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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 3 - Advanced Technology Development (ATD)					PE 0603680F Manufacturing Technologies					
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	0.000	56.376	39.913						Continuing	Continuing
635280: Manufacturing Technologies	0.000	52.414	35.922						Continuing	Continuing
635281: Manufacturing Readiness	0.000	3.962	3.991						Continuing	Continuing

Note

Note: In FY 2009 the AF Manufacturing Technology (ManTech) program transfers to PE 0603680F, Manufacturing Technologies, from PE 0708011F, Industrial Preparedness, to focus on long-term manufacturing and processes and to better align with the Office of the Secretary of Defense ManTech PE.

A. Mission Description and Budget Item Justification

The ManTech program is mandated by Section 2521, Title 10, United States Code, to create an affordable, world-class industrial base manufacturing capability responsive to the warfighter's needs. The Air Force ManTech major program tenets are: development and improvement of technologies and processes; collaboration with government program offices, industry, and academia; investments in generic technologies that can be applied to different applications, technologies beyond reasonable risk level for industry alone; cost-sharing; multiple system/customer applications; potential for significant return on investment; and customer commitment to implement. To this end, ManTech develops, demonstrates, and assesses advanced manufacturing processes and technologies to reduce costs, improve quality/capability, and shorten cycle times of weapon systems during design, development, production, and sustainment. Where mature processes are not available, laboratory-developed and demonstrated process capabilities are made available for transition into weapon system programs. ManTech objectives are conducted through partnerships with all industry levels, from large prime contractors to small material and parts vendors. Manufacturing Technologies is in Budget Activity 3, Advanced Technology Development, since it develops and demonstrates manufacturing technologies for existing 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	39.729	40.480	
Current BES/President's Budget	0.000	56.376	39.913	
Total Adjustments	0.000	16.647	0.000	
Congressional Program Reductions	0.000	0.000		
Congressional Rescissions	0.000	-0.153		
Total Congressional Increases	0.000	5.600		
Total Reprogrammings	0.000	11.200		
SBIR/STTR Transfer	0.000	0.000		

Change Summary Explanation

In FY 2009, Congress added \$2.8 million for Advance Casting and Coating Technologies for Aircraft Canopies, \$1.6 million for Laser Peening for Friction Stir Welded Aerospace Structures, \$0.8 million for Nano-Composite Structures Manufacturing Technology Development, \$2.4 million for Next Generation Casting Supplier Base Initiative, \$1.2 million for Next Generation Manufacturing Process, \$1.6 million for Prepreg Thickness Variability Reduction Program, \$1.6 million for Production of Nanocomposites for Aerospace Applications, \$1.6 million for Rapid Automated Processing of Advanced Low Observables, and \$3.2 million for Technology Insertion Demonstration and Evaluation (TIDE).

C. Performance Metrics
Under Development.

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Exhibit R-2a, PB 2010 Air Force RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 3600 - Research, Development, Test & Evaluation, Air Force/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603680F Manufacturing Technologies					PROJECT NUMBER 635280	
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
635280: Manufacturing Technologies	0.000	52.414	35.922						Continuing	Continuing

Note

Note: In FY 2009 the AF Manufacturing Technologies program will transfer to PE 0603680F, Manufacturing Technologies, from PE 0708011F, Industrial Preparedness, to focus on long-term manufacturing technologies and processes and to better align with the Office of the Secretary of Defense ManTech PE.

A. Mission Description and Budget Item Justification

The ManTech program is mandated by Section 2521, Title 10, United States Code, to create an affordable, world-class industrial base manufacturing capability responsive to the warfighter's needs. The Air Force ManTech major program tenets are: development and improvement of manufacturing technologies and processes; collaboration with government program offices, industry, and academia; investments in generic technologies that can be applied to different applications, cost-sharing; multiple system/customer applications; potential for significant return on investment; and customer commitment to implement. To this end, ManTech develops and demonstrates advanced manufacturing processes and technologies to reduce costs, improve quality/capability, and shorten cycle times of weapon systems during design, development, production, and sustainment. Where mature processes are not available, laboratory-developed and demonstrated initial process capabilities are made available for transition into weapon system programs. ManTech objectives are conducted through partnerships with all industry levels, from large prime contractors to small material and parts vendors.

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

	FY 2008	FY 2009	FY 2010	FY 2011
<p>MAJOR THRUST: Develop and implement cost-effective maintenance, repair, and manufacturing technologies for sustainment of Air Force weapon systems. Note: In FY 2010, the increase in funding is due to greater emphasis on sustainment and readiness.</p> <p>In FY 2008: Not Applicable.</p> <p>In FY 2009: Continue cost-effective repair and manufacturing technologies for affordable sustainment of aircraft and turbine engine components. Continue Engine Rotor Life Extension (ERLE) technical effort to extend the life of critical, high value rotating engine components, which have been in service and scheduled for retirement. Continue assessments and manufacturing technology development to reduce costs and lead</p>	0.000	6.675	13.982	

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B. Accomplishments/Planned Program (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011	
<p>times for high value supply chain commodities. Continue rapid response productivity improvement efforts with selected high value programs.</p> <p>In FY 2010: Continue cost-effective repair and manufacturing technologies for affordable sustainment of both aircraft and turbine engine components. Continue assessments and manufacturing technology development to reduce logistic support costs, lead times for high value supply chain commodities, and cycle times for depot repair. Continue rapid response productivity improvement efforts with selected high value programs.</p>					
<p>MAJOR THRUST: Develop and implement pervasive affordability and producibility issues for various weapon systems and processes, to include manned and unmanned aircraft, advanced tactical missiles, directed energy systems, Command and Control Intelligence, Surveillance and Reconnaissance (C2ISR) platforms, space, structures, propulsion, stealth, and avionics/electronics. Note: In FY 2010, the decrease in funding is due to several efforts ramping down.</p> <p>In FY 2008: Not Applicable.</p> <p>In FY 2009: Continue high value efforts to verify advantages of flexible manufacturing, commercial/military integration, quality processing, and supplier improvements. Continue development of manufacturing capabilities for more affordable low-observable structures. Develop manufacturing capabilities for advanced propulsion technologies. Continue rapid response productivity improvement efforts for selected high value programs. Continue efforts to address critical electronics manufacturing technologies for various C2ISR and space applications in order to improve affordability and producibility. Continue efforts on Active Electronically Scanned Arrays (AESA) radar to enable improved manufacturing processes for reduced costs and cycle times and greater production capacity. Continue efforts on affordable datalink components to enable improved manufacturing processes for reduced costs and cycle times and increased production throughput. Conduct assessments on critical technologies in lab and acquisition programs to ensure affordable, producible technology transition.</p>	0.000	28.983	21.941		

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B. Accomplishments/Planned Program (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
In FY 2010: Continue high value efforts to verify advantages of flexible manufacturing, commercial/military integration, quality processing, and supplier improvements. Continue development and demonstration of manufacturing capabilities for more affordable low-observable structures. Develop manufacturing capabilities for advanced propulsion technologies. Continue rapid response productivity improvement efforts for selected high value programs. Continue efforts to address critical electronics manufacturing technologies for various C2ISR and space applications in order to improve affordability and producibility. Continue efforts on Active Electronically Scanned Arrays (AESA) radar to enable improved manufacturing processes for reduced costs and cycle times and greater production capacity of next generation radars. Continue efforts on affordable datalink components to enable improved manufacturing processes for reduced costs and cycle times. Commence development of advanced manufacturing processes for pervasive space needs. Conduct assessments on critical technologies in lab and acquisition programs to ensure affordable, producible technology transition.				
<p>CONGRESSIONAL ADD: Advance Casting and Coating Technologies for Aircraft Canopies.</p> <p>In FY 2008: Not Applicable.</p> <p>In FY 2009: Conduct Congressionally-directed effort for Advance Casting and Coating Technologies for Aircraft Canopies.</p> <p>In FY 2010: Not Applicable.</p>	0.000	2.792	0.000	
<p>CONGRESSIONAL ADD: Laser Peening for Friction Stir Welded Aerospace Structures.</p> <p>In FY 2008: Not Applicable.</p> <p>In FY 2009: Conduct Congressionally-directed effort for Laser Peening for Friction Stir Welded Aerospace Structures.</p>	0.000	1.596	0.000	

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B. Accomplishments/Planned Program (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
In FY 2010: Not Applicable.				
<p>CONGRESSIONAL ADD: Nano-Composite Structures Manufacturing Technology Development.</p> <p>In FY 2008: Not Applicable.</p> <p>In FY 2009: Conduct Congressionally-directed effort for Nano-Composite Structures Manufacturing Technology Development.</p> <p>In FY 2010: Not Applicable.</p>	0.000	0.798	0.000	
<p>CONGRESSIONAL ADD: Next Generation Casting Supplier Base Initiative.</p> <p>In FY 2008: Not Applicable.</p> <p>In FY 2009: Conduct Congressionally-directed effort for Next Generation Casting Supplier Base Initiative.</p> <p>In FY 2010: Not Applicable.</p>	0.000	2.394	0.000	
<p>CONGRESSIONAL ADD: Next Generation Manufacturing Process.</p> <p>In FY 2008: Not Applicable.</p> <p>In FY 2009: Conduct Congressionally-directed effort for Next Generation Manufacturing Process.</p>	0.000	1.197	0.000	

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B. Accomplishments/Planned Program (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
In FY 2010: Not Applicable.				
<p>CONGRESSIONAL ADD: Prepreg Thickness Variability Reduction Program.</p> <p>In FY 2008: Not Applicable.</p> <p>In FY 2009: Conduct Congressionally-directed effort for Prepreg Thickness Variability Reduction Program.</p> <p>In FY 2010: Not Applicable.</p>	0.000	1.596	0.000	
<p>CONGRESSIONAL ADD: Production of Nanocomposites for Aerospace Applications.</p> <p>In FY 2008: Not Applicable.</p> <p>In FY 2009: Conduct Congressionally-directed effort for Production of Nanocomposites for Aerospace Applications.</p> <p>In FY 2010: Not Applicable.</p>	0.000	1.596	0.000	
<p>CONGRESSIONAL ADD: Rapid Automated Processing of Advanced Low Observables.</p> <p>In FY 2008: Not Applicable.</p> <p>In FY 2009: Conduct Congressionally-directed effort for Rapid Automated Processing of Advanced Low Observables.</p>	0.000	1.596	0.000	

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B. Accomplishments/Planned Program (\$ in Millions)							FY 2008	FY 2009	FY 2010	FY 2011
In FY 2010: Not Applicable.										
CONGRESSIONAL ADD: Technology Insertion Demonstration and Evaluation (TIDE).							0.000	3.191	0.000	
In FY 2008: Not Applicable.										
In FY 2009: Conduct Congressionally-directed effort for Technology Insertion Demonstration and Evaluation (TIDE).										
In FY 2010: Not Applicable.										
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>	<u>Cost To Complete</u>	<u>Total Cost</u>
PE 0708011F/ Industrial Preparedness	0.000	0.000							Continuing	Continuing
Activity Not Provided/ This project has been coordinated through the Reliance 21 process to harmonize efforts and eliminate	0.000	0.000							Continuing	Continuing
D. Acquisition Strategy										
All major contracts in this Program Element were awarded after full and open competition.										
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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APPROPRIATION/BUDGET ACTIVITY 3600 - Research, Development, Test & Evaluation, Air Force/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603680F Manufacturing Technologies					PROJECT NUMBER 635281	
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
635281: Manufacturing Readiness	0.000	3.962	3.991						Continuing	Continuing

Note

Note: In FY 2009 the AF Manufacturing Technologies program will transfer to PE 0603680F, Manufacturing Technologies, from PE 0708011F, Industrial Preparedness, to focus on long-term manufacturing and processes and to better align with the Office of the Secretary of Defense ManTech PE.

A. Mission Description and Budget Item Justification

Manufacturing readiness of technologies is a key concern when identifying and mitigating risk to successfully transition these technologies and systems into production. Within each product sector (aeronautical, space, munitions/directed energy, and C2ISR), manufacturing readiness assessments (MRAs) will be applied and manufacturing readiness levels (MRLs) utilized to gauge and manage manufacturing related issues. Advanced Technology Demonstrations (ATDs) will be used when appropriate to aid in efficient transition. Selected acquisition programs will also be assessed to determine readiness for milestone decisions and/or to reduce manufacturing risk. Pervasive, generic and system-specific manufacturing maturation plans will be developed and implemented based on the assessments to reduce overall program risk and to provide an increased awareness of manufacturing issues throughout major weapon system life cycles. Generic and pervasive manufacturing issues will be identified and considered as potential ManTech programs to transition advanced manufacturing technologies into multiple sectors.

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

	FY 2008	FY 2009	FY 2010	FY 2011
<p>MAJOR THRUST: Through application of MRAs, develop and implement manufacturing maturation plans to improve affordability and producibility and mitigate transition risk from development to production.</p> <p>In FY 2008: Not Applicable.</p> <p>In FY 2009: Develop Manufacturing Maturation Plans (MMPs) for all Category I ATDs and selected high-visibility program based on MRA. Selected MMPs will be executed to increase the MRL and improve technology transition to production. MRAs will also be conducted on selected Air Force acquisition programs to aid in Milestone Decision Reviews and/or to mitigate cost, schedule, or rate issues. Manufacturing risk will be documented based on the assessments and delivered to the appropriate program offices. Pervasive manufacturing issues discovered during the assessments will be vetted through the ManTech requirements process.</p>	0.000	3.962	3.991	

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B. Accomplishments/Planned Program (\$ in Millions)							FY 2008	FY 2009	FY 2010	FY 2011
<p>In FY 2010: Continue development of Manufacturing Maturation Plans (MMPs) for Category I ATDs and selected high-visibility programs based on MRA. Selected MMPs will be executed to increase the MRL and improve technology transition to production. MRAs will also be conducted on selected Air Force acquisition programs to aid in Milestone Decision Reviews and/or to mitigate cost, schedule, or rate issues. Manufacturing risk will be documented based on the assessments and delivered to the appropriate program offices. Pervasive manufacturing issues discovered during the assessments will be vetted through the ManTech requirements process.</p>										
C. Other Program Funding Summary (\$ in Millions)										
	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
Activity Not Provided/ Related Activities	0.000	0.000							Continuing	Continuing
Activity Not Provided/ PE, 0708011F, Industrial Preparedness	0.000	0.000							Continuing	Continuing
Activity Not Provided/ This project has been coordinated through the Reliance 21 process to harmonize efforts and eliminate	0.000	0.000							Continuing	Continuing
D. Acquisition Strategy										
All major contracts in this Program Element were awarded after full and open competition.										
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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