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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Space Development Agency **Date:** March 2019

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 1206310SDA / <i>Space Science and Technology Research and Development</i>
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COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	20.000	-	20.000	0.000	0.000	0.000	0.000	Continuing	Continuing
032: <i>Proliferated Low Earth Orbit (pLEO) Sensor Technology</i>	0.000	0.000	0.000	20.000	-	20.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Note

This is a new program element in FY 2020.

A. Mission Description and Budget Item Justification

The Space Development Agency (SDA) is established to develop the next generation space architecture to enable U.S. military operations to be responsive to emerging multi-domain threats against our national security. To achieve that goal, the SDA will help inform the Department's decision to develop and implement a proliferated architecture enabled by lower cost, commercially-derived spacecraft and routine space access, shift the Department to a development organization focused on experimentation, prototyping, and accelerated fielding, and change the Department to a concentrated, decoupled structure to generate speed. The SDA will manage, direct, and execute the development of the space capabilities in accordance with DoD's Space Vision and field space capabilities at speed and scale, with the following goals:

- bold breakthroughs designed to obsolesce our competitors,
- technology maturation and systems engineering,
- lean engineering, manufacturing, and support,
- industrial base expansion; streamlined development and acquisition process, and
- increased acquisition cooperation with the National Reconnaissance Office (NRO).

The SDA will rapidly deploy critical elements of the next-generation space capabilities, initially focusing on these essential capabilities:

- Persistent global surveillance for advanced missile targeting,
- Indications, warnings, targeting, and tracking for defense against advanced missile threats,
- Alternate position, navigation, and timing (PNT) for a GPS-denied environment,
- Global and near-real time space situational awareness,
- Development of a deterrent capability,
- Responsive, resilient, common ground-based space support infrastructure (e.g., ground stations and launch capability),
- Cross-domain, networked, node-independent battle management command, control, and communications (BMC3), including nuclear command, control, and communications (NC3), and,
- Highly-scaled, low-latency, persistent, artificial intelligence-enable global surveillance.

The establishment of a communications and data transport layer in Low Earth Orbit (LEO) is essential to developing a new, responsive space architecture, and will be SDA's primary initial focus. The SDA will heavily leverage DARPA's Blackjack program (PE 0603287E) and its plan to demonstrate a 20-satellite constellation to

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build this transport layer. The SDA will develop an initial wedge of sub-constellations on this transport layer to provide additional capabilities, such as advanced missile warning.

This program element funds efforts to develop and demonstrate a prototype proliferated Low Earth Orbit (pLEO) communications and data transport layer and its sub-constellations in support of the DoD Space Vision.

B. Program Change Summary (\$ in Millions)	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020 Base</u>	<u>FY 2020 OCO</u>	<u>FY 2020 Total</u>
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	20.000	-	20.000
Total Adjustments	0.000	0.000	20.000	-	20.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• FY 2020 Program Start	-	-	20.000	-	20.000

Change Summary Explanation

This is a new start in FY 2020.

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Space Development Agency **Date:** March 2019

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 1206310SDA / <i>Space Science and Technology Research and Development</i>	Project (Number/Name) 032 / <i>Proliferated Low Earth Orbit (pLEO) Sensor Technology</i>
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COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
032: <i>Proliferated Low Earth Orbit (pLEO) Sensor Technology</i>	0.000	0.000	0.000	20.000	-	20.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Note

This is a new start in FY 2020.

A. Mission Description and Budget Item Justification

The Space Science and Technology Research and Development will develop and demonstrate the next generation sensor technologies to support future prototyping efforts to deliver the eight capabilities outlined in the DoD Space Vision. This effort will develop and demonstrate lower size, weight, power, and cost (SWAP-C) sensors for national security space missions.

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

	FY 2018	FY 2019	FY 2020
Title: Proliferated Low Earth Orbit (pLEO) Sensor Technology	0.000	-	20.000
Description: This effort will demonstrate LEO sensor technologies on an initial wedge of sub-constellations on the data transport layer architecture to enable other national security space missions such as global surveillance for advanced missile targeting; indications, warnings, targeting, and tracking for defense against advanced missile threats; alternate position, navigation, and timing (PNT) services for Global Positioning System (GPS) denied environments; deterrent capabilities; and other national security space missions.			
FY 2020 Plans: - Conduct trade studies and feasibility assessments of different sensor modalities to perform national security space missions. - Conduct Preliminary Design Review (PDR) of selected sensor payload(s).			
FY 2019 to FY 2020 Increase/Decrease Statement: The increase is due to establishment of this line in FY 2020.			
Accomplishments/Planned Programs Subtotals	0.000	-	20.000

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

N/A

Remarks

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D. Acquisition Strategy

Partners for these activities may include in-house research centers, small businesses, large defense contractors, commercial space providers, Federally Funded Research and Development Centers, and University Affiliated Research Centers.

E. Performance Metrics

Performance metrics will be specific to each of the efforts. Each effort will include measures identified in the management approach and Statement of Work (SOW). The activities will be monitored against schedules and deliverables as stated in the initiative's management approach.