognostics. Incorporate health assessment technologies into system data environment.</p>	0.000	0.000	1.485	
	0.000	0.000	0.490	

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>	<b>FY 2008</b>	<b>FY 2009</b>	<b>FY 2010</b>	<b>FY 2011</b>
<p>MAJOR THRUST: Develop, demonstrate, and transition technologies to improve component design, maintenance, replacement, and analytical certification concepts for life enhancement, performance improvement, and reduced maintenance, inspection, and replacement burden.</p> <p>In FY 2008: Not Applicable.</p> <p>In FY 2009: Not Applicable.</p> <p>In FY 2010: Evaluate low maintenance materials and structural concepts. Integrate structural life enhancement/replacement application concepts. Demonstrate risk based approach to structural integrity decision making. Demonstrate capability of certification by analysis to reduce design time, implementation, and sustainment costs. Develop technology options to improve sustainability of systems via material substitution, process modification, nondestructive inspection tools, and risk based modeling and decision making to ensure full system operability, sustainability, and safety.</p>				
<p>MAJOR THRUST: Develop, demonstrate, and transition technologies to improve maintenance, supply, and repair requirements/procedures on existing and new components to decrease system downtime and maintenance costs, and increase reliability, availability, service life, and mission capability.</p> <p>In FY 2008: Not Applicable.</p> <p>In FY 2009: Not Applicable.</p> <p>In FY 2010: Develop and demonstrate technologies that directly respond to sustainment needs identified by existing AF systems. Evaluate methods to adjust maintenance, supply, and repair workflow procedures and requirements to improve system availability and reduce the cost of system management and operational sustainment. Demonstrate high reliability maintenance free repair technologies. Demonstrate improved maintenance and repair data base systems. Demonstrate technology solutions for future and existing system maintenance issues.</p>	0.000	0.000	0.980	

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								<b>FY 2008</b>	<b>FY 2009</b>	<b>FY 2010</b>	<b>FY 2011</b>
<b>C. Other Program Funding Summary (\$ in Millions)</b>											
	<b>FY 2008</b>	<b>FY 2009</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	
Activity Not Provided/PE 0602201F Aerospace Vehicle Technologies	0.000	0.000							Continuing	Continuing	
Activity Not Provided/PE 0603211F Aerospace Technology Dev/Demo	0.000	0.000							Continuing	Continuing	
Activity Not Provided/ This project has been coordinated through the Reliance process to harmonize efforts and eliminate du	0.000	0.000							Continuing	Continuing	
<b>D. Acquisition Strategy</b> Not Applicable.											
<b>E. Performance Metrics</b> 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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