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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 0604233F I Specialized Undergraduate Flight Training							
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	-	17.754	5.776	11.344	0.000	11.344	3.243	2.173	2.413	2.458	Continuing	Continuing
674101: Undergraduate Remotely Piloted Aircraft Training	-	3.598	0.758	0.771	0.000	0.771	0.796	0.810	0.827	0.842	Continuing	Continuing
676035: T-6 Operational System Development	-	1.745	3.008	1.776	0.000	1.776	1.280	0.175	0.376	0.384	Continuing	Continuing
676037: T-38 Operational System Development	-	12.411	2.010	8.797	0.000	8.797	1.167	1.188	1.210	1.232	Continuing	Continuing

**Note**  
This program, BA 7, PE 0604233F, project 676035, Crash Survivable Recorder (CSR), is a new start.

**A. Mission Description and Budget Item Justification**  
Supports Air Education and Training Command's implementation of Specialized Undergraduate Pilot Training and the Department of Defense initiative for joint pilot training.

Undergraduate Remotely Piloted Aircraft Training supports Air Education and Training Command's implementation of Undergraduate Remotely Piloted Aircraft Training. This program provides and maintains the currency of Predator Reaper Integrated Mission Environment Desktop Training System.

T-6 Operational System Development continues follow on development activities to JPATS including studies & development efforts to support future ACAT III Engineering Change Proposals (ECPs) to the T-6 Aircraft, instructional courseware, and logistics support to include Diminishing Manufacturing Sources and Material Shortages (DMSMS) and development activities related to DMSMS. Included is development for the FAA mandated ACAT III program for Automatic Dependent Surveillance - Broadcast (ADS-B) Out and associated upgrades.

T-38 program will continue development of a replacement Mission Display Processor, refurbishment of the existing Heads-Up Display, development and integration of an Automatic Dependent Surveillance-Broadcast solution, as well as replacement of the Very High Frequency Communication radio system and the Very High Frequency Navigation system. Developmental Testing is projected to begin in the 2nd quarter of FY18. Production and deployment of the replacement systems is projected to begin in 2QFY2019.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Specialized Undergraduate Flight Training capabilities. 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, 0605898F, and 0605833F.

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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604233F / <i>Specialized Undergraduate Flight Training</i>
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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><u>B. Program Change Summary (\$ in Millions)</u></b>	<b><u>FY 2017</u></b>	<b><u>FY 2018</u></b>	<b><u>FY 2019 Base</u></b>	<b><u>FY 2019 OCO</u></b>	<b><u>FY 2019 Total</u></b>
Previous President's Budget	15.427	5.776	10.992	0.000	10.992
Current President's Budget	17.754	5.776	11.344	0.000	11.344
Total Adjustments	2.327	0.000	0.352	0.000	0.352
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	3.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.673	0.000			
• Other Adjustments	0.000	0.000	0.352	0.000	0.352

**Change Summary Explanation**

The \$3.000M Congressional add in FY17 was to support Remotely Piloted Aircraft training.  
The -\$0.673M is due to the Small Business Innovative Research tax.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0604233F / Specialized Undergraduate Flight Training				Project (Number/Name) 674101 / Undergraduate Remotely Piloted Aircraft Training			
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
674101: Undergraduate Remotely Piloted Aircraft Training	-	3.598	0.758	0.771	0.000	0.771	0.796	0.810	0.827	0.842	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

## A. Mission Description and Budget Item Justification

This effort supports Air Education and Training Command's (AETC) implementation of Undergraduate Remotely Piloted Aircraft (RPA) Training (URT). URT produces RPA pilots and Sensor Operators from accession sources to man RPA squadrons. Success of the program is heavily dependent on Predator Reaper Integrated Mission Environment (PRIME) Desktop Training System to prepare undergraduate students for entry in RPA Formal Training Units (FTU). PRIME has completed six Phases of development and is now at baseline functionality. PRIME is a desktop trainer similar to the Reaper training system now in use to train undergraduate RPA pilots and sensor operators. PRIME currently emulates the MQ-9 Reaper and needs to keep pace with that baseline system and expand to other RPAs in order to maintain concurrency and relevancy. Funds may be used to address emerging and short-notice Diminishing Manufacturing Sources and Material Shortage (DMSMS) issues. Diminishing Manufacturing Sources efforts 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. Implementation requirements and standards are defined under the Simulator Common Architecture Requirements and Standards (SCARS) initiative.

## B. Accomplishments/Planned Programs (\$ in Millions)

	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>
<b>Title:</b> Predator Reaper Integrated Mission Environment (PRIME) support	3.598	0.758	0.771	-	0.771
<b>Description:</b> Add Phase 7 operational capabilities.					
<b>FY 2018 Plans:</b> Continue to extend and enhance interoperability between PRIME and Modern Air Combat Environment (MACE) software incorporated in Phase 7 for instructor operations and entity generation. Add additional instrumentation functionality. Add multiple emergency missions. Add additional entity functionality. Phase 8 planning that was originally planned to occur has been pushed out awaiting completion of Phase 7.					
<b>FY 2019 Base Plans:</b> Continue to extend and enhance interoperability between PRIME and Modern Air Combat Environment (MACE) software incorporated in Phase 7 for instructor operations and entity generation. Add additional instrumentation functionality. Add multiple emergency missions. Add additional entity functionality. Phase 8 planning that was originally planned to occur has been pushed out awaiting completion of Phase 7.					
<b>FY 2018 to FY 2019 Increase/Decrease Statement:</b>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Air Force			<b>Date:</b> February 2018		
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0604233F / <i>Specialized Undergraduate Flight Training</i>	<b>Project (Number/Name)</b> 674101 / <i>Undergraduate Remotely Piloted Aircraft Training</i>			
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>					
	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>
Inflation adjustment					
<b>Accomplishments/Planned Programs Subtotals</b>	3.598	0.758	0.771	-	0.771
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A					
<b>Remarks</b>					
<b>D. Acquisition Strategy</b> Contract via Training Systems Acquisition III (TSA III) to Cubic Corporation, parent company of PRIME software data rights owner (Intific).					
<b>E. Performance Metrics</b> 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 0604233F / <i>Specialized Undergraduate Flight Training</i>				Project (Number/Name) 674101 / <i>Undergraduate Remotely Piloted Aircraft Training</i>					
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
Undergraduate Remotely Piloted Aircraft Training Phased planning, design, and development of software updates	SS/FFP	Cubic Corporation : NV	-	3.528	Mar 2017	0.688	Mar 2018	0.707	Mar 2019	-		0.707	Continuing	Continuing	-
Subtotal			-	3.528		0.688		0.707		-		0.707	Continuing	Continuing	N/A
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
Undergraduate Remotely Piloted Aircraft Training PMA	SS/CPFF	Program Office : WPAFB, OH	-	0.070	Oct 2016	0.070	Oct 2017	0.064	Oct 2018	-		0.064	Continuing	Continuing	-
Subtotal			-	0.070		0.070		0.064		-		0.064	Continuing	Continuing	N/A
			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			-	3.598		0.758		0.771		-		0.771	Continuing	Continuing	N/A
Remarks															

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2019 Air Force																<b>Date:</b> February 2018			
<b>Appropriation/Budget Activity</b> 3600 / 7								<b>R-1 Program Element (Number/Name)</b> PE 0604233F / <i>Specialized Undergraduate Flight Training</i>								<b>Project (Number/Name)</b> 674101 / <i>Undergraduate Remotely Piloted Aircraft Training</i>			

	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
<b><i>Predator Reaper Integrated Mission Environment (PRIME) Support</i></b>																												
Phase 7 Design/Development follow on																												
Phase 7 Design/Development continued																												
Phase 8 Planning																												
Phase 8 Design/Development																												
Phase 8 Design/Development continued																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2019 Air Force			<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0604233F / <i>Specialized Undergraduate Flight Training</i>	<b>Project (Number/Name)</b> 674101 / <i>Undergraduate Remotely Piloted Aircraft Training</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Predator Reaper Integrated Mission Environment (PRIME) Support</i></b>				
Phase 7 Design/Development follow on	3	2017	2	2018
Phase 7 Design/Development continued	2	2018	1	2019
Phase 8 Planning	1	2019	1	2020
Phase 8 Design/Development	2	2020	4	2021
Phase 8 Design/Development continued	2	2021	1	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0604233F / Specialized Undergraduate Flight Training				Project (Number/Name) 676035 / T-6 Operational System Development			
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
676035: T-6 Operational System Development	-	1.745	3.008	1.776	0.000	1.776	1.280	0.175	0.376	0.384	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

This program, BA 7, PE 0604233F, project 676035, Crash Survivable Recorder (CSR), is a new start.

**A. Mission Description and Budget Item Justification**

T-6 Operational System Development continues follow on development activities to JPATS including but not limited to studies & development efforts to support future ACAT III Engineering Change Proposals (ECPs) to the T-6 Aircraft, instructional courseware, and logistics support to include Diminishing Manufacturing Sources and Material Shortages (DMSMS) and development activities related to DMSMS. Included is development for the FAA mandated ACAT III program for Automatic Dependent Surveillance - Broadcast (ADS-B) Out and associated upgrades. Other ACAT III development activities include Crash Survivable Recorder (CSR).

Funding contained in this platform's documentation directly aids Air Education Training Command flying training enterprise to continue its overall pilot production increase starting in FY2020 thus reducing the USAF Pilot Shortage.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>
<b>Title:</b> T-6 (JPATS) Studies	0.000	0.209	1.576	-	1.576
<b>Description:</b> T-6 studies and development activities to support engine upgrades and future ACAT III Engineering Change Proposals (ECPs) to the T-6 (JPATS) aircraft and engine. Includes engineering and contractor support/services and PMA costs.					
<b>FY 2018 Plans:</b> T-6 Aircraft studies and development activities including but not limited to: the T-6 parachute surveillance study, safe/arm handle development, Electronic Flight Bag and Engine Preservation.					
<b>FY 2019 Base Plans:</b> T-6 Aircraft studies and development activities including but not limited to: the T-6 parachute surveillance study, safe/arm handle development, Electronic Flight Bag and Engine Preservation.					
<b>FY 2018 to FY 2019 Increase/Decrease Statement:</b>					



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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force			Date: February 2018			
Appropriation/Budget Activity 3600 / 7		R-1 Program Element (Number/Name) PE 0604233F / Specialized Undergraduate Flight Training		Project (Number/Name) 676035 / T-6 Operational System Development		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Funds increased \$1.3M supporting T-6 studies and development activities.						
<p><b>Title:</b> Crash Survivable Recorder (CSR)</p> <p><b>Description:</b> Crash Survivable Recorder (CSR) will provide the aircraft with a system that will meet the minimum crash survivable data collection capability as outlined in Air Force Instruction 63-133 Aircraft Information Program (Change 1, 4 November 2010) and SECDEF Memo of 22 June 06, Reducing Preventable Accidents. Includes engineering and contractor support/services and PMA costs.</p> <p><b>FY 2018 Plans:</b> Crash Survivable Recorder (CSR) is a new start program and will begin RDT&amp;E activities FY19.</p> <p><b>FY 2019 Base Plans:</b> Begin RDT&amp;E activities to include but not limited to: development, integration, test and certification of the Crash Survivable Recorder (CSR) to comply with the minimum crash survivable data collection capability as outlined in AFI 63-133 Aircraft Information Program 6 February 2001 Incorporating Change 1, 4 November 2010, and the Secretary of Defense Memo of 22 June 06, Reducing Preventable Accidents.</p> <p><b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> Crash Survivable Recorder (CSR) is a new start program with the acquisition lifecycle beginning in Fiscal Year 2019. Therefore, the increase in required funding from FY18 to FY19 is a direct result of the program initiating RDT&amp;E activities.</p>		-	0.000	0.200	-	0.200
<p><b>Title:</b> T-6 Avionics Upgrades for FAA (Federal Aviation Administration) Compliance</p> <p><b>Description:</b> The T-6 Automatic Dependent Surveillance Broadcast (ADS-B) Out program includes but is not limited to the component selection, integration, test and certification of ADS-B Out capability for the T-6A aircraft and Ground Based Training System (GBTS) to meet FAA compliance. Includes engineering and contractor support/services and PMA costs.</p> <p><b>FY 2018 Plans:</b> Continued development, integration, test, and certification of the Automatic Dependent Surveillance Broadcast (ADS-B Out) capability in the T-6 Training System to comply with the January 1, 2020 Federal Aviation Administration (FAA) ADS-B Out mandate.</p> <p><b>FY 2019 Base Plans:</b></p>		1.745	2.799	0.000	-	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force									Date: February 2018		
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0604233F / <i>Specialized Undergraduate Flight Training</i>				Project (Number/Name) 676035 / <i>T-6 Operational System Development</i>			
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
The Automatic Dependent Surveillance Broadcast (ADS-B Out) program will begin full rate production in FY19. As such, RDT&E activities for ADS-B Out is planned to conclude after FY18 which would result in a zero dollar requirement for FY19.											
FY 2018 to FY 2019 Increase/Decrease Statement: The Automatic Dependent Surveillance Broadcast (ADS-B Out) program will begin full rate production in FY19. As such, RDT&E activities for ADS-B Out is planned to conclude after FY18 which would result in a zero dollar requirement for FY19.											
Accomplishments/Planned Programs Subtotals							1.745	3.008	1.776	-	1.776
C. 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 06 Line Item 000999: Initial Spares/Repair Parts	0.000	2.046	0.590	-	0.590	1.215	3.034	1.854	1.882	Continuing	Continuing
• APAF 05 Line Item JPAT00: T-6	12.765	35.706	22.550	-	22.550	11.609	26.749	14.161	14.417	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
The Air Force is lead service for the T-6 Operational Systems Development program and currently manages upgrades to the entire family of systems for both the Air Force and Navy. T-6 Operational Systems Development acquisition strategy for satisfying emerging software and hardware requirements is designed to enable competition and control cost. Development resulting from Diminishing Manufacturing Sources and Material Shortages requirement will be evaluated and implemented incrementally to efficiently deliver required capabilities to AETC.											
E. 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 0604233F / Specialized Undergraduate Flight Training				Project (Number/Name) 676035 / T-6 Operational System Development					
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
T-6 Operational System Development T-6 (JPATS) Studies	Various	Various : Various	-	-		0.137	Mar 2018	1.412	Mar 2019	-		1.412	Continuing	Continuing	-
T-6 Operational System Development Avionics Upgrades for FAA Compliance	C/FFP	Scientific Research Corp : Atlanta, GA	-	1.745	Aug 2017	2.209	Mar 2018	-		-		-	Continuing	Continuing	3.536
T-6 Operational System Development Crash Survivable Recorder	C/CPAF	TBD : TBD	-	-		-		0.200	Sep 2019	-		0.200	Continuing	Continuing	-
Subtotal			-	1.745		2.346		1.612		-		1.612	Continuing	Continuing	N/A
Remarks															
The first piece of the Automatic Surveillance Broadcast Out (ADS-B Out) RDT&E effort was awarded in 4Q FY17. The second piece of the ADS-B Out RDT&E effort was awarded in 1Q FY18. The System development efforts are planned to being 2Q FY19. Crash Survivable Recorder RDT&E efforts are planned to being 1Q FY19.															
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
Avionics System Flight Test	MIPR	VX-20: NAS Patuxent River : MD	-	-		0.340	Jan 2018	-		-		-	Continuing	Continuing	-
Spectrum Management Support	Various	Not specified. : OH	-	-		0.022	Mar 2018	-		-		-	Continuing	Continuing	-
Subtotal			-	-		0.362		-		-		-	Continuing	Continuing	N/A
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 Contract Support	C/FFP	Not specified. : TBD	-	-		0.100	Sep 2018	0.064	Sep 2019	-		0.064	Continuing	Continuing	-
Government Travel	Various	Not specified. : TBD	-	-		0.200	Sep 2018	0.100	Sep 2019	-		0.100	Continuing	Continuing	-

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2019 Air Force												<b>Date:</b> February 2018		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0604233F / <i>Specialized Undergraduate Flight Training</i>					<b>Project (Number/Name)</b> 676035 / <i>T-6 Operational System Development</i>				

  

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	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
<b>Subtotal</b>			-	-		0.300		0.164		-		0.164		0.164	Continuing	Continuing	N/A

  

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	-	1.745	3.008	1.776	-	1.776	Continuing	Continuing	N/A

  

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2019 Air Force			<b>Date:</b> February 2018		
<b>Appropriation/Budget Activity</b> 3600 / 7		<b>R-1 Program Element (Number/Name)</b> PE 0604233F / <i>Specialized Undergraduate Flight Training</i>			<b>Project (Number/Name)</b> 676035 / <i>T-6 Operational System Development</i>

	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
<b><i>Joint Primary Aircraft Training System</i></b>																												
T-6 (JPATS) Studies																												
<b><i>Avionics Systems Development</i></b>																												
T-6 Avionics Upgrades for FAA Compliance																												
T-6 Crash Survivable Recorder																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2019 Air Force			<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0604233F / <i>Specialized Undergraduate Flight Training</i>	<b>Project (Number/Name)</b> 676035 / <i>T-6 Operational System Development</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Joint Primary Aircraft Training System</i></b>				
T-6 (JPATS) Studies	2	2017	4	2023
<b><i>Avionics Systems Development</i></b>				
T-6 Avionics Upgrades for FAA Compliance	4	2017	4	2018
T-6 Crash Survivable Recorder	4	2019	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0604233F / Specialized Undergraduate Flight Training				Project (Number/Name) 676037 / T-38 Operational System Development			
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
676037: T-38 Operational System Development	-	12.411	2.010	8.797	0.000	8.797	1.167	1.188	1.210	1.232	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

The T-38 is a twin engine, two seat (tandem), supersonic jet trainer used by Air Education and Training Command as an advanced trainer in Specialized Undergraduate Pilot Training. Modifications are budgeted to enhance operational capability while improving flight safety, reliability and maintainability. There are currently 505 T-38's in the Air Force inventory (53 T-38A, 6 AT-38B and 446 T-38C) with 3 T-38Cs pending removal. T-38s first entered service in 1960 and average over 50 years old.

T-38C Avionics system obsolescence remediation efforts to qualify updated systems will continue through the 2nd quarter of FY2019 with development of a replacement Mission Display Processor, refurbishment of the existing Heads-Up Display, development and integration of an Automatic Dependent Surveillance - Broadcast solution, as well as replacement of the Very High Frequency Communication radio system and the Very High Frequency Navigation radio system. The development and integration of an Automatic Dependent Surveillance-Broadcast solution will also include the T-38A/B aircraft.

Additionally, studies & development efforts to support future ACAT III Engineering Change Proposals to address obsolescence issues and the regular block upgrades are required to keep the system current. These will be accomplished with O&M unless block upgrade provides additional capabilities. Block upgrades incorporate software and/or hardware improvements to comply with new capabilities mandated by Department of Defense, Federal Aviation Administration, or National Airspace System and to address flight safety issues. The block upgrades support the T-38C aircraft and Aircrew Training Devices.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>
<b>Title:</b> T-38 Avionics Component Integration (AvCI)	10.138	0.010	8.740	0.000	8.740
<b>Description:</b> T-38C Avionics System obsolescence remediation effort is developing and qualifying replacement components/Line Replaceable Units (LRU) that are becoming non-supportable. Systems include the Mission Display Processor, Heads-Up Display and Very High Frequency Communication and Navigation radios. Additionally, the T-38C program is developing a solution for the Federal Aviation Administration Automated Dependent Surveillance-Broadcast (Out) mandate.					
<b>FY 2018 Plans:</b> The T-38C program will continue development in FY18 of a replacement Mission Display Processor, refurbishment of the existing Heads-Up Display, development and integration of an Automatic Dependent					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force			Date: February 2018			
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0604233F / Specialized Undergraduate Flight Training	Project (Number/Name) 676037 / T-38 Operational System Development				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Surveillance Broadcast (ADS-B) solution as well as replacement of the Very High Frequency Communication and Navigation Radios. Developmental Testing is projected to begin in the 2nd quarter of FY18. <b>FY 2019 Base Plans:</b> All T-38C programs will complete developmental testing and move in to the production and deployment phase by 2nd quarter of FY19. This is the final funding requirements for development and testing. <b>FY 2019 OCO Plans:</b> None <b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> Funding increased to match requirements and complete the program development and testing.						
<b>Title:</b> T-38 Studies and Development Efforts <b>Description:</b> Studies and efforts to support future ACAT III Engineering Change Proposals to address obsolescence issues and the regular block upgrades are required to keep the system current. <b>FY 2018 Plans:</b> Obsolescence study planned for T-38C Video Data Transfer Unit Compact Flash Cards (CFC). The current CFC is no longer in production. <b>FY 2019 Base Plans:</b> Funding is for future requirements to address obsolescence issues and the regular block upgrades required to keep the system current. <b>FY 2019 OCO Plans:</b> None <b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> Slight funding increase in FY 2019		0.100	0.010	0.042	0.000	0.042
<b>Title:</b> T-38A/B ADS-B <b>Description:</b> Develop and integrate an Automatic Dependent Surveillance Broadcast (Out) solution the T-38A/B model fleet. The solution must maintain the military transponder modes. <b>FY 2018 Plans:</b>		2.173	1.990	0.015	0.000	0.015



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Air Force								<b>Date:</b> February 2018				
<b>Appropriation/Budget Activity</b> 3600 / 7				<b>R-1 Program Element (Number/Name)</b> PE 0604233F / <i>Specialized Undergraduate Flight Training</i>				<b>Project (Number/Name)</b> 676037 / <i>T-38 Operational System Development</i>				
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>								<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>
<p>Complete system development and integration. Accomplish ground and flight testing. Finalize TCTO development.</p> <p><b><i>FY 2019 Base Plans:</i></b> Development and testing will be completed by the 2nd quarter of FY19. The program will move to the production and deployment phase.</p> <p><b><i>FY 2019 OCO Plans:</i></b> None</p> <p><b><i>FY 2018 to FY 2019 Increase/Decrease Statement:</i></b> This is the final funding required for development and testing. Program development and testing will be completed by 2nd quarter FY19.</p>												
<b>Accomplishments/Planned Programs Subtotals</b>								12.411	2.010	8.797	0.000	8.797
<b>C. Other Program Funding Summary (\$ in Millions)</b>												
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To Complete</u>	<u>Total Cost</u>	
• APAF 05 Line Item T03800: T-38	33.590	51.641	70.623	-	70.623	35.076	38.026	39.624	38.489	Continuing	Continuing	
<b>Remarks</b>												
<b>D. Acquisition Strategy</b>												
<p>The T-38 Operations System Development acquisition strategy for satisfying emerging software and hardware requirements is designed to enable competition and cost control. Developmental requirements resulting from Diminishing Manufacturing Sources and Material Shortages research and reporting will be evaluated and implemented incrementally to efficiently deliver required capabilities to Air Education &amp; Training Command in support of the pilot training program. System block upgrades will be required to maintain aircraft airworthiness and will be implemented based on Air Education &amp; Training Command requirements. An appropriate level of technical data rights is required by all current support contracts.</p> <p>Contract FA8211-16-D-0001 is a Type D Indefinite Delivery, Indefinite Quantity contract competitively awarded to address T-38C avionics system obsolescence issues and provide Contractor Logistics Support follow-on support. The Avionics Component Integration contract was awarded 8 January 2016. Obsolescence remediation efforts began immediately and the follow-on Contractor Logistics Support effort began 1 April 2017.</p>												

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0604233F / <i>Specialized Undergraduate Flight Training</i>	Project (Number/Name) 676037 / <i>T-38 Operational System Development</i>

The T-38A/B Automatic Dependent Surveillance-Broadcast program awarded a contract to develop and integrate and ADS-B solution in May 2017. The current contract is a Type D Indefinite Delivery, Indefinite Quantity contract sole source awarded to modify APX-119 transponders declared excess by the Item Manager and "free issued" to the T-38 Program Office. System development and aircraft integration work has started.

## E. 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 0604233F / <i>Specialized Undergraduate Flight Training</i>				Project (Number/Name) 676037 / <i>T-38 Operational System Development</i>					
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
T-38 Avionics System DMSMS mitigation efforts	C/FFP	The Boeing Company : St. Louis, MO	-	9.244	Oct 2016	0.010	Oct 2017	8.648	Oct 2018	-		8.648	Continuing	Continuing	-
T-38 A/B Automatic Dependent Surveillance-Broadcast	SS/FFP	The Raytheon Company : Aberdeen, MD	-	2.173	Apr 2017	1.704	Oct 2017	0.015	Oct 2018	-		0.015	Continuing	Continuing	-
T-38 Studies and Development Efforts	Various	TBD : NV	-	0.100		0.010	Oct 2017	0.042	Oct 2018	-		0.042	Continuing	Continuing	-
Subtotal			-	11.517		1.724		8.705		-		8.705	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
Avionics system Flight Test	PO	412th FTS : Edwards AFB, CA	-	0.809	Jun 2017	0.194	Oct 2017	0.000		-		0.000	Continuing	Continuing	-
Not specified.	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-
Subtotal			-	0.809		0.194		0.000		-		0.000	Continuing	Continuing	N/A
Remarks															
Funding for flight test is estimated to cover T-38A/B/C requirements.															
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 Contract support	C/FFP	Not specified. : NV	-	0.030	Dec 2016	0.033	Dec 2017	0.033	Dec 2018	-		0.033	Continuing	Continuing	-
Government Travel	Various	Not specified. : NV	-	0.055	Oct 2016	0.059	Oct 2017	0.059	Oct 2017	-		0.059	Continuing	Continuing	-
Subtotal			-	0.085		0.092		0.092		-		0.092	Continuing	Continuing	N/A

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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 0604233F / Specialized Undergraduate Flight Training					Project (Number/Name) 676037 / T-38 Operational System Development						
				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				-	12.411		2.010		8.797		-		8.797	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&amp;E Schedule Profile: PB 2019 Air Force

Date: February 2018

## Appropriation/Budget Activity

3600 / 7

## R-1 Program Element (Number/Name)

PE 0604233F / Specialized Undergraduate  
Flight Training

## Project (Number/Name)

676037 / T-38 Operational System  
Development

	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
<b>Avionics Systems Development</b>																												
Heads-Up Display Integration																												
Heads-Up Display Qualification Testing																												
Mission Display Processor Integration																												
Mission Display Processor Qualification Testing																												
Automatic Dependent Surveillance Broadcast Integration (T38-C)																												
Automatic Dependent Surveillance Broadcast Qualification Testing (T38-C)																												
Very High Frequency Radio Integration																												
Very High Frequency Radio Qualification Testing																												
Very High Frequency Navigation Unit Integration																												
Very High Frequency Navigation Unit Qualification Testing																												
T-38A/B ADS-B Development																												
T-38A/B ADS-B Integration																												
T-38A/B Qualification Testing																												
T-38 Block Software Upgrades																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2019 Air Force			<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0604233F / <i>Specialized Undergraduate Flight Training</i>	<b>Project (Number/Name)</b> 676037 / <i>T-38 Operational System Development</i>	

**Schedule Details**

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Avionics Systems Development</i></b>				
Heads-Up Display Integration	1	2017	4	2017
Heads-Up Display Qualification Testing	1	2018	1	2019
Mission Display Processor Integration	1	2017	4	2017
Mission Display Processor Qualification Testing	1	2018	1	2019
Automatic Dependent Surveillance Broadcast Integration (T38-C)	1	2017	1	2018
Automatic Dependent Surveillance Broadcast Qualification Testing (T38-C)	2	2018	2	2019
Very High Frequency Radio Integration	1	2017	4	2017
Very High Frequency Radio Qualification Testing	1	2018	1	2019
Very High Frequency Navigation Unit Integration	1	2017	4	2017
Very High Frequency Navigation Unit Qualification Testing	1	2018	1	2019
T-38A/B ADS-B Development	3	2017	1	2018
T-38A/B ADS-B Integration	3	2017	1	2018
T-38A/B Qualification Testing	1	2018	2	2020
T-38 Block Software Upgrades	1	2021	4	2023