Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Space Development Agency											Date: March 2019	
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 1206410SDA / *Space Technology Development and Prototyping*							
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	85.000	-	85.000	80.000	105.000	115.000	140.000	Continuing	Continuing
033: *Transport Layer Architecture and Standards*	-	0.000	0.000	15.000	-	15.000	15.000	15.000	15.000	15.000	Continuing	Continuing
034: *Space Situational Awareness and Launch*	-	0.000	0.000	10.000	-	10.000	25.000	50.000	50.000	50.000	Continuing	Continuing
039: *Proliferated Low Earth Orbit (pLEO) Missile Warning Ground Integration*	-	0.000	0.000	30.000	-	30.000	40.000	40.000	50.000	75.000	Continuing	Continuing
191: *Space-Based Interceptors*	-	0.000	0.000	15.000	-	15.000	0.000	0.000	0.000	0.000	Continuing	Continuing
193: *Space-Based Discrimination*	-	0.000	0.000	15.000	-	15.000	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,

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Space Development Agency	Date: March 2019
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 1206410SDA *I Space Technology Development and Prototyping*

• 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 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)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	85.000	-	85.000
Total Adjustments	0.000	0.000	85.000	-	85.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• FY 2020 Program Start	-	-	85.000	-	85.000

Change Summary Explanation
This is a new start in FY 2020.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Space Development Agency			Date: March 2019
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / *Space Technology Development and Prototyping*	Project (Number/Name) 033 / *Transport Layer Architecture and Standards*	

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
033: *Transport Layer Architecture and Standards*	-	0.000	0.000	15.000	-	15.000	15.000	15.000	15.000	15.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This is a new start in FY 2020.

A. Mission Description and Budget Item Justification

The Space Technology Development and Prototyping effort will develop and demonstrate a prototype proliferated Low Earth Orbit (pLEO) communications and data transport layer and its sub-constellations to provide the eight capabilities outlined in the DoD Space Vision. The SDA will rapidly develop and field the next generation space architecture that will enable the US to deploy space capabilities that out-pace adversarial threats. This architecture is underpinned by a communications and data transport layer, which will reside on a proliferated small satellite constellation in Low Earth Orbit (LEO). The Transport Layer will support the transfer of data between the space segment of the next generation space architecture, to potentially include
payloads co-hosted with the Transport Layer or other non-collocated space elements, and the ground, to include ground support infrastructure and very large numbers of users/subscribers. The Transport Layer will provide the "connective tissue" for the next generation space architecture.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Transport Layer Architecture and Standards	0.000	0.000	15.000	0.000	15.000
Description: Develop and demonstrate a prototype a resilient and unified military communications and data transport layer, enabled by a proliferated Low Earth Orbit (pLEO) architecture. This effort will demonstrate capability to provide very low latency (low or high bandwidth) communications and data between any two points on the globe to enable mission-agnostic battle management, command, control, and communications (BMC3). This effort will leverage technologies developed under the DARPA Blackjack program and, wherever feasible, leverage commercial industry plans to provide broadband internet access from space to form the foundation of the transport layer architecture.					
FY 2019 Plans: N/A					
FY 2020 Base Plans: - Conduct Preliminary Design Review (PDR) for user terminal system.					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Space Development Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206410SDA / *Space Technology Development and Prototyping*	**Project (Number/Name)** 033 / *Transport Layer Architecture and Standards*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
- Develop interface and messaging standards for data transport layer architecture. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** This program is a new start in FY 2020.					
Accomplishments/Planned Programs Subtotals	0.000	0.000	15.000	0.000	15.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

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.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Space Development Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206410SDA / *Space Technology Development and Prototyping*	**Project (Number/Name)** 033 / *Transport Layer Architecture and Standards*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TBD	C/TBD	TBD : TBD	0.000	0.000		0.000		12.000		0.000		12.000	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.000		12.000		0.000		12.000	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TBD	Various	TBD : TBD	0.000	0.000		0.000		3.000		0.000		3.000	Continuing	Continuing	-
		Subtotal	0.000	0.000		0.000		3.000		0.000		3.000	Continuing	Continuing	N/A

	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		0.000		15.000		0.000		15.000	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Space Development Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206410SDA / *Space Technology Development and Prototyping*	**Project (Number/Name)** 033 / *Transport Layer Architecture and Standards*

	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Transport Layer Architecture and Standards																												
Conduct Preliminary Design Review (PDR) for user terminal system.									[redacted]																			
Develop interface and messaging standards for data transport layer architecture.									[redacted]																			

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Space Development Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206410SDA / *Space Technology Development and Prototyping*	**Project (Number/Name)** 033 / *Transport Layer Architecture and Standards*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Transport Layer Architecture and Standards				
Conduct Preliminary Design Review (PDR) for user terminal system.	1	2020	4	2021
Develop interface and messaging standards for data transport layer architecture.	1	2020	4	2021

Exhibit R-2A, RDT&E Project Justification: PB 2020 Space Development Agency			Date: March 2019
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / *Space Technology Development and Prototyping*	Project (Number/Name) 034 / *Space Situational Awareness and Launch*	

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
034: *Space Situational Awareness and Launch*	-	0.000	0.000	10.000	-	10.000	25.000	50.000	50.000	50.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This is a new start in FY 2020.

A. Mission Description and Budget Item Justification

The Space Technology Development and Prototyping effort will develop and demonstrate a prototype proliferated Low Earth Orbit (pLEO) communications and data transport layer and its sub-constellations to provide the eight capabilities outlined in the DoD Space Vision. Developing and fielding a pLEO space architecture will significantly improve U.S. resilience posture in space. The Space Situational Awareness (SSA) and Launch project will further support this vision of enhanced resilience. Global and near real-time SSA will provide a detailed understanding of the space order of battle and a responsive launch capability to enable rapid constitution or replenishment of space capabilities.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Space Situational Awareness and Launch	0.000	0.000	10.000	0.000	10.000
Description: Working with commercial providers, develop and demonstrate enhanced space situational awareness (SSA) and small-to-medium launch service access to provide SSA on large numbers of small satellites in LEO, including tracking, orbit determination, orbital state and uncertainty propagation, conjunction prediction, and collision avoidance. This effort will leverage existing Government and commercial tools and approaches to extend capabilities for a pLEO environment. In addition, this effort will identify and contract for launch of small-to-medium size payloads, to demonstrate responsive constitution and replenishment.					
FY 2019 Plans: N/A					
FY 2020 Base Plans: - Conduct trade studies of existing space traffic management capabilities and approaches for pLEO applications. - Conduct trade studies of small-to-medium payload launch service providers and ability to responsively support pLEO constitution and replenishment.					
FY 2020 OCO Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Space Development Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206410SDA / *Space Technology Development and Prototyping*	**Project (Number/Name)** 034 / *Space Situational Awareness and Launch*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** This program is a new start in FY 2020.					
Accomplishments/Planned Programs Subtotals	0.000	0.000	10.000	0.000	10.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

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.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Space Development Agency			Date: March 2019
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / *Space Technology Development and Prototyping*	Project (Number/Name) 034 / *Space Situational Awareness and Launch*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TBD	C/TBD	TBD : TBD	0.000	0.000		0.000		8.000		0.000		8.000	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.000		8.000		0.000		8.000	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TBD	Various	TBD : TBD	0.000	0.000		0.000		2.000		0.000		2.000	Continuing	Continuing	-
		Subtotal	0.000	0.000		0.000		2.000		0.000		2.000	Continuing	Continuing	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		0.000		10.000		0.000		10.000	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Space Development Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206410SDA / *Space Technology Development and Prototyping*	**Project (Number/Name)** 034 / *Space Situational Awareness and Launch*

	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Space Situational Awareness and Launch																												
Conduct trade studies of existing space traffic management capabilities and approaches									[redacted]																			
Conduct trade studies of small-to-medium size payload									[redacted]																			

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Space Development Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206410SDA / *Space Technology Development and Prototyping*	**Project (Number/Name)** 034 / *Space Situational Awareness and Launch*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Space Situational Awareness and Launch				
Conduct trade studies of existing space traffic management capabilities and approaches	1	2020	4	2021
Conduct trade studies of small-to-medium size payload	1	2020	4	2021

Exhibit R-2A, RDT&E Project Justification: PB 2020 Space Development Agency			Date: March 2019
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / *Space Technology Development and Prototyping*	Project (Number/Name) 039 / *Proliferated Low Earth Orbit (pLEO) Missile Warning Ground Integration*	

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
039: *Proliferated Low Earth Orbit (pLEO) Missile Warning Ground Integration*	-	0.000	0.000	30.000	-	30.000	40.000	40.000	50.000	75.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This is a new start in FY 2020.

A. Mission Description and Budget Item Justification

The pLEO Missile Warning (MW) Ground Integration project will enable a persistent global surveillance capability, enabled by a pLEO data communications transport layer, that will provide indications, warnings, targeting, and tracking to support the defeat of advanced missile threats.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: pLEO Missile Warning Ground Integration	0.000	0.000	30.000	0.000	30.000
Description: Develop and demonstrate a prototype MW ground infrastructure compatible with a proliferated Low Earth Orbit (pLEO) sensor infrastructure. This effort will focus on integrating MW technologies and on-orbit residual capability in the form of sensors, command and control software, and data products demonstrated by DARPA's Blackjack program, and any follow-on MW prototyping efforts, into a MW ground support infrastructure. To the maximum extent possible, this effort will leverage commercial approaches for pLEO constellation management while maximizing support for the legacy MW ground segment. The development will be a phased approach to transition current command and control to a new, consolidated Battle Management, Command, Control, and Communications (BMC3) infrastructure consistent with the DoD Space Vision.					
FY 2019 Plans: N/A					
FY 2020 Base Plans: - Examine current MW ground segment and conduct trade studies of alternative approaches - Conduct Preliminary Design Review of MW ground infrastructure					
FY 2020 OCO Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Space Development Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206410SDA / *Space Technology Development and Prototyping*	**Project (Number/Name)** 039 / *Proliferated Low Earth Orbit (pLEO) Missile Warning Ground Integration*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** This program is a new start in FY 2020.					
Accomplishments/Planned Programs Subtotals	0.000	0.000	30.000	0.000	30.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

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.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Space Development Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206410SDA / *Space Technology Development and Prototyping*	**Project (Number/Name)** 039 / *Proliferated Low Earth Orbit (pLEO) Missile Warning Ground Integration*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TBD	C/TBD	TBD : TBD	0.000	0.000		0.000		24.000		0.000		24.000	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.000		24.000		0.000		24.000	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TBD	C/Various	TBD : TBD	0.000	0.000		0.000		6.000		-		6.000	Continuing	Continuing	-
		Subtotal	0.000	0.000		0.000		6.000		-		6.000	Continuing	Continuing	N/A

	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		0.000		30.000		0.000		30.000	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Space Development Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206410SDA / *Space Technology Development and Prototyping*	**Project (Number/Name)** 039 / *Proliferated Low Earth Orbit (pLEO) Missile Warning Ground Integration*

	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Missile Warning Technology																												
Examine current MW ground segment and conduct trade studies of alternative									[redacted]																			
Conduct Preliminary Design Review of MW ground infrastructure									[redacted]																			

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Space Development Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206410SDA / *Space Technology Development and Prototyping*	**Project (Number/Name)** 039 / *Proliferated Low Earth Orbit (pLEO) Missile Warning Ground Integration*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Missile Warning Technology				
Examine current MW ground segment and conduct trade studies of alternative	1	2020	4	2021
Conduct Preliminary Design Review of MW ground infrastructure	1	2020	4	2021

Exhibit R-2A, RDT&E Project Justification: PB 2020 Space Development Agency			Date: March 2019
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / *Space Technology Development and Prototyping*	Project (Number/Name) 191 / *Space-Based Interceptors*	

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
191: *Space-Based Interceptors*	-	0.000	0.000	15.000	-	15.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This is a new start in FY 2020.

A. Mission Description and Budget Item Justification

The Space Technology Development and Prototyping effort will develop and demonstrate a prototype proliferated Low Earth Orbit (pLEO) communications and data transport layer and its sub-constellations to provide the eight capabilities outlined in the DoD Space Vision. Developing and fielding a pLEO space architecture will significantly improve U.S. resilience posture in space. This effort is focused on developing a government reference architecture for a space-based kinetic interceptor layer for boost-phase defense.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Space-Based Interceptor Assessment	0.000	-	15.000	-	15.000
Description: The SDA, under the leadership of the Under Secretary of Defense for Research and Engineering and in coordination with the Missile Defense Agency, Joint Staff, Air Force, and Director, Cost Assessment and Program Evaluation, will execute a Space-Based Interceptor assessment. ***FY 2020 Base Plans:*** The space-based interceptor assessment entails developing a government reference architecture for a space-based kinetic interceptor layer for boost-phase defense. These efforts include developing an independent cost estimate and assessment of technical risks, potential countermeasures, and development timelines. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** This is a new start in FY 2020.					
Accomplishments/Planned Programs Subtotals	0.000	-	15.000	-	15.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2020 Space Development Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206410SDA / *Space Technology Development and Prototyping*	**Project (Number/Name)** 191 / *Space-Based Interceptors*

D. Acquisition Strategy

Partners for these activities may include in-house research centers, Federally Funded Research and Development Centers, and University Affiliated Research Centers.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Space Development Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206410SDA / *Space Technology Development and Prototyping*	**Project (Number/Name)** 191 / *Space-Based Interceptors*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Space-Based Interceptor Assessment	TBD	TBD : TBD	-	-		-		15.000		-		15.000	Continuing	Continuing	-
		Subtotal	-	-		-		15.000		-		15.000	Continuing	Continuing	N/A

	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		0.000		15.000		-		15.000	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Space Development Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206410SDA / *Space Technology Development and Prototyping*	**Project (Number/Name)** 191 / *Space-Based Interceptors*

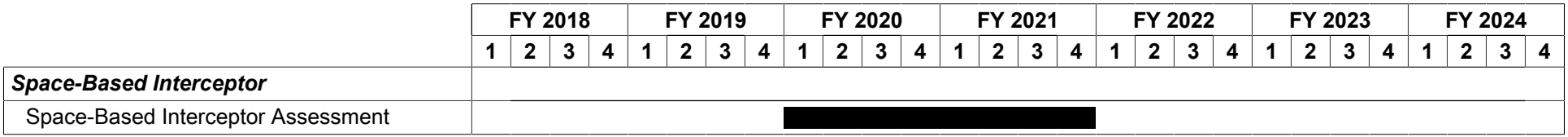

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Space Development Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206410SDA / *Space Technology Development and Prototyping*	**Project (Number/Name)** 191 / *Space-Based Interceptors*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Space-Based Interceptor				
Space-Based Interceptor Assessment	1	2020	4	2021

Exhibit R-2A, RDT&E Project Justification: PB 2020 Space Development Agency			Date: March 2019
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / *Space Technology Development and Prototyping*	Project (Number/Name) 193 / *Space-Based Discrimination*	

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
193: *Space-Based Discrimination*	-	0.000	0.000	15.000	-	15.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This is a new start in FY 2020.

A. Mission Description and Budget Item Justification

The Space Technology Development and Prototyping effort will develop and demonstrate a prototype proliferated Low Earth Orbit (pLEO) communications and data transport layer and its sub-constellations to provide the eight capabilities outlined in the DoD Space Vision. Developing and fielding a pLEO space architecture will significantly improve U.S. resilience posture in space. This effort is focused on developing a government reference architecture for a space-based discrimination layer for missile defense.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Space-Based Discrimination Assessment ***Description:*** The SDA, under the leadership of the Under Secretary of Defense for Research and Engineering and in coordination with the Missile Defense Agency, Joint Staff, Air Force, and Director, Cost Assessment and Program Evaluation, will execute a Space-Based Discrimination assessment. ***FY 2020 Base Plans:*** The Space-Based Discrimination assessment entails developing a government reference architecture for a space-based discrimination layer for missile defense. These efforts include developing an independent cost estimate and assessment of technical risks, potential countermeasures, and development timelines. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** This is a new start in FY 2020.	0.000	-	15.000	-	15.000
Accomplishments/Planned Programs Subtotals	0.000	-	15.000	-	15.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2020 Space Development Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206410SDA / *Space Technology Development and Prototyping*	**Project (Number/Name)** 193 / *Space-Based Discrimination*

D. Acquisition Strategy

Partners for these activities may include in-house research centers, Federally Funded Research and Development Centers, and University Affiliated Research Centers.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Space Development Agency			Date: March 2019
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / *Space Technology Development and Prototyping*	Project (Number/Name) 193 / *Space-Based Discrimination*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Space-Based Discrimination Assessment	TBD	TBD : TBD	-	-		-		15.000		-		15.000	Continuing	Continuing	-
		Subtotal	-	-		-		15.000		-		15.000	Continuing	Continuing	N/A

	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		0.000		15.000		-		15.000	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Space Development Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206410SDA / *Space Technology Development and Prototyping*	**Project (Number/Name)** 193 / *Space-Based Discrimination*

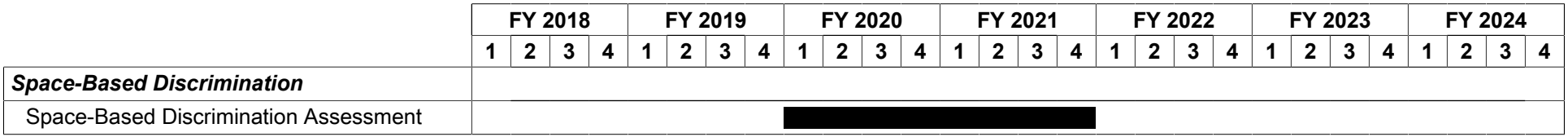

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Space Development Agency		Date: March 2019
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 1206410SDA / *Space Technology Development and Prototyping*	**Project (Number/Name)** 193 / *Space-Based Discrimination*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Space-Based Discrimination				
Space-Based Discrimination Assessment	1	2020	4	2021