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**Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0207268F / <i>Aircraft Engine Component Improvement Program</i>
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	111.566	136.087	55.223	0.000	55.223	68.626	55.330	91.264	94.567	Continuing	Continuing
671012: <i>Aircraft Engine Component Improvement Program</i>	-	71.605	96.538	45.301	0.000	45.301	68.626	55.330	49.773	51.574	Continuing	Continuing
675365: <i>F135 Aircraft Engine Component Improvement Program</i>	-	39.961	39.549	9.922	0.000	9.922	0.000	0.000	41.491	42.993	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 deficiencies, improve system Operational Readiness (OR) and Reliability & Maintainability (R&M), reduce engine Life Cycle Cost (LCC), and sustain engines throughout their service life. It also serves as the primary vehicle to implement emerging technology solutions to resolve these issues and improve engine performance. Past investments have reduced warfighter Class A rates and decreased Engine Related Loss of Aircraft (ERLOA) and generated significant returns on investments. Significant requirements for FY23 and FY24 include Accelerated Mission Tests (AMTs) required to qualify complex redesigns enabling fleet incorporation of the improvement and providing risk reduction of recently fielded redesigns that were qualified by analysis. The AMT provides early identification of safety/reliability issues prior to the operational fleet experiencing the safety and/or reliability issue. Ongoing tasks for this year support addressing obsolescence and Diminishing Manufacturing Sources and Material Shortage (DMSMS) issues on the TF33 engine (B-52 aircraft), developing critical repairs and extending life limited parts to avoid \$220M on the F119 engine (F-22 aircraft) in preparation for its 2nd depot interval, conducting accelerated mission test on the F135 engine, and eliminating critical safety concerns with the J85 engine (T-38 aircraft).

Engine CIP provides the only means to develop solutions to safety issues, obsolescence, reliability, availability, maintainability, and affordability driven by changes in aircraft operational parameters and missions, usage, or age.

Engines are accepted into the CIP program after 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 engines operational. Engine CIP testing identifies and fixes engine-related problems ahead of operational impacts. R&M related Engine CIP efforts significantly reduce out year Operations and Maintenance (O&M) and spares costs.

The BY funding request was reduced by \$8.592 million to account for the availability of prior year execution balances.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F,

**UNCLASSIFIED**

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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0207268F / <i>Aircraft Engine Component Improvement Program</i>
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0606398F. In FY22, \$0.00M was expended for civilian pay expenses in this program element, and in FY23 \$0.00M is forecast for civilian pay expenses in this program element.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>
Previous President's Budget	115.715	116.087	3.671	0.000	3.671
Current President's Budget	111.566	136.087	55.223	0.000	55.223
Total Adjustments	-4.149	20.000	51.552	0.000	51.552
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	20.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-4.149	0.000			
• Other Adjustments	0.000	0.000	51.552	0.000	51.552

**Change Summary Explanation**

FY22 reduction of -4.149M for Small Business Innovative Research (SBIR)  
 FY23 Congressional Increase of \$20M (\$10M for Engine CIP efforts and \$10M for F135 Engine)  
 FY24 increased by 51.552M to fund Engine CIP disconnect.

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force										<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0207268F / Aircraft Engine Component Improvement Program				<b>Project (Number/Name)</b> 671012 / Aircraft Engine Component Improvement Program			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
671012: Aircraft Engine Component Improvement Program	-	71.605	96.538	45.301	0.000	45.301	68.626	55.330	49.773	51.574	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**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, to correct deficiencies, improve system operational readiness (OR) and reliability & maintainability (R&M), reduce engine life cycle cost (LCC), and sustain engines throughout their service life. Engine CIP directly addresses engine related causes to aircraft non-mission-capability rates. Significant requirements for FY23 and FY24 include accelerated mission tests (AMTs) required to qualify complex redesigns enabling fleet incorporation of the improvement and providing risk reduction of recently fielded redesigns that were qualified by analysis. The AMT provides early identification of safety and reliability issues prior to the operational fleet experiencing the issue. Ongoing tasks for this year support addressing obsolescence and DMSMS issues on the TF33 engine (B-52 aircraft), developing critical repairs and extending life limited parts to avoid over \$220M on the F119 engine (F-22 aircraft) program in preparations for its 2nd depot interval induction, and eliminating a safety concern with the J85 engine (T-38 aircraft). Changes in aircraft operational parameters or missions accelerate the discovery of new engine issues and the need to resolve these issues. Engine CIP funding is driven by field events and types/maturity of engines, not by the total engine quantity.

Service-related engine deficiencies occur throughout the engine lifecycle. Given the uncertainty with regard to the number and timing of engine-related deficiencies, it is essential for the USAF to have adequate engineering capability and test capacity to rapidly respond to problems as they occur.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22, \$0.00M was expended for civilian pay in this program element, and in FY23 \$0.00M is forecast for civilian pay expenses in this program element.

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

	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<b>Title:</b> F100 Aircraft Engine Component Improvement Program	9.694	21.716	6.133
<b>Description:</b> The F100-220 and F100-229 Engine CIP provides critical developmental engineering support to maintain flight safety, to address parts obsolescence, to improve OR and R&M, to reduce engine LCC, in order for engines to be sustainable throughout their service life. Funds may be used to address emerging and short-notice DMSMS.			
<b>FY 2023 Plans:</b> F100-220 and F100-229:			

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force		<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0207268F / Aircraft Engine Component Improvement Program	<b>Project (Number/Name)</b> 671012 / Aircraft Engine Component Improvement Program		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<ul style="list-style-type: none"> <li>- Will execute multiple tasks to address engine issues associated with the F-15 and F-16 aircraft</li> <li>- Address engine component redesign, repair/rework procedures, engine maturation and life limit/mission analysis</li> <li>- Validate redesigned parts and new repair procedures</li> <li>- Maintain engine flight safety, address obsolescence deficiencies, improve OR and R&amp;M, reduce engine LCC, and sustain engines throughout their service life</li> <li>-Conduct F100 AMT</li> <li>- Funds may be used to address emerging and short-notice DMSMS issues</li> </ul> <p><b>FY 2024 Plans:</b> F100-220 and F100-229:</p> <ul style="list-style-type: none"> <li>- Will execute multiple tasks to address engine issues associated with the F-15 and F-16 aircraft</li> <li>- Address engine component redesign, repair/rework procedures, engine maturation and life limit/mission analysis</li> <li>- Validate redesigned parts and new repair procedures</li> <li>- Maintain engine flight safety, address obsolescence deficiencies, improve OR and R&amp;M, reduce LCC, and sustain engines throughout their service life</li> <li>-Conduct F100 AMT</li> <li>- Funds may be used to address emerging and short-notice DMSMS issues</li> </ul> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Funding decrease due to efforts across FY23-FY24 nearing completion.</p>				
<p><b>Title:</b> F110 Aircraft Engine Component Improvement Program</p> <p><b>Description:</b> The F101, F110-100, F110-129, F118-100, and F118-101 Engine CIP provides critical developmental engineering support for multiple engines to maintain flight safety, to address parts obsolescence, to improve OR and R&amp;M, to reduce engine LCC, and to sustain engines throughout their service life. Funds may be used to address emerging and short-notice DMSMS issues.</p> <p><b>FY 2023 Plans:</b> F101, F110-100, F110-129, F118-100, and F118-101:</p> <ul style="list-style-type: none"> <li>- Will execute multiple tasks to address engine issues associated with the B1, B-2, F-15, F-16, and U-2 aircraft</li> <li>- Address safety of flight, engine component redesign, repair/rework procedures, engine maturation and life limit/mission analysis</li> <li>- Validate redesigned parts and new repair procedures</li> <li>- Conduct F110 AMT</li> <li>- Maintain engine flight safety, address obsolescence deficiencies, improve OR and R&amp;M, reduce engine LCC, and sustain engines throughout their service life</li> </ul>		10.920	13.198	6.909

**UNCLASSIFIED**

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<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0207268F / Aircraft Engine Component Improvement Program	<b>Project (Number/Name)</b> 671012 / Aircraft Engine Component Improvement Program		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<p>- Funds may be used to address emerging and short-notice DMSMS issues</p> <p><b>FY 2024 Plans:</b> F101, F110-100, F110-129, F118-100, and F118-101:</p> <ul style="list-style-type: none"> <li>- Will execute multiple tasks to address engine issues associated with the B1, B-2, F-15, F-16, and U-2 aircraft</li> <li>- Address safety of flight, engine component redesign, repair/rework procedures, engine maturation and life limit/mission analysis</li> <li>- Validate redesigned parts and new repair procedures</li> <li>- Conduct F110 AMT</li> <li>- Maintain engine flight safety, address obsolescence deficiencies, improve OR and R&amp;M, reduce engine LCC, and sustain engines throughout their service life</li> <li>- Funds may be used to address emerging and short-notice DMSMS issues</li> </ul> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Funding decrease due to efforts across FY23-FY24 nearing completion.</p>				
<p><b>Title:</b> F119 Aircraft Engine Component Improvement Program</p> <p><b>Description:</b> The F-119 Engine CIP provides critical developmental engineering support for approximately 471 engines to maintain flight safety, to address parts obsolescence, to improve OR and R&amp;M, to reduce engine LCC, and to sustain engines throughout their service life. Funds may be used to address emerging and short-notice DMSMS issues.</p> <p><b>FY 2023 Plans:</b> F-119</p> <ul style="list-style-type: none"> <li>- Will execute multiple tasks to address engine issues associated with the F-22 aircraft</li> <li>- Address engine component redesign, repair/rework procedures, engine maturation and life limit/mission analysis</li> <li>- Validate redesigned parts and new repair procedures</li> <li>- An F-119 Engine AMT is currently in process and runs through FY2023</li> <li>- Maintain engine flight safety, address obsolescence deficiencies, improve OR and R&amp;M, reduce engine LCC, and sustain engines throughout their service life</li> <li>- Funds may be used to address emerging and short-notice DMSMS issues</li> </ul> <p><b>FY 2024 Plans:</b> F-119:</p> <ul style="list-style-type: none"> <li>- Will execute multiple tasks to address engine issues associated with the F-22 aircraft</li> <li>- Address engine component redesign, repair/rework procedures, engine maturation and life limit/mission analysis</li> <li>- Validate redesigned parts and new repair procedures</li> </ul>		21.226	25.653	13.429

**UNCLASSIFIED**

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<ul style="list-style-type: none"> <li>- Maintain engine flight safety, address obsolescence deficiencies, improve OR and R&amp;M, reduce engine LCC, and sustain engines throughout their service life</li> <li>- Funds may be used to address emerging and short-notice DMSMS issues</li> </ul> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Funding decrease due to efforts across FY23-FY24 nearing completion.</p>				
<p><b>Title:</b> Other Aircraft Engine Component Improvement Program</p> <p><b>Description:</b> CIP provides critical developmental engineering support for approximately 8,000+ engines (e.g., TF33, TF34, T53, T56, T700, T400, J85, F107) and over 16,000 APU/SPS to maintain flight safety, to address parts obsolescence, to improve OR and R&amp;M, to reduce engine LCC, and to sustain engines throughout their service life. Funds may be used to address emerging and short-notice DMSMS issues.</p> <p><b>FY 2023 Plans:</b> Other Engines (e.g., TF33, TF34, T53, T56, T700, T400, J85, APUs, F107):</p> <ul style="list-style-type: none"> <li>- Will execute multiple tasks to address engine issues associated with the C-130, T38, UH-1N, UH/MH-60/60G, A-10, B-52, AWACS, and JSTARS aircraft, cruise missiles and aircraft APUs</li> <li>- Address engine component redesign, repair/rework procedures, engine maturation and life limit/mission analysis</li> <li>- Validate redesigned parts and new repair procedures</li> <li>- Address issues leading to increased UERs and decreased flight safety</li> <li>- Maintain engine flight safety, address obsolescence deficiencies, improve system OR and R&amp;M, reduce engine LCC, and sustain engines throughout their service life</li> <li>- Funds may be used to address emerging and short-notice DMSMS issues</li> <li>- Funds will also be used to stand up any new Engine CIP TMS programs</li> </ul> <p><b>FY 2024 Plans:</b> Other Engines (e.g., TF33, TF34, T53, T56, T700, T400, J85, APUs, F107):</p> <ul style="list-style-type: none"> <li>- Will execute multiple tasks to address engine issues associated with the C-130, T38, UH-1N, UH/MH-60/60G, A-10, B-52, AWACS, and JSTARS aircraft, cruise missiles and aircraft APUs</li> <li>- Address engine component redesign, repair/rework procedures, engine maturation and life limit/mission analysis</li> <li>- Validate redesigned parts and new repair procedures</li> <li>- Address issues leading to increased UERs and decreased flight safety</li> <li>- Maintain engine flight safety, address obsolescence deficiencies, improve OR and R&amp;M, reduce engine LCC, and sustain engines throughout their service life</li> <li>- Funds may be used to address emerging and short-notice DMSMS issues</li> </ul>		29.765	35.971	18.830

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force		<b>Date:</b> March 2023		
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
- Funds will also be used to stand up any new Engine CIP TMS programs				
<b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Funding decrease due to efforts across FY23-FY24 nearing completion.				
<b>Accomplishments/Planned Programs Subtotals</b>		71.605	96.538	45.301
<b>C. Other Program Funding Summary (\$ in Millions)</b>				
N/A				
<b>Remarks</b>				
Other APPN RELATED ACTIVITIES				
(U) - PEs 0203752A and 0205633N, Army/Navy Aircraft Engine CIPs				
<b>D. Acquisition Strategy</b>				
Sole Source Indefinite Delivery/Indefinite Quantity (IDIQ) contracts to Original Equipment Manufacturers (OEMs), and DoD agencies with a 8-year ordering period and 10-year delivery period. Supports multiple tasks to accomplish CIP for more than 23 engine models.				

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force												Date: March 2023			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)					Project (Number/Name)						
3600 / 7				PE 0207268F / Aircraft Engine Component Improvement Program					671012 / Aircraft Engine Component Improvement Program						
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Aircraft Engine CIP:Develop aircraft engine improvements - F110/F101/F118	SS/CPFF	GE : Evendale, OH	-	10.920	Dec 2021	13.198	Nov 2022	6.909	Nov 2023	-		6.909	Continuing	Continuing	-
Aircraft Engine CIP: Develop aircraft engine improvements-F100/F119/TF33/T400	SS/CPFF	Pratt & Whitney : Hartford, CT	-	36.565	Dec 2021	44.190	Nov 2022	23.133	Nov 2023	-		23.133	Continuing	Continuing	-
Aircraft Engine CIP: Develop aircraft engine improvements-TF34/J85/T700	SS/CPFF	GE : Lynn, MA	-	7.736	Dec 2021	9.349	Nov 2022	4.894	Nov 2023	-		4.894	Continuing	Continuing	-
Aircraft Engine CIP: Develop aircraft engine improvements-T56	SS/CPFF	Rolls Royce : Indianapolis, IN	-	0.201	Dec 2021	0.243	Nov 2022	0.127	Nov 2023	-		0.127	Continuing	Continuing	-
Aircraft Engine CIP: Develop aircraft Auxiliary Power Unit improvements/T53	SS/CPFF	Honeywell : Phoenix, AZ	-	2.355	Dec 2021	2.847	Nov 2022	1.490	Nov 2023	-		1.490	Continuing	Continuing	-
Aircraft Engine CIP: Develop engine improvements-F107	SS/CPFF	Various : Various	-	0.099	Dec 2021	0.120	Nov 2022	0.063	Nov 2023	-		0.063	Continuing	Continuing	-
<b>Subtotal</b>			-	57.876		69.947		36.616		-		36.616	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Aircraft Engine CIP: Non-OEM CIP Tasks	Various	Various : Various	-	0.880	Dec 2021	1.063	Nov 2022	0.557	Nov 2023	-		0.557	Continuing	Continuing	-
<b>Subtotal</b>			-	0.880		1.063		0.557		-		0.557	Continuing	Continuing	N/A

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0207268F / Aircraft Engine Component Improvement Program	<b>Project (Number/Name)</b> 671012 / Aircraft Engine Component Improvement Program
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<b>Support (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			

**Remarks**  
Non-OEM engine CIP tasks include: blade and rotor inspections to identify potential defects or needed repairs.

<b>Test and Evaluation (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Aircraft Engine CIP: Ground test and validate engine improvements	PO	AEDC : Arnold AFB, TN	-	3.775	Dec 2021	14.562	Dec 2022	2.388	Dec 2023	-		2.388	Continuing	Continuing	-
<b>Subtotal</b>			-	3.775		14.562		2.388		-		2.388	Continuing	Continuing	N/A

**Remarks**  
Fuel costs for contractor-performed T&E are included in the applicable contract.

<b>Management Services (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Aircraft Engine CIP: PMA	Various	Various : Various	-	4.508	Dec 2021	5.448	Dec 2022	2.852	Dec 2023	-		2.852	Continuing	Continuing	-
Propulsion Center of Excellence (PCOE)	Various	Various : Various	-	4.566	Dec 2021	5.518	Dec 2022	2.888	Dec 2023	-		2.888	Continuing	Continuing	-
<b>Subtotal</b>			-	9.074		10.966		5.740		-		5.740	Continuing	Continuing	N/A

**Remarks**  
PMA Description: Program Management support, travel, and A&AS.

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract	
<b>Project Cost Totals</b>		-	71.605	96.538	45.301	-	45.301	Continuing	Continuing	N/A

**Remarks**

**UNCLASSIFIED**

<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b>		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0207268F / Aircraft Engine Component Improvement Program	<b>Project (Number/Name)</b> 671012 / Aircraft Engine Component Improvement Program

FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>CIP Legacy Activities</b>	
F-100 Engine CIP Activities	
F-110 Engine CIP Activities	
F-119 Engine CIP Activities	
Other Legacy Engine CIP Activities	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0207268F / Aircraft Engine Component Improvement Program	<b>Project (Number/Name)</b> 671012 / Aircraft Engine Component Improvement Program

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>CIP Legacy Activities</i></b>				
F-100 Engine CIP Activities	1	2022	4	2028
F-110 Engine CIP Activities	1	2022	4	2028
F-119 Engine CIP Activities	1	2022	4	2028
Other Legacy Engine CIP Activities	1	2022	4	2028

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force										<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0207268F / Aircraft Engine Component Improvement Program				<b>Project (Number/Name)</b> 675365 / F135 Aircraft Engine Component Improvement Program			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
675365: F135 Aircraft Engine Component Improvement Program	-	39.961	39.549	9.922	0.000	9.922	0.000	0.000	41.491	42.993	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The F135 Aircraft Engine Component Improvement Program (CIP) supports the F-35 single-engine fighter propulsion system. It provides the only source of critical developmental engineering support for the F135 propulsion system. F135 CIP maintains flight safety (highest priority), corrects service revealed deficiencies, improves system Operational Readiness (OR) and Reliability & Maintainability (R&M), reduces propulsion system Life Cycle Cost (LCC), and sustains the propulsion system throughout its 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 F135 CIP provides the means to develop fixes for these problems. F135 CIP funding is driven by field events and type/maturity of the propulsion system, not by the total quantity of engines. 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 engines operational. F135 CIP, through "Lead the Fleet" operational use and accelerated mission testing, identifies and fixes propulsion-related problems ahead of operational impacts. F135 CIP ensures continued improvements in R&M, which reduce out year support costs. Historically, R&M related CIP efforts significantly reduce out year O&M and spares costs.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 \$0.00M was expended for civilian pay expenses in this program element, and in FY23 \$0.00M is forecast for civilian pay expenses in this program element.

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

	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<b>Title:</b> F135 Aircraft Engine Improvement Program	39.961	39.549	9.922
<b>Description:</b> The Aircraft Engine CIP provides the only source of critical developmental engineering support for F-35 propulsion systems to maintain flight safety for this single-engine fighter, correct service revealed deficiencies, improve system OR and R&M, reduce engine LCC, and sustain engines throughout their service life. Funds may be used to address emerging and short-notice DMSMS issues.			
<b>FY 2023 Plans:</b>			
- Execute approximately 80+ AF-funded F135 engine tasks supporting F-35 flying operations.			
- Conduct accelerated mission test and analytical condition inspection.			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force		<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0207268F / Aircraft Engine Component Improvement Program	<b>Project (Number/Name)</b> 675365 / F135 Aircraft Engine Component Improvement Program		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<ul style="list-style-type: none"> <li>- Address safety of flight, engine component redesign, repair/rework procedures and life limit/mission analysis.</li> <li>- Validate redesigned parts and new repair procedures.</li> <li>- Maintain/improve engine flight safety, improve OR and R&amp;M, reduce engine LCC, and sustain engine throughout service life.</li> <li>- Funds may be used to address emerging and short-notice DMSMS issues.</li> </ul> <p><b>FY 2024 Plans:</b></p> <ul style="list-style-type: none"> <li>- Execute approximately 80+ AF-funded F135 engine tasks supporting F-35 flying operations.</li> <li>- Conduct accelerated mission test and analytical condition inspection.</li> <li>- Address safety of flight, engine component redesign, repair/rework procedures and life limit/mission analysis.</li> <li>- Validate redesigned parts and new repair procedures.</li> <li>- Maintain/improve engine flight safety, improve OR and R&amp;M, reduce engine LCC, and sustain engine throughout service life.</li> <li>- Funds may be used to address emerging and short-notice DMSMS issues.</li> </ul> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Decrease due to funding reduction in FY2024.</p>				
<b>Accomplishments/Planned Programs Subtotals</b>		39.961	39.549	9.922
<b>C. Other Program Funding Summary (\$ in Millions)</b>				
N/A				
<b>Remarks</b>				
Program Element 0205633N provides US Navy funding support for the F135 propulsion system.				
<b>D. Acquisition Strategy</b>				
Contracts within this program are projected to be awarded sole source to each engine manufacturer. F-135 Engine CIP tasks are generally assigned to the original engine manufacturer based on available funding and prioritization of candidates.				

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0207268F / Aircraft Engine Component Improvement Program	<b>Project (Number/Name)</b> 675365 / F135 Aircraft Engine Component Improvement Program
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<b>Product Development (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Aircraft Engine CIP: Develop F135 engine improvements	SS/CPFF	Pratt & Whitney : Hartford, CT	-	38.543	Jan 2022	38.501	Jan 2023	9.570	Jan 2024	-		9.570	Continuing	Continuing	-
<b>Subtotal</b>			-	38.543		38.501		9.570		-		9.570	Continuing	Continuing	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Aircraft Engine CIP: Ground test and validate engine improvements	PO	AEDC : Arnold AFB, TN	-	1.171	Dec 2021	0.865	Dec 2022	0.291	Dec 2023	-		0.291	Continuing	Continuing	-
<b>Subtotal</b>			-	1.171		0.865		0.291		-		0.291	Continuing	Continuing	N/A

<b>Management Services (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Aircraft Engine CIP: PMA	Various	Various : Various	-	0.247	Dec 2021	0.183	Dec 2022	0.061	Dec 2023	-		0.061	Continuing	Continuing	-
<b>Subtotal</b>			-	0.247		0.183		0.061		-		0.061	Continuing	Continuing	N/A

**Remarks**  
PMA Description: Program Management support, travel, and A&AS.

<b>Project Cost Totals</b>	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
	-	39.961	39.549	9.922	-	9.922	Continuing	Continuing	N/A

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0207268F / Aircraft Engine Component Improvement Program	<b>Project (Number/Name)</b> 675365 / F135 Aircraft Engine Component Improvement Program

FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>CIP JSF Activities</b>	
F-135 Engine CIP Tasks	
F-135 Engine CIP Tasks FY27	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0207268F / Aircraft Engine Component Improvement Program	<b>Project (Number/Name)</b> 675365 / F135 Aircraft Engine Component Improvement Program

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>CIP JSF Activities</i></b>				
F-135 Engine CIP Tasks	1	2022	4	2024
F-135 Engine CIP Tasks FY27	1	2027	4	2028

**Note**

FY25-FY26 funding not supported.