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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 0305202F I Dragon U-2							
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	-	37.217	34.486	48.518	22.100	70.618	38.939	18.694	18.347	19.849	Continuing	Continuing
674820: Sensor Development	-	37.217	34.486	48.518	22.100	70.618	38.939	18.694	18.347	19.849	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Central Intelligence Agency (CIA) established the Senior Year Program in 1955. The program has evolved significantly over the years to include the U-2 airframe, engines, sensors, cameras, recorders, data links, life support systems, test facilities and equipment. The U-2S model airframes were constructed in the late 1980s, with the last aircraft rolling off the assembly line in 1989. The U-2S provides global reconnaissance signals intelligence (SIGINT) and geospatial intelligence (GEOINT) 24 hours a day, seven days a week in support of national and DoD worldwide missions. The U-2 is currently deployed to forward operating locations (FOL) around the world. Modifications to the aircraft and payloads are required to ensure continued operational effectiveness in support of Combatant Commander Requirements and in accordance with previous NDAA guidance.

In the 2013 PB, the Air Force decided to retain the U-2 weapon system instead of retiring it. At that time sustainment efforts and capability upgrades to the platform and payloads were pursued to support National and Combatant Commander requirements.

In the 2015 PB, the Air Force decided to retire the U-2 in 2016. In accordance with 10 U.S.C. 2244a, the U-2 weapon system is identified as Equipment Scheduled For Retirement Or Disposal: Limitation On Expenditures For Modifications, stating that modification to any aircraft (i.e., a given tail number, weapon, or item of equipment that the SECAF plans to retire or otherwise dispose of within 5 years after the date on which the modification would be completed) are prohibited.

In the 2016 PB, the Air Force re-phases U-2 divestiture to begin in FY2019 and to complete no later than FY2020. In accordance with 10 U.S.C. 2244a, the Secretary of the Air Force may waive the prohibition on modifications if the Secretary determines that carrying out the modification is in the national security interest of the United States. Therefore, modifications required to address sustainment issues (diminishing manufacturing sources, vanishing vendor items) or operational utility may be submitted to the Secretary for approval to ensure operational effectiveness and to comply with guidance received in previous and current NDAA's for the timeframe of phased divestiture. The National Security Waiver was signed by the Secretary of the Air Force on 26 May 2015.

In the 2017 PB, the Air Force continued addressing reliability, maintainability, sustainability, and safety issues and support U-2 integration of payloads and capabilities by taking prudent acquisition actions to meet operational requirements, comply with previous NDAA guidance, and IAW 10 U.S.C. Prudent acquisition activities also include trade studies, analyses, preliminary systems engineering, system and subsystem level testing in accordance with DoD and military standards, and specification development in support of both current program planning and execution as well as studies supporting analysis and investment in future U-2 program planning.

In the 2018 and 2019 PB, the Air Force decided to retain the U-2, funding investment and manpower in base, and the majority of operations and sustainment in OCO. The Air Force will continue to address reliability, maintainability, sustainability, and safety issues and support U-2 integration of payloads and capabilities by taking

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prudent acquisition actions to meet operational and safety of flight requirements. These acquisition efforts will include trade studies, analyses, preliminary systems engineering, system and subsystem level testing in accordance with DoD and military standards, and specification development in support of both current program planning and execution as well as studies supporting analysis and investment in future U-2 program planning.								
The U-2 Program provides funding for an Advanced Synthetic Aperture Radar System (ASARS) acquisition effort. This effort will design, fabricate, integrate, and demonstrate system capability enhancements for a high altitude deep look SAR system. This mitigates a Diminishing Manufacturing Supply and Material Shortages (DMSMS) issue with the current U-2 SAR sensor.								
This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.								
B. Program Change Summary (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total		
Previous President's Budget		37.217	34.486	48.882	0.000	48.882		
Current President's Budget		37.217	34.486	48.518	22.100	70.618		
Total Adjustments		0.000	0.000	-0.364	22.100	21.736		
• 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		0.000	0.000					
• SBIR/STTR Transfer		0.000	0.000					
• Other Adjustments		0.000	0.000	-0.364	22.100	21.736		
Change Summary Explanation								
FY16 increase across FYDP due to AF decision to rephase U-2 divestiture to FY19.								
FY17 increase to address DMSMS issues in the program.								
FY18 and FY19 increase due to the retention of the U-2. Addresses prudent acquisition efforts to address safety-of-flight and DMSMS issues.								
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: U-2 Aircraft Update Block 20.1				9.902	23.488	40.498	-	40.498

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Description: Aircraft sustainment and/or enhancement development includes activities such as, but not limited to, trade studies, analysis, preliminary system engineering, system and subsystem testing or demonstrations, sensor specification development, avionics system upgrades, emergency egress system sustainability and suitability effort, airframe Loads and Environment Spectra Survey (L/ESS) Compliance and Flight Data Recorder Installation, mission planning system migration, navigation system and stellar tracker initiatives, Open Mission Systems and Unmanned Aerospace Systems Command and Control Standard Initiative (OMS/UCI) standards compliance, GPS technical refresh, helmet and Full Pressure Suit technical refresh, and tactical data-link (L-16, IBS, IFDL, MADL, etc.) design and integration.</p> <p>FY 2018 Plans: FY18 will support sensor sustainment and/or enhancements, avionics, navigation system and stellar tracker initiatives, OMS/UCI standards compliance, mission planning, airframe sustainment, ground support equipment, helmet and Full Pressure Suit Technical refresh, Loads and Environment Spectra Survey (L/ESS) Compliance and Flight Data Recorder Installation, and mitigating sustainability and suitability issues with the current emergency egress system on the U-2 platform.</p> <p>FY 2019 Base Plans: Aircraft sustainment and/or enhancement development includes activities such as, but not limited to, trade studies, analysis, preliminary system engineering, system and subsystem testing or demonstrations, sensor specification development, avionics system upgrades, emergency egress system sustainability and suitability effort, airframe Loads and Environment Spectra Survey (L/ESS) Compliance and Flight Data Recorder Installation, mission planning system migration, navigation system and stellar tracker initiatives, advanced and agile systems, Open Mission Systems and Unmanned Aerospace Systems Command and Control Standard Initiative (OMS/UCI) standards compliance, GPS technical refresh, helmet and Full Pressure Suit technical refresh, and tactical data-link (L-16, IBS, IFDL, MADL, etc.) design and integration.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Increase in funding required to address the Egress System Sustainability and Suitability effort, Loads and Environment Spectra Survey (L/ESS) compliance, and the Flight Data Recorder.</p>						
Title: U-2 Payload Update Block 20.1		27.315	10.998	8.020	22.100	30.120
Description: Aircraft payload development supports sustainment and/or enhancement development includes activities such as, but not limited to, trade studies, analysis, preliminary system engineering, system and subsystem testing or demonstrations, sensor specification development, Advanced Synthetic Aperture Radar						

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
System (ASARS) development and test, SIGINT and multi-spectral sensor technical refresh integration and test, defensive systems, sensor range improvements, strategic and tactical data link (L-16, IBS, IFDL, MADL, etc.) design and integration.						
FY 2018 Plans: FY18 will support payload sustainment and/or enhancement activities such as, but not limited to, ASARS development, integration and test, defensive systems, datalinks, avionics technical refresh, SIGINT and multi-spectral sensor technical refresh, Optical Bar Camera technical refresh, sensor range improvements, and associated ground support equipment.						
FY 2019 Base Plans: FY19 will continue to support payload sustainment and/or enhancement activities such as, but not limited to, ASARS development, integration and test, defensive systems, datalinks, avionics technical refresh, SIGINT and multi-spectral sensor technical refresh, advanced and agile payloads, Optical Bar Camera technical refresh, sensor range improvements, and associated ground support equipment.						
FY 2019 OCO Plans: Counters emergent threats in the low band spectrum for detection, display and defeat by the AN/ALQ-221 Low Band (LB) subsystem in order to allow U-2 flight ops in moderately contested environments. Requirements will be met with two system modifications: an Advanced Threat Systems modification and a Continuous Power wave Amplifier (CWPA) modification.						
This is the development work for follow on FY19 procurement of 15 kits + spares. Additional information is available via classified means.						
FY 2018 to FY 2019 Increase/Decrease Statement: FY19 will continue to support payload sustainment and/or enhancement activities such as, but not limited to, ASARS development, integration and test, defensive systems, datalinks, avionics technical refresh, SIGINT and multi-spectral sensor technical refresh, advanced and agile payloads, Optical Bar Camera technical refresh, sensor range improvements, and associated ground support equipment.						
Accomplishments/Planned Programs Subtotals		37.217	34.486	48.518	22.100	70.618
D. Other Program Funding Summary (\$ in Millions)						
N/A						

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D. Other Program Funding Summary (\$ in Millions)		
Remarks		
E. Acquisition Strategy N/A		
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0305202F / <i>Dragon U-2</i>				Project (Number/Name) 674820 / <i>Sensor 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
ASARS Phase 1 Enhancements Design	SS/CPFF	Raytheon/Lockheed Martin : El Segundo, CA	-	-		-		-		-		-	Continuing	Continuing	-
ASARS Phase 2 Integration & Demonstration	SS/CPIF	Raytheon/Lockheed Martin Aeronautics : El Segundo, CA	-	14.714	Mar 2016	-		0.520	Mar 2019	-		0.520	Continuing	Continuing	-
Flight Test Support	SS/CPFF	Lockheed Martin Aeronautics : Palmdale, CA	-	1.986	Dec 2017	-		-		-		-	Continuing	Continuing	-
Ground Support Equipment	SS/CPFF	L3 Communications : Salt Lake City, UT	-	9.901	Nov 2016	10.998	Nov 2017	-		-		-	Continuing	Continuing	-
Navigation System	SS/CPFF	Lockheed Martin Aeronautics : Palmdale, CA	-	9.902	Dec 2016	4.734	Dec 2017	-		-		-	Continuing	Continuing	-
Emergency Egress System Sustainability and Suitability Effort	TBD	TBD : TBD, CA	-	-		10.111	Jul 2018	22.029	Apr 2019	-		22.029	Continuing	Continuing	-
Avionics Technical Refresh	TBD	TBD : TBD	-	-		-		11.234	Apr 2019	-		11.234	Continuing	Continuing	-
Loads and Environment Spectra Survey (L/ESS) Compliance and Flight Data Recorder Installation	TBD	TBD : TBD, CA	-	-		8.643	Jan 2018	-		-		-	Continuing	Continuing	-
Multi-Spectral Sensor Technical Refresh	TBD	TBD : TBD	-	-		-		7.500	Dec 2018	-		7.500	Continuing	Continuing	-
Mission Planning Software Technical Refresh	TBD	TBD : TBD	-	-		-		7.235	Apr 2019	-		7.235	Continuing	Continuing	-
Electronic Warfare Suite (EWS) Advanced Threat	SS/TBD	TBD : TBD	-	-		-		0.000		22.100	Dec 2018	22.100	Continuing	Continuing	22.100
Subtotal			-	36.503		34.486		48.518		22.100		70.618	Continuing	Continuing	N/A

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Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Office Support	C/FFP	Not specified. : GA	-	0.714		-		-		-		-	Continuing	Continuing	-
Subtotal			-	0.714		-		-		-		-	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	-	37.217		34.486		48.518		22.100		70.618	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305202F / <i>Dragon U-2</i>	Project (Number/Name) 674820 / <i>Sensor Development</i>
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	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
No project title.																												
Advanced Synthetic Aperture Radars System (ASARS)																												
Ground Support Equipment																												
Navigation System																												
Emergency Egress System Sustainability and Suitability Effort																												
Loads and Environment Spectra Survey (L/ESS) Compliance and Flight Data Recorder Installation																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305202F / <i>Dragon U-2</i>	Project (Number/Name) 674820 / <i>Sensor Development</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>No project title.</i>				
Advanced Synthetic Aperture Radars System (ASARS)	1	2017	4	2023
Ground Support Equipment	1	2017	2	2020
Navigation System	1	2017	4	2020
Emergency Egress System Sustainability and Suitability Effort	3	2018	4	2021
Loads and Environment Spectra Survey (L/ESS) Compliance and Flight Data Recorder Installation	1	2018	3	2019