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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2013 Air Force **DATE:** February 2012

<b>APPROPRIATION/BUDGET ACTIVITY</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0207268F: <i>Aircraft Engine Component Improvement Program (CIP)</i>
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COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	115.290	172.967	187.984	-	187.984	114.369	193.431	190.403	192.616	Continuing	Continuing
671012: <i>Aircraft Engine Component Improvement Program</i>	115.290	141.093	156.236	-	156.236	82.837	161.881	157.976	159.761	Continuing	Continuing
675365: <i>F-35</i>	-	31.874	31.748	-	31.748	31.532	31.550	32.427	32.855	Continuing	Continuing

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

The Aircraft Engine Component Improvement Program (CIP) provides the only source of critical sustaining engineering support for in-service Air Force engines to maintain flight safety (highest priority), to correct service revealed deficiencies, to improve system operational readiness (OR) and reliability & maintainability (R&M), to reduce engine Life Cycle Cost (LCC), and to sustain engines throughout their service life. Historically, aircraft systems change missions, tactics, and environments (including new fuels) to meet changing threats throughout their lives. New technical problems can develop in the engines through actual use and Engine CIP provides the means to develop fixes for these field problems. Engine CIP funding is driven by field events and types/maturity of engines, not by the total engine quantity. The program starts with government acceptance of the first procurement-funded engine and continues over the engine's life, gradually decreasing to a minimum level (safety/depot repairs) sufficient to keep older inventory engines operational. Engine CIP, through "Lead the Fleet" operational use and accelerated mission testing, identifies and fixes engine-related problems ahead of operational impacts. Engine CIP addresses out-of-warranty usage/life and enables the Air Force to obtain additional warranties when manufacturers incorporate Engine CIP improvements into production engines. Engine CIP ensures continued improvements in engine R&M, which reduce out year support costs. Historically, R&M related Engine CIP efforts significantly reduce out year Operations and Maintenance (O&M) and spares costs. Without Engine CIP, out year support funding would have to be significantly increased.

This program is in Budget Activity 7, Operational System Development, because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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<b>APPROPRIATION/BUDGET ACTIVITY</b>	<b>R-1 ITEM NOMENCLATURE</b>
3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i>	PE 0207268F: <i>Aircraft Engine Component Improvement Program (CIP)</i>
BA 7: <i>Operational Systems Development</i>	

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013 Base</b>	<b>FY 2013 OCO</b>	<b>FY 2013 Total</b>
Previous President's Budget	147.396	182.967	180.546	-	180.546
Current President's Budget	115.290	172.967	187.984	-	187.984
Total Adjustments	-32.106	-10.000	7.438	-	7.438
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-4.721	-			
• Other Adjustments	-27.385	-10.000	7.438	-	7.438

**Change Summary Explanation**

FY 2011 adjustments are Congressional General Reduction -\$0.615, Cong Directed Reductions -\$26.770 and Small Business Innovative Research (SBIR) Reduction -\$4.721)

FY 2012 - Reduction -\$10.000M due to Congressional Mark in FY12PB.

FY 2013 - Increase +\$7.438M addresses additional Engine CIP R&M tasks.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2013 Air Force									<b>DATE:</b> February 2012		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0207268F: <i>Aircraft Engine Component Improvement Program (CIP)</i>				<b>PROJECT</b> 671012: <i>Aircraft Engine Component Improvement Program</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013 Base</b>	<b>FY 2013 OCO</b>	<b>FY 2013 Total</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
671012: <i>Aircraft Engine Component Improvement Program</i>	115.290	141.093	156.236	-	156.236	82.837	161.881	157.976	159.761	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

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

The Aircraft Engine Component Improvement Program (CIP) provides the only source of critical sustaining engineering support for in-service Air Force engines to maintain flight safety (highest priority), to correct service revealed deficiencies, to improve system operational readiness (OR) and reliability & maintainability (R&M), to reduce engine Life Cycle Cost (LCC), and to sustain engines throughout their service life. Historically, aircraft systems change missions, tactics, and environments (including new fuels) to meet changing threats throughout their lives. New technical problems can develop in the engines through actual use and Engine CIP provides the means to develop fixes for these field problems. Engine CIP funding is driven by field events and types/maturity of engines, not by the total engine quantity. The program starts with government acceptance of the first procurement-funded engine and continues over the engine's life, gradually decreasing to a minimum level (safety/depot repairs) sufficient to keep older inventory engines operational. Engine CIP, through "Lead the Fleet" operational use and accelerated mission testing, identifies and fixes engine-related problems ahead of operational impacts. Engine CIP addresses out-of-warranty usage/life and enables the Air Force to obtain additional warranties when manufacturers incorporate Engine CIP improvements into production engines. Engine CIP ensures continued improvements in engine R&M, which reduce out year support costs. Historically, R&M related Engine CIP efforts significantly reduce out year Operations and Maintenance (O&M) and spares costs. Without Engine CIP, out year support funding would have to be significantly increased.

This program is in Budget Activity 7, Operational System Development, because this budget activity includes development efforts to upgrade systems that have been fielded or have received for full rate production and anticipate production funding in the current or subsequent fiscal year.

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

	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013 Base</b>	<b>FY 2013 OCO</b>	<b>FY 2013 Total</b>
<b>Title:</b> Aircraft Engine Component Improvement Program	115.290	141.093	156.236	-	156.236
<b>Description:</b> Aircraft Engine Component Improvement Program (CIP) provides critical sustaining engineering support for approximately 22,500 engines (including FMS) to maintain flight safety (highest priority), to address parts obsolescence, to improve system operational readiness (OR) and reliability & maintainability (R&M), to reduce engine Life Cycle Cost (LCC), and to sustain engines throughout their service life.					
<b>FY 2011 Accomplishments:</b> Funding enables Engine CIP to execute 200+ tasks across 13+ engine types. Majority of the budget addresses engine issues associated with the A-10, B-1, B-2, C-130, F-15, F-16, and F-22, aircraft. Engine CIP work effort addresses safety of flight, engine component redesign, repair/rework procedures, engine maturation					

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**Exhibit R-2A, RDT&E Project Justification:** PB 2013 Air Force **DATE:** February 2012

<b>APPROPRIATION/BUDGET ACTIVITY</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0207268F: <i>Aircraft Engine Component Improvement Program (CIP)</i>	<b>PROJECT</b> 671012: <i>Aircraft Engine Component Improvement Program</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
<p>and life limit/mission analysis. In addition to engine maturation, ground and flight engine testing is used to validate redesigned parts and new repair procedures. Engine CIP maintains engine flight safety (highest priority), addresses obsolescence deficiencies, improves system operational readiness (OR) and reliability and maintainability (R&amp;M), reduces engine life cycle costs (LCC) and sustains engines throughout their service life.</p> <p><b>FY 2012 Plans:</b> Funding enables Engine CIP to execute 200+ tasks across 13+ engine types. Majority of the budget addresses engine issues associated with the A-10, B-1, B-2, C-130, F-15, F-16, and F-22 aircraft. Engine CIP work effort addresses safety of flight, engine component redesign, repair/rework procedures, engine maturation and life limit/mission analysis. In addition to engine maturation, ground and flight engine testing is used to validate redesigned parts and new repair procedures. Engine CIP maintains engine flight safety, addresses obsolescence deficiencies, improves system operational readiness (OR) and reliability &amp; maintainability (R&amp;M), reduces engine life cycle costs (LCC), and sustains engines throughout their service life.</p> <p><b>FY 2013 Base Plans:</b> Funding enables Engine CIP to execute 200+ tasks across 13+ engine types. Majority of the budget addresses engine issues associated with the A-10, B-1, B-2, C-130, F-15, F-16, and F-22 aircraft. Engine CIP work effort addresses safety of flight, engine component redesign, repair/rework procedures, engine maturation and life limit/mission analysis. In addition to engine maturation, ground and flight engine testing is used to validate redesigned parts and new repair procedures. Engine CIP maintains engine flight safety, addresses obsolescence deficiencies, improves system operational readiness (OR) and reliability &amp; maintainability (R&amp;M), reduces engine life cycle costs (LCC), and sustains engines throughout their service life.</p> <p><b>FY 2013 OCO Plans:</b> N/A</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	115.290	141.093	156.236	-	156.236

<b>C. Other Program Funding Summary (\$ in Millions)</b>										
Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete Total Cost
• 1: <i>Other APPN's</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing Continuing

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2013 Air Force		<b>DATE:</b> February 2012
<b>APPROPRIATION/BUDGET ACTIVITY</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0207268F: <i>Aircraft Engine Component Improvement Program (CIP)</i>	<b>PROJECT</b> 671012: <i>Aircraft Engine Component Improvement Program</i>
<b>D. Acquisition Strategy</b> Contracts within this Program Element are awarded sole source to engine manufacturers. Engine CIP tasks are generally assigned to original engine manufacturers based on available funding and prioritization of candidates.		
<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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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2013 Air Force		<b>DATE:</b> February 2012
<b>APPROPRIATION/BUDGET ACTIVITY</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0207268F: <i>Aircraft Engine Component Improvement Program (CIP)</i>	<b>PROJECT</b> 671012: <i>Aircraft Engine Component Improvement Program</i>

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2013 Air Force **DATE:** February 2012

<b>APPROPRIATION/BUDGET ACTIVITY</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0207268F: <i>Aircraft Engine Component Improvement Program (CIP)</i>	<b>PROJECT</b> 671012: <i>Aircraft Engine Component Improvement Program</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Engine CIP activities	1	2011	4	2017

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0207268F: <i>Aircraft Engine Component Improvement Program (CIP)</i>	<b>PROJECT</b> 675365: <i>F-35</i>
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COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
675365: <i>F-35</i>	-	31.874	31.748	-	31.748	31.532	31.550	32.427	32.855	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

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

The F135 Aircraft Engine Component Improvement Program (CIP) supports F-35 propulsion systems. It provides the only source of critical sustaining engineering support for in-service Air Force propulsion systems. Engine CIP maintains flight safety (highest priority), to correct service revealed deficiencies, to improve system Operational Readiness (OR) and Reliability & Maintainability (R&M), to reduce propulsion system Life Cycle Cost (LCC), and sustain the propulsion systems throughout the service life. Historically, aircraft systems change missions, tactics, and environment (including new fuels) and meet changing threats throughout their lives. New technical problems can develop in the propulsion system through actual use and the Engine CIP provides the means to develop fixes for these field problems. Engine CIP funding is driven by field events and type/maturity of the propulsion systems, not by the total quantity. The program starts with government acceptance of the first procurement-funded engine and continues over the propulsion system's life, gradually decreasing to a minimum level (safety/depot repairs) sufficient to keep older inventory propulsion systems operational. Engine CIP, through "Lead the Fleet" operational use and accelerated mission testing, identifies and fixes propulsion-related problems ahead of operational impacts. Engine CIP addresses out-of-warranty usage/life and enables the Air Force to obtain additional warranties when manufacturers incorporate Engine CIP improvements into production propulsion systems. Engine CIP ensures continued improvements in R&M, which reduce out year support costs. Historically, R&M related Engine CIP efforts significantly reduce out year O&M and spares costs. Without Engine CIP, out year support funding would have to be significantly increased.

This program is in Budget Activity 7, Operational System Development, because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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

	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
<b>Title:</b> Aircraft Engine Component Improvement Program (F135)	-	31.874	31.748	-	31.748
<b>Description:</b> The Aircraft Engine Component Improvement Program (CIP) provides the only source of critical sustaining engineering support for F-35 propulsion systems to maintain flight safety (highest priority), to correct service revealed deficiencies, to improve system operational readiness (OR) and reliability & maintainability (R&M), to reduce engine Life Cycle Cost (LCC), and to sustain engines throughout their service life.					
<b>FY 2011 Accomplishments:</b> Not Applicable					
<b>FY 2012 Plans:</b>					



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

	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Initial priority will be to procure representative test engines and begin planning for engine maturation testing. JSF CIP will advance engine maturity 2X hours ahead of the fleet to identify any major safety or reliability issues before they can affect the field. In addition accelerated maturation testing, several reliability degraders will also be addressed, including sensors, seals, disk life, and other component deficiencies. Funding to correct service revealed deficiencies, to improve system operational readiness (OR) and reliability & maintainability (R&M), to reduce engine life cycle cost (LCC), and to sustain engines throughout their service life.					
<b><i>FY 2013 Base Plans:</i></b> Funding enables JSF Engine CIP to execute approximately 30 tasks supporting initial flying operations on F135. Engine CIP work effort addresses safety of flight, engine component redesign, repair/rework procedures, accelerated maturation testing and life limit/mission analysis. In addition, ground and flight engine testing will be used to validate redesigned parts and new repair procedures. Funding will enable JSF CIP to maintain/improve engine flight safety, address parts obsolescence, improve system operational readiness and reliability & maintainability, reduce engine life cycle cost, and sustain engines throughout their service life.					
<b>Accomplishments/Planned Programs Subtotals</b>	-	31.874	31.748	-	31.748

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

<u>Line Item</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013 Base</u>	<u>FY 2013 OCO</u>	<u>FY 2013 Total</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• PE: 0205633N, OTHER APPN: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing Continuing

**D. Acquisition Strategy**

Contracts within this Program Element are projected to be awarded sole source to engine manufacturer. F-35 Engine CIP tasks are generally assigned to the original engine manufacturer based on available funding and prioritization of candidates.

**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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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2013 Air Force		<b>DATE:</b> February 2012
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**Exhibit R-4A, RDT&E Schedule Details:** PB 2013 Air Force **DATE:** February 2012

<b>APPROPRIATION/BUDGET ACTIVITY</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0207268F: <i>Aircraft Engine Component Improvement Program (CIP)</i>	<b>PROJECT</b> 675365: <i>F-35</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
F-35 Engine CIP Tasks	2	2012	4	2017