Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Air Force											Date: February 2020	
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 1206438F / *Space Control Technology*							
COST ($ in Millions)	**Prior Years**	**FY 2019**	**FY 2020**	**FY 2021 Base**	**FY 2021 OCO**	**FY 2021 Total**	**FY 2022**	**FY 2023**	**FY 2024**	**FY 2025**	**Cost To Complete**	**Total Cost**
Total Program Element	-	68.604	58.231	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
642611: *Technology Insertion Planning and Analysis*	-	68.604	58.231	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

In FY2021, PE 1206438F, Space Control Technology efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1206438SF Space Control Technology from Appropriation 3600, Budget Activity 04 due to the creation of a new Appropriation for Space Force.

This project supports a range of activities including systems engineering, technology planning, development, demonstrations and prototyping, and testing, as well as modeling, simulations and exercises to support development and maturation of tactics and procedures for a responsive and resilient Space Control mission area. This includes technology development and prototyping for Defensive Counterspace (DCS) and Offensive Counterspace (OCS) and the necessary systems engineering for the warfighter to effectively employ such systems.

Specifically supported are DCS and Space Situational Awareness (SSA) activities which include developing threat warning payloads for monitoring, detecting, identifying, tracking, assessing, verifying, categorizing, and characterizing objects and events in space. Additionally, this activity supports the development of payload prototypes and space defense force packages for protecting U.S. space systems, resources, and operations from enemy attempts to negate, interfere, or destroy them.

Specific OCS activities include disruption, denial, or degradation (and associated Electronic Support) of adversary space systems which may be used for purposes hostile to U.S. national security interests. Rapid Reaction Capabilities in response to immediate warfighter needs in the Space Control mission area are developed within this program.

Space acquisition must respond with speed and agility to emerging adversary threats. Space & Missile Systems Center (SMC) is transforming the organization and implementation of space acquisition to an enterprise approach, maximizing innovation and resiliency, leveraging international, commercial, and mission partnerships, and managing program/project priorities according to an integrated unclassified/classified enterprise space architecture. Expanding the appropriate acquisition authorities and contract mechanisms to deliver capability sooner, SMC will strategically execute experimentation, prototyping, risk reduction, and other efforts to develop new or repurpose capabilities.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Space Control Technology (SCT) weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392F and 1206398F.

Funding for this exhibit is contained in PE 1206438F.

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This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

B. Program Change Summary ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	91.646	64.231	75.200	0.000	75.200
Current President's Budget	68.604	58.231	0.000	0.000	0.000
Total Adjustments	-23.042	-6.000	-75.200	0.000	-75.200
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-6.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-20.044	0.000			
• SBIR/STTR Transfer	-2.998	0.000			
• Other Adjustments	0.000	0.000	-75.200	0.000	-75.200

Change Summary Explanation

FY 2019: $20.044M decrease for higher Air Force priorities.
FY 2020: $6.000M decrease to account for the availability of prior year execution balances.
FY 2021: -$75.200M; funds starting in FY 2021 were transferred from RDT&E, Air Force to RDT&E, Space Force.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021
Title: Rapid Reaction Branch	21.105	19.284	0.000
Description: Develops advanced capabilities for rapid prototyping and integration into space control programs of record and, if requested, to warfighter Urgent Operational Needs (UONs) and Joint Urgent Operational Needs (JUONs). Conducts prototype capability development, testing, training and rapid transition of technology and techniques to space control systems. Sustains deployed quick reaction capabilities until transition to program of record or mission completion. ***FY 2020 Plans:*** Develop, test, train, field, transition and sustain advanced rapid reaction capabilities in response to emergent requirements from multiple Combatant Commands. Conduct initial technical development and integration activities against relevant threat systems and technologies in preparation for operational requirements. Develop and test advanced prototypes in support of activities within the Space Control Technology portfolio. Integrate and evaluate relevant Government Reference Architecture (GRA) Increment 4 technologies. Integrate information assurance constructs and controls into developmental platforms to expedite fielding. Execute			

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021
field development & test activities, at CONUS & OCONUS locations, to verify system performance in the operational environment. Enhance fielded rapid reaction capabilities in response to evolving threats and operator feedback. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, experimentation, prototyping, etc. ***FY 2021 Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** N/A			
Title: Experimentation Platforms & Defense Force Packaging ***Description:*** This effort will acquire, outfit and operate microsat busses with the primary purpose of demonstrating new technologies, flight testing payloads or subsystems, and validating Tactics, Techniques, and Procedures (TTPs) to ensure the delivery of critical space effects throughout all phases of a future space conflict against an adaptive and thinking adversary. It also supports a range of activities developing, prototyping, and fielding a family of on-board and near-board, modular resilience payloads supporting threat warning and protection options for National Security Space High-Value satellites. These payloads will be integrated with enterprise command and control capabilities for tasking, reporting, and response. On-orbit prototype demonstrations will be performed to demonstrate sensor/payload capabilities for high-value satellite force packaging requirements. Systems Engineering will enable the integration, interoperability and compatibility of new space control technology systems and capabilities amongst each other and amongst these new systems and the existing space control enterprise. ***FY 2020 Plans:*** Continue development of selected sensor/response payloads (from mod/sim and analysis efforts) for prototype demonstrations for threat warning and response payloads for high-value satellites. Continue prototype and operations ground infrastructure design trades and build-out in support of space command and control (C2) and space range requirements. Perform risk reduction efforts to define high-value satellite bus requirements for force packaging on-ramps. Create and mature systems engineering models for space control scenarios and consolidate separate program artifacts into an interconnected virtual representation of the SY enterprise. Exercise those models to determine critical paths and nodes, timing requirements, risks, and opportunities. Define various systems engineering functions, tools, procedures, and best practices to accelerate acquisition of successful and affordable space systems. Perform systems engineering support tasks. Perform maturation and transition of new technology, and technology needs identification, prioritization, and solution development. Rapidly respond to implement system resiliency and	47.499	38.947	0.000

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021
situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, experimentation, prototyping, etc. ***FY 2021 Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** N/A			
Accomplishments/Planned Programs Subtotals	68.604	58.231	0.000

D. Other Program Funding Summary ($ in Millions)

N/A

Remarks

E. Acquisition Strategy

All contracts funded in this program element will be awarded using competitive procedures to the maximum extent possible.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Air Force			Date: February 2020
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 1206438F / *Space Control Technology*	**Project (Number/Name)** 642611 / *Technology Insertion Planning and Analysis*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SCT Counterspace Technology Prototyping/ Rapid Reaction Development	Various	Various : Various	-	19.504	Jan 2019	17.764	Jan 2020	-		-		-	Continuing	Continuing	-
SCT Foundational Architecture	C/FFP	TBD : El Segundo, CA	-	10.475	Feb 2019	11.884	Jan 2020	-		-		-	0.000	22.359	-
SCT Experimentation Platforms Sensors	C/CPIF	Various : Various, CA	-	4.709	Jan 2019	-		-		-		-	0.000	4.709	-
SCT Experimentation Platforms Microsat Buses	C/FFP	Various : Various, CA	-	5.766	Jan 2019	-		-		-		-	0.000	5.766	-
SCT Modeling & Sim; Payload Analysis and Alternatives	C/Various	Various : Various, CA	-	8.218	May 2019	6.500	Dec 2019	-		-		-	0.000	14.718	-
SCT OCO Funding P3I	Various	Various : Various	-	1.100	Jan 2019	-		-		-		-	0.000	1.100	-
SCT Sensor Prototype Development	C/Various	Various : Various, CA	-	12.086	Feb 2019	17.063	Jan 2020	-		-		-	0.000	29.149	-
SCT Ground Infrastructure	Various	Various : Various, CA	-	0.500	Oct 2018	2.500	Oct 2019	-		-		-	0.000	3.000	-
SCT High-Value Satellite Bus Requirements	Various	Various : Various, CA	-	1.500	Feb 2019	1.000	Oct 2019	-		-		-	0.000	2.500	-
		Subtotal	-	63.858		56.711		-		-		-	Continuing	Continuing	N/A

Remarks

N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Civilian Reimbursable Budget Authority	Various	Space and Missile Systems Center : El Segundo, CA	-	0.180	Oct 2018	-		-		-		-	0.000	0.180	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Air Force		Date: February 2020
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Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	0.180		-		-		-		-	0.000	0.180	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
A&AS	Various	Various : Various, CA	-	3.266	Feb 2019	1.520	Jan 2020	-		-		-	Continuing	Continuing	-
FFRDC	Various	Various : Various, CA	-	1.000	Oct 2018	-		-		-		-	0.000	1.000	-
Other Support	Various	Various : Various, CA	-	0.300	Oct 2018	-		-		-		-	0.000	0.300	-
		Subtotal	-	4.566		1.520		-		-		-	Continuing	Continuing	N/A

	Prior Years	FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	68.604		58.231		-		-		-	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Air Force		Date: February 2020
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 1206438F / *Space Control Technology*	**Project (Number/Name)** 642611 / *Technology Insertion Planning and Analysis*

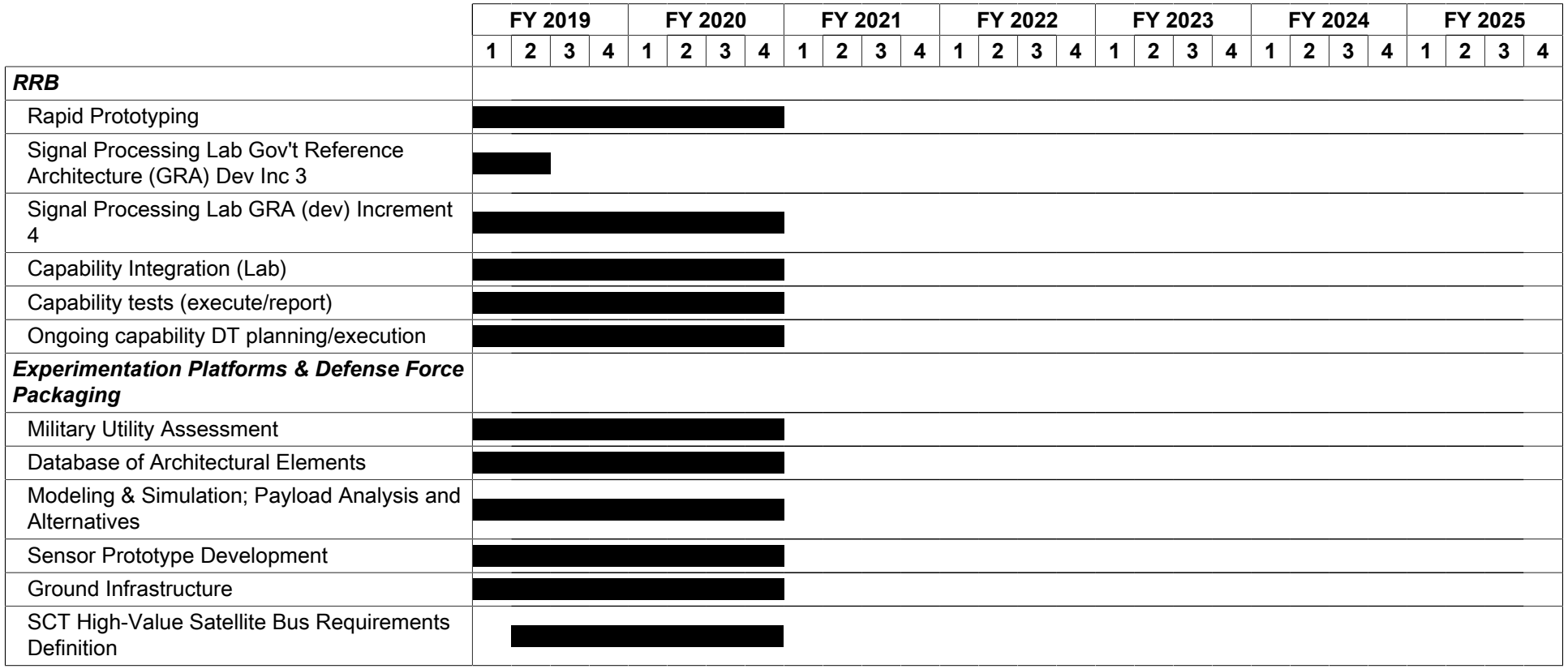

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Air Force		Date: February 2020
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 1206438F / *Space Control Technology*	**Project (Number/Name)** 642611 / *Technology Insertion Planning and Analysis*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
RRB				
Rapid Prototyping	1	2019	4	2020
Signal Processing Lab Gov't Reference Architecture (GRA) Dev Inc 3	1	2019	2	2019
Signal Processing Lab GRA (dev) Increment 4	1	2019	4	2020
Capability Integration (Lab)	1	2019	4	2020
Capability tests (execute/report)	1	2019	4	2020
Ongoing capability DT planning/execution	1	2019	4	2020
Experimentation Platforms & Defense Force Packaging				
Military Utility Assessment	1	2019	4	2020
Database of Architectural Elements	1	2019	4	2020
Modeling & Simulation; Payload Analysis and Alternatives	1	2019	4	2020
Sensor Prototype Development	1	2019	4	2020
Ground Infrastructure	1	2019	4	2020
SCT High-Value Satellite Bus Requirements Definition	2	2019	4	2020