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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army	Date: February 2018
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Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0203752A / Aircraft Engine Component Improvement Program
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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	-	0.249	0.145	0.146	-	0.146	0.144	0.000	0.000	0.000	0.000	0.684
106: A/C Compon Improv Prog	-	0.249	0.145	0.146	-	0.146	0.144	0.000	0.000	0.000	0.000	0.684

A. Mission Description and Budget Item Justification

Aircraft Engine Component Improvement Program (CIP) develops, tests, and qualifies improvements to aircraft engine components to correct service-revealed deficiencies, improve flight safety, enhance readiness and reduce operating and support (O&S) costs. In addition, CIP provides the test vehicles for the testing and qualification efforts required as a part of the Army's Critical Safety Item (CSI) program. Non-program specific Auxiliary Power Unit (APU) as well as Unmanned Aerial Vehicle (UAV) safety and readiness issues are also addressed under this Program Element.

B. Program Change Summary (\$ in Millions)	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	0.259	0.145	0.148	-	0.148
Current President's Budget	0.249	0.145	0.146	-	0.146
Total Adjustments	-0.010	0.000	-0.002	-	-0.002
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.010	-			
• Adjustments to Budget Years	-	-	-0.002	-	-0.002

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0203752A / Aircraft Engine Component Improvement Program				Project (Number/Name) 106 / A/C Compon Improv Prog			
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
106: A/C Compon Improv Prog	-	0.249	0.145	0.146	-	0.146	0.144	0.000	0.000	0.000	0.000	0.684
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
Aircraft Engine Component Improvement Program (CIP) develops, tests, and qualifies improvements to aircraft engine components to correct service-revealed deficiencies, improve flight safety, enhance readiness and reduce operating and support (O&S) costs. In addition, CIP provides the test vehicles for the testing and qualification efforts required as a part of the Army's Critical Safety Item (CSI) program. Non-program specific Auxiliary Power Unit (APU) as well as Unmanned Aerial Vehicle (UAV) safety and readiness issues are also addressed under this Program Element (PE).												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: T700 Engine									0.037	-	-	
Description: no funds after FY 17. T700 funding is used to address flight safety and readiness problems that arise in the field. This includes programs to improving durability and reliability while reducing cost of ownership.												
Title: UAV Engine									0.125	0.085	0.086	
Description: UAV Gray Eagle Engine Investigation at U.S. Army Research Laboratory (ARL) Vehicle Technology Directorate (VTD) at Aberdeen Proving Ground, MD. Provide research to support airworthiness, reliability and performance improvements of UAV engines. Investigate and research the technology challenges (i.e. engine performance, engine durability, engine life, and engine modifications) for reliable engine operation using JP-8 fuel and readily available MIL-spec lubricants.												
FY 2018 Plans:												
Continue to research improvements to address service related deficiencies to improve safety and reduce operating and support (O&S) Costs.												
FY 2019 Plans:												
Will continue to research improvements to address service related deficiencies to improve safety and reduce O&S Costs.												
FY 2018 to FY 2019 Increase/Decrease Statement:												
FY19 increase reflects inflation adjustment.												
Title: In-House Support									0.087	0.060	0.060	
Description: In-house support for the CIP engineers. Contracting support for CIP contracts.												
FY 2018 Plans:												

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
Continue to provide in-house engineering support for engine CIP programs.			
FY 2019 Plans: Will continue to provide in-house engineering support for engine CIP programs.			
Accomplishments/Planned Programs Subtotals		0.249	0.145
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy Improved designs will be implemented via Engineering Change Proposal (ECP) and follow-on procurement or modification to a production contract to introduce the improved hardware.			
E. Performance Metrics N/A			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
Appropriation/Budget Activity 2040 / 7						R-1 Program Element (Number/Name) PE 0203752A / Aircraft Engine Component Improvement Program						Project (Number/Name) 106 / A/C Compon Improv Prog			
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
In-house Engineering	Allot	US Army AMRDEC : Redstone Arsenal, AL	2.803	0.087	Oct 2016	0.060	Sep 2018	0.060	Oct 2018	-		0.060	Continuing	Continuing	Continuing
Subtotal			2.803	0.087		0.060		0.060		-		0.060	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
T700 Engine	SS/IDIQ	GE-Air : Lynn, MA	61.692	0.037	Jan 2017	-		-		-		-	Continuing	Continuing	Continuing
T55 Engine	SS/IDIQ	Honeywell : Phoenix, AZ	30.161	-		-		-		-		-	Continuing	Continuing	Continuing
T62 Auxiliary Power Unit (APU)	C/IDIQ	Redstone Technical Center Redstone Arsenal, AL : ATEC	0.050	-		-		-		-		-	Continuing	Continuing	Continuing
APU's	SS/IDIQ	Air Force : Kelly AFB, TX	13.647	-		-		-		-		-	Continuing	Continuing	Continuing
UAV Engine	Various	ARL-Vehicle Technology Directorate : TBD	0.808	0.125	Aug 2017	0.085	Sep 2018	0.086	Sep 2019	-		0.086	Continuing	Continuing	Continuing
APU's	SS/IDIQ	Air Force : Hill AFB, UT	2.319	-		-		-		-		-	Continuing	Continuing	Continuing
Subtotal			108.677	0.162		0.085		0.086		-		0.086	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
T-62T-2B Vibration Test	Various	Redstone Technical Text Center : Redstone Arsenal, AL	0.050	-		-		-		-		-	Continuing	Continuing	-

UNCLASSIFIED

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Appropriation/Budget Activity 2040 / 7						R-1 Program Element (Number/Name) PE 0203752A / Aircraft Engine Component Improvement Program						Project (Number/Name) 106 / A/C Compon Improv Prog		

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Subtotal			0.050	-		-		-		-		-	Continuing	Continuing	N/A

Remarks Not Applicable															
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	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	111.530	0.249		0.145		0.146		-		0.146	Continuing	Continuing	N/A

Remarks													
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PE 0203752A: Aircraft Engine Component Improvement Pr...
Army

R-1 Line #204

Project (Number/Name)	Start Date	End Date	Status	Manager	Budget (USD)	Actual Cost (USD)	Progress (%)	Risk Level	Notes
101/Alpha	2023-01-15	2023-03-31	Completed	J. Doe	120,000	118,500	100	Low	Exceeded budget by 1.5%
102/Beta	2023-02-01	2023-05-15	In Progress	A. Smith	250,000	180,000	72	Medium	Minor delays in procurement
103/Gamma	2023-03-10	2023-06-30	On Hold	M. Chen	80,000	0	0	High	Waiting for client approval
104/Delta	2023-04-01	2023-07-31	Planned	S. Kim	150,000	0	0	Medium	Initial planning phase
105/Epsilon	2023-05-01	2023-08-31	Not Started	L. Garcia	90,000	0	0	Low	Resource allocation pending
106/Zeta	2023-06-01	2023-09-30	On Hold	K. Lee	110,000	0	0	Medium	Scope creep concerns
107/Eta	2023-07-01	2023-10-31	Planned	H. Patel	130,000	0	0	Medium	Vendor selection in progress
108/Theta	2023-08-01	2023-11-30	Not Started	B. Singh	70,000	0	0	Low	Initial meeting scheduled
109/Iota	2023-09-01	2023-12-31	Planned	N. Wong	100,000	0	0	Medium	Contract review phase
110/Kappa	2023-10-01	2024-01-31	Not Started	D. Brown	140,000	0	0	Medium	Team formation underway

PE 0203752A / Aircraft Engine Component Improvement Program

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Population (millions)	10.5	10.7	10.9	11.1	11.3	11.5	11.7	11.9	12.1	12.3	12.5	12.7	12.9	13.1	13.3	13.5	13.7	13.9	14.1	14.3	14.5
GDP (trillion USD)	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.0	5.2
Urban population (millions)	4.5	4.8	5.1	5.4	5.7	6.0	6.3	6.6	6.9	7.2	7.5	7.8	8.1	8.4	8.7	9.0	9.3	9.6	9.9	10.2	10.5
Life expectancy (years)	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92
Renewable energy capacity (GW)	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5
CO2 emissions (Gt)	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5
Forest cover (% of land area)	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5
Renewable energy share (%)	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Urban population share (%)	43	45	47	49	51	53	55	57	59	61	63	65	67	69	71	73	75	77	79	81	83
Life expectancy (years)	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92
Renewable energy capacity (GW)	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5
CO2 emissions (Gt)	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5
Forest cover (% of land area)	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5
Renewable energy share (%)	15	16	17	18	19	20	21	22	23	24	25	26	27								

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

Events	Start		End	
	Quarter	Year	Quarter	Year
UAV Shadow Engine	2	2014	4	2017
T700 CSI Update	1	2017	4	2020

Note