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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 3: Advanced Technology Development (ATD)</i> | R-1 Program Element (Number/Name) PE 0603112F / <i>Advanced Materials for Weapon 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 | - | 60.566 | 49.765 | 30.372 | 0.000 | 30.372 | 32.704 | 34.331 | 35.907 | 37.968 | Continuing | Continuing |
| 632100: <i>Laser Hardened Materials</i> | - | 21.050 | 18.295 | 15.957 | 0.000 | 15.957 | 16.655 | 16.764 | 17.107 | 17.726 | Continuing | Continuing |
| 633153: <i>Non-Destructive Inspection Development</i> | - | 2.555 | 4.806 | 5.178 | 0.000 | 5.178 | 4.564 | 4.716 | 4.812 | 4.986 | Continuing | Continuing |
| 633946: <i>Materials Transition</i> | - | 36.961 | 26.664 | 9.237 | 0.000 | 9.237 | 11.485 | 12.851 | 13.988 | 15.256 | Continuing | Continuing |

A. Mission Description and Budget Item Justification

This program develops and demonstrates advanced materials and process technologies to satisfy Department of the Air Force requirements in areas such as survivability, readiness, affordability, and new processes and materials. These projects ensure the Department of the Air Force weapon systems are ready and able when needed.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver science and technology capabilities. The use of program funds in this PE would be in addition to the civilian pay expenses budgeted in program elements 0601102F, 0602020F, 0602102F, 0602201F, 0602202F, 0602203F, 0602204F, 0602602F, 0602605F, 0602788F, 1206601SF, and 0602298F.

This program element may include necessary expenses to support the operation and maintenance of facilities to manage, execute, and deliver science and technology capabilities.

This program is in Budget Activity 3, Advanced Technology Development because this budget activity includes development of subsystems and components and efforts to integrate subsystems and components into system prototypes for field experiments and/or tests in a simulated environment.

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 3: Advanced Technology Development (ATD)</i> | R-1 Program Element (Number/Name) PE 0603112F / <i>Advanced Materials for Weapon Systems</i> |
|--|--|

| B. Program Change Summary (\$ in Millions) | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 63.378 | 29.116 | 34.883 | 0.000 | 34.883 |
| Current President's Budget | 60.566 | 49.765 | 30.372 | 0.000 | 30.372 |
| Total Adjustments | -2.812 | 20.649 | -4.511 | 0.000 | -4.511 |
| • Congressional General Reductions | 0.000 | 0.000 | | | |
| • Congressional Directed Reductions | 0.000 | 0.000 | | | |
| • Congressional Rescissions | 0.000 | 0.000 | | | |
| • Congressional Adds | 0.000 | 25.000 | | | |
| • Congressional Directed Transfers | 0.000 | -4.351 | | | |
| • Reprogrammings | 0.000 | 0.000 | | | |
| • SBIR/STTR Transfer | -2.809 | 0.000 | | | |
| • Other Adjustments | -0.003 | 0.000 | -4.511 | 0.000 | -4.511 |

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

Project: 632100: *Laser Hardened Materials*

Congressional Add: *Program increase - laser protective eyewear*

Congressional Add: *Program increase - advanced aerospace materials technology development and testing*

Congressional Add Subtotals for Project: 632100

Project: 633946: *Materials Transition*

Congressional Add: *Program increase - Metals Affordability Research*

Congressional Add: *Program increase - polymer printing technology for additive manufacturing*

Congressional Add: *Program increase - certification for advanced materials*

Congressional Add Subtotals for Project: 633946

Congressional Add Totals for all Projects

| | FY 2022 | FY 2023 |
|--|----------------|----------------|
| | | |
| | 1.756 | 0.000 |
| | 0.000 | 10.000 |
| | 1.756 | 10.000 |
| | | |
| | 9.758 | 10.000 |
| | 4.879 | 5.000 |
| | 14.637 | 0.000 |
| | 29.274 | 15.000 |
| | 31.030 | 25.000 |

Change Summary Explanation

Decrease in FY 2023 and FY 2024 is due to Congressionally directed transfer into Program 0603032F, Future AF Integrated Technology Demos, Project 630320, Air Force Vanguard.

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| Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force | | | | | | | | | | Date: March 2023 | | |
| Appropriation/Budget Activity 3600 / 3 | | | | | R-1 Program Element (Number/Name) PE 0603112F / <i>Advanced Materials for Weapon Systems</i> | | | | Project (Number/Name) 632100 / <i>Laser Hardened Materials</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 |
| 632100: <i>Laser Hardened Materials</i> | - | 21.050 | 18.295 | 15.957 | 0.000 | 15.957 | 16.655 | 16.764 | 17.107 | 17.726 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

This project develops and demonstrates advanced materials technologies that enhance protection for Department of the Air Force personnel to ensure safety and to enable them to perform required missions in threat environments. Advanced materials technologies also enhance protection for Department of the Air Force sensors and systems to ensure safety, survivability, and operability in threat environments.

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

| | FY 2022 | FY 2023 | FY 2024 |
|--|----------------|----------------|----------------|
| Title: Aerospace Systems Protection | 11.109 | 4.816 | 10.372 |
| Description: Develop and demonstrate materials technologies that enhance hardening for sensors, avionics, and components to increase survivability and mission effectiveness of Department of the Air Force systems. | | | |
| FY 2023 Plans: Continue to validate and assess the demonstrated results and transition the use of protection technologies for future sensor designs and strategies to mitigate directed energy damage for visual/near, short-wave, and mid-wave infrared detectors. Continue transitioning new technologies and integrate the developments into light, operator friendly survivable electro-optic sensors that provide full spectrum protection for missile warning. Continue analyzing the high-performance properties of damage limiting semiconductor materials designed to harden electro-optic imaging sensors. Continue to transition developed laser countermeasures for survivability of dynamic electro-optic/infrared imagers. Continue to advance the employment and integration of evolved computational materials science to model materials characteristics to increase accuracy and shorten design cycle time of coatings development for use in sensor hardening. Continue development of materials for survivable next generation aircraft sensor systems. Complete technology development and maturation of anti-access munitions hardening. | | | |
| FY 2024 Plans: Continue validating and assessing the demonstrated results and transition the use of protection technologies for future sensor designs and strategies to mitigate directed energy damage for visual/near, short-wave, and mid-wave infrared detectors. Continue transitioning technologies and integrate the developments into light, operator friendly survivable electro-optic sensors that provide full spectrum protection for missile warning. Continue analyzing the high-performance properties of damage limiting semiconductor materials designed to harden electro-optic imaging sensors. Continue transitioning developed laser countermeasures for survivability of dynamic electro-optic/infrared imagers. Continue advancing the employment and integration of evolved computational materials science to model materials characteristics to increase accuracy and shorten design cycle time | | | |

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| Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force | | Date: March 2023 | | |
| Appropriation/Budget Activity 3600 / 3 | R-1 Program Element (Number/Name) PE 0603112F / <i>Advanced Materials for Weapon Systems</i> | Project (Number/Name) 632100 / <i>Laser Hardened Materials</i> | | |
| B. Accomplishments/Planned Programs (\$ in Millions) | | FY 2022 | FY 2023 | FY 2024 |
| of coatings development for use in sensor hardening. Continue development of materials for survivable next generation aircraft sensor systems. FY 2023 to FY 2024 Increase/Decrease Statement: FY 2024 funding increased compared to FY 2023 by \$5.556 million. Funding increase is due to increased emphasis on survivable aircraft sensor systems | | | | |
| Title: Aircrew Protection Description: Develop and demonstrate materials technologies that enhance protection for Department of the Air Force personnel to ensure safety and to enable crews to perform required missions in a threat environment. FY 2023 Plans: Continue to develop, validate, demonstrate, and transition laser protection materials and technologies for personnel protection. Continue to validate and develop light-weight helmet-mounted sensor hardening materials focusing on next-generation nighttime specialized sensors. Continue to advance transition efforts and development of visor based aircrew protection materials with agile protection. Continue to evaluate and assess new materials and advances in characterization and demonstration of eye protection technologies using computational materials science tools. Continue to transition, validate, mature, and test improvements to functionality and performance of personnel protection technologies in expected operational conditions. Continue development and testing of materials technologies to protect against nuclear flash blindness. FY 2024 Plans: Continue developing, validating, demonstrating, and transitioning laser protection materials and technologies for personnel protection. Complete validation and development of light-weight helmet-mounted sensor hardening materials focusing on next-generation nighttime specialized sensors. Continue advancing transition efforts and development of visor based aircrew protection materials with agile protection. Continue evaluating and assessing materials and advances in characterization and demonstration of eye protection technologies using computational materials science tools. Continue transitioning, validate, mature, and test improvements to functionality and performance of personnel protection technologies in expected operational conditions. Continue development and testing of materials technologies to protect against nuclear flash blindness. FY 2023 to FY 2024 Increase/Decrease Statement: FY 2024 increased compared to FY 2023 by \$2.106 million. Funding increased due to increased emphasis on visor based aircrew protection. | | 8.185 | 3.479 | 5.585 |
| Title: Transformational Technology Development Description: This funding allocation will initiate new and continue existing Transformational Technology Development efforts. The Transformational Technology Development program will select new projects, in alignment with mission focused areas | | 0.000 | 0.000 | 0.000 |

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| Appropriation/Budget Activity 3600 / 3 | R-1 Program Element (Number/Name) PE 0603112F / <i>Advanced Materials for Weapon Systems</i> | Project (Number/Name) 632100 / <i>Laser Hardened Materials</i> |
|--|--|--|

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2022 | FY 2023 | FY 2024 |
|---|---------|---------|---------|
| <p>which include, but are not limited to: Intelligent Planning and Wargaming, Battlespace Awareness, Integrated Base Defense, and Hypersonic Multi-Mission Aircraft. Investments focus on technology development efforts including, but are not limited to technologies to enhance survivability, operability and performance of personnel, sensors, and structures in a threat environment through advanced materials technologies for hardening avionics, sensors, and components and increasing personnel protection. This investment is overseen by senior representatives from Air and Space Forces who participate in the submission, initial review, and down-selection of Transformational Technology Development proposed efforts. Final selections will be reviewed by the Air Force Deputy Assistant Secretary for Science, Technology, and Engineering before a final recommendation for Congressional approval is made.</p> <p>FY 2023 Plans: In FY 2023 this effort will be realigned under Program 0603032F Future AF Integrated Technology Demos, Project 630320, Air Force Vanguard, effort Vanguard Prospect - Fight Tonight.</p> <p>FY 2024 Plans: Not applicable.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Not applicable,</p> | | | |
| Accomplishments/Planned Programs Subtotals | 19.294 | 8.295 | 15.957 |

| | FY 2022 | FY 2023 |
|--|---------|---------|
| Congressional Add: Program increase - laser protective eyewear <i>FY 2022 Accomplishments:</i> Conducted Congressionally directed efforts. <i>FY 2023 Plans:</i> Not Applicable | 1.756 | 0.000 |
| Congressional Add: Program increase - advanced aerospace materials technology development and testing <i>FY 2022 Accomplishments:</i> Not applicable. <i>FY 2023 Plans:</i> Conduct Congressionally directed efforts. | 0.000 | 10.000 |
| Congressional Adds Subtotals | 1.756 | 10.000 |

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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 / 3 | R-1 Program Element (Number/Name) PE 0603112F / <i>Advanced Materials for Weapon Systems</i> | Project (Number/Name) 632100 / <i>Laser Hardened Materials</i> |
|--|--|--|

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</u> <u>Complete</u> | <u>Total Cost</u> |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • RDTE 03 0603112F: <i>Advanced Materials for Weapon Systems</i> | 0.000 | 0.000 | 0.000 | - | 0.000 | - | - | - | - | 0.000 | 0.000 |

Remarks

D. Acquisition Strategy

N/A

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|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|--|-------------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force | | | | | | | | | | Date: March 2023 | | |
| Appropriation/Budget Activity 3600 / 3 | | | | | R-1 Program Element (Number/Name) PE 0603112F / <i>Advanced Materials for Weapon Systems</i> | | | | Project (Number/Name) 633153 / <i>Non-Destructive Inspection Development</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 |
| 633153: <i>Non-Destructive Inspection Development</i> | - | 2.555 | 4.806 | 5.178 | 0.000 | 5.178 | 4.564 | 4.716 | 4.812 | 4.986 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

This project develops and demonstrates advanced nondestructive inspection and evaluation technologies to monitor performance integrity and to detect failure causing conditions in weapon systems components and materials. Nondestructive inspection and evaluation capabilities greatly influence and/or limit many design, manufacturing, and maintenance practices. This project provides technology to satisfy Department of the Air Force requirements to extend the lifetime of current systems through increased reliability and cost-effectiveness at field and depot maintenance levels. Equally important is assuring manufacturing quality, integrity, and safety requirements are built in.

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

| | FY 2022 | FY 2023 | FY 2024 |
|---|----------------|----------------|----------------|
| Title: Special Material Inspection Technologies | 0.235 | 1.202 | 1.295 |
| Description: Develop and demonstrate advanced inspection technologies supporting special material systems to enhance affordability and ensure full performance and survivability. | | | |
| FY 2023 Plans: Continue the transition process to depots and flight lines for improved methods to acquire and analyze data to facilitate improved characterization, registration, and tracking of degradation and damage to special materials that enables/ensures more affordable coatings assessment. Continue to validate tools to improve characterization and failure modes of specialty multilayer coatings. Continue to develop automation for robotic technologies for visual inspections that will realize human-assisted inspection capabilities and begin to provide capabilities for automated multi-spectral characterization. | | | |
| FY 2024 Plans: Continue the transition process to depots and flight lines for improved methods to acquire and analyze data to facilitate improved characterization, registration, and tracking of degradation and damage to special materials that enables/ensures more affordable coatings assessment. Continue validating tools to improve characterization and failure modes of specialty multilayer coatings. Continue developing automation for robotic technologies for visual inspections that will realize human-assisted inspection capabilities and provide capabilities for automated multi-spectral characterization. | | | |
| FY 2023 to FY 2024 Increase/Decrease Statement: FY 2024 increased compared to FY 2023 by 0.093 million. Funding increase due to above described plans. | | | |
| Title: Advanced System Monitoring Technologies | 0.706 | 3.604 | 3.883 |

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| Appropriation/Budget Activity 3600 / 3 | R-1 Program Element (Number/Name) PE 0603112F / <i>Advanced Materials for Weapon Systems</i> | Project (Number/Name) 633153 / <i>Non-Destructive Inspection Development</i> | | |
| B. Accomplishments/Planned Programs (\$ in Millions) | | FY 2022 | FY 2023 | FY 2024 |
| <p>Description: Develop and demonstrate advanced systems status monitoring technologies to provide on-board and embedded sensing to gain continuous awareness of the state of key subsystems.</p> <p>FY 2023 Plans: Continue to demonstrate advanced analytical methods to more accurately assess the location, and register spatial location, of damage detected using nondestructive inspection data and results. Develop augmented reality technologies to improve the process of performing non-destructive evaluation tasks, acquiring and archiving data and reporting results, and enabling improved inspector guidance and visualization. Continue development and transition of novel approaches to collect, analyze, transport, archive, and use digital nondestructive inspection data and information. Continue enhanced methods for compiling, reporting, collecting and rapidly analyzing digital nondestructive testing and evaluation data necessary for improved damage detection and characterization. Demonstrate and transition technologies to locate damage to composite structures without coating removal and to inspect composite structures with complex geometry. Continue the transition and integration of computational materials science tools to provide data necessary for life prediction methods to enable risk-based life management.</p> <p>FY 2024 Plans: Continue demonstrating advanced analytical methods to more accurately assess the location, and register spatial location, of damage detected using nondestructive inspection data and results. Develop augmented reality technologies to improve the process of performing non-destructive evaluation tasks, acquiring and archiving data and reporting results, and enabling improved inspector guidance and visualization. Continue development and transition of novel approaches to collect, analyze, transport, archive, and use digital nondestructive inspection data and information. Continue enhanced methods for compiling, reporting, collecting and rapidly analyzing digital nondestructive testing and evaluation data necessary for improved damage detection and characterization. Demonstrate and transition technologies to locate damage to composite structures without coating removal and to inspect composite structures with complex geometry. Continue the transition and integration of computational materials science tools to provide data necessary for life prediction methods to enable risk-based life management.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: FY 2024 increased compared to FY 2023 by 0.279 million. Funding increase due to the above described plans.</p> | | | | |
| <p>Title: Transformational Technology Development</p> <p>Description: This effort initiates new and continues existing Transformational Technology Development efforts. The Transformational Technology Development program will select new projects, in alignment with mission focused areas which include, but are not limited to: Intelligent Planning and Wargaming, Battlespace Awareness, Integrated Base Defense, and Hypersonic Multi-Mission Aircraft. Investments focus on technology development efforts including, but are not limited to technologies to enhance survivability, operability and performance of personnel, sensors, and structures in a threat environment through developments in nondestructive inspection and evaluation technologies to monitor performance integrity and detect</p> | | 1.614 | 0.000 | 0.000 |

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| Appropriation/Budget Activity 3600 / 3 | R-1 Program Element (Number/Name) PE 0603112F / <i>Advanced Materials for Weapon Systems</i> | Project (Number/Name) 633153 / <i>Non-Destructive Inspection Development</i> |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2022 | FY 2023 | FY 2024 |
|---|----------------|----------------|----------------|
| <p>failures before they affect they system. This investment is overseen by senior representatives from Air and Space Forces who participate in the submission, initial review, and down-selection of Transformational Technology Development proposed efforts. Final selections will be reviewed by the Air Force Deputy Assistant Secretary for Science, Technology, and Engineering before a final recommendation for Congressional approval is made.</p> <p>FY 2023 Plans: In FY 2023 this effort will be realigned under Program 0603032F, Future AF Integrated Technology Demos, Project 630320, Air Force Vanguard, effort Vanguard Prospect - Area Effects Demo.</p> <p>FY 2024 Plans: Not applicable.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Not applicable.</p> | | | |
| Accomplishments/Planned Programs Subtotals | 2.555 | 4.806 | 5.178 |

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

N/A

Remarks

D. Acquisition Strategy

N/A

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| Appropriation/Budget Activity 3600 / 3 | R-1 Program Element (Number/Name) PE 0603112F / <i>Advanced Materials for Weapon Systems</i> | Project (Number/Name) 633946 / <i>Materials Transition</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 |
|-------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 633946: <i>Materials Transition</i> | - | 36.961 | 26.664 | 9.237 | 0.000 | 9.237 | 11.485 | 12.851 | 13.988 | 15.256 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

This project develops and demonstrates advanced materials and processing technologies for fielded and planned Department of the Air Force weapon, airframe, aerospace structure, protection, and propulsion applications. Advanced materials and processes that have matured beyond applied research are characterized, critical data are collected, and critical evaluations in the proposed operating environment are performed. This design and scale-up data improves the overall affordability of promising materials and processing technologies, providing needed initial incentives for their industrial development.

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

| | FY 2022 | FY 2023 | FY 2024 |
|---|---------|---------|---------|
| <p>Title: Air Vehicle Materials Technologies</p> <p>Description: Develop and demonstrate materials and processes technologies for air vehicle and subsystems to enhance lift, propulsion, power generation management, survivability, and affordability of air vehicles.</p> <p>FY 2023 Plans: Continue development of technologies for organic engine lifing analysis for enhanced engine component risk management capability. Continue development and characterization for transitioning materials to protect infrared apertures on next generation hardened assets. Continue to validate and verify results of microstructure sensitive lifing methodologies that lower life cycle cost and advance performance characteristics of airframe and engine components in order to start development of next generation modeling tools that incorporate residual stress effects on component life. Continue development and characterization of materials for application in nuclear systems and protection for next-generation hardened assets.</p> <p>FY 2024 Plans: Complete development of technologies for organic engine lifing analysis for enhanced engine component risk management capability. Continue development and characterization for transitioning materials to protect next generation hardened assets. Complete microstructure sensitive lifing methodologies that lower life cycle cost and advance performance characteristics of airframe and engine components in order to start development of next generation modeling tools that incorporate residual stress effects on component life. Continue development and characterization of materials for next-generation hardened assets.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: FY 2024 decreased compared to FY 2023 by \$6.427 million. Funding decrease due to completion of lifing methodologies and analysis development.</p> | 5.854 | 11.664 | 5.237 |
| <p>Title: Counter Intelligence, Surveillance, and Reconnaissance Technologies</p> | 0.000 | 0.000 | 4.000 |

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| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2022 | FY 2023 | FY 2024 |
|---|----------------|----------------|----------------|
| <p>Description: Develop and demonstrate multiple intelligence technologies to degrade adversarial Intelligence, Surveillance, and Reconnaissance (ISR) collection and analysis to cause enemy decisions and actions which favor Department of the Air Force mission goals. This work directly supports both passive airbase defense and overall theatre operations.</p> <p>FY 2023 Plans: Not applicable as effort is starting in FY2024.</p> <p>FY 2024 Plans: Initiate developmental efforts in counter ISR technologies across multiple collection domains in a tactically coordinated way that considers all relevant operational environments. Initiate development of a closed-loop simulation in a digital test environment with a human in the loop and quantify the utility of techniques incorporating cost, size, weight and power requirements.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: FY2024 increased by \$4.000 million due to increased focus on counter ISR technologies.</p> | | | |
| <p>Title: Transformational Technology Development</p> <p>Description: This effort initiates new and continues existing Transformational Technology Development efforts. The Transformational Technology Development program will select new projects, in alignment with mission focused areas which include, but are not limited to: Intelligent Planning and Wargaming, Battlespace Awareness, Integrated Base Defense, and Hypersonic Multi-Mission Aircraft. Investments focus on technology development efforts including, but are not limited to technologies to enhance survivability, operability and performance of personnel, sensors, and structures in a threat environment through characterization and data evaluation of advanced materials in potential operational environment in order to improve affordability. This investment is overseen by senior representatives from Air and Space Forces who participate in the submission, initial review, and down-selection of Transformational Technology Development proposed efforts. Final selections will be reviewed by the Air Force Deputy Assistant Secretary for Science, Technology, and Engineering before a final recommendation for Congressional approval is made.</p> <p>FY 2023 Plans: In FY 2023 this effort will be realigned under Program 0603032F, Future AF Integrated Technology Demos, Project 630320, Air Force Vanguard, effort Vanguard Prospect - Area Effects Demo.</p> <p>FY 2024 Plans: Not applicable.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement:</p> | 1.833 | 0.000 | 0.000 |

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| B. Accomplishments/Planned Programs (\$ in Millions) | | FY 2022 | FY 2023 | FY 2024 |
| Not applicable. | | | | |
| Accomplishments/Planned Programs Subtotals | | 7.687 | 11.664 | 9.237 |
| | | FY 2022 | FY 2023 | |
| Congressional Add: Program increase - Metals Affordability Research | | 9.758 | 10.000 | |
| FY 2022 Accomplishments: Conducted Congressionally directed efforts. | | | | |
| FY 2023 Plans: Conduct Congressionally directed efforts. | | | | |
| Congressional Add: Program increase - polymer printing technology for additive manufacturing | | 4.879 | 5.000 | |
| FY 2022 Accomplishments: Conducted Congressionally directed efforts. | | | | |
| FY 2023 Plans: Conduct Congressionally directed efforts. | | | | |
| Congressional Add: Program increase - certification for advanced materials | | 14.637 | 0.000 | |
| FY 2022 Accomplishments: Conducted Congressionally directed efforts. | | | | |
| FY 2023 Plans: Not applicable | | | | |
| Congressional Adds Subtotals | | 29.274 | 15.000 | |
| C. Other Program Funding Summary (\$ in Millions) | | | | |
| N/A | | | | |
| Remarks | | | | |
| D. Acquisition Strategy | | | | |
| N/A | | | | |