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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force **Date:** March 2023

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| 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 0305206F / <i>Airborne Reconnaissance Systems</i> |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 108.291 | 70.048 | 43.158 | 0.000 | 43.158 | 47.810 | 26.863 | 27.117 | 69.660 | Continuing | Continuing |
| 672001: <i>Next-Generation Sensors</i> | - | 20.184 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 25.806 | Continuing | Continuing |
| 672002: <i>Agile ISR</i> | - | 5.413 | 1.690 | 8.910 | 0.000 | 8.910 | 8.106 | 8.259 | 8.266 | 0.000 | Continuing | Continuing |
| 672003: <i>Sensors Open System Architecture</i> | - | 0.734 | 10.782 | 5.948 | 0.000 | 5.948 | 5.843 | 6.058 | 6.048 | 0.000 | Continuing | Continuing |
| 674818: <i>Imaging and Targeting Support</i> | - | 24.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 30.587 | Continuing | Continuing |
| 674820: <i>Sensor Development</i> | - | 30.344 | 48.692 | 18.928 | 0.000 | 18.928 | 24.231 | 0.000 | 0.000 | 0.000 | 0.000 | 122.195 |
| 675092: <i>JTC/SIL MUSE</i> | - | 3.593 | 3.784 | 3.869 | 0.000 | 3.869 | 3.956 | 4.054 | 4.137 | 4.287 | Continuing | Continuing |
| 675291: <i>Gorgon Stare</i> | - | 12.500 | 5.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 17.500 |
| 676025: <i>Data Compression</i> | - | 11.523 | 0.100 | 5.503 | 0.000 | 5.503 | 5.674 | 8.492 | 8.666 | 8.980 | Continuing | Continuing |

A. Mission Description and Budget Item Justification

The Airborne Reconnaissance System [ARS] Program develops and integrates next generation intelligence, surveillance, and reconnaissance [ISR] capabilities. ARS includes platform-agile sensor data processing; sensor products aiding assisted target recognition algorithms and other artificial intelligence activities [e.g. geolocation models, sensor-base exploitation tools, sensor networking capabilities]; and implementation of Sensor open architecture standards. The ARS Program includes the following efforts: Next-Generation Sensors [672001], Agile ISR [672002], Sensors Open System Architecture [672003], Imaging and Targeting Support [674818], Sensor Development [674820], JTS/SIL MUSE [675092], Gorgon Stare [675291], and Data Compression [676025].

The ARS PE is integral to developing multi-domain, multi-Intelligence [multi-INT] research, development, test and evaluation [RDT&E] Program of Record [PoR] efforts in support of the National Defense Strategy (NDS) and 2018 DoD Artificial Intelligence Strategy, as applied by the Air Force in the Next Generation ISR Dominance Flight Plan. Specifically, Program 0305206F provides authorized and appropriated funding to multi-INT RDT&E efforts for utilization on airborne platforms. This program traditionally provides a multi-INT venue for integration of technologies matured in both the Advanced Technology Sensors [0604257F] and Airborne SIGINT Enterprise [0304260F] programs.

NGS is a platform-agile suite of sensor technologies defined for the best flexibility and capability for an ever-changing scale of ISR missions. Execution of the NGS activities are founded upon three pillars: Open Standards, Artificial Intelligence [AI]/Machine Learning[ML] algorithms, and Advanced Platform-Agile Sensors. The power behind the NGS program is an open architectural system design that enables rapid third-party software and LRU insertion/replacement allowing for DevSecOps execution, onboard multi-modal and multi-INT processing real-time, sensor cross-cueing, and AI/ML application. The AI/ML algorithms will be used to enable assisted target detection and identification. NGS will anticipate and more quickly counter adversaries' future improvements in their abilities to hide from and defeat ISR sensors.

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| Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force | Date: March 2023 |
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| 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 0305206F / <i>Airborne Reconnaissance Systems</i> |
|--|--|

NGS efforts include, but are not limited to: Multi-Intelligence Common Open Architecture Reconnaissance Programs Standard [MI-COARPS], Advanced Platform-Agile Sensors, Assisted Target Recognition for ISR [ATRI], and Digital Engineering [DE], to include Model-Based Systems Engineering [MBSE]. Due to higher Air Force priorities in FY23, the activities were strategically paused and future FY24 efforts have moved to PE 64257F BPAC 642001 for continued prototyping, technology maturation, and risk reduction.

The Open Standards pillar of next generation capabilities is supported through MI-COARPS and Sensors Open Systems Architecture [SOSA] which coordinates advanced technologies and open architecture development for multi-INT sensor modalities. The AI/ML algorithm pillar of next generation capabilities will be supported by the Agile ISR and Data Compression efforts. Detection, Removal and Characterization Operations [DRACO] supports the development of a robust image quality improvement capability for airborne synthetic aperture radar [SAR] products. Additionally, the Reduction of Data Using Compression Enhancement [RDUCE] develops data compression algorithms, addressing current and future systems' bandwidth limitations. Consistent with NDS, algorithms are multi-INT sensor agile that are submitted for formal adoption by the DOD-Intelligence Community [IC] Joint Enterprise Standards Committee [JESC] GEOINT and SIGINT standards groups. Platform agile sensors pillar of next-generation capabilities will be supported by the Sensor Development effort, which includes the Advanced Synthetic Aperture Radar System [ASARS] front-end antenna array and receiver exciter advancements [ASARS-2B]. ASARS-2B follow-on RDT&E extends range, enhances SAR performance and introduces maritime capability, while laying the framework for future use of open architectures. Additional efforts that support the next generation capabilities include continuation of Gorgon Stare Wide Area Motion Imagery [WAMI] RDT&E and the Multiple Unified Simulation Environment [MUSE] Joint Technology Center/Systems Integration Lab [JTC/SIL] by supporting ISR Training.

This program element may include necessary emergent or unanticipated civilian pay expenses required to manage, execute, and deliver the ARS program for emergent or unanticipated weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F. In PY23 .261M and in CY24 .266M 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.

| B. Program Change Summary (\$ in Millions) | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024 Base</u> | <u>FY 2024 OCO</u> | <u>FY 2024 Total</u> |
|---|-----------------------|-----------------------|----------------------------|---------------------------|-----------------------------|
| Previous President's Budget | 108.291 | 55.048 | 56.694 | 0.000 | 56.694 |
| Current President's Budget | 108.291 | 70.048 | 43.158 | 0.000 | 43.158 |
| Total Adjustments | 0.000 | 15.000 | -13.536 | 0.000 | -13.536 |
| • Congressional General Reductions | 0.000 | 0.000 | | | |
| • Congressional Directed Reductions | 0.000 | 0.000 | | | |
| • Congressional Rescissions | 0.000 | 0.000 | | | |
| • Congressional Adds | 0.000 | 15.000 | | | |
| • 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 | -13.536 | 0.000 | -13.536 |

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force **Date:** March 2023

Appropriation/Budget Activity
 3600: *Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development*

R-1 Program Element (Number/Name)
 PE 0305206F / *Airborne Reconnaissance Systems*

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: 674818: *Imaging and Targeting Support*

Congressional Add: *ASARS-2B*

Congressional Add Subtotals for Project: 674818

Project: 675291: *Gorgon Stare*

Congressional Add: *Wide Area Motion Imagery*

Congressional Add Subtotals for Project: 675291

Congressional Add Totals for all Projects

| | FY 2022 | FY 2023 |
|--|----------------|----------------|
| | 24.000 | - |
| | 24.000 | - |
| | 12.500 | 5.000 |
| | 12.500 | 5.000 |
| | 36.500 | 5.000 |

Change Summary Explanation

FY22 Congressional Adds for ASARS-2B (24M) and Gorgon Stare (12.5M).
 The decrease in FY24 from the previous President's Budget is due to a decrease in ASARS-2B development.

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| Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force | | | | | | | | | | Date: March 2023 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | | | | Project (Number/Name) 672001 / Next-Generation Sensors | | | |
| COST (\$ in Millions) | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
| 672001: <i>Next-Generation Sensors</i> | - | 20.184 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 25.806 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note

Due to higher Air Force priorities in FY23, the activities were strategically paused and future FY24 efforts have moved to PE 64257F BPAC 642001 for continued prototyping, technology maturation, and risk reduction.

A. Mission Description and Budget Item Justification

The Next Generation Sensors (NGS) program seeks to change the paradigm of Intelligence, Surveillance, and Reconnaissance (ISR) sensor acquisitions to deliver mission critical technology more quickly and cost effectively. NGS is a platform-agile suite of sensor technologies defined for the best flexibility and capability for an ever-changing scale of ISR missions. The power behind the NGS program is an open architectural system design that enables individual sensor upgrades and enhancements and mission-specific mode and algorithm applications, establishing a path to on-board multimodal and multi-INT processing, sensor cross-cueing, and artificial intelligence applications. NGS efforts include, but are not limited to: Multi-INT Common Open Architecture Reconnaissance Programs Standard (MI-COARPS), Advanced Platform-Agile Sensors, Assisted Target Recognition for ISR (ATRI), and Digital Engineering (DE), to include Model Based Systems Engineering (MBSE).

NGS program efforts are set by capability gaps within the Challenging Targets Initial Capabilities Document and as approved by the Capabilities Decision Memorandum (Signed Jan 2019). These requirements have been further verified, modeled, and developed through the Airborne Sensors for ISR (ASI) Analysis of Alternatives (AoA). Program requirements were further defined in the NGS Draft Capability Development Document (DCDD) approved on 21 February 2021.

This program element may include necessary emergent or unanticipated civilian pay expenses required to manage, execute, and deliver insert program name for emergent or unanticipated weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F. In FY22 2.449M was expended for civilian pay expenses in this program element.

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

| | | | |
|---|----------------|----------------|----------------|
| | FY 2022 | FY 2023 | FY 2024 |
| Title: Next Generation Sensors | 20.184 | 0.000 | 0.000 |
| Description: Mold current and future ISR into a platform-agile, non-proprietary, autonomous multi-INT cross cueing solution that is designed based on mission requirements. Sensors will have to penetrate up to highly contested domains and survive to operate. This project will also increase interoperability by developing common standards and interfaces for mission and sensor systems. | | | |
| FY 2023 Plans: | | | |

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| Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force | | Date: March 2023 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / <i>Airborne Reconnaissance Systems</i> | Project (Number/Name) 672001 / <i>Next-Generation Sensors</i> |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2022 | FY 2023 | FY 2024 |
|---|----------------|----------------|----------------|
| N/A. | | | |
| <i>FY 2024 Plans:</i> Next Generation Sensors has moved to PE 64257F BPAC 642001 for continued prototype and tech development. | | | |
| <i>FY 2023 to FY 2024 Increase/Decrease Statement:</i> No change to budget. Zeroed in FY23 and FY24. FY24 funds moved to PE 64257F BPAC 642001. | | | |
| Accomplishments/Planned Programs Subtotals | 20.184 | 0.000 | 0.000 |

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

N/A

Remarks

D. Acquisition Strategy

N/A - FY24 NGS activities and acquisition strategy have moved to PE 64257F BPAC 642001.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force **Date:** March 2023

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 672001 / Next-Generation Sensors |
|--|---|--|

| Product Development (\$ in Millions) | | | | FY 2022 | | FY 2023 | | FY 2024 Base | | FY 2024 OCO | | FY 2024 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 | | | |
| Triple Raven ATD | Various | Various : TBD | - | 0.000 | Feb 2022 | - | | - | | - | | - | 0.000 | 0.000 | - |
| NGS Sensors | Various | Various : TBD | - | 3.645 | Feb 2022 | - | | - | | - | | - | 0.000 | 3.645 | - |
| NGS Algorithms (ATRI) | Various | Various : TBD | - | 5.846 | Feb 2022 | - | | - | | - | | - | 0.000 | 5.846 | - |
| NGS Standards (OA) | Various | Various : TBD | - | 5.141 | Dec 2021 | - | | - | | - | | - | 0.000 | 5.141 | - |
| Raging Parakeet JCTD | Various | Various : TBD | - | 0.000 | Dec 2021 | - | | - | | - | | - | 0.000 | 0.000 | - |
| Digital Engineering (DE), Model Based Systems Engineering (MBSE) | Various | Various : TBD | - | 3.000 | Oct 2021 | - | | - | | - | | - | 0.000 | 3.000 | - |
| Subtotal | | | - | 17.632 | | - | | - | | - | | - | 0.000 | 17.632 | N/A |

| Management Services (\$ in Millions) | | | | FY 2022 | | FY 2023 | | FY 2024 Base | | FY 2024 OCO | | FY 2024 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 | | | |
| PMA: Other Gov't costs | Various | Not specified. : TBD | - | 2.552 | Oct 2021 | - | | - | | - | | - | Continuing | Continuing | - |
| Subtotal | | | - | 2.552 | | - | | - | | - | | - | Continuing | Continuing | N/A |

| | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| Project Cost Totals | | - | 20.184 | - | - | - | Continuing | Continuing | N/A |

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| Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force | | Date: March 2023 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / <i>Airborne Reconnaissance Systems</i> | Project (Number/Name) 672001 / <i>Next-Generation Sensors</i> |

| FY 2022 | | | | FY 2023 | | | | FY 2024 | | | | FY 2025 | | | | FY 2026 | | | | FY 2027 | | | | FY 2028 | | | |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 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 |

| | |
|---------------------------------|--|
| Next Generation Sensors | |
| Sensors | |
| Algorithm Development (ATRI) | |
| Standards (Open Architecture) | |
| Raging Parakeet JCTD | |
| Model Based Systems Engineering | |

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| Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force | | Date: March 2023 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / <i>Airborne Reconnaissance Systems</i> | Project (Number/Name) 672001 / <i>Next-Generation Sensors</i> |

Schedule Details

| Events by Sub Project | Start | | End | |
|---------------------------------|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Next Generation Sensors | | | | |
| Sensors | 1 | 2022 | 4 | 2022 |
| Algorithm Development (ATRI) | 1 | 2022 | 4 | 2022 |
| Standards (Open Architecture) | 1 | 2022 | 4 | 2022 |
| Raging Parakeet JCTD | 1 | 2022 | 4 | 2022 |
| Model Based Systems Engineering | 1 | 2022 | 4 | 2022 |

Note
Due to higher AF priorities in FY23, the activities were strategically paused and future FY24 efforts have moved to PE 64257F BPAC 642001 for continued prototyping and technology development.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force **Date:** March 2023

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 672002 / Agile ISR |
|--|---|--|

| COST (\$ in Millions) | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 672002: Agile ISR | - | 5.413 | 1.690 | 8.910 | 0.000 | 8.910 | 8.106 | 8.259 | 8.266 | 0.000 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note

In FY2023, PE 0305206F, (Airborne Reconnaissance Systems), Project 674818, (Imaging and Targeting Support) efforts related to Agile Pod will transfer to Project 672002, (Agile ISR) in order to provide greater visibility and transparency. This project is not a new start.

A. Mission Description and Budget Item Justification

The Agile ISR BPAC matures, develops, and deploys projects started under the Imaging & Targeting Support (I&TS) program in support of current and future platform agnostic, non-proprietary, autonomous, multi-INT cross cueing ISR solutions based on Advanced Battle Management System (ABMS) and Joint All-domain Command and Control (JADC2) mission requirements. This includes, but is not limited to, High Altitude Long Endurance (HALE) platform development, Detection Removal and Characterization Operations (DRACO), support and development of AgilePod, and other projects. Portions of the developmental efforts under Agile ISR are classified.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver technology and sensor capabilities. The use of such program funds would be in addition to civilian pay expenses budgeted in program element 0605831F.

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

| | FY 2022 | FY 2023 | FY 2024 |
|---|---------|---------|---------|
| Title: DRACO | 5.413 | 1.590 | 6.910 |
| Description: Detection Removal and Characterization Operations (DRACO) is a robust Image Quality improvement capability for Airborne Synthetic Aperture Radar (SAR) products. The software resides in multiple locations on the ground and future efforts will migrate algorithms to airborne platforms supporting the Air Force, Army, Navy and other customers. DRACO efforts include but are not limited to development, design, fabrication, integration, demonstration, test, and transition of image quality improvement capabilities. This project originated under the I&TS program. All other details are classified. | | | |
| FY 2023 Plans: | | | |
| - Continue to mature, develop and deploy DRACO capabilities in order to give the warfighter a more efficient and effective tool. | | | |
| - Continue to complete DRACO 6.0 efforts in 1QFY24. | | | |
| - Continue to increase interoperability by developing common standards and interfaces. | | | |
| - Continue to increase access and expand user base. | | | |
| - Continue the DRACO SAR Clean-up AI/ML Reduction (SCAR) development effort. | | | |
| FY 2024 Plans: | | | |
| - Will complete the DRACO SCAR development effort. | | | |

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| Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force | | Date: March 2023 |
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| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2022 | FY 2023 | FY 2024 |
|---|----------------|----------------|----------------|
| <ul style="list-style-type: none"> - Will continue to mature, develop and deploy DRACO capabilities in order to give the warfighter a more efficient and effective tool. - Will initiate DRACO 7.0 efforts in 2QFY24. - Will continue to increase interoperability by developing common standards and interfaces. - Will continue to increase access and expand user base to include cloud based deployment of the capability to enable ready access to IC Partners. - Will integrate DRACO, assisted target recognition, and SAR compression algorithm into a software suite referenced as SAR Clean-up AI/ML Reduction (SCAR) Package. <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increased Air Force priority in FY24 supporting completion of DRACO 6.0, increased interoperability, and kicking off DRACO 7.0 efforts.</p> | | | |
| <p>Title: AgilePod</p> <p>Description: AgilePod is a government-owned, open standards pod capable of multiple payloads including but not limited to ISR, communications, and EW. It consists of multiple variants and provides a rapid fielding capability for payloads to any aircraft in the DOD inventory that can carry an external store.</p> <p>FY 2023 Plans: - Continue to develop AgilePod variants for multi-platform use.</p> <p>FY 2024 Plans: - Will continue to develop AgilePod variants for multi-platform use.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increased to support AgilePod development for multi-platform use and increased Air Force priority.</p> | 0.000 | 0.100 | 2.000 |
| Accomplishments/Planned Programs Subtotals | 5.413 | 1.690 | 8.910 |

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

N/A

Remarks

D. Acquisition Strategy

Capabilities will be developed and integrated onto various information systems and platforms using an agile acquisition approach. The projects will be executed and contracted with appropriate vendor(s) to deliver capability while driving competition where possible.

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| Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force | | Date: March 2023 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 672002 / Agile ISR |

| FY 2022 | | | | FY 2023 | | | | FY 2024 | | | | FY 2025 | | | | FY 2026 | | | | FY 2027 | | | | FY 2028 | | | |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 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 |

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| Agile ISR | |
| DRACO 6.0 | |
| DRACO 7.0 | |
| DRACO Development | |
| AgilePod* | |

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| Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force | | Date: March 2023 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 672002 / Agile ISR |

Schedule Details

| Events by Sub Project | Start | | End | |
|-----------------------|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Agile ISR | | | | |
| DRACO 6.0 | 1 | 2022 | 2 | 2024 |
| DRACO 7.0 | 2 | 2024 | 2 | 2026 |
| DRACO Development | 1 | 2022 | 4 | 2027 |
| AgilePod* | 1 | 2023 | 4 | 2028 |

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|---|-------------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force | | | | | | | | | | Date: March 2023 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | | | | Project (Number/Name) 672003 / Sensors Open System Architecture | | | |
| COST (\$ in Millions) | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
| 672003: Sensors Open System Architecture | - | 0.734 | 10.782 | 5.948 | 0.000 | 5.948 | 5.843 | 6.058 | 6.048 | 0.000 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The Sensors Open System Architecture (SOSA) project develops common hardware standards and associated software interfaces in support of the development for modalities of sensors, such as: RADAR, SIGINT, EW, Communications and EO/IR (development of standards and open architecture interfaces for Hardware and Electrical/Mechanical interfaces) in support of multiple airborne reconnaissance platforms, both manned and unmanned. Its objectives are to develop, demonstrate, and rapidly upgrade/iterate advanced, interoperable, multi-platform solutions to reduce the find, fix, target, and track kill chain timeline, and to provide safe separation and collision avoidance for remotely piloted aircraft through development of abstraction interfaces for sense (such as RADAR, ADS-B, TCAS, Next Generation Sensors, ASIP, and ASARS) and avoid logic.

This project is designed to support development of the Next Generation Sensors program, as well as other AFLCMC/MI emerging and program of record needs. As part of the development effort SOSA will be funding and supporting first article development of key common hardware solutions.

The Open Architecture SIL (System Integration Laboratory) that supports SOSA will continue development of common hardware standards and associated software interfaces and provide a conformance/compliance program for industry partners and other DoD services.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver technology and sensor capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F.

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

| | FY 2022 | FY 2023 | FY 2024 |
|---|----------------|----------------|----------------|
| Title: Sensors Open System Architecture | 0.734 | 10.782 | 5.948 |
| Description: Description: The Sensors Open System Architecture (SOSA) project will execute activities to develop common hardware standards and associated software interfaces. | | | |
| FY 2023 Plans: | | | |
| - Continue to develop prototype of SOSA SAR/SIGINT capability | | | |
| - Continue to develop AgilePod internal electrical/mechanical interfaces | | | |
| - Continue to implement and execute hardware demonstrations | | | |
| - Continue to support EO/IR article prototyping | | | |

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|---|---|---|
| Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force | | Date: March 2023 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 672003 / Sensors Open System Architecture |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2022 | FY 2023 | FY 2024 |
|---|----------------|----------------|----------------|
| - Continue to prepare and host open standards interoperability demonstrations | | | |
| <i>FY 2024 Plans:</i> | | | |
| - Will continue to develop prototype of SOSA SAR/SIGINT capability | | | |
| - Will continue to develop AgilePod internal electrical/mechanical interfaces | | | |
| - Will continue to implement and execute hardware demonstrations | | | |
| - Will continue to support EO/IR article prototyping | | | |
| - Will continue to prepare and host open standard interoperability demonstrations | | | |
| <i>FY 2023 to FY 2024 Increase/Decrease Statement:</i> | | | |
| FY23 to FY24 decrease due to FY23 congressional add. FY24 returning to normal levels. | | | |
| Accomplishments/Planned Programs Subtotals | 0.734 | 10.782 | 5.948 |

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

N/A

Remarks

D. Acquisition Strategy

Coalition of Industry, DoD, and OGA partnerships to develop common hardware standards and associated software interfaces to support ACC and AFLCMC requirements for next generation sensors. Acquisition initiatives consist of prototype activities, risk reduction and demonstrations. Contracting strategy for FY23 and beyond is to be determined.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force **Date:** March 2023

| | | |
|--|---|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 672003 / Sensors Open System Architecture |
|--|---|---|

| Product Development (\$ in Millions) | | | | FY 2022 | | FY 2023 | | FY 2024 Base | | FY 2024 OCO | | FY 2024 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 |
| SOSA Hardware Development | SS/FFP | Dynetics (JSIL) : Huntsville, AL | - | - | | - | | 0.600 | Oct 2023 | - | | 0.600 | Continuing | Continuing | - |
| SOSA Hardware Development (1) | SS/CPFF | Skayl : DC & Arizona, AZ | - | - | | - | | 0.500 | Mar 2024 | - | | 0.500 | Continuing | Continuing | - |
| SOSA Hardware Development (2) | SS/CPFF | DCS : Dayton, OH | - | 0.439 | Dec 2021 | - | | 0.000 | Mar 2024 | - | | 0.000 | Continuing | Continuing | - |
| SOSA Hardware Development (3) | SS/CPFF | CFD : Dayton, OH | - | - | | 0.487 | Dec 2022 | 1.100 | Mar 2024 | - | | 1.100 | Continuing | Continuing | - |
| SOSA Hardware Development (4) | SS/CPFF | GTRI Conformance : Atlanta, GA | - | - | | - | | 0.500 | Oct 2023 | - | | 0.500 | Continuing | Continuing | - |
| SOSA Hardware Development (5) | SS/CPFF | GTRI H/W Dev : Atlanta, GA | - | - | | - | | 0.500 | Jun 2024 | - | | 0.500 | Continuing | Continuing | - |
| SOSA Hardware Development (6) | SS/CPFF | BAH : Baltimore, MD | - | - | | - | | - | | - | | - | Continuing | Continuing | - |
| SOSA Hardware Development (7) | SS/CPFF | GTRI Hardware Upgrade : Atlanta, GA | - | - | | - | | 1.440 | Jan 2024 | - | | 1.440 | Continuing | Continuing | - |
| SOSA Hardware Development (8) | SS/CPFF | Leidos : Dayton, OH | - | 0.200 | Dec 2021 | 0.200 | Dec 2022 | 1.308 | Feb 2024 | - | | 1.308 | Continuing | Continuing | - |
| SOSA Hardware Development (9) | SS/FFP | Spectranetix/Pacific Def : El Segundo, CA | - | - | | - | | - | | - | | - | 0.000 | 0.000 | - |
| Subtotal | | | - | 0.639 | | 0.687 | | 5.948 | | - | | 5.948 | Continuing | Continuing | N/A |

| Management Services (\$ in Millions) | | | | FY 2022 | | FY 2023 | | FY 2024 Base | | FY 2024 OCO | | FY 2024 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 Management Administration (PMA) | Various | Not specified. : TBD | - | 0.095 | Dec 2021 | 10.095 | Aug 2023 | 0.000 | | - | | 0.000 | Continuing | Continuing | - |
| Subtotal | | | - | 0.095 | | 10.095 | | 0.000 | | - | | 0.000 | Continuing | Continuing | N/A |

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|--|--------------------|----------------|----------------|---|--------------------|----------------------|-------------------------|---|---------------------------------|--|--|
| Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force | | | | | | | | Date: March 2023 | | | |
| Appropriation/Budget Activity 3600 / 7 | | | | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | | | | Project (Number/Name) 672003 / Sensors Open System Architecture | | | |
| | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract | | |
| Project Cost Totals | - | 0.734 | 10.782 | 5.948 | - | 5.948 | Continuing | Continuing | N/A | | |

Remarks

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| Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force | | Date: March 2023 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 672003 / Sensors Open System Architecture |

| FY 2022 | | | | FY 2023 | | | | FY 2024 | | | | FY 2025 | | | | FY 2026 | | | | FY 2027 | | | | FY 2028 | | | |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 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 |

| | |
|--|--|
| Sensors Open System Architecture | |
| Technical Standard Publications (Semi-Annual Deliveries) | |
| SOSA Demonstration | |
| SIL Activites | |

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| Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force | | Date: March 2023 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 672003 / Sensors Open System Architecture |

Schedule Details

| Events by Sub Project | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Sensors Open System Architecture | | | | |
| Technical Standard Publications (Semi-Annual Deliveries) | 1 | 2022 | 4 | 2028 |
| SOSA Demonstration | 1 | 2022 | 4 | 2028 |
| SIL Activites | 1 | 2022 | 4 | 2028 |

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|--|-------------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force | | | | | | | | | | Date: March 2023 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | | | | Project (Number/Name) 674818 / Imaging and Targeting Support | | | |
| COST (\$ in Millions) | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
| 674818: <i>Imaging and Targeting Support</i> | - | 24.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 30.587 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The purpose is to develop, mature, demonstrate, and rapidly transition next-generation, persistent, wide area surveillance and common imagery reconnaissance sensor capabilities (active and passive systems), including sensor data processing, for multiple airborne platforms, as well as sensor products to aid in rapid targeting (geolocation models, sensor-based exploitation tools, sensor networking capabilities).

Developmental efforts pursued include but are not limited to: Radar, Electro-Optical/Infrared, hyperspectral imagery (HSI), Lidar/Ladar, and other technologies to improve measurement and signature intelligence, polarimetric imaging, maritime search/track, foliage penetration, nuclear event detection, and other modalities; increased geolocation accuracy; increased dismount detection capability; advanced sensor data correlation; automated target detection; network centric warfare; and other ISR and associated planning and direction; collection; processing and exploitation; analysis and production; and dissemination capabilities. These efforts are intended to reduce both target search and kill chain timelines as well as supporting traditional intelligence activities. This project will also increase interoperability by developing common standards and interfaces.

The funds in this project are distributed in priority order, as supported by the Challenging Targets Initial Capabilities Document and set by the GCWG, for the goal of building a comprehensive GEOINT capability for the USAF. On an annual basis, developmental technologies are reviewed against warfighter capabilities and requirements based on strategic roadmaps and the results of the ASI AoA as prefaced in the Challenging Targets Initial Capabilities Document. Efforts advancing the technological maturity of promising sensors and processing capabilities are reviewed and prioritized into a recommended list for senior executive direction to implement in the coming year.

Activities also include studies and analysis to support both current program planning and execution and future program planning.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver technology and sensor capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F.

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

| | FY 2022 | FY 2023 | FY 2024 |
|---|----------------|----------------|----------------|
| Title: ISR Tech Dev | - | 0.000 | 0.000 |
| Description: Mold current and future ISR into platform agnostic, non-proprietary, autonomous Multi-INT fusion and cross cuing solutions that are designed based on capability and mission requirements. Develop technologies for airborne ISR sensors to include artificial intelligence-driven automatic sensing and low-cost attritable ISR sensors. | | | |

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| Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force | | Date: March 2023 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 674818 / Imaging and Targeting Support |

| | | | |
|---|----------------|----------------|----------------|
| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2022 | FY 2023 | FY 2024 |
| <i>FY 2023 Plans:</i> N/A | | | |
| <i>FY 2024 Plans:</i> N/A | | | |
| <i>FY 2023 to FY 2024 Increase/Decrease Statement:</i> N/A | | | |
| Accomplishments/Planned Programs Subtotals | - | 0.000 | 0.000 |

| | | |
|---|----------------|----------------|
| | FY 2022 | FY 2023 |
| Congressional Add: ASARS-2B | 24.000 | - |
| <i>FY 2022 Accomplishments:</i> Develop/design/fabricate/integrate/demonstrate/test and field deep look high altitude ISR radar capabilities. | | |
| Congressional Adds Subtotals | 24.000 | - |

| | | | | | | | | | | | |
|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
| Line Item | FY 2022 | FY 2023 | FY 2024 | FY 2024 | FY 2024 | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
| • RDTE 07 PE 0305202F: Dragon U-2 | 0.000 | 0.000 | 0.000 | - | 0.000 | 0.000 | - | - | - | Continuing | Continuing |

Remarks

D. Acquisition Strategy
ASARS / High Altitude SAR technology maturation is conducted by Air Force Life Cycle Management Center/Intelligence, Surveillance, and Reconnaissance and Special Operations Forces (AFLCMC/WIN), in conjunction and cooperation with AFLCMC/HBG (Robins AFB) for test support.

Acquisition strategy is to maximize commercial and national development efforts and investment through multiple contracting methods, including the use of engineering change proposals to modify existing contracts and new contracts that were awarded both competitively or on a sole source basis.

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| Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force | | Date: March 2023 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 674818 / Imaging and Targeting Support |

| FY 2022 | | | | FY 2023 | | | | FY 2024 | | | | FY 2025 | | | | FY 2026 | | | | FY 2027 | | | | FY 2028 | | | |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 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 |

| | |
|-------------------------------------|--|
| ASARS-2B (Congressional Add) | |
| ASARS-2B | |

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| Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force | | Date: March 2023 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 674818 / Imaging and Targeting Support |

Schedule Details

| Events by Sub Project | Start | | End | |
|-------------------------------------|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| ASARS-2B (Congressional Add) | | | | |
| ASARS-2B | 1 | 2022 | 4 | 2022 |

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force **Date:** March 2023

| | | |
|--|---|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 674820 / Sensor Development |
|--|---|---|

| COST (\$ in Millions) | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|-----------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 674820: <i>Sensor Development</i> | - | 30.344 | 48.692 | 18.928 | 0.000 | 18.928 | 24.231 | 0.000 | 0.000 | 0.000 | 0.000 | 122.195 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The Sensors Development project increases the range and collection capability, interoperability and processing of the Advanced Synthetic Aperture Radar Systems [ASARS] through design, development, testing, and fielding efforts. The Sensors Development efforts advance the capability of ASARS for U-2 employment, and is a critical component for the multi-INT Next Generation Sensors, project 672001, efforts. ASARS-2B [front-end] & ASARS-2C [back-end] efforts provide critical advancements and risk reduction in SAR/Moving Target Indication capability to be implemented in the future multi-INT, platform agile capability that Next Generation Sensors will provide.

The ASARS effort is a fifth generation, deep-look, high-altitude, ISR radar that is the foundation for the radar component of the Next Generation Sensors [NGS] family of systems as outlined in the AFROC approved ASARS-2C draft Capabilities Development Document [CDD]. ASARS-2B [front-end] is the antenna and receiver exciter replacement. The ASARS-2C [back end] data processing efforts extend the ASARS-2B [front-end] radar capability using open architecture data processing and multi-platform integration. Open architecture improves performance and lowers cost by facilitating and enabling qualified third party software vendors to incorporate future multi-ISR capability to advance interoperability across joint operations. ASARS increases current capability and addresses National Defense Strategy Key Operational Problems and ISR Dominance flight plan.

This program element may include necessary emergent or unanticipated civilian pay expenses required to manage, execute, and deliver ASARS-2B for emergent or unanticipated weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F. In PY23 \$.261M and in CY24 \$.266M was expended for civilian pay expenses in this program element.

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

| | FY 2022 | FY 2023 | FY 2024 |
|--|---------|---------|---------|
| Title: Advanced Synthetic Aperture Radar System [ASARS]-2B (front-end) | 30.344 | 48.692 | 15.128 |
| Description: Develop, design, fabricate, integrate, test and field deep look high altitude ISR radar capabilities. | | | |
| FY 2023 Plans: - Finalize development, design, fabrication, integration and initial flight test for deep look high altitude ISR radar capabilities | | | |
| FY 2024 Plans: Will complete development, design, fabrication, integration and flight test for deep look high altitude ISR radar capabilities. | | | |
| FY 2023 to FY 2024 Increase/Decrease Statement: | | | |

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| Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force | | Date: March 2023 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 674820 / Sensor Development |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2022 | FY 2023 | FY 2024 |
|--|----------------|----------------|----------------|
| Decrease due to ramping down and completion of ASARS-2B development in FY24. | | | |
| Title: Advanced Synthetic Aperture Radar System [ASARS]-2C [back-end] | 0.000 | 0.000 | 3.800 |
| Description: Integrate open radar processing architectures for enhanced RF capabilities and third party mode development. | | | |
| FY 2023 Plans: - N/A | | | |
| FY 2024 Plans: Will complete development, design, fabrication, integration and flight test for deep look high altitude ISR radar capabilities. | | | |
| FY 2023 to FY 2024 Increase/Decrease Statement: N/A | | | |
| Accomplishments/Planned Programs Subtotals | 30.344 | 48.692 | 18.928 |

| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| <u>Line Item</u> | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u> <u>Base</u> | <u>FY 2024</u> <u>OCO</u> | <u>FY 2024</u> <u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
| • RDTE 07 PE 0305202F: <i>Dragon U-2</i> | 18.319 | 0.000 | 0.000 | - | 0.000 | 0.000 | 0.000 | - | - | 0.000 | 0.000 |

Remarks
A portion of the funding within the U-2 RDT&E line will be used to advance ASARS development / design/fabrication/integration/demonstration/testing and fielding deep look high altitude ISR radar capabilities.

D. Acquisition Strategy
ASARS / High Altitude SAR technology maturation is conducted by Air Force Life Cycle Management Center/Intelligence, Surveillance, and Reconnaissance and Special Operations Forces [AFLCMC/WIN], in conjunction and cooperation with AFLCMC/WIA [Robins AFB] for test support. Acquisition strategy is to maximize commercial and national development efforts and investment through multiple contracting methods, including but not limited to the use of engineering change proposals to modify existing contracts and new contracts that were awarded both competitively or on a sole source basis.

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| Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force | | Date: March 2023 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 674820 / Sensor Development |

| FY 2022 | | | | FY 2023 | | | | FY 2024 | | | | FY 2025 | | | | FY 2026 | | | | FY 2027 | | | | FY 2028 | | | |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 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 |

| | |
|----------------------------------|--|
| ASARS-2B | |
| ASARS-2B EMD | |
| -- NRE Contract Award (Feb 2019) | |
| -- PDR (Dec 2019) | |
| -- CDR (Jul 2020) | |
| ASARS-2C | |
| ASARS-2C | |
| -- Tech Maturation | |
| -- NRE Contract Award (Dec 2021) | |

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|--|---|---|
| Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force | | Date: March 2023 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 674820 / Sensor Development |

Schedule Details

| Events by Sub Project | Start | | End | |
|----------------------------------|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| ASARS-2B | | | | |
| ASARS-2B EMD | 1 | 2022 | 4 | 2024 |
| -- NRE Contract Award (Feb 2019) | 1 | 2022 | 1 | 2022 |
| -- PDR (Dec 2019) | 1 | 2022 | 1 | 2022 |
| -- CDR (Jul 2020) | 4 | 2022 | 4 | 2022 |
| ASARS-2C | | | | |
| ASARS-2C | 1 | 2022 | 4 | 2024 |
| -- Tech Maturation | 1 | 2022 | 4 | 2024 |
| -- NRE Contract Award (Dec 2021) | 1 | 2022 | 1 | 2022 |

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|---|-------------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force | | | | | | | | | | Date: March 2023 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | | | | Project (Number/Name) 675092 / JTC/SIL MUSE | | | |
| COST (\$ in Millions) | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
| 675092: JTC/SIL MUSE | - | 3.593 | 3.784 | 3.869 | 0.000 | 3.869 | 3.956 | 4.054 | 4.137 | 4.287 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The Multiple Unified Simulation Environment (MUSE) is the DoD flight simulation/training system of choice for many Unmanned Aircraft Systems (UAS), RPA, and airborne platforms. MUSE is also known as the Air Force Synthetic Environment for Reconnaissance and Surveillance (AFSERS) in its Air Force training application. The MUSE/AFSERS is a software suite that simulates UAS/RPA (e.g., MQ-9) systems, tailored air vehicle & data links, and visualization systems used for payload product outputs-including Full Motion Video (FMV), Fixed Frame Imagery (FFI), Ground Moving Target Indicator (GMTI) data, and Link 16 (J2.2 and J3.5) tracking messages. Outputs are compliant with applicable DoD standards and are continually tested against actual ground data processors to ensure DoD systems interoperability.

The Services and Combatant Commanders have a requirement for training with a system that provides a real-time simulation environment containing multiple domain systems that can be integrated with larger force-on-force simulations. The MUSE creates a realistic operational environment supporting military utility assessment, architecture, and employment concept development. Training, Tactics, Techniques and Procedures (TTP) refinement, practice Processing, Exploitation and Dissemination (PED) of multi-domain information. Conduct emerging concepts experimentation, optimizing Command, Control, Communications, and Computing (C4) with warfighting exercises and experiments. MUSE is the preferred UAS/RPA simulation system used by US Combatant Commanders and Joint Services to support command and battle staff C4 training.

The MUSE also creates a realistic operational environment that supports: an embedded training capability for new UAS/RPA system Program Managers; tools to minimize acquisition and life cycle cost and schedule impacts. MUSE conducts emerging concepts experimentation, future systems exploration, systems integration, and technology insertion; applications for Joint and Service-specific warfighting exercises; and C4 training optimization.

MUSE is currently used by all Services and most unified commands simulating MQ-1, MQ-9, RQ-4, MQ-1C, M/RQ-5, RQ-7, national and commercial satellite systems, P-3, E-8 and the U-2 during warfighting exercises. The AFSERS provides National Imagery Transmission Format (NITF) information for simulated data collection systems, supporting PED training. The MUSE is also used as a mission rehearsal tool for current, on-going military combat operations. Most of the MUSE/AFSERS software suite components are also used in multiple airborne platform system training devices. Including the MQ-9 [Medium Altitude Long Endurance Tactical (MALET) JSIL Aircrew Trainer (MJAT)] and RQ-4 [Global Hawk Sensor Operator Part Task Trainer (GHSOPTT), and Global Hawk Weapon System Trainer (WST)].

The Joint Technology Center/Systems Integration Laboratory (JTC/SIL) is the training center of excellence supporting UAS and RPA programs for the Services. JTC/SIL provides the system engineering, test and integration, interoperability, rapid technology insertion to address MUSE training requirements. The JTC/SIL combines the UAS/RPA knowledge of communications standards (such as STANAGs 4586, 4607, 4545 and 4609) with Hardware in the Loop (HIL) testing, MUSE, integrating with other DoD modeling and simulation (M&S) architectures. For those airborne assets normally not available for training, the JTC/SIL provides surrogate systems and interfaces. The JTC/SIL contributes to the distributed training environments, virtually linking participants from various locations worldwide, and are routinely supported

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| Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force | Date: March 2023 |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 675092 / JTC/SIL MUSE |
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within the MUSE architecture. The JTC/SIL continues to develop leading edge technologies supporting the rapidly evolving UAS/RPA training requirements required to support NDS future fighting force.

MUSE project funds may be utilized to cover the GCWG Secretariat, studies and analysis activities, supporting current program planning, execution, and future program planning.

This program element may include necessary emergent or unanticipated civilian pay expenses required to manage, execute, and deliver JTC/SIL MUSE for emergent or unanticipated weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F.

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

| | FY 2022 | FY 2023 | FY 2024 |
|--|----------------|----------------|----------------|
| <p>Title: Air Force Synthetic Environment for Reconnaissance and Surveillance (AFSERS) Development</p> <p>Description: DoD's simulation/training system of choice for Intelligence Surveillance and Reconnaissance (ISR) systems, sensors, and platforms. Includes AFSERS, Common Ground Station Interface, and infrastructure support.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Continue update of sensor models and release new MUSE/AFSERS versions to reflect evolving RPA and ISR improvements to support theater level exercises such as CCPT (formerly Ulchi Freedom Guardian and Key Resolve), Yama Sakura, Talisman Saber, Pacific Sentry/Fury, Austere Challenge, and associated events. - Continue rapid response to Cyber Security threats as they are identified. - Continue modifying the MUSE/AFSERS to further compliance with all CAFDMO requirements - Continue optimization of software architecture and modularization to facilitate extensibility and scalability - Continue integration of the new high fidelity SAR model into the MUSE/AFSERS baseline which provides realistic imagery based upon material encoded terrain - Continue conducting integration testing with designated federations (such as ASCCE) to ensure joint interoperability with services - Continue performing DMON Integration: Support CAFDMO SPRs for AFSERS; Integration/Testing at Distributed Training Centers - Continue development and integration of Electronic Warfare (EW) modeling and simulation capabilities to include GPS jamming effects. - Continue enhancing and integrating UAS Swarming modeling and simulation - Continue building new ISR platform simulations with multi-sensor capability to include P-3 ORION & P-8 POSEIDON. - Continue integration of new high fidelity MTI capabilities <p>FY 2024 Plans:</p> | 3.593 | 3.784 | 3.869 |

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| Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force | | Date: March 2023 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 675092 / JTC/SIL MUSE |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2022 | FY 2023 | FY 2024 |
|--|----------------|----------------|----------------|
| <ul style="list-style-type: none"> - Will continue to update sensor models and release new MUSE/AFSERS versions to reflect evolving RPA and ISR improvements to support theater level exercises such as CCPT (formerly Ulchi Freedom Guardian and Key Resolve), Yama Sakura, Talisman Saber, Pacific Sentry/Fury, Austere Challenge, and associated events. - Will continue to rapidly respond to Cyber Security threats as they are identified. - Will continue to modify the MUSE/AFSERS to further compliance with all CAFDMO requirements - Will continue to optimize software architecture and modularization to facilitate extensibility and scalability - Will continue to integrate a new high fidelity SAR model into the MUSE/AFSERS baseline which provides realistic imagery based upon material encoded terrain - Will continue to conduct integration testing with designated federations (such as ASCCE) to ensure joint interoperability with services - Will continue to perform DMON Integration: Support CAFDMO SPRs for AFSERS; Integration/Testing at Distributed Training Centers - Will continue to develop and integrate Electronic Warfare (EW) modeling and simulation capabilities to include GPS jamming effects. - Will continue to enhance and integrate UAS Swarming modeling and simulation - Will continue to build new ISR platform simulations with multi-sensor capability to include P-3 ORION & P-8 POSEIDON. - Will continue to integrate new high fidelity MTI capabilities <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding increased due to inflation.</p> | | | |
| Accomplishments/Planned Programs Subtotals | 3.593 | 3.784 | 3.869 |

| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|---|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-----------------------|
| Line Item | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
| • RDTE 07 PE 0305204A: <i>Tactical Unmanned Aerial Vehicles</i> | 0.000 | 0.000 | 0.000 | - | 0.000 | - | - | - | - | - | Continuing Continuing |

Remarks

D. Acquisition Strategy

This is an enterprise services effort, jointly funded and centrally managed by the US Army. JTC/SIL falls under US Army Futures Command. US Army PE 0305204A funding ending after FY 2021. Additional continual Army funding expected from PEO STRI, JSJ7, exercise events, and other external Army users. AFLCMC/WIN MIPRs funds in support of Unmanned Aircraft Systems modeling and simulation efforts. The Air Force POC is Dr. Lillian-Campbell from AF Agency for Modeling & Simulation which falls under HAF/A3T.

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| Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force | | Date: March 2023 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 675092 / JTC/SIL MUSE |

| FY 2022 | | | | FY 2023 | | | | FY 2024 | | | | FY 2025 | | | | FY 2026 | | | | FY 2027 | | | | FY 2028 | | | |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 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 |

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| JTC/SIL MUSE | |
| AFSERS Development | |

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| Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force | | Date: March 2023 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / <i>Airborne Reconnaissance Systems</i> | Project (Number/Name) 675092 / <i>JTC/SIL MUSE</i> |

Schedule Details

| Events by Sub Project | Start | | End | |
|-----------------------|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| JTC/SIL MUSE | | | | |
| AFSERS Development | 1 | 2022 | 4 | 2028 |

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|---|-------------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force | | | | | | | | | | Date: March 2023 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | | | | Project (Number/Name) 675291 / Gorgon Stare | | | |
| COST (\$ in Millions) | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
| 675291: Gorgon Stare | - | 12.500 | 5.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 17.500 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The Gorgon Stare system is a podded airborne sensor suite that provides city-sized wide area airborne surveillance and was integrated on MQ-9 Reapers. The Air Force Requirements Oversight Council (AFROC) approved Air Combat Command's recommendation to transition Gorgon Stare from a Quick Reaction Capability (QRC) to an Air Force Enduring Capability in November 2014. Gorgon Stare's requirements are documented in the Gorgon Stare Wide Area Airborne Sensor draft Capabilities Development Document (CDD). The acquisition strategy for this Air Force podded sensor suite solution is sustainment of the current capability with any upgrades implemented via validated -1067s, Urgent Operational Needs, or requirements as documented in the program CDD.

Development efforts conducted with FY2021 Congressionally added funds included the continuation of the following capabilities: Tagging and Tracking Full Field of View (FFoV), Electro-optical (EO)/Infrared (IR) Co-Collect, Airborne Tip and Cue, and Image Quality Enhancements Phase II. Development efforts in FY2022 used Congressionally added funds to include the continuation of, MQ-9 Blk 5 Integration, FFoV tagging and tracking, and Airborne Tip and Cue Phase II capabilities. FY2022 activities also included studies and analysis to support both current program planning and execution as well as future program planning.

Development efforts in FY 2023 include completing Image Quality Enhancements Phase III efforts and MQ-9 Block 5 Integration, and additional improvements to Wide Area Motion Imagery technology.

The acquisition program manager has the authority to redirect funding as necessary to meet Gorgon Stare current and emerging Combatant Commander requirements to better meet the war fighting objectives.

This program element may include necessary emergent or unanticipated civilian pay expenses required to manage, execute, and deliver Gorgon Stare for emergent or unanticipated weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F.

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

| | FY 2022 | FY 2023 |
|---|----------------|----------------|
| Congressional Add: Wide Area Motion Imagery | 12.500 | 5.000 |
| FY 2022 Accomplishments: Development efforts conducted with FY2021 Congressionally added funds included the continuation of the following capabilities: Tagging and Tracking Full Field of View (FFoV), Electro-optical (EO)/Infrared (IR) Co-Collect, Airborne Tip and Cue, and Image Quality Enhancements Phase II. Development efforts in FY2022 used Congressionally added funds to include the continuation of, MQ-9 Blk 5 Integration, FFoV tagging and tracking, and Airborne Tip and Cue Phase II capabilities. FY2022 activities also | | |

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force **Date:** March 2023

| | | |
|--|---|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 675291 / Gorgon Stare |
|--|---|---|

| | | |
|--|----------------|----------------|
| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2022 | FY 2023 |
| included studies and analysis to support both current program planning and execution as well as future program planning. | | |
| FY 2023 Plans: Development efforts in FY 2023 include completing Image Quality Enhancements Phase III efforts and MQ-9 Block 5 Integration, and additional improvements to Wide Area Motion Imagery technology. | | |
| Congressional Adds Subtotals | 12.500 | 5.000 |

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

| <u>Line Item</u> | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u> <u>Base</u> | <u>FY 2024</u> <u>OCO</u> | <u>FY 2024</u> <u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
|---|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| • APAF 05 PRDTB3: <i>MQ-9 UAS Payloads</i> | 40.800 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 40.800 |
| • APAF 06 PRDTB3: <i>Gorgon Stare</i> | 6.800 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 6.800 |

Remarks

D. Acquisition Strategy
 The wide area airborne surveillance requirement is being delivered via the Gorgon Stare podded wide area motion imagery sensor suite integrated on the MQ-9 Reaper RPA. Gorgon Stare transitioned from a QRC to an Air Force Enduring Capability under AFROC authority in November 2014. The program is executed by the 645th Aeronautical Systems Group, Intelligence, Surveillance, and Reconnaissance and Special Operations Forces Directorate as a post-Milestone C program. The sensor suite will be sustained in its current configuration. Any future capability upgrades will be fielded as a result of validated -1067s or Urgent Operational Needs, or requirements as documented in the program CDD.

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| Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force | | Date: March 2023 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 675291 / Gorgon Stare |

| FY 2022 | | | | FY 2023 | | | | FY 2024 | | | | FY 2025 | | | | FY 2026 | | | | FY 2027 | | | | FY 2028 | | | |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 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 |

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| Gorgon Stare | |
| EO/IR Co-Collect | [REDACTED] |

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| Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force | | Date: March 2023 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / <i>Airborne Reconnaissance Systems</i> | Project (Number/Name) 675291 / <i>Gorgon Stare</i> |

Schedule Details

| Events by Sub Project | Start | | End | |
|----------------------------|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| <i>Gorgon Stare</i> | | | | |
| EO/IR Co-Collect | 1 | 2023 | 4 | 2023 |

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|---|-------------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force | | | | | | | | | | Date: March 2023 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | | | | Project (Number/Name) 676025 / Data Compression | | | |
| COST (\$ in Millions) | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
| 676025: Data Compression | - | 11.523 | 0.100 | 5.503 | 0.000 | 5.503 | 5.674 | 8.492 | 8.666 | 8.980 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

RDUCE provides efficient and integrated compression of Intelligence, Surveillance, and Reconnaissance (ISR) sensor data. RDUCE develops, tests, and integrates new sensor data compression software and hardware for current and emerging airborne and space-based ISR sensors. The program develops compression capabilities for manned and unmanned platforms, associated ground stations, and the Distributed Common Ground Systems (DCGS). RDUCE data products meet standard certification for use within the Department of Defense and Intelligence Community (IC) Geospatial Intelligence (GEOINT), Signals Intelligence (SIGINT), and Measurement and Signatures Intelligence (MASINT) collection disciplines. RDUCE compression also allows for maximizing the use of limited bandwidth and delivering more data, faster to the tactical user in the field.

RDUCE activities include continuous studies, analysis, and updates to support program planning and execution. RDUCE also seeks to acquire certification of its data compression algorithms which includes acceptance into the DoD Information Technology Standards Registry (DISR). By ensuring compliance with appropriate standards governing bodies, RDUCE is always ready to satisfy new operational requirements.

This program element may include necessary emergent or unanticipated civilian pay expenses required to manage, execute, and deliver RDUCE for emergent or unanticipated weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F.

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

| | FY 2022 | FY 2023 | FY 2024 |
|--|----------------|----------------|----------------|
| Title: Data Compression | 11.523 | 0.100 | 5.503 |
| <p>Description: The Data Compression effort provides the warfighter capabilities to efficiently compress ISR data and to enable dissemination in near-real time to tactical, operational, and strategic users through bandwidth-limited dissemination systems, overcoming limited data storage space, and accelerating data transmission. The program focuses on current and emerging ISR sensors, including incorporation into open architectures like Common Open Architecture Radar Programs (COARPs), Future Airborne Capability Environment (FACE), and Sensor Open System Architecture (SOSA). The algorithms can be leveraged for any platform. For example, the HSI algorithm was selected by NASA to be included in an experimental system on the ISS. Outputs will meet standards certification for use within the DoD Geospatial, Signals and Measurement and Signatures Intelligence collection disciplines.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Provide continued updates and integration support for the mature TRL modalities (SAR, HSI, SAR Phase History, SIGINT) - FPGA hardware development to support SAR and HSI sensors | | | |

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| Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force | | Date: March 2023 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 676025 / Data Compression |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2022 | FY 2023 | FY 2024 |
|--|----------------|----------------|----------------|
| <ul style="list-style-type: none"> - Identify platform/sensor partners for initial test/integration across all sensor modes - Update compression algorithms to address any issues or previously uncaptured use cases to ensure they are operationally relevant <p>FY 2024 Plans:</p> <ul style="list-style-type: none"> - Will provide continued updates and integration support for the mature TRL modalities (SAR, HSI, SAR Phase History, SIGINT) - Will continue to identify platform/sensor partners for initial test/integration across all sensor modes - Will continue to update compression algorithms to address any issues or previously uncaptured use cases to ensure they are operationally relevant - Will explore EO/IR modality compression technologies - Will explore AI/ML compression techniques - Will explore Compression as a Service (CaaS) to accelerate integration efforts <p>FY 2023 to FY 2024 Increase/Decrease Statement: FY24 increased to return to programmed funding after FY23 decrease due to higher Air Force priorities.</p> | | | |
| Accomplishments/Planned Programs Subtotals | 11.523 | 0.100 | 5.503 |

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

N/A

Remarks

D. Acquisition Strategy

Data Compression program is conducted by Air Force Life Cycle Management Center/ Intelligence, Surveillance, and Reconnaissance and Special Operations Forces (AFLCMC/WIN). Acquisition strategy is to develop data compression hardware/software, and data compression standards for various ISR applications to include airborne, ground stations, data storage facilities, and exploitation tools. RDUCE will utilize existing contracts with full and open competition where appropriate. Integration will be accomplished by the requisite program offices.

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| Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force | | | | | | | | | | | | Date: March 2023 | | | |
|---|------------------------|--------------------------------|-------------|---|------------|---------|------------|---------------------------|------------|-------------|------------|------------------|------------------|------------|--------------------------|
| Appropriation/Budget Activity | | | | R-1 Program Element (Number/Name) | | | | Project (Number/Name) | | | | | | | |
| 3600 / 7 | | | | PE 0305206F / Airborne Reconnaissance Systems | | | | 676025 / Data Compression | | | | | | | |
| Product Development (\$ in Millions) | | | | FY 2022 | | FY 2023 | | FY 2024 Base | | FY 2024 OCO | | FY 2024 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 |
| LIDAR | Various | Various : Various | - | 1.715 | Mar 2022 | - | | 0.500 | Dec 2023 | - | | 0.500 | Continuing | Continuing | - |
| EO/IR | Various | Various : Various | - | 1.200 | Apr 2022 | - | | 0.450 | Dec 2023 | - | | 0.450 | Continuing | Continuing | - |
| SIGzip | Various | Various : Various | - | 1.000 | Mar 2022 | - | | - | | - | | - | Continuing | Continuing | - |
| Subtotal | | | - | 3.915 | | - | | 0.950 | | - | | 0.950 | Continuing | Continuing | N/A |
| Support (\$ in Millions) | | | | FY 2022 | | FY 2023 | | FY 2024 Base | | FY 2024 OCO | | FY 2024 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 |
| Standardization Development | C/CPAF | Various : Various | - | - | | 0.100 | Mar 2023 | 0.250 | Dec 2023 | - | | 0.250 | 0.000 | 0.350 | - |
| Standardization Development (FLEX) | C/CPAF | Various : Various | - | 0.500 | Feb 2022 | - | | 0.300 | Dec 2023 | - | | 0.300 | Continuing | Continuing | - |
| Standardization Development (SARzip) | C/CPAF | Various : Various | - | 0.500 | Feb 2022 | - | | 0.250 | Dec 2023 | - | | 0.250 | Continuing | Continuing | - |
| Standardization Development (zPHD) | C/CPAF | Various : Various | - | 0.500 | Feb 2022 | - | | 0.250 | Dec 2023 | - | | 0.250 | Continuing | Continuing | - |
| Standardization Development (SIGzip) | C/CPAF | Various : Various | - | - | | - | | 0.250 | Dec 2023 | - | | 0.250 | Continuing | Continuing | - |
| Subtotal | | | - | 1.500 | | 0.100 | | 1.300 | | - | | 1.300 | Continuing | Continuing | N/A |
| Test and Evaluation (\$ in Millions) | | | | FY 2022 | | FY 2023 | | FY 2024 Base | | FY 2024 OCO | | FY 2024 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 |
| ADDA Lab | C/CPAF | Various : Various | - | 0.796 | Feb 2022 | - | | 1.000 | Dec 2023 | - | | 1.000 | Continuing | Continuing | - |
| Integration Activities | C/CPAF | Various : Various | - | 4.047 | Jan 2022 | - | | 1.253 | Dec 2023 | - | | 1.253 | Continuing | Continuing | - |
| COMPASE Lab | C/CPAF | Various : Various | - | 0.250 | Jan 2022 | - | | - | | - | | - | Continuing | Continuing | - |
| Not Specified | C/TBD | Not specified. : TBD | - | - | | - | | - | | - | | - | Continuing | Continuing | - |
| Subtotal | | | - | 5.093 | | - | | 2.253 | | - | | 2.253 | Continuing | Continuing | N/A |

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| Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force | | Date: March 2023 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 676025 / Data Compression |

Schedule Details

| Events by Sub Project | Start | | End | |
|--------------------------------------|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| RDUCE | | | | |
| LIDAR Phase 1 | 1 | 2022 | 4 | 2022 |
| LIDAR Phase 2 | 1 | 2024 | 4 | 2026 |
| SIGINT | 1 | 2022 | 2 | 2023 |
| COMPASE Lab | 1 | 2022 | 2 | 2022 |
| ADDA Lab | 1 | 2022 | 4 | 2028 |
| Standardization Development | 1 | 2022 | 4 | 2028 |
| Standardization Development (SARzip) | 1 | 2022 | 4 | 2028 |
| Standardization Development (FLEX) | 1 | 2022 | 4 | 2028 |
| Standardization Development (zPHD) | 1 | 2022 | 4 | 2028 |
| Standardization Development (SIGzip) | 1 | 2023 | 4 | 2028 |
| EO/IR | 1 | 2024 | 4 | 2026 |
| AI/ML compression | 1 | 2023 | 4 | 2025 |