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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Air Force **Date:** April 2022

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 0603199F / <i>Sustainment Science and Technology (S&T)</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	15.631	19.112	10.695	0.000	10.695	11.368	13.694	14.480	15.051	Continuing	Continuing
635351: <i>Technology Sustainment</i>	-	15.631	19.112	10.695	0.000	10.695	11.368	13.694	14.480	15.051	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program develops and demonstrates mature Air Force Research Laboratory (AFRL) sustainment technologies such as: materials, corrosion, maintenance/repair techniques, state awareness/non-destructive inspection, health management, life prediction, low observable materials and processes, composite materials and logistics for transition into fielded Department of the Air Force systems to reduce life cycle sustainment costs and increase readiness. Technologies matured and demonstrated impact affordability and availability of fielded aerospace weapon systems by reducing sustainment costs, extending service life, and maintaining mission readiness and capability. This program develops and demonstrates maintenance, life cycle management, and system/fleet decision making technologies that can be implemented to address operational sustainment issues and could influence future system sustainability decisions via risk reduction to support inclusion into new systems. Studies are conducted to analyze processes and methodologies for application of technologies to address sustainment issues across the force, identifying cross cutting applications for fielded systems, and opportunities for building in sustainability into future applications. This program also develops and demonstrates affordable advanced composites for aircraft structures of fielded and emerging systems. This includes studies, analysis, and tests for application of composites to address sustainment and affordability issues across the force. Efforts in this program have been coordinated through the Department of Defense (DoD) Science and Technology (S&T) process to harmonize efforts and eliminate duplication.

The Department of the Air Force technologies in this program are both enabling and enduring as we invest in maturing emerging technologies that address established mission gaps, and transformational technologies that address integrated enterprise capabilities intended to reshape the future force across air, space, and cyber warfighting domains. Development of transformational operational capabilities through advanced technology solutions focuses on five strategic capabilities: Global Persistent Awareness; Resilient Information Sharing; Rapid, Effective Decision-Making; Complexity, Unpredictability, and Mass; and Speed and Reach of Disruption and Lethality.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver science & 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 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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B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	16.902	21.057	0.000	0.000	0.000
Current President's Budget	15.631	19.112	10.695	0.000	10.695
Total Adjustments	-1.271	-1.945	10.695	0.000	10.695
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	-1.945			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-1.271	0.000			
• Other Adjustments	0.000	0.000	10.695	0.000	10.695

Change Summary Explanation

The FY 2022 President's Budget submittal did not reflect FY 2023 through FY 2026 funding. Therefore, an explanation of the change between the two budget positions for FY2023 cannot be made in a relevant manner.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
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Title: System Health Management/Assessment Technologies	5.096	0.000	0.000
Description: Develop, demonstrate, and transition state awareness/system health management technologies. Conduct studies and analyses to design sustainability into future Department of the Air Force applications. The short-term tasks in this area are selected based on warfighter needs identified via a semi-annual, competitive process.			
FY 2022 Plans: Technical work on this effort completed in FY 2021.			
FY 2023 Plans: Technical work on this effort completed in FY 2021.			
FY 2022 to FY 2023 Increase/Decrease Statement: Not applicable			
Title: Prevention/Enhanced Maintainability Technologies	5.442	5.854	5.544
Description: Develop, demonstrate, and transition maintenance and sustainment technologies to improve component design, maintenance, replacement, and concepts for performance improvement and reduced maintenance burden for the Department			

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
of the Air Force. Short term tasks in this effort are selected based on warfighter needs identified via a semi-annual, competitive process.				
<p>FY 2022 Plans: Continue rapid repair and materials development for aircraft battle damage repair of advanced fighter aircraft. Continue advanced canopy technology development. Continue total body nondestructive evaluation system for outer mold line inspection of advanced fighter aircraft. Continue development of materials and processes to reduce maintenance burden on low observable systems. Continue efforts to demonstrate high reliability of repair and maintenance technologies to increase service time between maintenance actions. Continue to develop, demonstrate, and transition maintenance and sustainment technologies to improve component design, maintenance, repair, replacement, and concepts for maintainer training, extending part life, and reduced maintenance burden spanning Department of the Air Force mission areas of Air, Space, and Cyber. Continue to develop abrasion resistance coating to protect composite material substrates for low observable systems. Continue to develop a flexible crack-blunting primer. Initiate other new efforts based on competitive selection processes in FY 2021.</p> <p>FY 2023 Plans: Continue rapid repair and materials development for aircraft battle damage repair of advanced fighter aircraft. Continue advanced canopy technology development. Continue total body nondestructive evaluation system for outer mold line inspection of advanced fighter aircraft. Continue development of materials and processes to reduce maintenance burden on low observable systems. Continue efforts to demonstrate high reliability of repair and maintenance technologies to increase service time between maintenance actions. Continue to develop, demonstrate, and transition maintenance and sustainment technologies to improve component design, maintenance, repair, replacement, and concepts for maintainer training, extending part life, and reduced maintenance burden spanning Department of the Air Force mission areas of Air, Space, and Cyber. Continue development abrasion resistance coating to protect composite material substrates for low observable systems. Completed development of a flexible crack-blunting primer.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: FY 2023 decreased compared to FY 2022 by \$0.310 million. Funding decreased due to plans described above.</p>				
<p>Title: Management/Improved Reliability Technologies</p> <p>Description: Develop, demonstrate, and transition technologies to improve existing and new components, fleet management/ decision-making tools, and supply chain/sustainment infrastructure to decrease downtime and costs, and increase reliability. The short-term tasks in this effort are selected based on warfighter needs identified via a semi-annual, competitive process.</p> <p>FY 2022 Plans:</p>		5.093	5.477	5.118

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>Continue system development to provide prognostic capabilities for avionics components and analysis techniques to extend engine component service life. Continue efforts to develop system fleet management decision-making tools, maintenance/repair database technologies and techniques, and supply chain/infrastructure approaches to reduce sustainment costs. These efforts span Department of the Air Force mission areas of Air, Space, and Cyber. Initiate new efforts based on competitive selection processes in FY 2021.</p> <p>FY 2023 Plans: Continue system development to provide prognostic capabilities for avionics components and analysis techniques to extend engine component service life. Continue efforts to develop system fleet management decision-making tools, maintenance/repair database technologies and techniques, and supply chain/infrastructure approaches to reduce sustainment costs. These efforts span Department of the Air Force mission areas of Air, Space, and Cyber. Continue efforts based on competitive selection processes in FY 2021.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: FY 2023 decreased compared to FY 2022 by \$0.359 million. Funding decreased due to the plans described above.</p>				
<p>Title: Transformational Technology Development</p> <p>Description: Continually funded effort. This funding allocation is to provide funding to start new and continue Transformational Technology Developments. 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: materials, corrosion, maintenance/repair techniques, state awareness/non-destructive inspection, health management, life prediction, low observable materials and processes, composite materials and logistics technologies that affect mission availability. 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 2022 Plans: Fund the follow-on efforts for projects started in FY 2021. Select Transformational Technology Development efforts that support the National Defense Strategy and Department of the Air Force priorities.</p> <p>FY 2023 Plans:</p>		0.000	7.781	0.033

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Continue to fund the follow-on efforts for Transformational Technology Development projects selected in prior FYs (eg composites for emerging hypersonic systems). Select Transformational Technology Development efforts for following FY that support the National Defense Strategy and Department of the Air Force priorities.			
<i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> FY 2023 decreased compared to FY 2022 by \$7.748 million. Funding is decreased due to scaling investment toward the Department of the Air Force target outlined in the Air Force 2030 Science and Technology (S&T) Strategy.			
Accomplishments/Planned Programs Subtotals	15.631	19.112	10.695

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

N/A

Remarks

E. Acquisition Strategy

N/A