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

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> / BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603401F / <i>Advanced Spacecraft Technology</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	-	63.088	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
632181: <i>Spacecraft Payloads</i>	-	6.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
633834: <i>Integrated Space Technology Demonstrations</i>	-	56.588	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This program develops, integrates, and demonstrates space technologies in the areas of spacecraft payloads, spacecraft protection, spacecraft vehicles, and space systems survivability. The integrated space technologies are demonstrated by component or system level tests on the ground or in flight. Efforts in this program have been coordinated through the Department of Defense Science and Technology Executive Committee process to harmonize efforts and eliminate duplication.

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.

<b>B. Program Change Summary (\$ in Millions)</b>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>
Previous President's Budget	87.608	0.000	0.000	0.000	0.000
Current President's Budget	63.088	0.000	0.000	0.000	0.000
Total Adjustments	-24.520	0.000	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-19.341	0.000			
• SBIR/STTR Transfer	-2.888	0.000			
• Other Adjustments	-2.291	0.000	0.000	0.000	0.000

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

**Project:** 632181: *Spacecraft Payloads*

Congressional Add: *Congressional Add: Program increase - ground-based interferometry*

Congressional Add Subtotals for Project: 632181

**Project:** 633834: *Integrated Space Technology Demonstrations*

	FY 2021	FY 2022
	6.500	-
	6.500	-

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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 3: Advanced Technology Development (ATD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603401F / <i>Advanced Spacecraft Technology</i>
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<b>Congressional Add Details (\$ in Millions, and Includes General Reductions)</b>	<b>FY 2021</b>	<b>FY 2022</b>
Congressional Add: <i>Congressional Add: Program increase - modular satellite power systems</i>	3.868	-
Congressional Add Subtotals for Project: 633834	3.868	-
Congressional Add Totals for all Projects	10.368	-

**Change Summary Explanation**

Decrease in FY 2021 reflects reprogramming to support Research and Development Projects, 10 U.S.C. Section 2363, an amendment to PL 110-417, 10 U.S.C. Section 2358 and 10 U.S.C. 2805(d)(1)(B).

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

<b>Appropriation/Budget Activity</b> 3600 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603401F / <i>Advanced Spacecraft Technology</i>	<b>Project (Number/Name)</b> 632181 / <i>Spacecraft Payloads</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
632181: <i>Spacecraft Payloads</i>	-	6.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

This project funds the development, demonstration, and evaluation of radiation-hardened space electronic hardware, satellite control hardware, and software for advanced satellite surveillance operations. Future improved space-qualifiable electronics and software for data and signal processing will be more interchangeable, interoperable, and standardized. In the near-term, this project's work concentrates on converting (for example, radiation-hardening) commercial data and signal processor technologies for use in Air Force space systems. For mid-term applications, this project merges advanced, radiation-hardened space processor, memory, and interconnect technologies with commercially-derived, open system architectures to develop and demonstrate robust, on-board processing capabilities for 21st century Department of Defense satellites. In the long-term, this project area focuses on developing low-cost, easily modifiable software and hardware architectures for fully autonomous constellations of intelligent satellites capable of performing all mission related functions without operator intervention.

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

	FY 2021	FY 2022
<b>Congressional Add:</b> Congressional Add: Program increase - ground-based interferometry	6.500	-
<b>FY 2021 Accomplishments:</b> Conduct Congressionally directed effort. This effort will be executed in PE 0603401F, Advanced Spacecraft Technology, Project 633834, Integrated Space Technology Demonstrations.		
<b>Congressional Adds Subtotals</b>	6.500	-

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

N/A

**Remarks**

**D. Acquisition Strategy**

Not applicable

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<b>Appropriation/Budget Activity</b> 3600 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603401F / <i>Advanced Spacecraft Technology</i>	<b>Project (Number/Name)</b> 633834 / <i>Integrated Space Technology Demonstrations</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
633834: <i>Integrated Space Technology Demonstrations</i>	-	56.588	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

This project is a series of advanced technology demonstrations designed to address mission needs by applying emerging technologies from the Air Force Research Laboratory, other United States government laboratories, and industry. These technologies are integrated into system-level demonstrations that are used to test, evaluate, and validate the technologies in a relevant environment.

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

	FY 2021	FY 2022	FY 2023
<b>Title:</b> Integrated Satellite Demonstrations	52.720	0.000	0.000
<b>Description:</b> Develop satellite technologies for integrated, robust, and flexible satellite demonstrations building on previous work and leveraging investments by other organizations.			
<b>FY 2022 Plans:</b> In FY 2022, PE 0603401F, Advanced Spacecraft Technology, Project 633834, Integrated Space Technology Demonstrations efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1206616SF, Space Advanced Technology Development/Demo, Project 633834, Integrated Space Technology Demonstrations, from Appropriation 3600, Budget Activity (BA) 03 due to the creation of a new Appropriation for Space Force.			
<b>FY 2023 Plans:</b> Not applicable			
<b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Not applicable			
<b>Accomplishments/Planned Programs Subtotals</b>	52.720	0.000	0.000

	FY 2021	FY 2022
<b>Congressional Add:</b> Congressional Add: Program increase - modular satellite power systems	3.868	-
<b>FY 2021 Accomplishments:</b> Conduct Congressionally directed effort.		
<b>Congressional Adds Subtotals</b>	3.868	-

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<b>Appropriation/Budget Activity</b> 3600 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603401F / <i>Advanced Spacecraft Technology</i>	<b>Project (Number/Name)</b> 633834 / <i>Integrated Space Technology Demonstrations</i>

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

N/A

**Remarks**

**D. Acquisition Strategy**

Not applicable