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Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Air Force **Date:** February 2020

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 0207131F / A-10 Squadrons
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COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
Total Program Element	-	27.537	31.916	24.535	0.000	24.535	104.389	101.333	23.624	39.036	Continuing	Continuing
674809: <i>A-10 Squadrons</i>	-	27.537	31.916	24.535	0.000	24.535	104.389	101.333	23.624	39.036	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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, accommodate technology insertion and fulfill Federal Aviation Administration or other mandates necessary to ensure continued aircrew safety and mission effectiveness.

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), increase situational awareness and enhance targeting capabilities as they become available. The funds budgeted continue regular OFP suite development efforts.

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.

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 0605831F.

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.

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B. Program Change Summary (\$ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	27.738	36.816	24.581	0.000	24.581
Current President's Budget	27.537	31.916	24.535	0.000	24.535
Total Adjustments	-0.201	-4.900	-0.046	0.000	-0.046
• Congressional General Reductions	0.000	-4.900			
• 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	-0.201	0.000	-0.046	0.000	-0.046
Change Summary Explanation					
FY20- (\$4.9M) Congressional mark for forward finance					
C. Accomplishments/Planned Programs (\$ in Millions)	FY 2019	FY 2020	FY 2021		
Title: SDB-I	-	7.000	5.000		
Description: Funds will be used to purchase support equipment for the use of the Small Diameter Bomb-1 on the A-10 platform. The A-10 Small Diameter Bomb (SDB) 1 program is expected to field with the Suite 11 Operational Flight Program (OFP). In addition to software integration, there is support equipment for maintenance that will need to be purchased. The bomb lift adaptor will be required for loading the weapon on to the aircraft stations. The Combat Munitions BIT Reprogramming Equipment (CMBRE) tester will be required for maintenance back shops. These testers are required for the BRU-61 software checks. Lastly, BRU-61 trainers will be required for qualification training on the maintenance side.					
FY 2020 Plans: Software and integration of the SDB					
FY 2021 Plans: Continue integration efforts to complete integration with OFP Software					
FY 2020 to FY 2021 Increase/Decrease Statement: Integration of the SDB with OFP software					
Title: OFP Development	13.700	13.800	13.800		

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2019	FY 2020	FY 2021
<p>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.</p> <p>This OFP effort also contains Program Management Administration (PMA) support activities to include travel, office supplies, training courses, Video Teleconferencing (VTC) and support contractors.</p> <p>FY 2020 Plans: Continue Suite 10 Software development and integration</p> <p>FY 2021 Plans: Continue Suite 10 Software development and integration for fielding, Start of Suite 11 Software development and integration.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: No change</p>				
<p>Title: ARC-210 Gen 6</p> <p>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.</p> <p>FY 2020 Plans: Continue 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.</p> <p>FY 2021 Plans: Continue Non-recurring engineering (NRE) for System Integration Laboratory (SIL) Integration and Testing.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: No significant change</p>		4.200	6.116	5.000
<p>Title: A-10 Small Projects</p>		8.637	5.000	0.735

UNCLASSIFIED

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2019	FY 2020	FY 2021
<p>Description: RDT&E funds provide updates and incorporation of capabilities for weapons integration, targeting pod updates, and communication/navigation/data link improvements. 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).</p> <p>FY 2020 Plans: Funding will be used for integration of SDB onto A-10 platform; to include power study, test, labor, materials, etc.</p> <p>FY 2021 Plans: Funding will be used for integration of SDB onto A-10 platform; to include power study, test, labor, materials, etc.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: Reducing efforts.</p>				
<p>Title: J-Hook</p> <p>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.</p> <p>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.</p> <p>FY 2020 Plans: N/A</p> <p>FY 2021 Plans: N/A</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: N/A</p>		1.000	0.000	0.000
Accomplishments/Planned Programs Subtotals		27.537	31.916	24.535

UNCLASSIFIED

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D. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u> <u>Base</u>	<u>FY 2021</u> <u>OCO</u>	<u>FY 2021</u> <u>Total</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APAF 05 Line Item A01000: <i>A-10 Squadrons, PE 0207131F</i>	168.060	132.069	135.980	-	135.980	128.947	135.002	86.231	-	0.000	786.289

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Air Force **Date:** February 2020

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207131F / A-10 Squadrons	Project (Number/Name) 674809 / A-10 Squadrons
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Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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			
Product Development	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-
OFP Development 1st Qtr FY18 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	-		-		-		-		-	Continuing	Continuing	-
OFP Development 2nd Qtr FY18 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	-		-		-		-		-	Continuing	Continuing	-
OFP Development 3rd Qtr FY18 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	-		-		-		-		-	Continuing	Continuing	-
OFP Development 4th Qtr FY18 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	-		-		-		-		-	Continuing	Continuing	-
OFP Development 1st Qtr FY19 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	2.610	Nov 2018	-		-		-		-	Continuing	Continuing	-
OFP Development 2nd Qtr FY19 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	2.610	Jan 2019	-		-		-		-	Continuing	Continuing	-
OFP Development 3rd Qtr FY19 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	2.610	Apr 2019	-		-		-		-	Continuing	Continuing	-
OFP Development 4th Qtr FY19 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	2.616	Jun 2019	-		-		-		-	Continuing	Continuing	-
OFP Development 1st Qtr FY20 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	-		2.610	Nov 2019	-		-		-	Continuing	Continuing	-
OFP Development 2nd Qtr FY20 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	-		2.610	Jan 2020	-		-		-	Continuing	Continuing	-
OFP Development 3rd Qtr FY20 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	-		2.610	Apr 2020	-		-		-	Continuing	Continuing	-
OFP Development 4th Qtr FY20 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	-		2.610	Jun 2020	-		-		-	Continuing	Continuing	-
OFP Development 1st Qtr FY21 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	-		-		2.610	Nov 2020	-		2.610	Continuing	Continuing	-
OFP Development 2nd Qtr FY21 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	-		-		2.610	Jan 2021	-		2.610	Continuing	Continuing	-
OFP Development 3rd Qtr FY21 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	-		-		2.610	Apr 2021	-		2.610	Continuing	Continuing	-
OFP Development 4th Qtr FY21 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	-		-		2.610	Jun 2021	-		2.610	Continuing	Continuing	-

UNCLASSIFIED

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Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 7				PE 0207131F / A-10 Squadrons				674809 / A-10 Squadrons								
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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			-	10.446		10.440		10.440		-		10.440	Continuing	Continuing	N/A	
Support (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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	
Support	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-	
USAF (Multiple)	Various	Various : Various	-	9.242	Jan 2019	13.426		6.082		-		6.082	Continuing	Continuing	-	
Subtotal			-	9.242		13.426		6.082		-		6.082	Continuing	Continuing	N/A	
Test and Evaluation (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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	
Test and Evaluation	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-	
USAF (OFF)	Various	Various : Various	-	3.049	Sep 2019	3.250	Sep 2019	3.213	Oct 2020	-		3.213	Continuing	Continuing	-	
Subtotal			-	3.049		3.250		3.213		-		3.213	Continuing	Continuing	N/A	
Management Services (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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	
Management Services	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-	
PMA	Various	Various : Various	-	4.800	Aug 2019	4.800		4.800		-		4.800	Continuing	Continuing	-	
Subtotal			-	4.800		4.800		4.800		-		4.800	Continuing	Continuing	N/A	
Project Cost Totals			Prior Years	27.537		31.916		24.535		-		24.535	Continuing	Continuing	N/A	

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Air Force	Date: February 2020
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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207131F / A-10 Squadrons	Project (Number/Name) 674809 / A-10 Squadrons
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	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
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<u>Remarks</u>									
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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Air Force **Date:** February 2020

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207131F / A-10 Squadrons	Project (Number/Name) 674809 / A-10 Squadrons
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	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
	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
OFF																												
Suite 10 - OFP Fields																												
ARC - 210 Crypto Mandate																												
Suite 11 - OFP System Design, Development and Flight Test																												
Suite 11 - OFP Fields																												
Suite 12 - OFP System Design, Development and Flight Test																												
Suite 12 - OFP Fields																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Air Force **Date:** February 2020

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207131F / A-10 Squadrons	Project (Number/Name) 674809 / A-10 Squadrons
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>OFP</i>				
Suite 10 - OFP Fields	4	2021	4	2021
ARC - 210 Crypto Mandate	2	2019	4	2020
Suite 11 - OFP System Design, Development and Flight Test	2	2021	2	2022
Suite 11 - OFP Fields	2	2021	2	2023
Suite 12 - OFP System Design, Development and Flight Test	2	2022	3	2023
Suite 12 - OFP Fields	3	2023	3	2024