Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Air Force	Date: March 2024
Appropriation/Budget Activity 3620F: *Research, Development, Test & Evaluation, Space Force* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 1206440SF / *Next-Gen OPIR -- Ground*

COST ($ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
Total Program Element	-	582.529	661.367	558.013	0.000	558.013	371.990	287.207	297.569	303.438	0.000	3,062.113
657106: *Next-Gen OPIR-Ground*	-	582.529	661.367	558.013	0.000	558.013	371.990	287.207	297.569	303.438	0.000	3,062.113
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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 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. E-FORGE will investigate a survivable antenna system and mission data processing system to enable Survivable and Endurable (S/E) ground mission operations for the Next-Gen OPIR Missile Warning (MW) mission.

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 MTA is fully funded across the Future Years Defense Program.

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.

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B. Program Change Summary ($ in Millions)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Previous President's Budget	582.529	661.367	557.034	0.000	557.034
Current President's Budget	582.529	661.367	558.013	0.000	558.013
Total Adjustments	0.000	0.000	0.979	0.000	0.979
• 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	0.000	0.000			
• Other Adjustments	0.000	0.000	0.979	0.000	0.979

Change Summary Explanation

FY 2025: +0.979M; Inflation adjustment

C. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
Title: FORGE Command and Control (FC2)	59.945	109.580	71.792

Description: FC2 is a Government-owned Missile Warning ground architecture that provides infrastructure, Mission Unique Software (MUS) and sensor/spacecraft specific C2 capabilities that use common messaging standards to transition C2 of the legacy Space-Based InfraRed System (SBIRS) constellation, including MUS efforts developed under the Geosynchronous Non-Integrated Tactical Warning and Attack Assessment Ops Migration to EGS (GNOME) prototype, and integration of Next-Gen OPIR Geosynchronous Earth Orbit (GEO) (NGG) and Next-Gen OPIR Polar (NGP) MUS to FORGE in order to deliver an integrated Missile Warning C2 ground system. Includes Mission Management, Telemetry Command and Control, Ground Resource Management, and user interface software development and the integration of the Flight Dynamics software.

FY 2024 Plans:

GNOME: Complete development and integration of C2 Mission Management MUS and core application for a GEO space vehicle.

FC2: Begin the prototype demonstration competition to develop and integrate the Mission Management, Ground Resource Control Management, and user interface software to support NGP. This will serve as the foundation for the C2 system to support NGP, NGG, and SBIRS.

FY 2025 Plans:

Complete the prototype demonstration to integrate the Mission Management, Ground Resource Control Management, and user interface software to support NGP. Award the final FC2 Phase 2 contract to continue software development of C2 to support NGP

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
launch, which will serve as the baseline foundation to transition SBIRS and NGG to FC2. Begin integration of the NGP MUS with the FC2 system. ***FY 2024 to FY 2025 Increase/Decrease Statement:*** FY 2025 decreased due to the completion of GNOME and integration activities.			
Title: Mission Data Processing (MDP) ***Description:*** The FORGE MDP is 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 2024 Plans:*** Deliver follow-on applications for SBIRS non-ITW/AA data processing. Continue development of follow-on MDP Applications Framework (MDPAF) effort. Continue follow-on development of MDP Applications Provider (MDPAP) effort for ITW/AA data processing. Continue follow-on development for Sensor Specific Processing (SSP) to support migration of all SBIRS Highly Elliptical Orbit (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 2025 Plans:*** Complete development of the follow-on MDPAF effort. Continue follow-on development and begin integration of MDPAP applications onto the FORGE framework for SBIRS ITW/AA data processing. Continue follow-on development for SSP to support migration of all SBIRS HEO and GEO assets to FORGE framework. Begin final system level integration and testing of mission data processing thrust area (MDPAF, MDPAP, and SSP) for SBIRS transition to operations on FORGE. Begin the DevSecOps pipeline to be responsive to evolving threats. 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, and activities that may leverage commercial and international opportunities. ***FY 2024 to FY 2025 Increase/Decrease Statement:***	237.654	269.141	304.585

Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Air Force	Date: March 2024
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C. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
FY 2025 increased due to system level integration of MDPAF, MDPAP, and SSP for the transition of SBIRS to FORGE operations.			
Title: Next-Gen Transition ***Description:*** Next-Gen transition is the development to enable use of FORGE for mission processing and C2 for future OPIR space systems. Included in this effort is the development of Next Gen Interim Ops (NIO) to ensure the most critical ground processing is ready in time for the first Next-Gen OPIR GEO satellite launch as required by JROCM 130-17. 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 2024 Plans:*** 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 and NGP-1 launch. ***FY 2025 Plans:*** 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 and NGP. ***FY 2024 to FY 2025 Increase/Decrease Statement:*** FY 2025 decreased due to completion of NIO integration and test activities in prep for NGG-1 launch.	212.119	134.854	110.153
Title: Relay Ground Station - Asia (RGS-A) ***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 will provide data to the Mission Control Station (MCS) for processing and dissemination to warfighters and National Command Authorities. The RGS modernization effort will include the ability to operate antennas and process data. This activity is for the Asia ground station portion of the FORGE - RGS architecture and includes 6 antennas. It is an ACAT III program. ***FY 2024 Plans:*** Purchase final mission equipment and complete site construction activities. Begin final system installation and checkout. ***FY 2025 Plans:*** Complete final system installation and checkout. ***FY 2024 to FY 2025 Increase/Decrease Statement:***	72.811	67.792	43.571

Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Air Force	Date: March 2024
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C. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
FY 2025 decreased due to ramp down in development and completion of site integration.			
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. ***FY 2024 Plans:*** Award second site, RGS-S, 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 RGS-UK, in Europe, and execute site preparations. ***FY 2025 Plans:*** Continue second site, RGS-S, development and integration activities. Award third RGS site RGS UK, which includes purchasing ITW/AA-class antenna and associated hardware for the Next-Gen Constellation. Execute site preparations. ***FY 2024 to FY 2025 Increase/Decrease Statement:*** FY 2025 decreased due to completion of long lead item purchases for RGS-S.	0.000	45.000	27.912
Title: E-FORGE ***Description:*** E-FORGE was a new start activity in FY24. As an FY24 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. Endurable FORGE (E-FORGE) is envisioned as a possible solution to replace the interim SBIRS Survivable Endurable Evolution (S2E2) system and provides continuous survivable and endurable non-imaging infrared for MW reporting across all phases of military operations to ITW/AA, Chairman, Joint Chiefs of Staff (CJCS) and Nuclear Command and Control System architectures. E-FORGE, as envisioned, enables the integration of SBIRS GEO 1-6 and the Next-Gen OPIR MW mission data through a survivable antenna system and a modernized data processing platform that adopts the FORGE MDP open framework and the FORGE C2 (FC2) baseline solution, and an integrated data architecture for missile warning. Additionally, E-FORGE may integrate nuclear detonation detection (NUDET) data from GPS sensors and utilize protected MILSATCOM for strategic reporting. ***FY 2024 Plans:*** E-FORGE began initial studies/prototyping needed for the development of a survivable antenna system and shelters. Additionally, E-FORGE began development of a data processing platform to include mission unique software that will support the survivable	0.000	35.000	0.000

Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Air Force	Date: March 2024
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C. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
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 was a new start activity in FY24. As an FY24 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 2025 Plans:*** N/A ***FY 2024 to FY 2025 Increase/Decrease Statement:*** FY 2025 decreased; awaiting USSF Force Design analysis.			
Accomplishments/Planned Programs Subtotals	582.529	661.367	558.013

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. The program will transition to the software acquisition pathway at the end of the MTA.

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 FC2 thrust, the FORGE team is using competitive use OT authorities to develop the Mission Management, Telemetry Command and Control, Ground Resource Management, and user interface software, while the mission unique software will be provided by the space vehicle contractors. For the Next-Gen Transition effort, the program is using the Next-Gen GEO and Next-Gen Polar contract with the space vehicle prime contractor to perform the work needed to develop the ground capabilities. The program is executing the MDP, FC2, 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 2025 Air Force			Date: March 2024
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
FC2	Various	Various : TBD	-	59.945	Jun 2023	109.580	Apr 2024	71.792	Dec 2024	-		71.792	Continuing	Continuing	-
MDP	Various	Various : TBD	-	161.281	Nov 2022	215.469	Nov 2023	236.764	Nov 2024	-		236.764	Continuing	Continuing	-
Next-Gen Transition	Various	Various : TBD	-	212.119	Nov 2022	134.854	Nov 2023	110.153	Nov 2024	-		110.153	Continuing	Continuing	-
RGS-A	Various	NWIC and Northrop Grumman : Boulder, CO	-	72.811	Nov 2022	67.792	Nov 2023	43.571	Nov 2024	-		43.571	Continuing	Continuing	-
RGSs	TBD	Various : TBD	-	-		45.000	May 2024	27.912	Nov 2024	-		27.912	Continuing	Continuing	-
E-FORGE	Various	Various : TBD	-	-		35.000	Jan 2024	-		-		-	Continuing	Continuing	-
SE&I	TBD	TBD : TBD	-	23.208	Dec 2022	14.580	Dec 2023	30.537	Dec 2024	-		30.537	Continuing	Continuing	-
Technical Mission Analysis	RO	Aerospace Corporation : El Segundo, CA	-	6.958	Jan 2023	3.381	Jan 2024	7.005	Jan 2025	-		7.005	Continuing	Continuing	-
		Subtotal	-	536.322		625.656		527.734		-		527.734	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	RO	Aerospace Corporation : El Segundo, CA	-	8.967	Jan 2023	4.036	Jan 2024	5.822	Jan 2025	-		5.822	Continuing	Continuing	-
A&AS	Various	Various : TBD	-	36.890	Feb 2023	31.400	Nov 2023	24.081	Nov 2024	-		24.081	Continuing	Continuing	-
Other Support	Various	Various : TBD	-	0.350	Nov 2022	0.275	Nov 2023	0.376	Nov 2024	-		0.376	Continuing	Continuing	-
		Subtotal	-	46.207		35.711		30.279		-		30.279	Continuing	Continuing	N/A

	Prior Years	FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	582.529		661.367		558.013		-		558.013	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2025 Air Force		Date: March 2024
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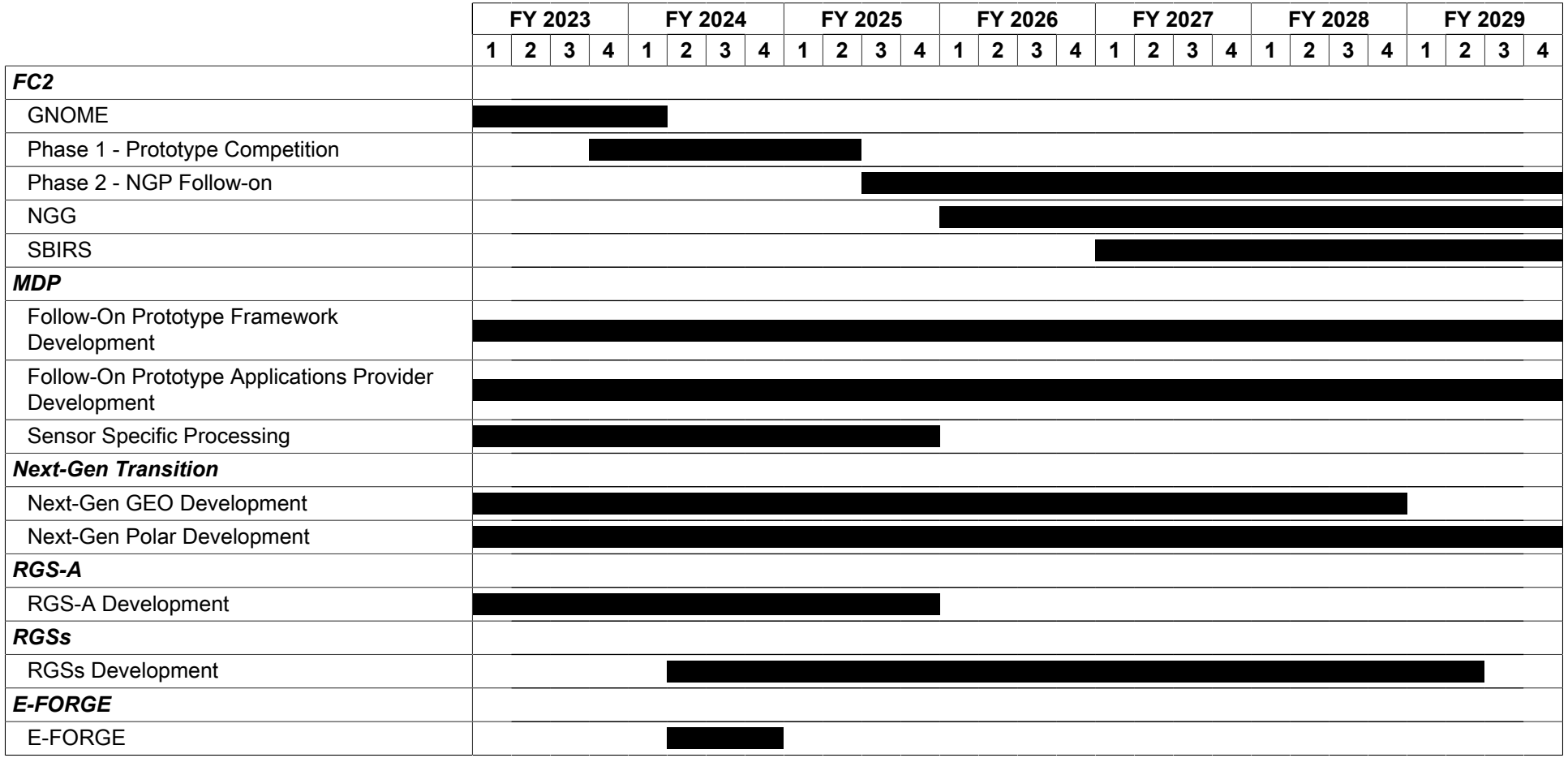

Exhibit R-4A, RDT&E Schedule Details: PB 2025 Air Force		Date: March 2024
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Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
FC2				
GNOME	1	2023	1	2024
Phase 1 - Prototype Competition	4	2023	2	2025
Phase 2 - NGP Follow-on	3	2025	4	2029
NGG	1	2026	4	2029
SBIRS	1	2027	4	2029
MDP				
Follow-On Prototype Framework Development	1	2023	4	2029
Follow-On Prototype Applications Provider Development	1	2023	4	2029
Sensor Specific Processing	1	2023	4	2025
Next-Gen Transition				
Next-Gen GEO Development	1	2023	4	2028
Next-Gen Polar Development	1	2023	4	2029
RGS-A				
RGS-A Development	1	2023	4	2025
RGSs				
RGSs Development	2	2024	2	2029
E-FORGE				
E-FORGE	2	2024	4	2024