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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Air Force **Date:** April 2022

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0207268F / <i>Aircraft Engine Component Improvement Program</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	121.206	115.715	116.087	0.000	116.087	3.671	17.314	13.097	90.541	Continuing	Continuing
671012: <i>Aircraft Engine Component Improvement Program</i>	-	93.644	75.754	86.538	0.000	86.538	3.671	17.314	13.097	49.379	Continuing	Continuing
675365: <i>F135 Aircraft Engine Component Improvement Program</i>	-	27.562	39.961	29.549	0.000	29.549	0.000	0.000	0.000	41.162	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. 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 FY22 and FY23 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. It also serves as the primary vehicle to implement emerging technology solutions to resolve these issues and improve engine performance.

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.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. For FY21 \$0.00 was expended, and for FY22 \$0.00M is forecast for civilian pay expenses in this program. element.

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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. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	125.666	103.715	0.000	0.000	0.000
Current President's Budget	121.206	115.715	116.087	0.000	116.087
Total Adjustments	-4.460	12.000	116.087	0.000	116.087
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	12.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-4.460	0.000			
• Other Adjustments	0.000	0.000	116.087	0.000	116.087

Change Summary Explanation

The FY2022 President's Budget submittal did not reflect FY2023 through FY2026 funding. Therefore, an explanation of the change between the two budget positions for FY2023 cannot be made in a relevant manner.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force										Date: April 2022		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0207268F / Aircraft Engine Component Improvement Program				Project (Number/Name) 671012 / Aircraft Engine Component Improvement Program			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
671012: Aircraft Engine Component Improvement Program	-	93.644	75.754	86.538	0.000	86.538	3.671	17.314	13.097	49.379	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 (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. Engine CIP directly addresses engine related causes to aircraft Non-Mission-Capability rates. Significant requirements for FY22 and FY23 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. Engines are inducted into the program 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 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 replacement spares costs.

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, test capacity to rapidly respond to problems as they occur and absolutely paramount to reach SecDef directed 80% mission capability rate for F-22, F-16, and F-15 aircraft.

Minimal, if any, new tasks will be initiated in FY22/23.

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

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: F100 Aircraft Engine Component Improvement Program	9.179	10.257	12.587	0.000	12.587
Description: The F100-220 and F100-229 Engine CIP provides critical developmental engineering support for approximately 3841 engines (including foreign military sales [FMS]) to maintain flight safety (highest priority), to					

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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207268F / Aircraft Engine Component Improvement Program	Project (Number/Name) 671012 / Aircraft Engine Component Improvement Program					
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
<p>address parts obsolescence, to improve system 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.</p> <p>FY 2022 Plans: F100-220 and F100-229: - Will execute multiple tasks. Budget will address engine issues associated with the F-15 and F-16 aircraft. - Address engine component redesign, repair/rework procedures, engine maturation and life limit/mission analysis. - Validate redesigned parts and new repair procedures. - Maintain engine flight safety, address obsolescence deficiencies, improved system operational readiness (OR) and reliability & maintainability (R&M), reduced engine life cycle costs (LCC), and sustain engines throughout their service life. - Funds may be used to address emerging and short-notice DMSMS issues.</p> <p>FY 2023 Base Plans: F100-220 and F100-229: - Will execute multiple tasks to address engine issues associated with the F-15 and F-16 aircraft. - Address engine component redesign, repair/rework procedures, engine maturation and life limit/mission analysis. - Validate redesigned parts and new repair procedures. - Maintain engine flight safety, address obsolescence deficiencies, improved system operational readiness (OR) and reliability & maintainability (R&M), reduced engine life cycle costs (LCC), and sustain engines throughout their service life. - Funds may be used to address emerging and short-notice DMSMS issues.</p> <p>FY 2023 OCO Plans: N/A</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase due to requirement increase</p>							
Title: F110 Aircraft Engine Component Improvement Program			14.100	7.530	9.212	0.000	9.212
Description: The F101, F110-100, F110-129, F118-100, and F118-101 Engine CIP provides critical developmental engineering support for approximately 2568 engines (including FMS) to maintain flight safety (highest priority), to address parts obsolescence, to improve system OR and R&M, to reduce engine LCC, and to							

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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207268F / Aircraft Engine Component Improvement Program	Project (Number/Name) 671012 / Aircraft Engine Component Improvement Program					
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
<p>sustain engines throughout their service life. Funds may be used to address emerging and short-notice DMSMS issues.</p> <p>FY 2022 Plans: F101, F110-100, F110-129, F118-100, and F118-101: - Will execute multiple tasks to address engine issues associated with the B1, B-2, F-15, F-16, and U-2 aircraft. - Address safety of flight, engine component redesign, repair/rework procedures, engine maturation and life limit/mission analysis. - Validate redesigned parts and new repair procedures. - Maintain engine flight safety, address obsolescence deficiencies, improved system OR and R&M, reduced engine LCC, and sustain engines throughout their service life. - Funds may be used to address emerging and short-notice DMSMS issues.</p> <p>FY 2023 Base Plans: F101, F110-100, F110-129, F118-100, and F118-101: - Will execute multiple tasks to address engine issues associated with the B1, B-2, F-15, F-16, and U-2 aircraft. - Address safety of flight, engine component redesign, repair/rework procedures, engine maturation and life limit/mission analysis. - Validate redesigned parts and new repair procedures. - Maintain engine flight safety, address obsolescence deficiencies, improved system OR and R&M, reduced engine LCC, and sustain engines throughout their service life. - Funds may be used to address emerging and short-notice DMSMS issues.</p> <p>FY 2023 OCO Plans: N/A</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase due to requirement increase</p>							
Title: F119 Aircraft Engine Component Improvement Program			25.352	10.924	13.433	0.000	13.433
Description: The F119 Engine CIP provides critical developmental engineering support for approximately 471 engines to maintain flight safety (highest priority), to address parts obsolescence, to improve system OR and R&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.							

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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207268F / Aircraft Engine Component Improvement Program	Project (Number/Name) 671012 / Aircraft Engine Component Improvement Program				
B. Accomplishments/Planned Programs (\$ in Millions)						
		FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
<p>FY 2022 Plans: F119: - Will execute multiple tasks to address engine issues associated with the F-22 aircraft. - Address engine component redesign, repair/rework procedures, engine maturation and life limit/mission analysis. - Validate redesigned parts and new repair procedures. - Maintain engine flight safety, address obsolescence deficiencies, improved system OR and R&M, reduced engine LCC, and sustain engines throughout their service life. - Funds may be used to address emerging and short-notice DMSMS issues.</p> <p>FY 2023 Base Plans: F119: - Will execute multiple tasks. The budget will address engine issues associated with the F-22 aircraft. - Address engine component redesign, repair/rework procedures, engine maturation and life limit/mission analysis. - Validate redesigned parts and new repair procedures. - Maintain engine flight safety, address obsolescence deficiencies, improved system operational readiness (OR) and reliability & maintainability (R&M), reduced engine life cycle costs (LCC), and sustain engines throughout their service life. - Funds may be used to address emerging and short-notice Diminishing Manufacturing Sources and Material Shortages (DMSMS) issues.</p> <p>FY 2023 OCO Plans: N/A</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase due to requirement increase</p>						
<p>Title: Other Aircraft Engine Component Improvement Program</p> <p>Description: The Other Engines (e.g., TF33, TF34, T53, T56, T700, T400, J85, F107, APUs) CIP provides critical developmental engineering support for approximately 8,000+ engines (including FMS) and over 16,000 APU/SPS to maintain flight safety (highest priority), to address parts obsolescence, to improve system OR and R&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>		45.013	47.043	51.306	0.000	51.306

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
<p>FY 2022 Plans: Other Engines (e.g., TF33, TF34, T53, T56, T700, T400, J85, APUs, F107): - Will execute multiple tasks. The budget will 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. - Address engine component redesign, repair/rework procedures, engine maturation and life limit/mission analysis. - Validate redesigned parts and new repair procedures. -Address issues leading to increased UERs and decreased flight safety. - Maintain engine flight safety, address obsolescence deficiencies, improved system OR and R&M, reduced engine LCC, and sustain engines throughout their service life. - Funds may be used to address emerging and short-notice DMSMS issues. - Funds will also be used to stand up any new Engine CIP TMS programs</p> <p>FY 2023 Base Plans: Other Engines (e.g., TF33, TF34, T53, T56, T700, T400, J85, APUs, F107): - Will execute multiple tasks. The budget will 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. - Address engine component redesign, repair/rework procedures, engine maturation and life limit/mission analysis. - Validate redesigned parts and new repair procedures. -Address issues leading to increased UERs and decreased flight safety. - Maintain engine flight safety, address obsolescence deficiencies, improved system OR and R&M, reduced engine LCC, and sustain engines throughout their service life. - Funds may be used to address emerging and short-notice DMSMS issues. - Funds will also be used to stand up any new Engine CIP TMS programs</p> <p>FY 2023 OCO Plans: N/A</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase due to requirement increase</p>					
Accomplishments/Planned Programs Subtotals	93.644	75.754	86.538	0.000	86.538

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207268F / Aircraft Engine Component Improvement Program	Project (Number/Name) 671012 / Aircraft Engine Component Improvement Program
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks Other APPN RELATED ACTIVITIES (U) - PEs 0203752A and 0205633N, Army/Navy Aircraft Engine CIPs		
D. Acquisition Strategy 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 2023 Air Force **Date:** April 2022

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207268F / Aircraft Engine Component Improvement Program	Project (Number/Name) 671012 / Aircraft Engine Component Improvement Program
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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 aircraft engine improvements - F110/F101/F118	SS/CPFF	GE : Evendale, OH	-	14.100	Dec 2020	7.530	Dec 2021	9.212	Dec 2022	-		9.212	Continuing	Continuing	-
Aircraft Engine CIP: Develop aircraft engine improvements-F100/F119/TF33/T400	SS/CPFF	Pratt & Whitney : Hartford, CT	-	41.938	Dec 2020	26.210	Dec 2021	31.508	Dec 2022	-		31.508	Continuing	Continuing	-
Aircraft Engine CIP: Develop aircraft engine improvements-TF34/J85/T700	SS/CPFF	GE : Lynn, MA	-	7.395	Dec 2020	6.621	Dec 2021	7.221	Dec 2022	-		7.221	Continuing	Continuing	-
Aircraft Engine CIP: Develop aircraft engine improvements-T56	SS/CPFF	Rolls Royce : Indianapolis, IN	-	1.615	Dec 2020	0.530	Dec 2021	0.578	Dec 2022	-		0.578	Continuing	Continuing	-
Aircraft Engine CIP: Develop aircraft Auxiliary Power Unit improvements/T53	SS/CPFF	Honeywell : Phoenix, AZ	-	0.873	Dec 2020	4.494	Dec 2021	4.901	Dec 2022	-		4.901	Continuing	Continuing	-
Aircraft Engine CIP: Develop engine improvements-F107	SS/CPFF	Various : Various	-	0.022	Dec 2020	0.038	Dec 2021	0.041	Dec 2022	-		0.041	Continuing	Continuing	-
Subtotal			-	65.943		45.423		53.461		-		53.461	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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: Non-OEM CIP Tasks	Various	Various : Various	-	1.639	Dec 2020	0.311	Dec 2021	0.339	Dec 2022	-		0.339	Continuing	Continuing	-
Subtotal			-	1.639		0.311		0.339		-		0.339	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Air Force **Date:** April 2022

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207268F / Aircraft Engine Component Improvement Program	Project (Number/Name) 671012 / Aircraft Engine Component Improvement Program
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Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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 CIP Tasks refer to work in support of Engine CIP.

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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	-	7.429	Dec 2020	16.113	Dec 2021	17.569	Dec 2022	-		17.569	Continuing	Continuing	-
Subtotal			-	7.429		16.113		17.569		-		17.569	Continuing	Continuing	N/A

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

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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	-	5.459	Dec 2020	5.234	Dec 2021	5.709	Dec 2022	-		5.709	Continuing	Continuing	-
Propulsion Center of Excellence (PCOE)	Various	Various : Various	-	13.174	Dec 2020	8.673	Dec 2021	9.460	Dec 2022	-		9.460	Continuing	Continuing	-
Subtotal			-	18.633		13.907		15.169		-		15.169	Continuing	Continuing	N/A

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

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		-	93.644	75.754	86.538	-	86.538	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207268F / Aircraft Engine Component Improvement Program	Project (Number/Name) 671012 / Aircraft Engine Component Improvement Program

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	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

CIP Legacy Activities	
F-100 Engine CIP Activities	
F-110 Engine CIP Activities	
F-119 Engine CIP Activities	
Other Legacy Engine CIP Activities	
F-100 Engine CIP Activities FY27	
F-110 Engine CIP Activities FY27	
F-119 Engine CIP Activities FY27	
Other Legacy Engine CIP Activities FY27	

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207268F / Aircraft Engine Component Improvement Program	Project (Number/Name) 671012 / Aircraft Engine Component Improvement Program

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>CIP Legacy Activities</i>				
F-100 Engine CIP Activities	1	2021	1	2024
F-110 Engine CIP Activities	1	2021	1	2024
F-119 Engine CIP Activities	1	2021	1	2024
Other Legacy Engine CIP Activities	1	2021	1	2024
F-100 Engine CIP Activities FY27	1	2027	4	2027
F-110 Engine CIP Activities FY27	1	2027	4	2027
F-119 Engine CIP Activities FY27	1	2027	4	2027
Other Legacy Engine CIP Activities FY27	1	2027	4	2027

Note

Schedule not showing 2QFY24-4QFY26 as funding is currently insufficient in FY24-FY26 to complete tasks.

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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
675365: F135 Aircraft Engine Component Improvement Program	-	27.562	39.961	29.549	0.000	29.549	0.000	0.000	0.000	41.162	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.

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

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: F135 Aircraft Engine Improvement Program	27.562	39.961	29.549	-	29.549
Description: The Aircraft Engine CIP provides the only source of critical developmental engineering support for F-35 propulsion systems to maintain flight safety (highest priority) 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.					
FY 2022 Plans:					
- Execute approximately 80+ AF-funded F135 engine tasks supporting F-35 flying operations.					
- Conduct accelerated mission test and analytical condition inspection.					
- Address safety of flight, engine component redesign, repair/rework procedures and life limit/mission analysis.					
- Validate redesigned parts and new repair procedures.					
- Maintain/improve engine flight safety, improve system operational readiness and reliability & maintainability, reduce engine life cycle cost, and sustain engine throughout service life.					

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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207268F / Aircraft Engine Component Improvement Program	Project (Number/Name) 675365 / F135 Aircraft Engine Component Improvement Program

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
- Funds may be used to address emerging and short-notice Diminishing Manufacturing Sources and Material Shortages (DMSMS) issues. FY 2023 Base Plans: - Execute approximately 80+ AF-funded F135 engine tasks supporting F-35 flying operations. - Conduct accelerated mission test and analytical condition inspection. - Address safety of flight, engine component redesign, repair/rework procedures and life limit/mission analysis. - Validate redesigned parts and new repair procedures. - Maintain/improve engine flight safety, improve system operational readiness and reliability & maintainability, reduce engine life cycle cost, and sustain engine throughout service life. - Funds may be used to address emerging and short-notice Diminishing Manufacturing Sources and Material Shortages (DMSMS) issues. FY 2022 to FY 2023 Increase/Decrease Statement: decrease due to reduced engineering tasks					
Accomplishments/Planned Programs Subtotals	27.562	39.961	29.549	-	29.549

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks
Program Element 0205633N provides US Navy funding support for the F135 propulsion system.

D. Acquisition Strategy
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 2023 Air Force **Date:** April 2022

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207268F / Aircraft Engine Component Improvement Program	Project (Number/Name) 675365 / F135 Aircraft Engine Component Improvement Program
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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	-	22.943	Jan 2021	33.264	Jan 2022	24.764	Jan 2023	-		24.764	Continuing	Continuing	-
Subtotal			-	22.943		33.264		24.764		-		24.764	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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	-	4.299	Dec 2020	6.233	Dec 2021	4.453	Dec 2022	-		4.453	Continuing	Continuing	-
Subtotal			-	4.299		6.233		4.453		-		4.453	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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	-	0.320	Oct 2020	0.464	Oct 2021	0.332	Oct 2022	-		0.332	Continuing	Continuing	-
Subtotal			-	0.320		0.464		0.332		-		0.332	Continuing	Continuing	N/A

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

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals		-	27.562	39.961	29.549	-		29.549	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207268F / Aircraft Engine Component Improvement Program	Project (Number/Name) 675365 / F135 Aircraft Engine Component Improvement Program

FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
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

CIP JSF Activities	
F-135 Engine CIP Tasks	
F-135 Engine CIP Tasks FY27	

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207268F / Aircraft Engine Component Improvement Program	Project (Number/Name) 675365 / F135 Aircraft Engine Component Improvement Program

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
CIP JSF Activities				
F-135 Engine CIP Tasks	1	2021	1	2024
F-135 Engine CIP Tasks FY27	1	2027	4	2027

Note

Schedule not showing 2QFY24-4QFY26 as funding is currently insufficient in FY24-FY26 to complete tasks.