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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 0305202F / <i>Dragon U-2</i>
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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	-	36.389	36.593	17.146	0.000	17.146	-	-	-	-	-	-
674820: <i>Sensor Development</i>	-	36.389	36.593	17.146	0.000	17.146	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The U-2S Dragon Lady platform is a high-demand/low-density aircraft equipped with state-of-the-art sensor and data link systems providing mission essential Intelligence, Surveillance, and Reconnaissance (ISR) to the Combatant Commands, Joint and Combined forces, and the IC community in peacetime and wartime. The program supports core missions such as Sensitive Reconnaissance Operations (outlined in CJCSI 3250.01) supporting the National Defense Strategy, in addition to other missions that include execution of CCMD OPLANs and CONPLANs, Humanitarian Assistance/Disaster Response (HADR), Counter-Insurgency (COIN) operations and third-party treaty verification/monitoring via the OLIVE HARVEST mission.

In the FY22 budget, the Air Force will maintain operational capability of the U-2 platform. FY22 development funds will be dedicated and required to sustain NDAA directed capability and capacity, and safe and effective operations until the remainder of U-2 scheduled service and AF divestiture in FY26. Efforts planned as part of the FY22 budget are required to ensure continuous worldwide operations through the remainder of U-2 service. Furthermore, FY22 efforts largely continue existing contracted efforts, which address reliability, maintainability, supportability, Diminishing Manufacturing Sources and Material Shortages (DMSMS), flight test, safety issues, and integration of capability development activities in support of the broader ISR portfolio.

During this time, RDT&E efforts will address sustainment, modification, and modernization of sensors and associated mission equipment that face near-terms sustainability and DMSMS. Also, RDT&E efforts focus on integrating/expanding platform capabilities within the larger ISR portfolio; these efforts include (but are not limited to) Advanced Synthetic Aperture Radar System (ASARS) 2B/C, avionics and navigation tech refresh, mission planning software and datalink infrastructure upgrades, modernization of aircraft data links, next generation SIGINT, and quick reaction capabilities (QRCs); enabling improved collection against emerging threats and capabilities through the remainder of scheduled U-2 operations.

Additionally, the U-2 program will continue to support emergent and/or experimental RDT&E efforts in support of Joint All-Domain Command and Control (JADC2) and Advanced Battle Management System (ABMS) as a platform surrogate for risk reduction.

Currently, the U-2 Program provides funding for an ASARS acquisition effort. This contracted effort will design, fabricate, integrate, and demonstrate system capability enhancements for a high-altitude deep look SAR system. This mitigates a DMSMS issue with the current U-2 SAR sensor and processor and implements an open-architecture radar environment.

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This program element may include necessary civilian pay expenses required to manage, execute, and deliver Dragon U2 capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.0M was expended and in FY21 \$0.0M is forecasted 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.

B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	36.389	18.660	18.319	0.000	18.319
Current President's Budget	36.389	36.593	17.146	0.000	17.146
Total Adjustments	0.000	17.933	-1.173	0.000	-1.173
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-0.067			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	18.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-1.173	0.000	-1.173

Change Summary Explanation

FY21 Transfer was an Air Force requested transfer from line 267 (Airborne Reconnaissance Systems). The FY21 reduction was an undistributed reduction-excess to need.

FY21 numbers reflected retention of the U-2, and additional investment and modernization efforts. FY22 PB reduces RDT&E totals from FY21 amount of \$36.6M to \$18.3M in FY22; FYDP sustains similar reduced levels until FY25. Reductions account for a portion of contracted efforts, addressing prudent actions for safety-of-flight, DMSMS, and sustainability issues. Additional modernization will be prohibited due to planned divestiture in FY26.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
Title: U-2 Aircraft Update Block 20.1	35.839	36.043	16.596
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			

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2020	FY 2021	FY 2022
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>FY 2021 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 software and infrastructure 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, quick reaction capability (QRC) development, enhanced communications/SIGINT system demo and development, and tactical data-link (L-16, IBS, IFDL, MADL, etc.) design and integration.</p> <p>FY 2022 Plans: Aircraft sustainment and/or enhancement efforts 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, mission planning system software and infrastructure migration, navigation system sustainability, advanced and agile systems, Open Mission Systems and Unmanned Aerospace Systems Command and Control Standard Initiative (OMS/UCI) standards compliance and integration, GPS technical refresh, helmet and Full Pressure Suit technical refresh, quick reaction capability (QRC) development, enhanced communications/SIGINT system sustainability and modernization, and tactical data-link (L-16, IBS, IFDL, MADL, etc.) efforts to meet operational requirements.</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: Decrease due to scheduled FY26 divestiture</p>				
<p>Title: U-2 Payload Update Block 20.1</p> <p>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 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.</p> <p>FY 2021 Plans:</p>		0.550	0.550	0.550

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2020	FY 2021	FY 2022
<p>In FY21, the majority of planned RDT&E base funding will fall under that aircraft mod category. Program office ACQ manager and PEM modify funding between categories as mission and threat environment evolves.</p> <p>Payload mod funding will be used to integrate ASARS-2B radar onto the platform.</p> <p>FY 2022 Plans: The bulk of FY22 funding will occur under the Aircraft Update Block addressing sustainability and DMSMS. Payload mod funding will be used to transition the ASARS-2C radar program onto the platform.</p>				
Accomplishments/Planned Programs Subtotals		36.389	36.593	17.146
D. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
E. Acquisition Strategy				
Acquisition strategy for efforts to support aircraft modification and/or enhancement efforts will be assessed as required, based on current program activities.				

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

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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	-	-	-
ASARS Phase 1 Enhancements Design	SS/CPFF	Raytheon/Lockheed Martin : El Segundo, CA	-	5.700		14.560		3.746		-		3.746	-	-	0.000
ASARS Phase 2 Integration & Demonstration	SS/CPFF	Raytheon/Lockheed Martin Aeronautics : El Segundo, CA	-	0.550	Feb 2020	0.000		2.500	Dec 2021	-		2.500	-	-	0.000
Flight Test Support	SS/CPFF	Lockheed Martin Aeronautics : Palmdale, CA	-	0.000		0.000		0.000		-		0.000	-	-	0.000
Data Links Modernization	SS/CPFF	L3 Communications : Salt Lake City, UT	-	11.850	Mar 2020	4.900		3.400	Dec 2021	-		3.400	-	-	0.000
Navigation System	SS/CPFF	Lockheed Martin Aeronautics : Palmdale, CA	-	0.000		0.000		0.000		-		0.000	-	-	0.000
Emergency Egress System Sustainability and Suitability Effort	SS/CPFF	Lockheed Martin Aeronautics : Palmdale, CA	-	0.560		1.000		0.000		-		0.000	-	-	0.000
Avionics Technical Refresh	SS/CPFF	LMA : Palmdale, CA	-	6.950		11.733	Dec 2020	7.500	Nov 2021	-		7.500	-	-	0.000
Loads and Environment Spectra Survey (L/ESS) Compliance and Flight Data Recorder Installation	SS/CPFF	LMA : Palmdale, CA	-	0.000		0.000		0.000		-		0.000	-	-	0.000
Electro-Optical/Infrared Sensor Technical Refresh	SS/CPFF	Lockheed Martin Aeronautics : Palmdale, CA	-	2.439		2.500		0.000		-		0.000	-	-	0.000
Mission Planning Software Technical Refresh	TBD	TBD : TBD	-	5.400	Mar 2020	0.000		0.000		-		0.000	-	-	0.000
Electronic Warfare Suite (EWS) Advanced Threat	SS/CPFF	BAE : Nashua, NY	-	2.040	Apr 2020	1.900		0.000		-		0.000	-	-	22.100
Subtotal			-	35.489		36.593		17.146		-		17.146	-	-	N/A

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

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FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
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

<i>U-2 Dragon Lady</i>	
Advanced Synthetic Aperture Radars System (ASARS)	
Data Links Modernization	
Navigation System	
Emergency Egress System Sustainability and Suitability Effort	
Avionics Tech Refresh	

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

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>U-2 Dragon Lady</i>				
Advanced Synthetic Aperture Radars System (ASARS)	1	2020	4	2024
Data Links Modernization	1	2020	4	2024
Navigation System	1	2020	3	2022
Emergency Egress System Sustainability and Suitability Effort	3	2020	4	2023
Avionics Tech Refresh	2	2020	4	2023