Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Air Force											Date: April 2022	
Appropriation/Budget Activity 3620F: *Research, Development, Test & Evaluation, Space Force* / BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 1203173SF / *Space and Missile Test and Evaluation Center*							
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	-	4.273	1.699	4.157	0.000	4.157	4.237	4.320	4.417	4.502	Continuing	Continuing
67A014: *R&D Space & Missile Operations*	-	4.273	1.699	4.157	0.000	4.157	4.237	4.320	4.417	4.502	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Research and Development Space and Missile Operations (RDSMO) program, executed by the Innovation and Prototyping Directorate at Kirtland Air Force Base (KAFB), NM, conducts Space Vehicle and Ground Test and Evaluation (T&E) and Initial Operational Test and Evaluation (IOT&E) to support prototype experimental, demonstration, and operational satellites within the RDT&E Support Complex (RSC) at KAFB, NM and at Schriever Space Force Base (SSFB), CO. Additionally, this program augments the Space Force Satellite Control Network (SCN) with the Mobile Range Flight (MRF) which provides a deployable system supporting launch and early orbit (LE&O) efforts for a variety of customers. The RDSMO program develops, acquires, delivers, integrates, tests, operates and sustains the Multi-Mission Satellite Operations Center (MMSOC) satellite command and control (C2) Ground System Enterprise (GSE) and employs fixed/deployable telemetry, tracking, and commanding (TT&C) antenna systems in support of USSF, Department of Defense, and other government mission partners. This program also leads the transfer of approved on-orbit missions to operational command organizations such as Space Operations Command.

The objective of the RDSMO Program is to develop and integrate technology to rapidly support prototype and operational space systems. Specifically, the MMSOC ground system is leveraged to expedite the acquisition, integration, and operations cycle and to enable a Satellite Control Authority (SCA) transition to SSFB. The RDSMO program provides beneficial ground and space vehicle technology directly to the warfighting organizations per the RDSMO Charter, for continued experimentation or operations. MMSOC uses a combination of standard hardware and software to:

(1) perform satellite C2 in support of launch requirements;
(2) develop tactics, techniques, and procedures to conduct satellite operations;
(3) provide a satellite C2 incremental block evolution resource for RDT&E of new satellite and C2 systems and concepts; and
(4) deliver operational flexibility for new and legacy satellite missions designed to outpace adversary on-orbit systems.

Space acquisition must respond with speed and agility to emerging adversary threats. Space Systems Command (SSC) has transformed 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, SSC will strategically execute experimentation, prototyping, risk reduction, and other efforts to develop new or repurpose capabilities.

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This program element may include necessary civilian pay expenses required to manage, execute, and deliver RDSMO weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392SF and 1206398SF

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

B. Program Change Summary ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	4.397	1.699	0.000	0.000	0.000
Current President's Budget	4.273	1.699	4.157	0.000	4.157
Total Adjustments	-0.124	0.000	4.157	0.000	4.157
• 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	-0.124	0.000			
• Other Adjustments	0.000	0.000	4.157	0.000	4.157

Change Summary Explanation

The FY 2022 President's Budget submittal did not reflect FY 2023 through FY 2026 funding. Therefore, an explanation of the change between the two budget positions for FY2023 cannot be made in a relevant manner.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: MMSOC Development	4.273	1.699	4.157
Description: Evolution of the Ground Services Architecture (GSA) through the Multi-Mission Satellite Operations Center (MMSOC). Development, integration, and test of common services for space vehicle prototype and operational capabilities, including shared orbital analysis and mission planning tools, data distribution and dissemination, cyber defense, cloud computing, multi-security level operations, and enhanced ground entry points for geosynchronous prototype-operations. ***FY 2022 Plans:*** Continue providing capability to USSF for reduced cost of operations and maintenance (O&M) through evolution of MMSOC C2 architecture and automated processes and integrate the Enterprise Ground System (EGS) backwards functionality into MMSOC C2.			

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Continue capabilities studies such as Cloud Computing, combining antennas, and containerization of services to reduce O&M costs. Optimize the multi-mission operations floor. Continue the experimental campaign and/or transition the residual use of the Long Duration Propulsive Evolved Expendable Launch Vehicle (LDPE)-1 & 2.. Continue to ensure RDSMO resources are available for the successful mission accomplishment of the USSF-12 Payload, Navigation Technology Satellite-3 (NTS-3) and Tetra prototyping projects. Host mission operations of Space Rapid Capability Office (SpRCO) and the Quasi-Zenith Satellite System (QZSS) hosted payload. Continue to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities include, but are not limited to, program office support, studies, technical analysis, experimentation, prototyping, etc.			
FY 2023 Plans: Develop MMSOC XPro full cybersecurity-compliance (PKI, 2 Factor Authentication, out of band management) and implement a vital capability to host 30 Service, DoD, and Interagency R&D missions with a goal to host all missions at a common classification level. If necessary, develop a separate enclave that provides data separation, encryption and logical segregation, with minimal hardware separation. Designs improve the operation of existing and planned prototype missions that will inform new acquisitions and improve MMSOC's cyber-secure posture. Develop automated mission planning tools to decrease the requirement for additional manpower to fly the satellites, thereby decreasing the total cost to operate the 30 satellite missions. Develop and deliver ground solutions and support for prototype, demonstration, and experimental missions, including but not limited to: the LDPE-1, LDPE-2, and LDPE-3A missions, subsequent ROOSTER and Tetra missions, the Air Force Vanguard Navigation Technology Satellite-3 (NTS-3), and the two Quasi-Zenith Satellite System (QZSS) payloads hosted on Japanese satellites. As part of this, develop Tactics, Techniques & Procedures (TTPs) for next generation USSF satellites. Continue integrating the prototype operations center with Enterprise Ground System (EGS) development, to include but not limited to developing the EGS Risk Reduction & Integration Plan for each prototype mission. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities include, but are not limited to, program office support, studies, technical analysis, experimentation, prototyping, etc.			
FY 2022 to FY 2023 Increase/Decrease Statement:			

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
FY 2023 funds increased to reflect increased activity and is representative of historical RDSMO annual funding levels necessary to continue the required RDSMO development, integration, and test efforts.			
Accomplishments/Planned Programs Subtotals	4.273	1.699	4.157

D. Other Program Funding Summary ($ in Millions)

Line Item	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
• SPSF 01 GNRLIT: *General Information Tech - Space*	1.926	1.938	-	-	-	-	-	-	-	Continuing	Continuing

Remarks

E. Acquisition Strategy

Modernize ground system capabilities and leverage MMSOC sustainment as a test bed for new ground service development, integration testing, and operations. In FY 2020, RDSMO competitively awarded the Engineering, Development, Integration, and Sustainment (EDIS) contract to support MMSOC, MRF, and EGS activities. RDSMO plans to competitively award a Prototype Operations (POPS)-1 Contract in FY 2022. Additionally, RDSMO uses an Advisory & Assistance Support (A&AS) contract. These contracts are all managed by Space Systems Command (SSC).

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Air Force			Date: April 2022
Appropriation/Budget Activity 3620F / 7	**R-1 Program Element (Number/Name)** PE 1203173SF / *Space and Missile Test and Evaluation Center*	**Project (Number/Name)** 67A014 / *R&D Space & Missile Operations*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Ground Services R&D Engineering, Development, Integration, and Test	C/CPAF	SAIC : Albuquerque, NM	-	2.268	Oct 2020	0.797	Apr 2022	2.012	Nov 2022	-		2.012	Continuing	Continuing	-
Naval Research Lab (NRL)	C/CPAF	Not specified. : TBD	-	-		0.300	Apr 2022	-		-		-	Continuing	Continuing	-
		Subtotal	-	2.268		1.097		2.012		-		2.012	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Space Test and Engineering Contract (STEC) (MMSOC)	C/CPFF	Linquest : Kirtland AFB, NM	-	1.488	Oct 2020	0.381	Dec 2021	-		-		-	Continuing	Continuing	-
Prototype Operations-1 (POPS-1)	C/CPFF	Not specified. : TBD	-	0.000		0.187	May 2022	1.453	Oct 2022	-		1.453	Continuing	Continuing	-
		Subtotal	-	1.488		0.568		1.453		-		1.453	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
A&AS- STS-III	C/FFP	MEI : Los Angeles, CA	-	0.000	Feb 2021	0.034	Apr 2022	0.692	Nov 2022	-		0.692	Continuing	Continuing	-
A&AS- METIS	C/FFP	Linquest : Los Angeles, CA	-	0.217	Feb 2021	0.000	Feb 2022	0.000	Feb 2023	-		0.000	Continuing	Continuing	-
FFRDC- Aerospace	SS/FP	Aerospace : Los Angeles, CA	-	0.300	Oct 2020	0.000	Oct 2021	0.000	Oct 2022	-		0.000	Continuing	Continuing	-
		Subtotal	-	0.517		0.034		0.692		-		0.692	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Air Force			Date: April 2022
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	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	4.273		1.699		4.157		-		4.157	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Air Force		Date: April 2022
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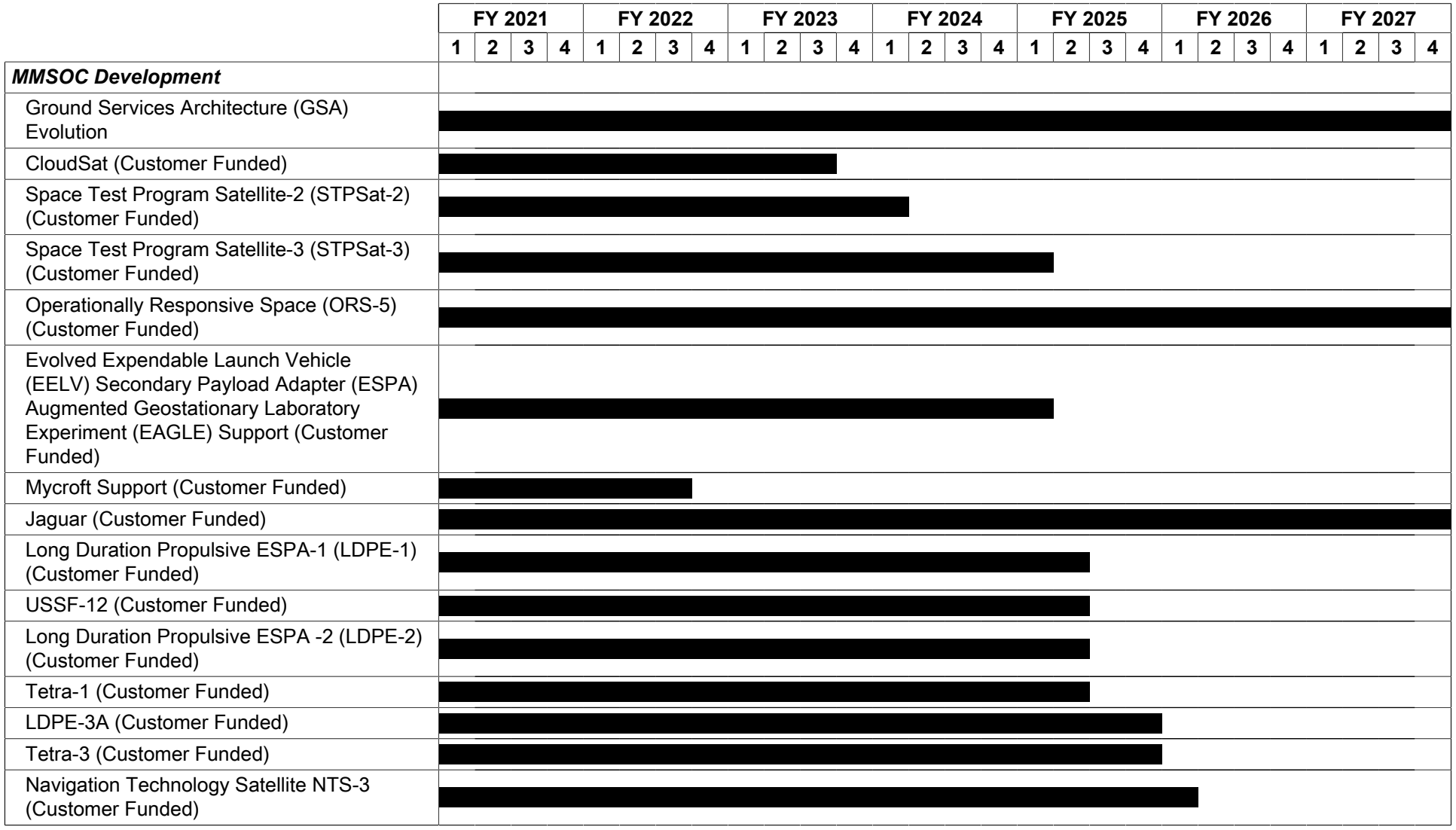

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3620F / 7	**R-1 Program Element (Number/Name)** PE 1203173SF / *Space and Missile Test and Evaluation Center*	**Project (Number/Name)** 67A014 / *R&D Space & Missile Operations*

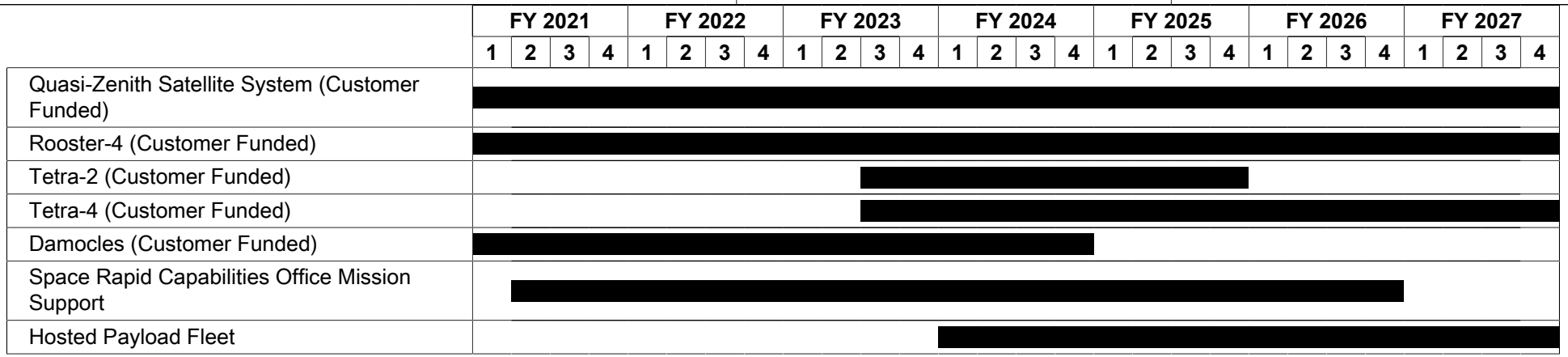

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3620F / 7	**R-1 Program Element (Number/Name)** PE 1203173SF / *Space and Missile Test and Evaluation Center*	**Project (Number/Name)** 67A014 / *R&D Space & Missile Operations*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
MMSOC Development				
Ground Services Architecture (GSA) Evolution	1	2021	4	2027
CloudSat (Customer Funded)	1	2021	3	2023
Space Test Program Satellite-2 (STPSat-2) (Customer Funded)	1	2021	1	2024
Space Test Program Satellite-3 (STPSat-3) (Customer Funded)	1	2021	1	2025
Operationally Responsive Space (ORS-5) (Customer Funded)	1	2021	4	2027
Evolved Expendable Launch Vehicle (EELV) Secondary Payload Adapter (ESPA) Augmented Geostationary Laboratory Experiment (EAGLE) Support (Customer Funded)	1	2021	1	2025
Mycroft Support (Customer Funded)	1	2021	3	2022
Jaguar (Customer Funded)	1	2021	4	2027
Long Duration Propulsive ESPA-1 (LDPE-1) (Customer Funded)	1	2021	2	2025
USSF-12 (Customer Funded)	1	2021	2	2025
Long Duration Propulsive ESPA -2 (LDPE-2) (Customer Funded)	1	2021	2	2025
Tetra-1 (Customer Funded)	1	2021	2	2025
LDPE-3A (Customer Funded)	1	2021	4	2025
Tetra-3 (Customer Funded)	1	2021	4	2025
Navigation Technology Satellite NTS-3 (Customer Funded)	1	2021	1	2026
Quasi-Zenith Satellite System (Customer Funded)	1	2021	4	2027
Rooster-4 (Customer Funded)	1	2021	4	2027
Tetra-2 (Customer Funded)	3	2023	4	2025
Tetra-4 (Customer Funded)	3	2023	4	2027
Damocles (Customer Funded)	1	2021	4	2024

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Air Force		Date: April 2022
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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Space Rapid Capabilities Office Mission Support	2	2021	4	2026
Hosted Payload Fleet	1	2024	4	2027