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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force **Date:** March 2023

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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	33.434	64.593	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	98.027
674809: <i>A-10 Squadrons</i>	-	33.434	64.593	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	98.027
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 as well as supporting integration of advanced weapons, targeting pods, and mission planning capabilities.

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 munitions, targeting systems, increase situational awareness and enhance targeting capabilities as they become available. These computer processing and avionics upgrades are critical to building a modernized architecture that promotes current open, agile, and digital concepts to enable future technological growth of the A-10's capabilities.

In addition the A-10 program will upgrade the current Central Interface Control Unit (CICU) with a modern central processor (software and hardware). The new processor is referred to as the Central Interface Control System (CICS). The current CICU is unable to incorporate Open Mission System/Universal Command and Control Interface (OMS/UCI) and Universal Armament Interface (UAI) architecture standards mandates. This redesigned central processor is cornerstone to other modernization efforts currently underway that will improve communications, situational awareness, data management, weapons management and targeting, and sensor management.

This program element includes funding to manage, execute, and deliver enhanced A-10 capabilities, and may include funding to support emerging modifications and other government support costs.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon 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. In FY22 0.000M was expended for civilian pay expenses in this program element, and in FY23 0.000M is forecasted 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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	34.224	72.393	70.027	0.000	70.027
Current President's Budget	33.434	64.593	0.000	0.000	0.000
Total Adjustments	-0.790	-7.800	-70.027	0.000	-70.027
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	-7.800			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.790	0.000			
• Other Adjustments	0.000	0.000	-70.027	0.000	-70.027

Change Summary Explanation

FY23 reduction of -\$7.8M for Congressional mark for CICS award delays

FY24 funding not supported

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Title: SDB-I	0.000	0.000	0.000
Description: The A-10C Small Diameter Bomb Increment I (SDB-I) program is an Air Combat Command (ACC) requirement originating from the Combat Air Force (CAF) Operational Requirements Document (ORD) 304-97-C-A for Miniature Munitions and Carriage System. SDB-I integration is an integral part of keeping A-10C a flexible, adaptable and survivable weapon system. The SDB-I program requires software and hardware integration of the Bomb Rack Unit - 61 (BRU-61) and the SDB-I itself. Integration of the SDB-I program includes software updates to A-10C's Operational Flight Program (OFP), Air Force SEEK EAGLE (AFSEO) testing, developmental testing (DT), operational testing (OT) and the purchasing of Common System Integration Lab (SIL) Test Equipment (CSTE) and others as determined by A-10 SPO Engineering. The SDB-I program is expected to field with the A-10C Operational Flight Program (OFP) iteration to be fielded in March 2023.			
FY 2023 Plans: N/A			
FY 2024 Plans:			

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
N/A				
<p>Title: Operational Flight Program (OFP) Development</p> <p>Description: The OFP effort includes but is not limited to the Software Capability Upgrade (SCU) program to enable the design and coding of software via an agile incremental cadence of 1-2 years and address efforts required to maintain current code, integrate new precision weapons, advanced targeting pods, and improved avionics to meet DoD mandates in order to modernize the A-10's architecture.</p> <p>OFP Upgrades permit timely integration of new precision weapons, advanced pods which include but is not limited to the Litening and Sniper 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>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 Operational Flight Program (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>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 2023 Plans: Includes but is not limited to the continuation of agile software releases.</p> <p>FY 2024 Plans: N/A</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: OFP Development not supported in FY24</p>		12.723	22.500	0.000
<p>Title: ARC-210 Gen 6</p> <p>Description: The ARC-210 Gen 6 and Mobile User Objective System (MUOS) Capable High Power Amplifier/Low Noise Amplifier (HPA/LNA) is an upgraded capability to the existing generation 4 radio which 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 MUOS capability. The Second Generation Anti-Jam Tactical Ultra-High Frequency Radio (SATURN)</p>		0.624	0.785	0.000

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>algorithm is also required for continued A-10 Combat Search and Rescue (CSAR) as well as Close Air Support with theater forces. The ARC-210 Gen 6 is an upgraded capability to the existing Generation 4 radio which does not currently have any of these capabilities.</p> <p>FY 2023 Plans: Includes but is not limited to the continuation of non-recurring engineering (NRE) for contractor integration design and System Integration Laboratory (SIL) Integration and Testing completing integration efforts for Increment 3. Increment 3 will provide the MUOS and SATCOM waveforms so the software radio can communicate on the ultra-high frequency, narrowband satellite system known as MUOS. Additionally, installing HPA/LNA to allow for greater amplification. 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. Technical order updates will also be accomplished.</p> <p>FY 2024 Plans: N/A</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: ARC-210 Gen 6 not supported in FY24</p>				
<p>Title: Central Interface Control System (CICS)</p> <p>Description: A-10 Central Interface Control System (CICS) replaces the aging Central Interface Control Unit (CICU) that suffers from high failure rates, Diminishing Manufacturing Sources and Materiel Supply (DMSMS) issues, and insufficient data processing capacity. The RDT&E effort encompasses software and hardware development, Software Integration Laboratory (SIL) test stand, support equipment, software and cyber security testing.</p> <p>The CICS modernization will require a new release of the Operation Flight Program (OFP) software to support the new CICS configuration.</p> <p>The hardware will need to be updated to meet the environmental requirements of the A-10, manage numerous upgrades to the A-10 which include, but are not limited to: 3D Audio, HRDS, JRG, 2GES, HOBIT, Link 16, SDB 1 and 2, FliteScene, LITENING Digital Pod, MUOS, SATURN and ARC-210 Gen VI. The CICS will utilize modern single board computers that have increased computing capacity, operate in high temperature environments and are available to support timely repair and replacement. The CICS hardware will provide ample processing power to meet the current and future needs of the weapons platform for planned and future growth. Additionally, it will convert selected analog systems outputs on the aircraft to digital and meet USAF mandated upgrades.</p>		20.087	41.308	0.000

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>Testing will be a major component of the RDT&E. Testing includes vendor testing, the A-10 SILs, Cyber Security, and use of A-10 Developmental and Operational Testing ensuring the system meets safety and airworthiness criteria. The OFP and CICS hardware implementation will require operational testing and certification to include weapons release and stores management.</p> <p>Finally, RDT&E funds will be used to design a sustainable, repairable and supportable system for the A-10. RDT&E funds will develop new test scripts for existing maintenance and repair testers. By designing a modular system that can be easily fault checked, replaceable and upgradeable, the CICS will be a system that can support the weapon system for the mid-term increasing the reliability and availability of the aircraft.</p> <p>FY 2023 Plans: Includes but is not limited to the continuing development of 10 prototypes and software development</p> <p>FY 2024 Plans: N/A</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: CICS not supported in FY24</p>			
Accomplishments/Planned Programs Subtotals	33.434	64.593	0.000

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	FY 2022	FY 2023	FY 2024 <u>Base</u>	FY 2024 <u>OCO</u>	FY 2024 <u>Total</u>	FY 2025	FY 2026	FY 2027	FY 2028	<u>Cost To Complete</u>	<u>Total Cost</u>
• APAF 05 Line Item A01000: <i>A-10 Squadrons, PE 0207131F</i>	83.621	83.972	0.000	-	0.000	0.000	0.000	-	-	0.000	167.593

Remarks

E. Acquisition Strategy
A-10 OFP development efforts will be conducted organically by the 309th Software Engineering Group (309th SWEG) at Ogden Air Logistics Complex, Hill AFB UT. The ARC-210 radio Crypto Mandate, Smart munitions and targeting systems for the Small Diameter Bomb (SDB) missionization efforts will be conducted by the contractor and organically by the 309th SWEG. 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. The A-10 CICS software is developed in collaboration with the 309th SWEG. Phase 1 is the design development of CICS and Phase 2 is the prototyping an integration.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force **Date:** March 2023

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 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
OFP Development 1st Qtr FY22 (309 SWEG)	PO	309 SWEG : Hill AFB, UT	-	6.100	Oct 2021	-		-		-		-	0.000	6.100	-
OFP Development 2nd Qtr FY22 (309 SWEG)	PO	309 SWEG : Hill AFB, UT	-	1.116	Jan 2022	-		-		-		-	0.000	1.116	-
OFP Development 3rd Qtr FY22 (309 SWEG)	PO	309 SWEG : Hill AFB, UT	-	1.116	Apr 2022	-		-		-		-	0.000	1.116	-
OFP Development 4th Qtr FY22 (309 SWEG)	PO	309 SWEG : Hill AFB, UT	-	-		-		-		-		-	0.000	0.000	-
OFP Development 1st Qtr FY23 (309 SWEG)	PO	309 SWEG : Hill AFB, UT	-	-		2.875	Oct 2022	-		-		-	0.000	2.875	-
OFP Development 2nd Qtr FY23 (309 SWEG)	PO	309 SWEG : Hill AFB, UT	-	-		2.875	Jan 2023	-		-		-	0.000	2.875	-
OFP Development 3rd Qtr FY23 (309 SWEG)	PO	309 SWEG : Hill AFB, UT	-	-		-		-		-		-	0.000	0.000	-
OFP Development 4th Qtr FY23 (309 SWEG)	PO	309 SWEG : Hill AFB, UT	-	-		5.165	Jul 2023	-		-		-	0.000	5.165	-
CICS Development Contract	C/FFP	Raytheon : McKinney, TX	-	18.855	Mar 2022	31.309	Jan 2023	-		-		-	0.000	50.164	-
CICS Prototype Development contract	C/FFP	Raytheon : McKinney, TX	-	-		0.000	Aug 2023	-		-		-	0.000	0.000	-
Subtotal			-	27.187		42.224		-		-		-	0.000	69.411	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
USAF (Multiple)	Various	Various : Various	-	1.000	Jul 2022	1.037		-		-		-	0.000	2.037	-
USAF (JEON)	Various	Various : Various	-	1.232	Nov 2022	-		-		-		-	0.000	1.232	-
CICS: BTR to F-15	Various	Various : Various	-	-		9.999	Feb 2023	-		-		-	0.000	9.999	-
OFP11: SBIR	Various	Various : Various	-	-		1.797	Feb 2023	-		-		-	0.000	1.797	-
Subtotal			-	2.232		12.833		-		-		-	0.000	15.065	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force		Date: March 2023
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FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
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	
ARC - 210 Crypto Mandate	
OFP 11 FTRR FY2021 Qtr 4	
OFP 11 Fields FY2023 Qtr 2	
CICS	
CICS Design Development	
CICS PDR	

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force **Date:** March 2023

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
OFP				
ARC - 210 Crypto Mandate	1	2022	4	2023
OFP 11 FTRR FY2021 Qtr 4	1	2022	3	2022
OFP 11 Fields FY2023 Qtr 2	2	2023	2	2023
CICS				
CICS Design Development	3	2022	2	2023
CICS PDR	2	2023	2	2023