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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Air Force **Date:** May 2021

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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	25.533	24.490	39.224	0.000	39.224	-	-	-	-	-	-
674809: <i>A-10 Squadrons</i>	-	25.533	24.490	39.224	0.000	39.224	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Note

This program, BA 7, PE 0207131F, project 674809, Central Interface Control System (CICS), 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, 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. 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 well into the 2030s.

The RDT&E funds provide A-10 Developmental and Operational Testing ensuring all added capability meets safety and airworthiness criteria. Full Mission Trainers (FMT's) Data Management Switch (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. RDT&E funds also provide for the implementation of requirements and standards defined under the Simulator Common Architecture Requirements and Standards (SCARS) initiative.

The FY2022 funding request was reduced by \$8.243 million to account for the availability of prior year execution balances.

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. In FY19 \$0.0M and in FY20 \$0.0M was expended for civilian pay expenses in this program element.

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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	31.916	24.535	104.389	0.000	104.389
Current President's Budget	25.533	24.490	39.224	0.000	39.224
Total Adjustments	-6.383	-0.045	-65.165	0.000	-65.165
• 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	-6.383	-0.045			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-65.165	0.000	-65.165

Change Summary Explanation

FY20 adjustment -\$3.499M BTR to F-22, -\$2.844M civ pay; FY21 no significant changes; FY22 adjustment for A-10 re-phase

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
Title: SDB-I	3.800	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 A-10C Operational Flight Program (OFP) 12/13.			
FY 2021 Plans: Continue integration efforts to complete integration with OFP Software			
FY 2022 Plans: Continue integration efforts to complete integration with OFP software			
FY 2021 to FY 2022 Increase/Decrease Statement: Initial decrease due to contract amount			
Title: Operational Flight Program (OFP) Development	21.547	20.490	18.539

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2020	FY 2021	FY 2022
<p>Description: M-Series and Software Capability Upgrade (SCU) programs 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>Permit timely integration of new precision weapons, advanced 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 2021 Plans: Continue Suite 10 Software development and integration for fielding, Start of Suite 11 Software development and integration.</p> <p>FY 2022 Plans: Continuation of Suite 11 development while moving to an Agile Acquisition position to deliver EPICS (major software development or group of several small software developments) in shorter span to meet mission requirements.</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: Continuation of Suite 11 development while moving to an Agile Acquisition position to deliver EPICS (major software development or group of several small software developments) in shorter span to meet mission requirements.</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 2021 Plans:</p>		0.186	4.000	1.500

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2020	FY 2021	FY 2022
<p>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 2022 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 to FY 2022 Increase/Decrease Statement: Decrease in contract amount. Contract protest caused late award and late expensing.</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 and software, cyber security testing.</p> <p>The Operational Flight Program will need to be rewritten in a modular, containerized format so that it is easily modified, repaired and upgraded.</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> <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 out to 2040. RDT&E funds will develop new test scripts for existing maintenance and repair testers. By designing a modular system that can be easily</p>		-	0.000	19.185

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
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. FY 2021 Plans: New Start in FY22. FY 2022 Plans: Development of CICS unit to support additional MODs mandated for the A-10. FY 2021 to FY 2022 Increase/Decrease Statement: New start in FY22.			
Accomplishments/Planned Programs Subtotals	25.533	24.490	39.224

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2022</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• APAF 05 Line Item A01000: <i>A-10 Squadrons, PE 0207131F</i>	125.825	135.793	85.249	-	85.249	-	-	-	-	-	-

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 the 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.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force **Date:** May 2021

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 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	-	0.000		0.000		0.000		0.000		0.000	-	-	-
OFP Development 1st Qtr FY18 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	0.000		0.000		0.000		0.000		0.000	-	-	-
OFP Development 2nd Qtr FY18 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	0.000		0.000		0.000		0.000		0.000	-	-	-
OFP Development 3rd Qtr FY18 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	0.000		0.000		0.000		0.000		0.000	-	-	-
OFP Development 4th Qtr FY18 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	0.000		0.000		0.000		0.000		0.000	-	-	-
OFP Development 1st Qtr FY19 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	0.000		0.000		0.000		0.000		0.000	-	-	-
OFP Development 2nd Qtr FY19 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	0.000		0.000		0.000		0.000		0.000	-	-	-
OFP Development 3rd Qtr FY19 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	0.000		0.000		0.000		0.000		0.000	-	-	-
OFP Development 4th Qtr FY19 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	0.000		0.000		0.000		0.000		0.000	-	-	-
OFP Development 1st Qtr FY20 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	6.611	Nov 2019	0.000		0.000		0.000		0.000	-	-	-
OFP Development 2nd Qtr FY20 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	1.251	Jan 2020	0.000		0.000		0.000		0.000	-	-	-
OFP Development 3rd Qtr FY20 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	1.251	Apr 2020	0.000		0.000		0.000		0.000	-	-	-
OFP Development 4th Qtr FY20 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	1.327	Jun 2020	0.000		0.000		0.000		0.000	-	-	-
OFP Development 1st Qtr FY21 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	0.000		4.246	Nov 2020	0.000		0.000		0.000	-	-	-
OFP Development 2nd Qtr FY21 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	0.000		2.718	Jan 2021	0.000		0.000		0.000	-	-	-
OFP Development 3rd Qtr FY21 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	0.000		1.543	Apr 2021	0.000		0.000		0.000	-	-	-
OFP Development 4th Qtr FY21 (309 SMXG)	PO	309 SMXG : Hill AFB, UT	-	0.000		1.993	Jun 2021	0.000		0.000		0.000	-	-	-

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Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	-	0.000		0.000		3.170	Oct 2021	0.000		3.170	-	-	-
OFP Development 2nd Qtr FY22 (309 SWEG)	PO	309 SWEG : Hill AFB, UT	-	0.000		0.000		1.110	Jan 2022	0.000		1.110	-	-	-
OFP Development 3rd Qtr FY22 (309 SWEG)	PO	309 SWEG : Hill AFB, UT	-	0.000		0.000		1.110	Apr 2022	0.000		1.110	-	-	-
OFP Development 4th Qtr FY22 (309 SWEG)	PO	309 SWEG : Hill AFB, UT	-	0.000		0.000		1.110	Jun 2022	0.000		1.110	-	-	-
Development Contract for CICS	C/CPAF	Not specified. : TBD	-	0.000		0.000		19.185		0.000		19.185	-	-	-
Subtotal			-	10.440		10.500		25.685		0.000		25.685	-	-	N/A

Support (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			
Support	C/CPAF	Not specified. : TBD	-	0.000		0.000		0.000		0.000		0.000	-	-	-
USAF (Multiple)	Various	Various : Various	-	7.043		5.690		5.239		0.000		5.239	-	-	-
Subtotal			-	7.043		5.690		5.239		0.000		5.239	-	-	N/A

Test and Evaluation (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			
Test and Evaluation	C/CPAF	Not specified. : TBD	-	0.000		0.000		0.000		0.000		0.000	-	-	-
USAF (OFP)	Various	Various : Various	-	3.250	Sep 2019	3.300	Oct 2020	3.300	Oct 2021	0.000		3.300	-	-	-
Subtotal			-	3.250		3.300		3.300		0.000		3.300	-	-	N/A

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Air Force **Date:** May 2021

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				
Suite 10 Fields FY2021 Qtr 3	4	2021	4	2021
ARC - 210 Crypto Mandate	2	2020	4	2024
OFP 11 FTRR FY2021 Qtr 3	2	2021	2	2022
OFP 11 Fields FY2022 Qtr 2	2	2022	4	2022
OFP 12 FTRR FY2021 Qtr 4	2	2022	3	2023
OFP 12 Fields FY2023 Qtr 1	3	2023	3	2024
OFP 13 FTRR FY2022 Qtr 4	2	2024	3	2025
OFP 13 fields FY 2024 Qtr 1	3	2025	2	2026
OFP 14 FTRR FY2023 Qtr 4	2	2026	4	2026
CICS				
CICS	2	2022	4	2025