Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force											Date: February 2018	
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 0207268F / *Aircraft Engine Component Improvement Program*							
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
Total Program Element	-	106.049	109.243	121.203	0.000	121.203	112.505	114.617	116.996	119.126	Continuing	Continuing
671012: *Aircraft Engine Component Improvement Program*	-	75.523	76.969	88.646	0.000	88.646	79.342	80.879	82.558	84.061	Continuing	Continuing
675365: *F135 Aircraft Engine Component Improvement Program*	-	30.526	32.274	32.557	0.000	32.557	33.163	33.738	34.438	35.065	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.

Changes in aircraft operational parameters caused by changing missions and tasks accelerate new engine problems; Engine CIP provides the means to develop fixes for these 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 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 CIP weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force					Date: February 2018
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*			**R-1 Program Element (Number/Name)** PE 0207268F / *Aircraft Engine Component Improvement Program*		
B. Program Change Summary ($ in Millions)	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**
Previous President's Budget	109.859	109.243	111.116	0.000	111.116
Current President's Budget	106.049	109.243	121.203	0.000	121.203
Total Adjustments	-3.810	0.000	10.087	0.000	10.087
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	-3.810	0.000	10.087	0.000	10.087

Change Summary Explanation

FY17 reduction of $3.810M for Small Business Innovative Research (SBIR)

FY19 includes $11M increase for Engine CIP priorities along with inflation adjustments

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force			Date: February 2018
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
671012: *Aircraft Engine Component Improvement Program*	-	75.523	76.969	88.646	0.000	88.646	79.342	80.879	82.558	84.061	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.

Changes in aircraft operational parameters caused by changing missions and tasks accelerate new engine problems; Engine CIP provides the means to develop fixes for these 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 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 CIP weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

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 2017	FY 2018	FY 2019
Title: F100 Aircraft Engine Component Improvement Program	7.006	6.480	7.463
Description: The F100-220 and F100-229 Engine CIP provides critical developmental engineering support for approximately 4085 engines (including foreign military sales [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. Funds may be used to address emerging and short-notice Diminishing Manufacturing Sources and Material Shortages (DMSMS) issues.			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
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 2017	FY 2018	FY 2019
FY 2018 Plans: F100-220 and F100-229: - Will execute 30+ 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 Diminishing Manufacturing Sources and Material Shortages (DMSMS) issues. ***FY 2019 Plans:*** F100-220 and F100-229: - Will execute 30+ 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 Diminishing Manufacturing Sources and Material Shortages (DMSMS) issues. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Budget increased due to inflationary changes.			
Title: F110 Aircraft Engine Component Improvement Program ***Description:*** The F101, F110-100, F110-129, F118-100, and F118-101 Engine CIP provides critical developmental engineering support for approximately 2732 engines (including foreign military sales [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. Funds may be used to address emerging and short-notice Diminishing Manufacturing Sources and Material Shortages (DMSMS) issues. ***FY 2018 Plans:*** F101, F110-100, F110-129, F118-100, and F118-101: - Will execute 35+ tasks. The budget will 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.	17.403	15.657	18.032

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
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 2017	FY 2018	FY 2019
- 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. ***FY 2019 Plans:*** F101, F110-100, F110-129, F118-100, and F118-101: - Will execute 35+ tasks. The budget will 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 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. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Budget increased due to inflationary changes.			
Title: F119 Aircraft Engine Component Improvement Program ***Description:*** The F119 Engine CIP provides critical developmental engineering support for approximately 475 engines 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. Funds may be used to address emerging and short-notice Diminishing Manufacturing Sources and Material Shortages (DMSMS) issues. ***FY 2018 Plans:*** F119: - Will execute 25+ 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. ***FY 2019 Plans:***	31.117	29.068	33.478

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
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 2017	FY 2018	FY 2019
F119: - Will execute 25+ 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. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Budget increased due to inflationary changes.			
Title: Other Aircraft Engine Component Improvement Program ***Description:*** The Other Engines (e.g., T56, T700, T400, J85, F107, APUs) CIP provides critical developmental engineering support for approximately 13000 engines (including foreign military sales [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. Funds may be used to address emerging and short-notice Diminishing Manufacturing Sources and Material Shortages (DMSMS) issues. ***FY 2018 Plans:*** Other Engines (e.g., T56, T700, T400, J85, APUs, F107): - Will execute 15+ tasks. The budget will address engine issues associated with the C-130, T38, UH-1N, UH/MH-60/60G aircraft, and aircraft APUs. - 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. ***FY 2019 Plans:*** Other Engines (e.g., T56, T700, T400, J85, APUs, F107, TF-34, TF-33): - Will execute 15+ tasks. The budget will address engine issues associated with the C-130, T38, UH-1N, UH/MH-60/60G, A-10, B-52 aircraft, cruise missiles and aircraft APUs. - Address engine component redesign, repair/rework procedures, engine maturation and life limit/mission analysis.	19.997	25.764	29.673

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
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 2017	FY 2018	FY 2019
- 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. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Budget increased due to inflationary changes.			
Accomplishments/Planned Programs Subtotals	75.523	76.969	88.646

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• RDTE 07 0205633N: *Aviation Improvements*	1.274	1.301	1.326	-	1.326	-	-	-	-	Continuing	Continuing
• RDTE 07 0203752A: *Army Aircraft Engine CIP*	0.118	0.120	0.123	-	0.123	-	-	-	-	Continuing	Continuing

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 3 Original Equipment Manufacturers (OEMs), and DoD agencies with a 5-year ordering period and 7-year delivery period. Supports multiple tasks to accomplish CIP for more than 23 engine models.

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.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force		Date: February 2018
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*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total 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	-	17.403	Dec 2016	15.657	Dec 2017	18.032	Dec 2018	-		18.032	Continuing	Continuing	-
Aircraft Engine CIP: Develop aircraft engine improvements-F100/F119/ TF33	SS/CPFF	Pratt & Whitney : Hartford, CT	-	40.288	Dec 2016	40.548	Dec 2017	46.700	Dec 2018	-		46.700	Continuing	Continuing	-
Aircraft Engine CIP: Develop aircraft engine improvements-TF34/J85/ T700	SS/CPFF	GE : Lynn, MA	-	3.824	Dec 2016	5.381	Dec 2017	6.198	Dec 2018	-		6.198	Continuing	Continuing	-
Aircraft Engine CIP: Develop aircraft engine improvements-T56	SS/CPFF	Rolls Royce : Indianapolis, IN	-	1.063	Dec 2016	1.783	Dec 2017	2.053	Dec 2018	-		2.053	Continuing	Continuing	-
Aircraft Engine CIP: Develop aircraft auxiliary power unit improvements	SS/CPFF	Honeywell : Phoenix, AZ	-	4.806	Dec 2016	3.984	Dec 2017	4.588	Dec 2018	-		4.588	Continuing	Continuing	-
Aircraft Engine CIP: Develop engine improvements-F107	SS/CPFF	Teledyne : Toledo, OH	-	1.909	Dec 2016	5.038	Dec 2017	5.802	Dec 2018	-		5.802	Continuing	Continuing	-
		Subtotal	-	69.293		72.391		83.373		-		83.373	Continuing	Continuing	N/A

Remarks

FY18 increases due to inflation adjustments.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Aircraft Engine CIP: Non-OEM CIP Tasks	Various	Various : Various	-	1.635	Oct 2016	0.135	Oct 2017	0.155	Oct 2018	-		0.155	Continuing	Continuing	-
		Subtotal	-	1.635		0.135		0.155		-		0.155	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force			Date: February 2018
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*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Non-OEM CIP Tasks refer to work in support of Engine CIP.
FY18 increases due to inflation adjustments.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Aircraft Engine CIP: Ground test and validate engine improvements	PO	AEDC : Arnold AFB, TN	-	1.860	Oct 2016	0.000	Oct 2017	-		-		-	Continuing	Continuing	-
		Subtotal	-	1.860		0.000		-		-		-	Continuing	Continuing	N/A

Remarks

Fuel costs for contractor-performed T&E are included in the applicable contract.
FY18 increases due to inflation adjustments.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Aircraft Engine CIP: PMA	Various	Various : Various	-	1.360	Oct 2016	1.927	Oct 2017	2.220	Oct 2018	-		2.220	Continuing	Continuing	-
Aircraft Engine CIP: In House Support/Misc	Various	Various : Various	-	1.375	Oct 2016	2.516	Oct 2017	2.898	Oct 2018	-		2.898	Continuing	Continuing	-
		Subtotal	-	2.735		4.443		5.118		-		5.118	Continuing	Continuing	N/A

Remarks

PMA Description: Program Management support, travel, and A&AS.
FY18 increases due to inflation adjustments.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force			Date: February 2018
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*	

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	75.523		76.969		88.646		-		88.646	Continuing	Continuing	N/A

Remarks

FY18 increases due to inflation adjustments.

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
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 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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																												

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
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

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
CIP Legacy Activities				
F-100 Engine CIP activities	1	2017	4	2023
F-110 Engine CIP Activities	1	2017	4	2023
F-119 Engine CIP Activities	1	2017	4	2023
Other Legacy Engine CIP Activities	1	2017	4	2023

Note

Traditional schedule does not lend itself to Engine CIP activities.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force			Date: February 2018
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*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675365: *F135 Aircraft Engine Component Improvement Program*	-	30.526	32.274	32.557	0.000	32.557	33.163	33.738	34.438	35.065	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The F135 Aircraft Engine Component Improvement Program (CIP) supports 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 CIP weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: F135 Aircraft Engine Improvement Program	30.526	32.274	32.557
Description: The Aircraft Engine Component Improvement Program (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 operational readiness (OR) and reliability & maintainability (R&M), reduce engine Life Cycle Cost (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.			
FY 2018 Plans: - Execute approximately 25+ AF-funded F135 engine tasks supporting initial flying operations. - Conduct accelerated mission test and analytical condition inspection.			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
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 2017	FY 2018	FY 2019
- 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 2019 Plans:*** - Execute approximately 25+ 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 2018 to FY 2019 Increase/Decrease Statement:*** Budget increased due to inflationary changes.			
Accomplishments/Planned Programs Subtotals	30.526	32.274	32.557

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• RDTE 07 0205633N: *Aviation Improvements*	10.050	-	-	-	-	-	-	-	-	Continuing	Continuing

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 engine manufacturer. F-135 Engine CIP tasks are generally assigned to the original engine manufacturer based on available funding and prioritization of candidates.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
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*

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.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force			Date: February 2018
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*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Aircraft Engine CIP: Develop F135 engine improvements	SS/CPFF	Pratt & Whitney : Hartford, CT	-	25.331	Jan 2017	26.973	Jan 2018	27.210	Jan 2019	-		27.210	Continuing	Continuing	-
		Subtotal	-	25.331		26.973		27.210		-		27.210	Continuing	Continuing	N/A

Remarks

FY18 Cost increase ($93K) due to adjustment for inflation

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Aircraft Engine CIP: Ground test and validate engine improvements	PO	AEDC : Arnold AFB, TN	-	5.000	Oct 2016	5.000	Oct 2017	5.044	Oct 2018	-		5.044	Continuing	Continuing	-
		Subtotal	-	5.000		5.000		5.044		-		5.044	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Aircraft Engine CIP: PMA	Various	Various : Various	-	0.195	Oct 2016	0.301	Oct 2017	0.303	Oct 2018	-		0.303	Continuing	Continuing	-
		Subtotal	-	0.195		0.301		0.303		-		0.303	Continuing	Continuing	N/A

Remarks

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

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	30.526		32.274		32.557		-		32.557	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
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 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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																												

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
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

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
CIP JSF Activities				
F-135 Engine CIP Tasks	1	2017	4	2023