

**UNCLASSIFIED**

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

<b>Appropriation/Budget Activity</b> 3620F: <i>Research, Development, Test &amp; Evaluation, Space Force / BA 3: Advanced Technology Development (ATD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 1206310SF / <i>Space Science and Technology Research and Development</i>
---	---

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	-	0.000	0.000	460.820	0.000	460.820	690.386	527.806	540.040	550.556	Continuing	Continuing
634869: <i>Space Science and Technology Research and Development</i>	-	0.000	0.000	460.820	0.000	460.820	690.386	527.806	540.040	550.556	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**  
 In FY 2023, PE 1206310SDA, Space Technology Development and Prototyping efforts were transferred from Appropriation 0400, Research, Development, Test & Evaluation (RDT&E), Defense-Wide, Budget Activity (BA) 3 to Appropriation 3620, RDT&E, Space Force, PE 1206310SF, due to the transfer of the Space Development Agency to the U.S. Space Force (USSF) in accordance with the William M. (Mac) Thornberry National Defense Authorization Act (NDAA) for FY 2021. This is an administrative realignment.

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

The Space Development Agency (SDA) is developing and demonstrating next generation space capabilities for the joint warfighter enabled by proliferation of satellites and a new acquisition model utilizing rapid spiral development. SDA is developing capabilities to address a wide range of Department of Defense (DoD) space needs as stated in the National Defense Strategy and DoD Space Vision, including low-latency tactical communication, beyond line of sight targeting, and advanced missile tracking. Specifically, SDA will demonstrate and field persistent, resilient capabilities needed to be responsive to emerging multi-domain threats against the U.S. national interest. SDA is responsible for the overall programmatic development and execution of a National Defense Space Architecture (NDSA). In coordination with other DoD Space stakeholders, SDA will drive the development of space capabilities to achieve the DoD Space Vision and reduce overlap and inefficiency. SDA will expand the DoD's space warfighting capability and foster growth in the U.S. space industrial base, by developing enhanced government-commercial relationships and international collaborations with key allies and partners.

While SDA is not responsible for building and fielding all capabilities within the NDSA, the Agency is responsible for orchestrating and architecting the NDSA and ensuring capability delivery to the warfighter following a spiral development approach. SDA is building and fielding the Transport Layer, a proliferated constellation of satellites to provide low-latency, high-volume data to the warfighter. This transport layer will provide the space-based data transport backbone for Joint All-Domain Command and Control (JADC2).

The establishment of a proliferated data transport layer is essential to developing a new and responsive space architecture. SDA will integrate additional constellations with this transport layer to provide multiple warfighting capabilities, such as advanced missile warning, 24/7/365 custody of time critical targets, and alternative position, navigation and timing (PNT) capabilities in navigation warfare (NAVWAR) resilient environments.

**UNCLASSIFIED**

<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2023 Air Force	<b>Date:</b> April 2022
--	-------------------------

<b>Appropriation/Budget Activity</b> 3620F: <i>Research, Development, Test &amp; Evaluation, Space Force I BA 3: Advanced Technology Development (ATD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 1206310SF / <i>Space Science and Technology Research and Development</i>
---	---

This program element funds the research and development activity to deliver capabilities to U.S. joint warfighting forces in two-year tranches, beginning in FY 2022, including performing trade studies, technical analyses, or modeling and simulation; identifying and maturing enabling technologies; defining and conducting risk reduction demonstrations, prototyping hardware or software systems; and exploring novel concepts for future warfighting 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.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	460.820	0.000	460.820
Total Adjustments	0.000	0.000	460.820	0.000	460.820
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	460.820	0.000	460.820

**Change Summary Explanation**

In FY 2022 and prior, funds for this effort were in Appropriation 0400, RDT&E BA 03, PE 126310SDA.

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>
<b>Title:</b> Space Development Agency R&E	0.000	0.000	460.820	0.000	460.820
<b>Description:</b> Research and development activities to support development, demonstration, and fielding of a resilient military sensing and data transport capability via a proliferated space architecture in Low Earth Orbit (LEO).					
<b>FY 2022 Plans:</b> For FY 2022 and prior, this work is performed under the Space Development Agency R&E effort in Appropriation 0400, Budget Activity (BA) 3, PE 1206310SDA, Space Science and Technology Research and Development, Project 012, Space Development Agency R&E.					
<b>FY 2023 Base Plans:</b>					

**UNCLASSIFIED**

<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2023 Air Force				<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 3620F: <i>Research, Development, Test &amp; Evaluation, Space Force I BA 3: Advanced Technology Development (ATD)</i>		<b>R-1 Program Element (Number/Name)</b> PE 1206310SF / <i>Space Science and Technology Research and Development</i>				
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>
<p>Tranche 0</p> <ul style="list-style-type: none"> <li>- Demonstrate optical inter-satellite communication links from space-to-space, space-to-air, and space-to-ground.</li> <li>- Begin tracking on-orbit operations demonstration.</li> <li>- Begin testing the developed algorithms for integrated battle management command, control, and communications (BMC3) applications on-orbit.</li> <li>- Demonstrate Link-16 connectivity from space vehicle to ground users.</li> <li>- Complete satellites launches and conduct capstone demonstration.</li> </ul> <p>Tranche 1</p> <ul style="list-style-type: none"> <li>- Complete Transport segment space vehicle system design.</li> <li>- Complete ground operations and network integration interoperability testing.</li> <li>- Conduct early initial launch vehicle studies.</li> <li>- Design the Tranche 1 network mission management systems hardware and software.</li> <li>- Complete radio frequency payload design.</li> <li>- Design the BMC3 software architecture.</li> </ul> <p>Tranche 2</p> <ul style="list-style-type: none"> <li>- Begin formulating requirements with the warfighter community.</li> </ul> <p><b>FY 2023 OCO Plans:</b> N/A</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> The increase in FY 2023 (as compared to the FY 2022 in the corresponding Defense-Wide PE 1206310SDA) is required to invest in the development of an increasingly broad set of technologies (including alternative navigation solutions, advanced missile tracking, multi-INT fusion algorithms, and integrated battle management algorithms) that are critical to delivering a robust initial warfighting capability in the NDSA.</p>						
<b>Accomplishments/Planned Programs Subtotals</b>		0.000	0.000	460.820	0.000	460.820

**UNCLASSIFIED**

<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2023 Air Force	<b>Date:</b> April 2022
--	-------------------------

<b>Appropriation/Budget Activity</b> 3620F: <i>Research, Development, Test &amp; Evaluation, Space Force I BA 3: Advanced Technology Development (ATD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 1206310SF / <i>Space Science and Technology Research and Development</i>
---	---

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE 03 1206310SDA: <i>Space Development Agency R&amp;E</i>	72.422	172.638	-	-	-	-	-	-	-	Continuing	Continuing

**Remarks**

For FY 2022 and prior, this work is performed under the Space Development Agency R&E effort in Appropriation 0400, BA 3, PE 1206310SDA, Space Science and Technology Research and Development, Project 012, Space Development Agency R&E.

**E. Acquisition Strategy**

Partners for these activities include DoD research centers, small businesses, large defense contractors, commercial space providers, Federally Funded Research and Development Centers, University Affiliated Research Centers, Missile Defense Agency (MDA), Space Systems Command (SSC), and Defense Advanced Research Projects Agency (DARPA). SDA is also a transition partner for technology developers seeking to conduct on-orbit experimentation and prototyping.