Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Air Force										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 3: *Advanced Technology Development (ATD)*				R-1 ITEM NOMENCLATURE PE 0603199F: *Sustainment Science and Technology (S&T)*							
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	2.852	2.935	5.780	-	5.780	6.744	9.582	9.548	9.705	Continuing	Continuing
635351: *Technology Sustainment*	2.852	2.935	5.780	-	5.780	6.744	9.582	9.548	9.705	Continuing	Continuing

A. Mission Description and Budget Item Justification

This project develops and demonstrates sustainment technologies such as materials, corrosion, and structures 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 project 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. Efforts in this program have been coordinated through the Reliance 21 process to harmonize efforts and eliminate duplication. This program is in Budget Activity 3, Advanced Technology Development, since it develops and demonstrates technologies for sustaining existing and future aerospace systems that have military utility and address warfighter needs.

B. Program Change Summary ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**
Previous President's Budget	2.943	2.935	5.876	-	5.876
Current President's Budget	2.852	2.935	5.780	-	5.780
Total Adjustments	-0.091	-	-0.096	-	-0.096
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.091	-			
• Other Adjustments	-	-	-0.096	-	-0.096

Exhibit R-2A, RDT&E Project Justification: PB 2012 Air Force			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603199F: *Sustainment Science and Technology (S&T)*	PROJECT 635351: *Technology Sustainment*	

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
635351: *Technology Sustainment*	2.852	2.935	5.780	-	5.780	6.744	9.582	9.548	9.705	Continuing	Continuing

A. Mission Description and Budget Item Justification

This project develops and demonstrates sustainment technologies such as materials, corrosion, and structures 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 project 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. Efforts in this program have been coordinated through the Reliance 21 process to harmonize efforts and eliminate duplication. This program is in Budget Activity 3, Advanced Technology Development, since it develops and demonstrates technologies for sustaining existing and future aerospace systems that have military utility and address warfighter needs.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Title: Major Thrust 1.	1.412	1.475	2.842	-	2.842
Description: Develop, demonstrate, and transition system health management technologies. Conduct studies and analyses to design in sustainability into future applications. ***FY 2010 Accomplishments:*** Developed and demonstrated fatigue/corrosion diagnostics sensors and algorithms for interpreting sensor data. Demonstrated real time diagnostic technologies and develop life prediction model capability to support risk-based decision making and prognostics. ***FY 2011 Plans:*** Continue efforts related to fatigue/corrosion diagnostics sensors and algorithms. Refine efforts to verify and validate real time material state awareness capability for engine and airframe structural components. Incorporate health assessment technologies into system data environment. ***FY 2012 Base Plans:*** Verify capability of state of the art reasoners to assess component health and real time awareness for engine components. Develop and demonstrate real time diagnostic technologies. Develop life prediction model					

Exhibit R-2A, RDT&E Project Justification: PB 2012 Air Force		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603199F: *Sustainment Science and Technology (S&T)*	PROJECT 635351: *Technology Sustainment*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
capability to support risk based decision making and prognostics. Incorporate health assessment technologies into system data environment. ***FY 2012 OCO Plans:***					
Title: Major Thrust 2. ***Description:*** Develop, demonstrate, and transition technologies to improve component design, maintenance, replacement, and concepts for performance improvement and reduced maintenance burden. ***FY 2010 Accomplishments:*** Evaluated low maintenance materials and structural concepts. Demonstrated capability of certification by analysis. Developed technology options to improve sustainability of systems. ***FY 2011 Plans:*** 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. ***FY 2012 Base Plans:*** Continue to evaluate concepts for integrated structural life enhancement/replacement concepts. Demonstrate risk-based approach to structural integrity decision making. Assess capability of certification by analysis to reduce design time, implementation, and sustainment costs. ***FY 2012 OCO Plans:***	0.480	0.480	0.940	-	0.940
Title: Major Thrust 3. ***Description:*** Develop, demonstrate, and transition technologies to improve on existing and new components to decrease downtime, costs, and increase reliability. ***FY 2010 Accomplishments:*** Began to develop and demonstrate technologies that directly respond to sustainment needs identified by existing Air Force systems. Initated efforts to demonstrate high reliability maintenance free repair technologies. ***FY 2011 Plans:***	0.960	0.980	1.998	-	1.998

Exhibit R-2A, RDT&E Project Justification: PB 2012 Air Force		DATE: February 2011
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Evaluate technological means to adjust maintenance management and operational sustainment. Demonstrate high reliability maintenance free repair technologies. Demonstrate improved maintenance and repair data base systems. ***FY 2012 Base Plans:*** Evaluate technological means to adjust system management and operational sustainment. Demonstrate high reliability repair technologies. Demonstrate improved maintenance and repair data base systems. ***FY 2012 OCO Plans:***					
Accomplishments/Planned Programs Subtotals	2.852	2.935	5.780	-	5.780

C. Other Program Funding Summary ($ in Millions)

Line Item	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
• Activity Not Provided: *Title Not Provided*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	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.