Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force											Date: March 2023	
Appropriation/Budget Activity 3620F: *Research, Development, Test & Evaluation, Space Force I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 1206440SF *I Next-Gen OPIR -- Ground*							
COST ($ in Millions)	**Prior Years**	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
Total Program Element	-	542.477	582.529	661.367	0.000	661.367	557.034	371.352	286.668	297.024	Continuing	Continuing
657106: *Next-Gen OPIR-Ground*	-	542.477	582.529	661.367	0.000	661.367	557.034	371.352	286.668	297.024	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 5, PE 1206440SF, project 657106, E-FORGE, is a new start.

In accordance with Congressional transfer direction in the FY 2023 enacted budget, funds in Program Element (PE) 1206442SF, Project 657106, Next-Gen OPIR Ground, have been transferred to 1206440SF, Next-Gen OPIR - Ground. FY 2024 and beyond budget is now included in this PE.

A. Mission Description and Budget Item Justification

Next-Generation Overhead Persistent Infrared (Next-Gen OPIR) Ground (Project 657106): Next-Gen OPIR Ground, also known as Future Operationally Resilient Ground Evolution (FORGE), consists of a modern Command and Control (C2) capability, modernization of Mission Data Processing (MDP) to implement an open framework and develop mission applications, required development and upgrades to Relay Ground Stations (RGS), and Endurable FORGE (E-FORGE), to provide a modern survivable and endurable architecture to meet USSF current and future space domain needs. FORGE will provide the flexibility and scalability to integrate new satellites, sensors and capabilities more rapidly and efficiently in order to meet evolving threats and warfighter needs. The Next-Gen OPIR Ground efforts enable cyber enhancements for both space and ground systems. FORGE C2 will introduce infrastructure and common platform services, mission unique software such as Telemetry, Tracking, and Commanding (TT&C), and mission management. E-FORGE will introduce development for a survivable mobile antenna and mission data processing system. E-FORGE is a new start in FY2024, and the USSF is still developing the E-FORGE operating concept and acquisition strategy. To support initial Next-Gen OPIR Space satellite launches without driving risk into the FORGE development schedule, the program has established a risk reduction ground capability, Next-Gen OPIR Interim Operations (NIO), based on a limited Space Based Infrared System (SBIRS) Block 20 solution.

The total cost of the FORGE Rapid Prototype Middle Tier of Acquisition (MTA) effort is 2,422.6 million. The RGS development and fielding is not contained in the MTA effort, as it consists of stand-alone Acquisition Category (ACAT) III efforts. The FORGE Rapid Prototype is not fully funded across the Future Years Defense Program. The Department of the Air Force is assessing all options to address the funding shortfalls for MTA programs including additional funding in a future budget request, performance trades based on technical maturity, or transition to alternative pathways.

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 re-purpose capabilities.

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This program element may include necessary civilian pay expenses required to manage, execute, and deliver Next-Gen OPIR Ground 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 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	542.477	0.000	0.000	0.000	0.000
Current President's Budget	542.477	582.529	661.367	0.000	661.367
Total Adjustments	0.000	582.529	661.367	0.000	661.367
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-30.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	612.529			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	661.367	0.000	661.367

Change Summary Explanation

FY 2023: +612.529M; in accordance with Congressional direction in the FY 2022 and FY 2023 enacted budgets, funds in PE 1206442SF, Project 657106, Next-Gen OPIR Ground, have transferred to PE 1206440SF.
FY 2023: -30.000M; Congressionally directed reduction for mission data processing excess to need.
FY 2024: +661.367M; in accordance with Congressional direction in the FY 2022 enacted budget, funds in PE 1206442SF, Project 657106, Next-Gen OPIR Ground, have transferred to PE 1206440SF and for inflation.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Command and Control (C2)	56.210	77.573	109.580
Description: The Space Force is transitioning to Enterprise Ground Services (EGS), a Government-owned ground architecture that focuses on infrastructure and common platform services, while expanding available services as they mature. FORGE C2 creates Mission Unique Software (MUS) and provides sensor/spacecraft specific C2 capabilities that use EGS messaging standards in order to transition C2 of the legacy SBIRS constellation and Next-Gen OPIR Geosynchronous Earth Orbit (GEO) (NGG) to FORGE and to launch Next-Gen OPIR Polar (NGP).			
FY 2023 Plans:			

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force	Date: March 2023
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C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Due to challenges in aligning the EGS and FORGE development schedules, the FY 2023 plans for the C2 thrust have changed since the FY 2023 President's Budget R-doc. Updated plans are reflected below. GEO Non-Integrated Tactical Warning/Attach Assessment (ITW/AA) Ops Migration to EGS (GNOME): Continue development and integration of C2 Mission Management MUS and core application for a GEO space vehicle. Command and Control Transition (C2X): Continue development of SBIRS Transport Network. Continue SBIRS C2 MUS development. Conduct risk reduction activities and begin development for infrastructure and platform capabilities needed for C2. Award contract to begin prototyping and demonstrating C2 application development for NGP as well as the user interface needed to integrate SBIRS, NGG, and NGP assets on FORGE C2. ***FY 2024 Plans:*** GNOME: Complete development and integration of C2 Mission Management MUS and core application for a GEO space vehicle. C2X: Complete development of SBIRS Transport Network. Continue SBIRS C2 MUS development. Begin initial integration needed to migrate SBIRS, NGG, and NGP assets on FORGE C2. Conduct risk reduction activities and begin development for infrastructure and platform capabilities needed for C2. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 increased due to a ramp up in the development of MUS, development of infrastructure and platform, and initial integration activities with the C2 infrastructure and platform.			
Title: Mission Data Processing (MDP)	275.993	248.782	269.141
Description: The FORGE MDP effort creates a replacement for the existing legacy SBIRS Ground mission processing applications which have cyber security and scalability limitations. MDP is creating a cyber-resilient, flexible, and scalable open framework capable of meeting current and future threats. MDP will plan OPIR and other mission data resource utilization to meet warfighter requirements. MDP provides the ability to ingest and publish varying levels of processed data for enhanced processing, perform efficient and systematic upgrades, and orchestrate real-time wideband processing for ITW/AA and non-ITW/AA mission areas. The MDP system provides modular mission applications to meet the future challenges of Missile Warning (MW), Missile Defense (MD), Battlespace Awareness (BA), and Technical Intelligence (TI). MDP is critical to making cyber-secure, effective use of the increased amounts of data that will be collected by Next-Gen OPIR. ***FY 2023 Plans:*** Deliver non-ITW/AA certified framework to Mission Control Station (MCS) and MCS-Backup. Continue development of follow-on MDP Application Framework (MDPAF) effort. Continue development of MDP Application Provider (MDPAP) effort and			

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force	Date: March 2023
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C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
SBIRS Legacy sensor specific processing (SSP) software. Continue development for SSP to support migration of all SBIRS Highly Elliptical Orbit (HEO) and GEO assets to FORGE framework. Conduct required studies to identify shared platform, infrastructure, and data layer solutions that will inform future concepts and activities in support of enterprise open frameworks and architectures as well as risk reduction activities, technical analysis for common platform, infrastructure and data layers for ground and communication systems to build upon. FY 2023 funding will allow the program to implement system resiliency, cyber security 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, and prototyping. ***FY 2024 Plans:*** Deliver follow-on applications for SBIRS non-ITW/AA data processing. Continue development of follow-on MDPAF effort. Continue follow-on development of MDPAP effort for ITW/AA data processing. Deliver and field mission applications for non ITW/AA data processing. Continue follow-on development for SSP to support migration of all SBIRS HEO and GEO assets to FORGE framework. Integrate entire mission data processing thrust area (MDPAF, MDPAP, and SSP) and begin sub-system level testing using operational data. FY 2024 funding will allow the program to implement system resiliency, cyber security and be responsive to evolving threats necessary to operate in the contested space domain. Activities include, but are not limited to, program office support, studies, technical analysis, experimentation, and prototyping. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 increased due to ramp up in MDPAP and SSP development to support SBIRS and Next-Gen ITW/AA data processing.			
Title: Next-Gen Transition ***Description:*** Next-Gen is the development to transition future OPIR space systems to using FORGE for mission processing and C2. Included in this effort is the development of an interim system (NIO) to ensure the most critical ground processing is ready in time for the first Next-Gen OPIR satellite launch. NIO will create mono tracks and publish those mono tracks to the existing SBIRS Block 20 ground system for fusion and dissemination to the warfighter. ***FY 2023 Plans:*** Continue development of the risk reduction system and conduct early integration and testing events. Continue integration of FORGE C2 functions. Continue install of hardware at the Consolidated and Continental United States (CONUS) Relay ground sites. Continue integration of mission data processing applications into the framework to support NGG. Continue to execute NGG and NGP contract. Start Space to Ground capability testing with NGG-1. ***FY 2024 Plans:***	183.880	174.174	134.854

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Complete Space to Ground capability testing with NGG-1. Complete development of the interim system, and final integration and testing events prior to NGG-1 launch. Continue development and integration of the mission unique software needed for C2 for NGG and NGP. Continue integration of multiple mission data processing applications into the framework to support NGG. Begin development needed to support NGG-2 launch. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 decreased due to completion of core development efforts to support NGG-1 launch.			
Title: Relay Ground Station - Asia (RGS-A) ***Description:*** This is not a New Start as funding was previously included in the FORGE - Relay Ground Stations (RGSs) Major Thrust. This effort is now segregated as an ACAT III program. OPIR data collected in space must be relayed to ground entry points and routed to provide warfighters with timely information. The legacy SBIRS ground architecture requires RGS upgrades and new RGSs to receive OPIR data from legacy and future Next-Gen OPIR assets. This effort will provide data to the MCS for processing and dissemination to warfighters and National Command Authorities. The RGS modernization effort will include the ability to operate antennas, process data, and support older Defense Support Program (DSP) assets. This activity is for the Asia ground station portion of the FORGE - RGS architecture and includes 6 antennas. ***FY 2023 Plans:*** Continue build-out of RGS-A site facility which is an integral part of RGS development. Continue antenna/infrastructure installation and prepare for check out. Purchase high-value antenna and associated hardware for RGS-A site ramp up of labor/construction activities. ***FY 2024 Plans:*** Purchase final mission equipment and complete site construction activities. Begin final system installation and checkout. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 decreased due to ramp down in site installation activities.	26.394	72.000	67.792
Title: Relay Ground Stations (RGSs) ***Description:*** OPIR data collected in space must be relayed to ground entry points and routed to provide warfighters with timely information. The legacy SBIRS ground architecture requires RGS upgrades and new RGSs to receive OPIR data from legacy and future Next-Gen OPIR assets. This effort expands two additional RGSs that will use common hardware capable of supporting all Next Gen-OPIR space assets. This effort will provide data to the MCS for processing and dissemination to warfighters and National Command Authorities. The RGS modernization effort will include the ability to operate antennas, process data, and support older DSP assets. This activity is for RGS's not included in the RGS-A portion of the FORGE - RGS architecture.	0.000	10.000	45.000

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
FY 2023 Plans: Perform site surveys and planning for the second and third RGS sites. ***FY 2024 Plans:*** Award second site, RGS-X in Europe, contract to design and purchase ITW/AA-class antenna and associated hardware for the Next-Gen Constellation. Complete site approval process and preliminary design. Release Request for Proposal (RFP) for third RGS site (the third site is a CONUS site split between RGS-S and RGS-N sites) and execute site preparations. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 increased due to ramp up in the second and third site development and associated long lead hardware items.			
Title: E-FORGE ***Description:*** Endurable FORGE (E-FORGE) provides continuous survivable and endurable non-imaging infrared for Missile Warning (MW) reporting across all phases of military operations to Integrated Tactical Warning and Attack Assessment (ITW/AA), Chairman, Joint Chiefs of Staff (CJCS) and Nuclear Command and Control System (NCCS) architectures. E-FORGE enables the processing of SBIRS GEO 1-6 and the Next-Gen OPIR MW assets through a survivable mobile antenna system, a modernized and mobile data processing platform, and an integrated data architecture for missile warning. Additionally, E-FORGE will integrate nuclear detonation detection (NUDET) data from GPS sensors and utilize protected MILSATCOM for strategic reporting. This is a new start. ***FY 2023 Plans:*** N/A ***FY 2024 Plans:*** E-FORGE will begin initial studies/prototyping needed for the development of a survivable mobile antenna system and mobile shelters. Additionally, E-FORGE will begin development of a mobile data processing platform to include mission unique software that will support the survivable endurable architecture. Additional activities include, but are not limited to, intra and inter program office technical support for requirements analysis and technical assistance. E-FORGE is a new start activity. As a new start, the operating concept is still being finalized. Future allocation of resources to this PE will be used to assist in the employment of the operating concept, once approved. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 increase due to the start of initial prototype/development efforts required for mobile mission data processing to meet Next Generation OPIR capabilities in support of presidential directives.	0.000	0.000	35.000
Accomplishments/Planned Programs Subtotals	542.477	582.529	661.367

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D. Other Program Funding Summary ($ in Millions)

N/A

Remarks

E. Acquisition Strategy

The Next-Gen OPIR Ground program is executing an acquisition strategy using Middle Tier of Acquisition (MTA) authority for Rapid Prototyping approved via Acquisition Decision Memorandum on 5 Dec 19.

To support this acquisition strategy, the program will follow an agile approach to develop capabilities and a robust DevSecOps (Development/Security/Operations) solution to deliver the capabilities. The FORGE program is pursuing a rapid prototyping approach founded primarily on software and infrastructure reuse, partnerships with other programs, limited scope, use of existing contracts where necessary, and maximizing competition where possible. For the MDP thrust, the FORGE program is using competitive use Other Transaction (OT) authorities to develop the framework and the applications. For the C2 thrust, the program team is assessing whether the use of existing Space Systems Command (SSC) contracts with an emphasis to on-ramp to Enterprise Ground Services is still the appropriate strategy or if an update to the strategy is required. For the Next-Gen Transition effort, the program is using the Next-Gen GEO and Next-Gen Polar contract with the prime contractor. The program is executing the MDP, C2, and NIO thrusts within the scope of its Middle Tier of Acquisition authorities. The program is executing the RGS thrust using traditional acquisition authorities. RGS-A was designated an ACAT III by the MDA.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force			Date: March 2023
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
C2	Various	Various : TBD	-	56.210	Jan 2022	77.574	Jun 2023	109.580	Apr 2024	-		109.580	Continuing	Continuing	-
MDP	Various	Various : TBD	-	223.513	Nov 2021	187.343	Nov 2022	215.469	Nov 2023	-		215.469	Continuing	Continuing	-
Next-Gen Transition	Various	Various : TBD	-	183.880	Nov 2021	174.174	Nov 2022	134.854	Nov 2023	-		134.854	Continuing	Continuing	-
RGS-A	Various	NWIC and Northrop Grumman : Boulder, CO	-	26.394	Nov 2021	72.000	Nov 2022	67.792	Nov 2023	-		67.792	Continuing	Continuing	-
RGSs	TBD	Various : TBD	-	0.000		10.000	Mar 2023	45.000	May 2024	-		45.000	Continuing	Continuing	-
E-FORGE	Various	Various : TBD	-	0.000		0.000		35.000	Jan 2024	-		35.000	Continuing	Continuing	-
SE&I	TBD	TBD : TBD	-	15.253	Dec 2021	21.197	Dec 2022	14.580	Dec 2023	-		14.580	Continuing	Continuing	-
Technical Mission Analysis	RO	Aerospace Corporation : El Segundo, CA	-	5.434	Jan 2022	3.646	Jan 2023	3.381	Jan 2024	-		3.381	Continuing	Continuing	-
		Subtotal	-	510.684		545.934		625.656		-		625.656	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	RO	Aerospace Corporation : El Segundo, CA	-	3.848		4.782	Jan 2023	4.036	Jan 2024	-		4.036	Continuing	Continuing	-
A&AS	Various	Various : TBD	-	27.670		31.538	Feb 2023	31.400	Nov 2023	-		31.400	Continuing	Continuing	-
Other Support	Various	Various : TBD	-	0.275		0.275	Nov 2022	0.275	Nov 2023	-		0.275	Continuing	Continuing	-
		Subtotal	-	31.793		36.595		35.711		-		35.711	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	542.477		582.529		661.367		-		661.367	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force		Date: March 2023
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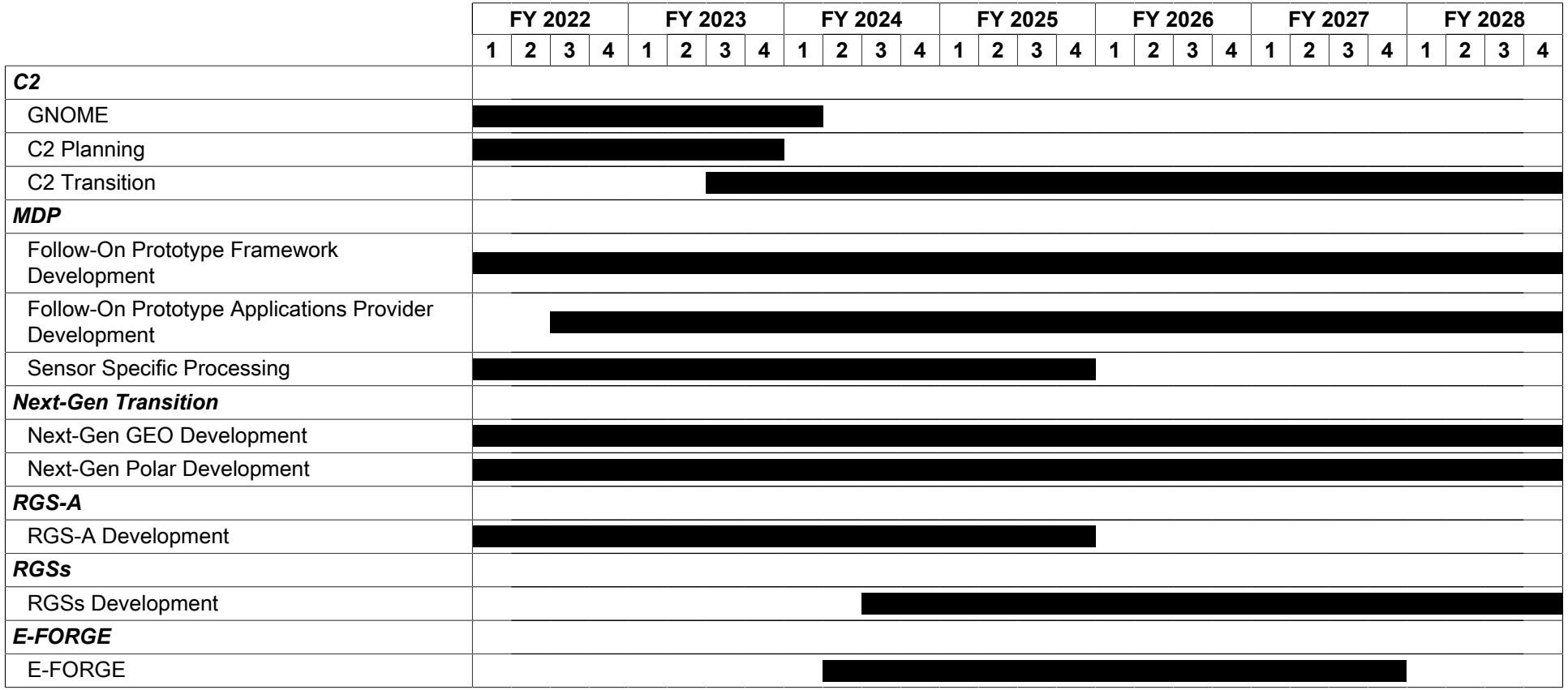

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force		Date: March 2023
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Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
C2				
GNOME	1	2022	1	2024
C2 Planning	1	2022	4	2023
C2 Transition	3	2023	4	2028
MDP				
Follow-On Prototype Framework Development	1	2022	4	2028
Follow-On Prototype Applications Provider Development	3	2022	4	2028
Sensor Specific Processing	1	2022	4	2025
Next-Gen Transition				
Next-Gen GEO Development	1	2022	4	2028
Next-Gen Polar Development	1	2022	4	2028
RGS-A				
RGS-A Development	1	2022	4	2025
RGSs				
RGSs Development	3	2024	4	2028
E-FORGE				
E-FORGE	2	2024	4	2027