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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 I BA 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 0207131F I A-10 Squadrons							
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	-	11.353	17.459	26.738	1.000	27.738	39.171	24.581	22.835	23.251	Continuing	Continuing
674809: A-10 Squadrons	-	11.353	17.459	26.738	1.000	27.738	39.171	24.581	22.835	23.251	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 7, PE 0207131F, project 674809, ARC-210 Gen 6, is a new start.
This program, BA 7, PE 0207131F, project 674809, J-Hook, is a new start.

A. Mission Description and Budget Item Justification

A-10 concept of operations requires a flexible, adaptable and survivable weapon system to conduct close air support (CAS), combat search and rescue (CSAR) and special operations missions. The A-10 must conduct around-the-clock air operations under various weather conditions against numerous and varied enemy threats.

Funds may be used to resolve emerging safety of flight and diminishing manufacturing sources issues (J-Hook), A-10 Thunderbolt Advanced-wing Continuation Kit (ATTACK), accommodate technology insertion (Additional Gigabit Ethernet capability, High Resolution Display System (HRDS), 3-D Audio, On-Board Oxygen Generation System (OBOGS), Parking Brake, and fulfill FAA and other mandates (IFF Mode-5, Automatic Dependent Surveillance Broadcast (ADS-B) Out, M-Code, NSA Crypto Modernization/ARC-210 radio/Mobile User Objective System (MUOS)) to ensure continued aircrew safety and mission effectiveness, Anti-Jam Embedded Global Positioning System within the provisions of 10 USC 2244A.

Operational Flight Program (OFP) development addresses evolving and continuing user requirements that must be incorporated in the aircraft software in order to employ advanced weapons (SMART Triple Ejector Rack (TER), Small Diameter Bomb (SDB)), increase situational awareness and enhance targeting capabilities as they become available. The funds budgeted continue regular OFP suite development efforts.

Additionally, these OFP/RDT&E funds provide for updates and incorporation of capabilities for weapons integration, targeting pod updates, and communication/navigation/data link improvements (e.g., M-Code, MUOS communication system, ADS-B, Embedded GPS/ INS, Gigabit Ethernet. HRDS,. 3-D Audio, ARC-210 radio Crypto Mod, Smart (TER), Small Diameter Bomb (SDB) capability and cyber security upgrades). These funds will ensure concurrency with systems impacted by OFP development, including but not limited to the Full Mission Trainer (FMT), mission planning and support equipment, as well as required upgrades to the Software Integration Laboratory (SIL). The

RDT&E funds provide A-10 Developmental and Operational Testing ensuring all added capability meets safety and airworthiness criteria. FMT's DMS efforts to include removal of end-of-life software/hardware within simulators systems and move to a modular, common open system architecture that is sustainable and cyber-resilient. Implement requirements and standards defined under the Simulator Common Architecture Requirements and Standards (SCARS) initiative.

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This program element may include necessary civilian pay expenses required to manage, execute, and deliver A-10 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. Program Change Summary (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	
Previous President's Budget		21.353	17.459	31.355	0.000	31.355	
Current President's Budget		11.353	17.459	26.738	1.000	27.738	
Total Adjustments		-10.000	0.000	-4.617	1.000	-3.617	
• Congressional General Reductions		0.000	0.000				
• Congressional Directed Reductions		-10.000	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		0.000	0.000	-4.617	1.000	-3.617	
Change Summary Explanation							
FY17 Congressional reduction of -\$10M for excess to need.							
FY19 reduction of \$4.416M due to under execution as well as inflation adjustments.							
C. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: OFP Development			11.353	13.459	13.700	-	13.700
Description: Updates to the A-10C OFP Suite software to permit timely integration of new precision weapons, updated targeting pods, improved avionics and enhanced electronic warfare capabilities. These upgraded capabilities are in response to evolving operational requirements, including Urgent Operational Needs, generated by the ever-changing operational environment of air combat.							
This OFP effort also contains Program Management Administration (PMA) support activities to include travel, office supplies, training courses, Video Teleconferencing (VTC) and support contractors.							

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
FY 2018 Plans: Continues Suite 9 development and funds Suite 10 candidate development by completing the software design, development and integration.						
FY 2019 Base Plans: N/A						
FY 2018 to FY 2019 Increase/Decrease Statement: Finish Suite 9 continue developing Suite 10. Begin the start of Suite 11.						
Title: ARC-210 Gen 6 Description: The ARC-210 Gen 6 will provide the A-10 with numerous needed capabilities. The first of which is NSA crypto mandate compliant secure communications. The second is the Air Force mandate of all aircraft having Mobile User Objective System (MUOS) capability. The SATURN algorithm is also required for continued A-10 Combat Search and Rescue (CSAR) as well as Close Air Support with theater forces. The older Generation 4 radio does not currently have any of these capabilities.		-	0.000	9.083	-	9.083
FY 2018 Plans: No funding						
FY 2019 Base Plans: Funding will be used for Non-recurring engineering (NRE) for System Integration Laboratory (SIL) Integration and Testing. This will ensure all required equipment and optimal configurations will be tested for fit and function within the A-10 aircraft. In addition, configurations will be flight tested to ensure capabilities are airworthy as well as functional.						
FY 2018 to FY 2019 Increase/Decrease Statement: NSA Crypto Mandate needs to be met. Since the A-10 Retirement has been rescinded, Air Force has approved funding in FY19 vs not funding in FY18.						
Title: ADS-B Out Description: This effort initiates Operational and Developmental Testing for AUTOMATIC DEPENDENT SURVEILLANCE - BROADCAST (ADS-B) Out. ADS-B Out is an FAA mandate to meet future air traffic demands and improve air traffic safety. This requirement was identified and approval for the A-10 by means of an AF Form 1067 dated 15 September 2006.		0.000	4.000	3.955	-	3.955

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
FY 2018 Plans: This effort initiates Operational and Developmental Testing for AUTOMATIC DEPENDENT SURVEILLANCE - BROADCAST (ADS-B) Out.						
FY 2019 Base Plans: This effort continues Operational and Developmental Testing for AUTOMATIC DEPENDENT SURVELLANCE-BROADCAST (ADS-B) out.						
FY 2018 to FY 2019 Increase/Decrease Statement: This effort continues Operational and Developmental Testing for AUTOMATIC DEPENDENT SURVELLANCE-BROADCAST (ADS-B) out.						
Title: J-Hook Description: Deployed A-10 units are reporting increased breakage/failure on weapons pylon retention snap hooks (J-Hooks) resulting in damage to the 1760 wiring harness at a rate of 4 to 6 times per week. Breaking J-Hooks/damaged 1760 cables were initially identified in 2009 during the PE Program. A-10 SPO East contracted Lockheed Martin Owego to develop a solution. The design was successfully put through DT at Eglin AFB. OT was subsequently conducted for 30 days, dropping >100 munitions with no defects noted. A-10 SPO has no documentation from OT. J-Hook T-2 Modification was shut down and the design shelved. This J-Hook modification design is now government property. FY 2018 Plans: N/A FY 2019 Base Plans: N/A FY 2019 OCO Plans: This effort will provide material solution (kits) based on current drawings/specs to improve the pylon retention snap hook system. FY 2018 to FY 2019 Increase/Decrease Statement:		-	0.000	0.000	1.000	1.000

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
New approved requirement to repair A-10 (J-Hooks) caused during deployment.					
Accomplishments/Planned Programs Subtotals	11.353	17.459	26.738	1.000	27.738

D. 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
• APAF 05 Line Item A01000: <i>A-10 Squadrons, PE 0207131F</i>	25.139	6.010	19.530	-	19.530	-	-	-	-	0.000	25.139

Remarks

E. Acquisition Strategy
A-10 OFP development efforts will be conducted organically by the 309th Software Maintenance Group (309 SMXG) at Ogden Air Logistics Complex, Hill AFB UT. The ADS-B, ARC-210 radio Crypto Mandate, SMART Triple Ejector Rack (TER) development for the Small Diameter Bomb (SDB) missionization efforts will be conducted by contractor and organically by the 309 SMXG. The A-10 FMT simulator OFP is managed by the Simulator Division at Wright-Patterson Air Force Base and is currently contractor-developed and integrated.

F. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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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 0207131F / A-10 Squadrons				Project (Number/Name) 674809 / A-10 Squadrons					
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
OFP Development 2nd Qtr FY16 (309th SMXG)	PO	309th SMXG : Hill AFB, UT	-	-		-		-		-		-	Continuing	Continuing	-
OFP Development (309th SMXG)	PO	309th SMXG : Hill AFB, UT	-	-		-		-		-		-	Continuing	Continuing	-
OFP Development 3rd Qtr FY16 (309 SMXG)	PO	309th SMXG : Hill AFB, UT	-	-		-		-		-		-	Continuing	Continuing	-
OFP Development 4th Qtr (309 SMXG)	PO	309th SMXG : Hill AFB, UT	-	-		-		-		-		-	Continuing	Continuing	-
OFP Development (309 SMXG) FY16	PO	309th SMXG : Hill AFB, UT	-	-		-		-		-		-	Continuing	Continuing	-
OFP Development (309 SMXG) FY16 BTR	PO	309th SMXG : Hill AFB, UT	-	-		-		-		-		-	Continuing	Continuing	-
OFP Development (309 SMXG) FY17	PO	309th SMXG : Hill AFB, UT	-	10.679	May 2017	-		-		-		-	Continuing	Continuing	-
OFP Development 1st Qtr FY18 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	-		1.180	Nov 2017	-		-		-	Continuing	Continuing	-
OFP Development 2nd Qtr FY18 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	-		1.800	Jan 2018	-		-		-	Continuing	Continuing	-
OFP Development 3rd Qtr FY18 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	-		4.800	Apr 2018	-		-		-	Continuing	Continuing	-
OFP Development 4th Qtr FY18 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	-		2.870	Jun 2018	-		-		-	Continuing	Continuing	-
OFP Development 1st Qtr FY19 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	-		-		2.610	Nov 2018	-		2.610	Continuing	Continuing	-
OFP Development 2nd Qtr FY19 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	-		-		2.610	Jan 2019	-		2.610	Continuing	Continuing	-
OFP Development 3rd Qtr FY19 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	-		-		2.610	Apr 2019	-		2.610	Continuing	Continuing	-
OFP Development 4th Qtr FY19 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	-		-		2.616	Jun 2019	-		2.616	Continuing	Continuing	-
Subtotal			-	10.679		10.650		10.446		-		10.446	Continuing	Continuing	N/A

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Support (\$ 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
USAF (Multiple)	Various	Various : Various	-	0.514	May 2017	4.799	Jan 2018	9.242	Jan 2019	-		9.242	Continuing	Continuing	-
Subtotal			-	0.514		4.799		9.242		-		9.242	Continuing	Continuing	N/A
Remarks															
FY16 \$0.125M - SIM SPO Full Mission Trainers (FMT) FY16 \$0.067M - SPO TDY FY17 \$0.351M - SIM SPO Full Mission Trainers (FMT) FY17 \$0.351M - PMA Tax FY17 \$0.020M - SPO TDY FY18 \$4.00M - ADS-B Out FY18 \$0.750M - SIM SPO Full Mission Trainers (FMT) FY18 \$0.049M - SPO TDY FY19 \$4.00M - ADS-B Out FY19 \$9.083M - ARC-210 Crypto Mandate FY19 \$0.750M - SIM SPO Full Mission Trainers (FMT) FY19 \$0.049M - SPO TDY															
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
USAF (OFF)	Various	Various : Various	-	0.000		1.850	Sep 2018	2.250	Sep 2019	1.000	Sep 2019	3.250	Continuing	Continuing	-
Subtotal			-	0.000		1.850		2.250		1.000		3.250	Continuing	Continuing	N/A
Remarks															
RDT&E Test and Evaluation will not begin until 1st Quarter FY18 due to FY17 cut/mark of \$10M.															
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
PMA	Various	Various : Various	-	0.160	Aug 2017	0.160	Aug 2018	4.800	Aug 2019	-		4.800	Continuing	Continuing	-
Subtotal			-	0.160		0.160		4.800		-		4.800	Continuing	Continuing	N/A

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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	-	11.353		17.459		26.738		1.000		27.738	Continuing	Continuing	N/A
Remarks													

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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 0207131F / A-10 Squadrons								Project (Number/Name) 674809 / A-10 Squadrons			

	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
OFP																												
Suite 9 - OFP System Design, Development and Flight Test																												
Suite 9 - OFP Fields																												
Suite 10 - OFP System Design, Development and Flight Test																												
Suite 10 - OFP Fields																												
ADSB-out																												
ARC - 210 Crypto Mandate																												

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

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>OFP</i>				
Suite 9 - OFP System Design, Development and Flight Test	2	2017	1	2019
Suite 9 - OFP Fields	1	2019	1	2019
Suite 10 - OFP System Design, Development and Flight Test	2	2018	4	2020
Suite 10 - OFP Fields	4	2020	4	2020
ADSB-out	2	2018	4	2020
ARC - 210 Crypto Mandate	2	2019	4	2020

Note

Suite 10 was subjected to a FY17 mark for \$10M. The program was reinstated upon receiving supplemental funding. As a result of the mark and late-to-need funding, 13 candidates were also lost from Suite 9.