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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
|--|-------------|---------|---------|--------------|---|---------------|---------|---------|---------|----------------|------------------|------------|
| 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 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| Total Program Element | - | 34.471 | 37.217 | 34.486 | 0.000 | 34.486 | 48.882 | 38.682 | 16.994 | 17.120 | 0.000 | 227.852 |
| 674820: Sensor Development | - | 34.471 | 37.217 | 34.486 | 0.000 | 34.486 | 48.882 | 38.682 | 16.994 | 17.120 | 0.000 | 227.852 |
| 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 PB, the Air Force decided to retain the U-2 through FY22, 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 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
| Previous President's Budget | | 34.471 | 37.217 | 6.942 | 0.000 | 6.942 |
| Current President's Budget | | 34.471 | 37.217 | 34.486 | 0.000 | 34.486 |
| Total Adjustments | | 0.000 | 0.000 | 27.544 | 0.000 | 27.544 |
| • 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 | 27.544 | 0.000 | 27.544 |
| 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 increase due to the retention of the U-2 through FY22. Addresses prudent acquisition efforts to address safety-of-flight and DMSMS issues. | | | | | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | | | FY 2016 | FY 2017 | FY 2018 |
| Title: U-2 Aircraft Update Block 20.1 | | | | 0.000 | 9.902 | 23.488 |
| 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, | | | | | | |

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| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>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 2016 Accomplishments: No efforts were planned.</p> <p>FY 2017 Plans: FY17 will support aircraft sustainment activities such as, but not limited to, sensor sustainment and/or enhancements, avionics, navigation systems, mission planning, and airframe sustainment.</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>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 2016 Accomplishments: FY 16 supported payload sustainment and/or enhancement activities such as, but not limited to, ASARS development, integration and test, defensive systems, and datalinks.</p> <p>FY 2017 Plans: FY17 will support payload sustainment and/or enhancement activities such as, but not limited to, ASARS development, integration and test, defensive systems, datalinks, and associated ground support equipment.</p> <p>FY 2018 Plans:</p> | | 34.471 | 27.315 | 10.998 |

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|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| 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. | | | |
| Accomplishments/Planned Programs Subtotals | 34.471 | 37.217 | 34.486 |

D. Other Program Funding Summary (\$ in Millions)

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
|------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • N/A: N/A | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | - |

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: FY 2018 Air Force | | | | | | | | | | | | Date: May 2017 | | | |
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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> | | | | | |
| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | - | 2.183 | Jan 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 2.183 | - |
| ASARS Phase 2 Integration & Demonstration | SS/CPIF | Raytheon/Lockheed Martin Aeronautics : El Segundo, CA | - | 31.160 | Mar 2016 | 14.714 | Mar 2016 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Flight Test Support | SS/CPFF | Lockheed Martin Aeronautics : Palmdale, CA | - | 0.000 | | 1.986 | Dec 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Ground Support Equipment | SS/CPFF | L3 Communications : Salt Lake City, UT | - | 0.000 | | 9.901 | Nov 2016 | 10.998 | Nov 2017 | 0.000 | | 10.998 | Continuing | Continuing | - |
| Navigation System | SS/CPFF | Lockheed Martin Aeronautics : Palmdale, CA | - | 0.000 | | 9.902 | Dec 2016 | 4.734 | Dec 2017 | 0.000 | | 4.734 | Continuing | Continuing | - |
| Emergency Egress System Sustainability and Suitability Effort | TBD | TBD : TBD | - | 0.000 | | 0.000 | | 10.111 | Jul 2018 | 0.000 | | 10.111 | Continuing | Continuing | - |
| Loads and Environment Spectra Survey (L/ESS) Compliance and Flight Data Recorder Installation | TBD | TBD : TBD | - | 0.000 | | 0.000 | | 8.643 | Jan 2018 | 0.000 | | 8.643 | Continuing | Continuing | - |
| Subtotal | | | - | 33.343 | | 36.503 | | 34.486 | | 0.000 | | 34.486 | - | - | - |
| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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. : TBD | - | 1.128 | | 0.714 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Subtotal | | | - | 1.128 | | 0.714 | | 0.000 | | 0.000 | | 0.000 | - | - | - |
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| Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force | | | | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0305202F / Dragon U-2 | | | | | Project (Number/Name) 674820 / Sensor Development | | | | | |
| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |
| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |
| | | | Prior Years | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |
| Project Cost Totals | | | - | 34.471 | | 37.217 | | 34.486 | | 0.000 | | 34.486 | - | - | - |
| Remarks | | | | | | | | | | | | | | | |

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | | | | | | | | | | | | | | | Date: May 2017 | | | |
| 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> | | | |

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| 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: FY 2018 Air Force | | | Date: May 2017 |
| 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 | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Advanced Synthetic Aperture Radars System (ASARS) | 1 | 2016 | 4 | 2022 |
| 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 |