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 I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 1203269SF *I GPS III Follow-On (GPS IIIF)*							
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	0.000	275.819	246.332	325.927	0.000	325.927	309.651	254.374	193.931	167.388	Continuing	Continuing
653170: *GPS IIIF*	0.000	275.819	246.332	265.863	0.000	265.863	247.799	190.704	128.360	100.541	214.192	1,669.610
653171: *GPS Enterprise Integration*	0.000	0.000	0.000	60.064	0.000	60.064	61.852	63.670	65.571	66.847	Continuing	Continuing
Program MDAP/MAIS Code: 590												

Note

In FY 2023, PE 1206423SF, Global Positioning System III - Operational Control Segment, Project 67A025, GPS Enterprise Integrator (EI), R-1 Line #52 efforts were transferred to PE 1203269SF, Global Positioning System IIIF, Project 653171, GPS Enterprise Integration, R-1 Line #17 in order to continue enterprise integration activities to support GPS IIIF Space, Ground and User Segment.

A. Mission Description and Budget Item Justification

The Global Positioning System (GPS) is a space-based navigation system that fills validated Joint Service requirements for worldwide, accurate, common grid three dimensional positioning/navigation for military aircraft, ships, and ground personnel. The consistent accuracy, unaffected by location or weather and available in real time, significantly improves effectiveness of reconnaissance, weapons delivery, mine countermeasures and rapid deployment for all services. GPS must comply with Title 10 United States Code (USC) Sec. 2281, which requires that the Secretary of Defense ensures the continued sustainment and operation of GPS for military and civilian purposes, and 51 USC Sec. 50112, which requires that GPS complies with certain standards and facilitates international cooperation.

The system is composed of three segments: User Equipment (funded under Program Element (PE) 1203164F, 1203164SF), Space (funded under PE 1203165F, 1203265F, 1203265SF, 1203269F, and 1203269SF), and a Control Network (funded under PE 1206423F, 1206423SF and 1203165F). The satellites broadcast high accuracy data using precisely synchronized signals that are received and processed by user equipment installed in military platforms. The user equipment computes the platform position and velocity and provides steering vectors to target locations or navigation waypoints. The control segment provides daily updates to the navigation messages broadcast from the satellites to maintain system precision in three dimensions to 16 meters (spherical error probable) worldwide. Additionally, GPS supports the United States (US) Nuclear Detonation (NUDET) Detection System (USNDS) mission and provides strategic and tactical support to the following Department of Defense (DoD) missions: Joint Operations by providing capabilities for Positioning, Navigation, and Timing (PNT); Command, Control, Communications, and Intelligence (C3I); Special Operations; Military Operations in Urban Terrain (MOUT); Defense-Wide Mission Support (DWMS); Air Mobility; and Space Launch Orbital Support.

GPS III Follow On (GPS IIIF) delivers improved satellites beyond the first ten GPS III Space Vehicles (SVs) being delivered (funded in PE 1203265SF GPS III Space Segment). While GPS IIIF satellites maintain the same capabilities as the GPS III satellites, they deliver significant enhancements to include: potential on-ramping of advanced PNT technology from efforts such as the Navigation Technology Satellite 3 (NTS-3), backward compatibility, Unified S-Band (USB) interface compliance, integration of hosted payloads including a redesigned USNDS payload, Laser Retro-reflector Arrays (LRAs), Search and Rescue/GPS (SAR/GPS), and Regional Military Protection (RMP) capabilities that provide the ability to deliver high-power regional Military Code (M-Code) signals in specific areas of intended effect.

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 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 1203269SF / *GPS III Follow-On (GPS IIIF)*

Implementation of RMP into the GPS Enterprise requires integration with the ground and user segments, executed by the GPS Next Generation Operational Control System (OCX), along with the Military GPS User Equipment (MGUE) programs, respectively. The SAR/GPS payload provided by Canada fills a validated National Search and Rescue Committee requirement to provide enduring, space-based distress alerting capability to detect, locate, and relay distress alerts to fulfill its responsibilities under international agreements for Search and Rescue. LRA, built by the Naval Research Lab (NRL), is a passive reflector that improves accuracy and provides better ephemeris data. National Geospatial-Intelligence Agency (NGA) funds the integration costs of the LRA.

This PE funds the Research, Development, Test, and Evaluation (RDT&E) of GPS IIIF SVs 11-12 (to include Non-Recurring Engineering (NRE) support efforts). This program includes risk-reducing simulators and systems engineering associated with delivering the new capabilities required of GPS IIIF satellites.

Starting in FY 2023, this program also funds the GPS EI project which includes critical efforts associated with the Government's responsibility to accomplish integration of multiple prime contracts across the three GPS enterprise segments, along with the transition to sustainment and operational communities. GPS EI maintains the current GPS architecture and system definition, controls and validates interfaces, ensures compatibility across current Generation II and III systems, and ongoing developments such as GPS IIIF space systems, OCX control systems, and MGUE Inc 1 and MGUE Inc 2 systems. GPS EI also develops/manages plans for execution and fielding of new capability like the new M-Code for use at the earliest opportunity. Further, GPS EI provides modeling, simulation, and technical analyses of impacts for Government-directed enterprise level trades among the GPS segments, leading to definition, management, maintenance, and evolution of the GPS Enterprise requirements and interface technical documents to build and ensure the integrity of the enterprise technical baseline, and perform system requirements verification.

In addition, GPS EI funds the technical evolution, risk reduction, enterprise-level testing and delivery of all PNT Enterprise, capabilities. GPS EI also assists in the analysis and assessment of futures technology to continue the advancement of the PNT enterprise ensuring PNT capabilities continue to be at the forefront. Examples for Generation II include electronic protection; for Generation III, additional anti-jamming protection and additional civil signals. To accomplish this, GPS EI delivers Test and Verification capabilities, Requirements and Interface Management, and Systems Integration support across the Space, Control, and User Segments. In this capacity, GPS EI is responsible for managing this cross-program work to provide these and other capabilities.

GPS EI's analyses guide Government decisions to ensure efficient and effective synchronization and execution across all GPS II and III programs. For Enterprise-wide integration to be successful, GPS EI: works with the GPS and NDS prime contractor teams to develop plans for early risk reduction System Integration Demonstrations to ensure system interfaces and functionality meet user and system requirements; ensures all equipment and documentation is ready when needed; integrates and analyzes enterprise schedules; and conducts formal test and verification, including Requirement Verification Plans and System Test Plans and Procedures. GPS EI performs all these efforts across all PNT programs in all acquisition phases. The Government owns the GPS Enterprise system requirements and integration, and highly leverages the GPS EI team to eliminate the need to fund a development prime contractor to perform these functions. This enhances Government control, oversight and program accountability.

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

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 I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 1203269SF *I GPS III Follow-On (GPS IIIF)*

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.

This program may include necessary civilian pay expenses required to manage, execute, and deliver GPS IIIF Space Segment weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in PEs 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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	285.496	264.265	0.000	0.000	0.000
Current President's Budget	275.819	246.332	325.927	0.000	325.927
Total Adjustments	-9.677	-17.933	325.927	0.000	325.927
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-17.933			
• 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	-9.677	0.000			
• Other Adjustments	0.000	0.000	325.927	0.000	325.927

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2021	FY 2022
Project: 653170: *GPS IIIF*		
Congressional Add: *Navigation Technology Satellite-3 (NTS-3) Payload and Launch*	28.983	-
Congressional Add Subtotals for Project: 653170	28.983	-
Congressional Add Totals for all Projects	28.983	-

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 FY 2023 cannot be made in a relevant manner.

Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force			Date: April 2022
Appropriation/Budget Activity 3620F / 5	R-1 Program Element (Number/Name) PE 1203269SF / *GPS III Follow-On (GPS III F)*	Project (Number/Name) 653170 / *GPS IIIF*	

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
653170: *GPS IIIF*	0.000	275.819	246.332	265.863	0.000	265.863	247.799	190.704	128.360	100.541	214.192	1,669.610
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The GPS is a space-based navigation system that fills validated Joint Service requirements for worldwide, accurate, common grid three dimensional positioning/ navigation for military aircraft, ships, and ground personnel. The consistent accuracy, unaffected by location or weather and available in real time, significantly improves effectiveness of reconnaissance, weapons delivery, mine countermeasures and rapid deployment for all services. GPS must comply with Title 10 USC Sec. 2281, which requires that the Secretary of Defense ensures the continued sustainment and operation of GPS for military and civilian purposes, and 51 USC Sec. 50112, which requires that GPS complies with certain standards and facilitates international cooperation.

The system is composed of three segments: User Equipment (funded under PE 1203164F, 1203164SF), Space (funded under PE 1203165F, 1203265F, 1203265SF, 1203269F, and 1203269SF), and a Control Network (funded under PE 1206423F, 1206423SF and 1203165F). The satellites broadcast high accuracy data using precisely synchronized signals that are received and processed by user equipment installed in military platforms. The user equipment computes the platform position and velocity and provides steering vectors to target locations or navigation waypoints. The control segment provides daily updates to the navigation messages broadcast from the satellites to maintain system precision in three dimensions to 16 meters (spherical error probable) worldwide. Additionally, GPS supports the USNDS mission and provides strategic and tactical support to the following DoD missions: Joint Operations by providing capabilities for PNT; C3I; Special Operations; MOUT; DWMS; Air Mobility; and Space Launch Orbital Support.

GPS IIIF delivers improved satellites beyond the first ten GPS III SVs being delivered (funded in PE 1203265SF GPS III Space Segment). While GPS IIIF satellites maintain the same capabilities as the GPS III satellites, they deliver significant enhancements to include: potential on-ramping of advanced PNT technology from efforts such as the NTS-3, backward compatibility, USB interface compliance, integration of hosted payloads including a redesigned USNDS payload, LRAs, SAR/GPS, and RMP capabilities that provide the ability to deliver high-power regional M-Code signals in specific areas of intended effect.

Implementation of RMP into the GPS Enterprise requires integration with the ground and user segments, executed by the OCX, along with the MGUE programs, respectively. The SAR/GPS payload provided by Canada fills a validated National Search and Rescue Committee requirement to provide enduring, space-based distress alerting capability to detect, locate, and relay distress alerts to fulfill its responsibilities under international agreements for Search and Rescue. LRA, built by the NRL, is a passive reflector that improves accuracy and provides better ephemeris data. NGA funds the integration costs of the LRA.

This PE funds the RDT&E of GPS IIIF SVs 11-12 (to include NRE support efforts). This program includes risk-reducing simulators and systems engineering associated with delivering the new capabilities required of GPS IIIF satellites.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: GPS III Follow-On (GPS IIIF) Development	246.836	246.332	265.863

Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1203269SF / *GPS III Follow-On (GPS III F)*	**Project (Number/Name)** 653170 / *GPS IIIF*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Description: The program utilizes RDT&E funds to develop and deliver SVs 11-12, conduct the NRE of developing risk-reducing simulators, developing support test equipment, and conducting the systems engineering associated with delivering the new capabilities required of GPS IIIF including backward compatibility, dual band Telemetry, Tracking, and Control, integration of Government Furnished Equipment hosted payloads, and RMP, which delivers high power regional M-Code signals in specific areas of intended effect. ***FY 2022 Plans:*** Continue development and NRE efforts to simultaneously support three satellites (SV11, SV12, & GPS IIIF Non-flight Satellite Testbed (GNST+)) in support of system integration and the final build and checkout of two GPS IIIF SV Simulators (GSS+). Efforts include hardware purchases of long lead items. Complete GSS+ 1 & 2 subsystem development, procurement and build; continue system integration. Complete GNST+ subsystem development, procurement and build; begin system integration. Complete SV11 subsystem development, procurement and build; begin system integration and test. Continue development, NRE, subsystem procurement, and build of SV12. Continue program office and other related support activities that may include, but not limited to, studies, technical analysis, prototyping, etc. ***FY 2023 Plans:*** Complete build, test, and delivery of GNST+. Continue development, build, and test of GSS+ 1 & 2, SV 11, & SV 12 in support of system integration. Conduct Integration and Testing of satellites and GNST+ pathfinder. Receive and process critical components for SVs 11-12 and initiate system module assembly. Conduct and support capability insertion research, and perform risk reduction activities on the Common Bus approach for SVs 13+. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but not limited to, program office support, studies, technical analysis, experimentation, prototyping, etc. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** FY 2023 funding increased due to completing build, test, and delivery of GNST+ while still continuing development activities for SVs 11-12 , GSS+ 1 & 2, and risk reduction activities on the Common Bus approach for SVs 13+.			
Accomplishments/Planned Programs Subtotals	246.836	246.332	265.863

	FY 2021	FY 2022
Congressional Add: Navigation Technology Satellite-3 (NTS-3) Payload and Launch	28.983	-

Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1203269SF / *GPS III Follow-On (GPS III F)*	**Project (Number/Name)** 653170 / *GPS IIIF*

	FY 2021	FY 2022
FY 2021 Accomplishments: The Congressional Add supports ground system development, space vehicle development, first year of on-orbit operations, procurement of the space vehicle pre-launch processing facility, mission unique launch vehicle integration, mission unique hardware, mission unique software, and separation system procurement for NTS-3. Continue program office and other related support activities that may include, but not limited to, studies, technical analysis, prototyping, etc.		
Congressional Adds Subtotals	28.983	-

C. 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 BA01 GPS03C: *GPSIII Follow On*	597.796	852.918	657.562	-	657.562	664.149	683.441	713.958	748.954	2,100.419	7,019.197

Remarks

D. Acquisition Strategy

In December 2017, Principal Deputy Office of the Assistant Secretary of the Air Force Acquisition & Logistics began the GPS IIIF program. Beginning in FY 2019 and, consistent with the Fiscal Year 2016 National Defense Authorization Act, the program was categorized as an Acquisition Category 1B Major Defense Acquisition Program (MDAP) with the Service Acquisition Executive serving as the Milestone Decision Authority (MDA). During this time, the MDA approved the second phase of the two-phased GPS III Follow-On acquisition strategy. Executed using funds in PE 1203265F, GPS III Space Segment, the Phase 1 Production Readiness Feasibility Assessments conducted during FY 2016-2017 provided data and insight into contractors' GPS satellite production designs with emphasis on a mature navigation payload and production-ready designs. Phase 1 results affirmed the viability of a competitive approach for Phase 2. The Phase 2 strategy directed the Air Force to conduct a full-and-open competition for GPS IIIF space vehicles and specified the use of RDT&E funds to deliver SVs 11-12 and conduct associated NRE. In addition to SVs 11-12, the RDT&E effort is comprised of developing risk-reducing simulators, support test equipment, and conducting the systems engineering associated with delivering the new capabilities required of GPS IIIF. The Air Force awarded the contract to Lockheed Martin in September 2018 and began the 1-year Critical Design Review (CDR) campaign in March 2019. Completion of CDR was done in March 2020 and Milestone C production certification completed in July 2020. Procurement of SVs 13 and 14 awarded on October 7, 2020. Procurement of SVs 15-17 awarded on October 22, 2021. The Space Force will continue to procure future GPS IIIF satellites via annual contract options exercised using Space Procurement, Air Force and Procurement, Space Force funds consistent with full-funding policy under an annual buy approach.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Air Force			Date: April 2022
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1203269SF / *GPS III Follow-On (GPS III F)*	**Project (Number/Name)** 653170 / *GPS IIIF*	

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
GPS IIIF Development	C/FPIF	Lockheed Martin : Littleton, CO	0.000	235.662	Dec 2020	230.447	Dec 2021	239.517	Nov 2022	-		239.517	693.438	1,399.064	1,374.851
NTS-3 Payload and Launch	Various	Various : Various	0.000	28.983	Feb 2021	-		-		-		-	0.000	28.983	-
GPS IIIF Technical Mission Analysis	Various	Various : Various	0.000	5.337	Dec 2020	2.083	Dec 2021	2.324	Dec 2022	-		2.324	50.754	60.498	-
GPS IIIF Enterprise SE&I	C/CPAF	SAIC : El Segundo, CA	0.000	1.562	Dec 2020	2.846	Dec 2021	6.636	Dec 2022	-		6.636	35.040	46.084	-
		Subtotal	0.000	271.544		235.376		248.477		-		248.477	779.232	1,534.629	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
GPS IIIF Test and Evaluation	Various	Various : Various	0.000	1.000	Apr 2021	0.000	Dec 2021	-		-		-	0.000	1.000	-
		Subtotal	0.000	1.000		0.000		-		-		-	0.000	1.000	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
GPS IIIF FFRDC	Various	Various : Various, CA	0.000	1.923	Dec 2020	1.928	Dec 2021	2.131	Dec 2022	-		2.131	42.006	47.988	-
GPS IIIF A&AS	Various	Various : El Segundo, CA	0.000	0.361	Dec 2020	8.828	Dec 2021	14.855	Dec 2022	-		14.855	76.258	100.302	-
GPS IIIF Other Support	Various	Various : El Segundo, CA	0.000	0.991	Oct 2020	0.200	Oct 2021	0.400	Oct 2022	-		0.400	2.000	3.591	-
		Subtotal	0.000	3.275		10.956		17.386		-		17.386	120.264	151.881	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Air Force			Date: April 2022
Appropriation/Budget Activity 3620F / 5	R-1 Program Element (Number/Name) PE 1203269SF / *GPS III Follow-On (GPS III F)*	Project (Number/Name) 653170 / *GPS IIIF*	

	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	0.000	275.819		246.332		265.863		-		265.863	899.496	1,687.510	N/A

Remarks

FINANCIAL PERFORMANCE: GPS IIIF is evaluated against traditional Research and Development (R&D) program expenditure benchmarks. However, unlike many traditional R&D programs, the GPS IIIF R&D and Production phases fall under a Fixed Price Incentive Firm Target (FPIF) contract type with progress payments. Mandatory funding obligations and progress payment withholds will cause the program to lag traditional expenditure benchmarks, painting an inaccurate portrait of overall program health.

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1203269SF / *GPS III Follow-On (GPS III F)*	**Project (Number/Name)** 653170 / *GPS IIIF*

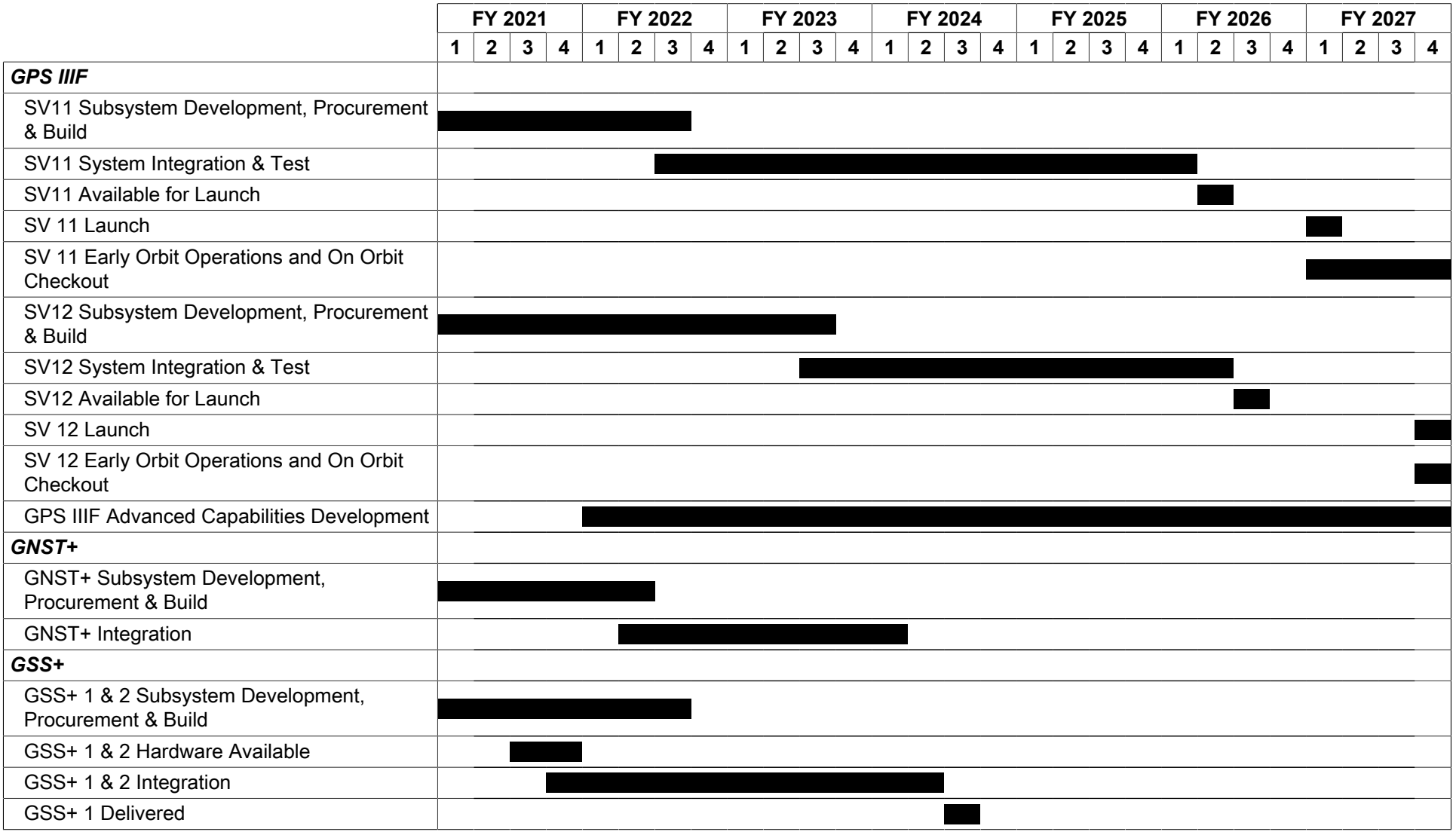

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1203269SF / *GPS III Follow-On (GPS III F)*	**Project (Number/Name)** 653170 / *GPS IIIF*

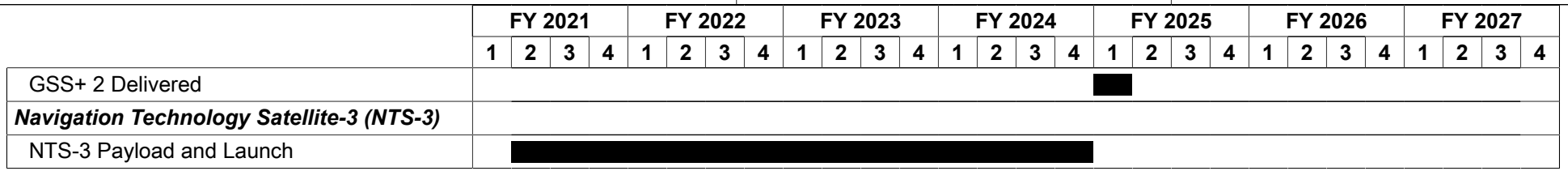

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1203269SF / *GPS III Follow-On (GPS III F)*	**Project (Number/Name)** 653170 / *GPS IIIF*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
GPS IIIF				
SV11 Subsystem Development, Procurement & Build	1	2021	3	2022
SV11 System Integration & Test	3	2022	1	2026
SV11 Available for Launch	2	2026	2	2026
SV 11 Launch	1	2027	1	2027
SV 11 Early Orbit Operations and On Orbit Checkout	1	2027	4	2027
SV12 Subsystem Development, Procurement & Build	1	2021	3	2023
SV12 System Integration & Test	3	2023	2	2026
SV12 Available for Launch	3	2026	3	2026
SV 12 Launch	4	2027	4	2027
SV 12 Early Orbit Operations and On Orbit Checkout	4	2027	4	2027
GPS IIIF Advanced Capabilities Development	1	2022	4	2027
GNST+				
GNST+ Subsystem Development, Procurement & Build	1	2021	2	2022
GNST+ Integration	2	2022	1	2024
GSS+				
GSS+ 1 & 2 Subsystem Development, Procurement & Build	1	2021	3	2022
GSS+ 1 & 2 Hardware Available	3	2021	4	2021
GSS+ 1 & 2 Integration	4	2021	2	2024
GSS+ 1 Delivered	3	2024	3	2024
GSS+ 2 Delivered	1	2025	1	2025
Navigation Technology Satellite-3 (NTS-3)				

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1203269SF / *GPS III Follow-On (GPS III F)*	**Project (Number/Name)** 653170 / *GPS IIIF*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
NTS-3 Payload and Launch	2	2021	4	2024

Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force			Date: April 2022
Appropriation/Budget Activity 3620F / 5	R-1 Program Element (Number/Name) PE 1203269SF / *GPS III Follow-On (GPS III F)*	Project (Number/Name) 653171 / *GPS Enterprise Integration*	

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
653171: *GPS Enterprise Integration*	0.000	0.000	0.000	60.064	0.000	60.064	61.852	63.670	65.571	66.847	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This is not a New Start. In FY 2023, PE 1206423SF, Global Positioning System III - Operational Control Segment, Project 67A025, GPS Enterprise Integrator (EI), R-1 Line #52 efforts were transferred to PE 1203269SF, Global Positioning System IIIF, Project 653171, GPS Enterprise Integration, R-1 Line #17 in order to continue enterprise integration activities to support GPS IIIF Space, Ground and User Segment.

A. Mission Description and Budget Item Justification

The GPS Program Office established and maintains the technical baseline and is responsible for the successful fielding of all the GPS Segments (space, control, and user). In order to successfully execute these responsibilities, GPS EI creates an enterprise architecture, integrates segment products, verifies the enterprise requirements are adequately met, develops and implements various Systems Engineering documents, defines methods of verification, conducts integrated system test and test analysis, develops and manages the Enterprise technical baseline which reflect multiple stakeholder requirements; stakeholders include the DoD, foreign governments, industry, and the general public (through four public interface specifications). Furthermore, GPS EI ensures PNT capabilities meet the warfighter's, civil agencies, commercial entities, international treaties, and over four billion global GPS users needs. Moreover, GPS EI is responsible for delivering a reliable PNT signal capability to military operators, the civil user community, and international partners. In addition, GPS EI validates the system performance in various mission threat scenarios during its development as well as provides in-depth technical expertise to enhance government control, oversight and program accountability. GPS EI is also responsible for all aspects of schedule and technical alignment across the GPS segments (space, control, and user).

More specifically, GPS EI is responsible for technical baseline management, integration, synchronizing, testing, and verifying GPS III, GPS IIIF, Operational Control System (OCS), OCX, MGUE Increment 1 and Increment 2, and other PNT investment projects. Additionally, GPS EI is responsible for creating and managing plans that provide early exercise of the products under development, compatibility analysis, and inter-segment testing. The inter-segment tests are required to prove OCX interoperability with GPS III satellites and Modernized User Equipment. More importantly, it ensures backwards compatibility with legacy systems such as GPS Block II satellites, OCS, and legacy user equipment. The GPS EI also manages the process through which the Joint Requirements Oversight Council validated requirements are matured and flowed down to the system segments, while remaining consistent with various interfaces. This enables the GPS system to meet Title 10 of the USC, Sec 2281, mandated PNT capabilities, and various other obligations to the international community that provide inter-operable PNT signals.

GPS EI also supports GPS spectrum protection at international forums such as the International Telecommunications Union. Such support consists of advocating on behalf of the US Government when negotiating with foreign partners. In addition, GPS EI provides technical expertise to maintain relationships with other US government agencies that include the Federal Aviation Administration, NGA, National Aeronautics and Space Administration, and Departments of State, Transportation, Homeland Security, and Commerce. GPS EI Spectrum also ensures GPS priority for eight essential spectrum signals, including those required for civil air navigation and

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safety of life. Spectrum Protection prevents encroachment from commercial or foreign entities, which results in the preservation of warfighter's reliable signal. As a result, military operations and the integrity of the global economic infrastructure are protected.

GPS EI also manages GPS and other navigation system performance monitoring and publishes performance specifications and reports to ensure anomalies with GPS can be resolved. In addition GPS EI provides technical expertise for the development for GPS program technical baselines and public specifications to make certain that the DoD fulfills its commitment to the world for civilian GPS Service.

GPS EI also provides the PNT enterprise expertise in System Safety, Enterprise level System Security Engineering covering Acquisition Systems Program Security (i.e., personnel, industrial, operations, information, sensitive compartmented information, communication, and physical), Program Protection, Foreign Disclosure, Public Release reviews, Mission System Certification and Accreditation, and Enterprise Cybersecurity. GPS EI is accountable for the development, execution, and analysis of the PNT Enterprise Segments, cybersecurity, and associated test cases necessary to deliver a secure operational system.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: Enterprise Integration	-	-	60.064
Description: This is not a New Start. Funding supports the integration and technical baseline control of all elements of the GPS system (space/control/user) in support of both military and civil users. Test and verification of integrated system performance in preparation for operational test and evaluation.			
FY 2023 Plans: Continue SSC-led integrated test, operational evaluation, and transition to operations of the OCX Block 1/2 and MGUE Increment 1 receivers. Continue integrated, Government-led development and operational testing using operational assets, facilities and resources; efforts will include OCX Site Acceptance Testing, OCX Transition Risk Reduction to Operations, Integrated System Test (IST) 3-1 for OCX, Multi-service Operational Test and Evaluation (OT&E) for OCX-dependent capabilities, IST 3-3 Phase 4, and OT&E in B-2 and Navy Arleigh Burke Class Destroyer (DDG). Complete OCX Block 1/2 Ready to Operate (RTO) and Operational Acceptance Review. Support MGUE Increment 2 miniature serial interface with Next Generation Application Specific Integrated Circuit prototyping. Support MGUE Handheld program initiation and requirements review. Continue GPS Enterprise-wide systems engineering, systems integration, and technical baseline management to ensure GPS Programs of Record work effectively together. Support GPS III SV09-10 delivery, launch planning and integration. Support integration planning for OCX Block 3F and GPS III Follow-On SVs. Evaluate systems for effectiveness in delivering capabilities of GPS Constellation Management, GPS Enterprise M-Code PNT Determination, GPS L2C signal PNT Determination, and GPS L5 signal PNT Determination. Support operational demonstration of Vanguard NTS-3 program and acquisition planning for transition to operations. Provide increased support for PNT cybersecurity including cyber survivability test and evaluation planning and analysis.			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but not limited to, program office support, studies, technical analysis, experimentation, prototyping, etc. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** FY 2023 funding increase due to ramp up of support to integration and tests for GPS IIIF SV12 and OCX Block 1 RTO.			
Accomplishments/Planned Programs Subtotals	-	-	60.064

C. 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
• RDTE 07 1206423F: *Global Positioning System III - Operational Control Segment*	515.079	413.766	359.720	0.000	359.720	274.887	82.499	22.871	6.620	0.000	1,675.442
• RDTE 04 1203164F: *NAVSTAR Global Positioning System (User Equipment) (SPACE)*	367.652	434.194	382.594	0.000	382.594	301.635	88.742	55.913	57.012	0.000	1,687.742
• RDTE 07 1203265F: *GPS III Space Segment*	10.398	7.207	1.626	0.000	1.626	0.000	0.000	0.000	0.000	0.000	19.231
• RDTE 05 1203269SF: *GPS III Follow-On (GPS IIIF)*	275.819	264.265	265.863	0.000	265.863	247.799	190.704	128.360	100.541	214.192	1,687.543
• RDTE 07 1203913F: *NUDET Detection System (SPACE)*	29.157	45.887	80.429	0.000	80.429	93.588	86.600	76.954	78.453	0.000	491.068
• SPSF 01 1203265SF: *GPS III Space Segment*	24.146	84.452	103.340	0.000	103.340	122.753	76.037	50.443	2.831	0.000	464.002
• SPSF 01 1203269SF: *GPS III Follow-On (GPS IIIF)*	597.796	601.418	657.562	0.000	657.562	664.149	683.441	713.958	748.954	2,100.419	6,767.697
• SPSF 01 1203164SF: *GPS UE Space*	2.256	2.274	0.950	0.000	0.950	0.901	0.838	0.888	0.840	0.000	8.947

Remarks

D. Acquisition Strategy

In accordance with a "back to basics" acquisition approach the Space Force is required to exercise complete ownership of the architecture, system definition, technical baseline, and integration of the GPS space, ground, and user segments. This complex inter-segment integration requires the government to be the integrator. To

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execute this responsibility, the government leverages systems engineering and integration expertise from both Federally Funded Research and Development Center (FFRDC) contractors and a Systems Engineering & Integration (SE&I) contractor. The GPS EI function of the SE&I contractor is currently funded within this PE. The SE&I effort was awarded in 2015 through a full and open competition. A sole source SE&I Bridge Contract began in 1QFY22. A full and open SE&I follow-on contract is scheduled to be awarded by 2QFY22.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Air Force			Date: April 2022
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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
GPS EI Enterprise SE&I	C/CPAF	TASC : El Segundo, CA	0.000	-		-		34.513	Nov 2022	-		34.513	Continuing	Continuing	-
GPS EI Technical Mission Analysis 1	RO	Aerospace : El Segundo, CA	0.000	-		-		9.744	Oct 2022	-		9.744	Continuing	Continuing	-
GPS EI Technical Mission Analysis 2	Various	Mitre : Various	0.000	-		-		10.809	Oct 2022	-		10.809	Continuing	Continuing	-
GPS EI Cybersecurity	Various	Various : El Segundo, CA	0.000	-		-		1.892	Nov 2022	-		1.892	Continuing	Continuing	-
GPS EI Additional Product Development	Various	Various : Various	0.000	-		-		0.800	Oct 2022	-		0.800	Continuing	Continuing	-
		Subtotal	0.000	-		-		57.758		-		57.758	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
GPS EI A&AS	Various	Various : El Segundo, CA	0.000	-		-		1.906	Oct 2022	-		1.906	Continuing	Continuing	-
GPS EI Other Support	Various	Various : Various	0.000	-		-		0.400	Oct 2022	-		0.400	Continuing	Continuing	-
		Subtotal	0.000	-		-		2.306		-		2.306	Continuing	Continuing	N/A

	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	0.000	-		-		60.064		-		60.064	Continuing	Continuing	N/A

Remarks

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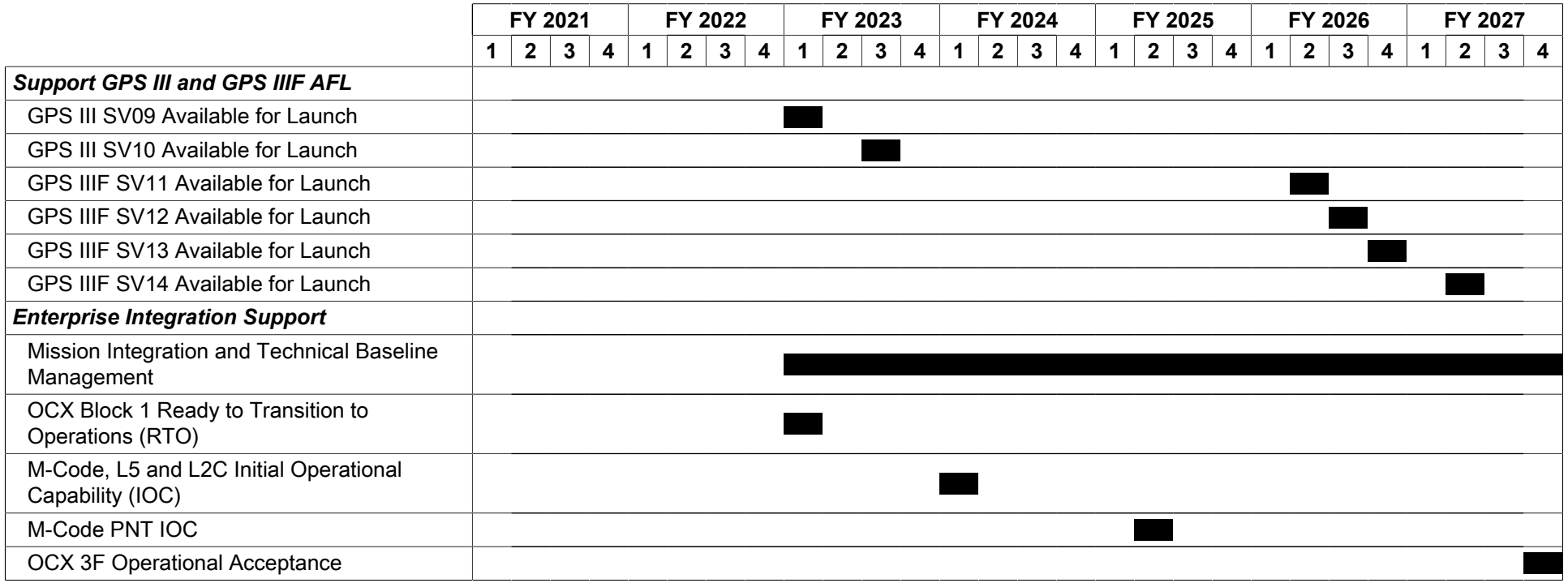

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Air Force		Date: April 2022
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Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Support GPS III and GPS IIIF AFL				
GPS III SV09 Available for Launch	1	2023	1	2023
GPS III SV10 Available for Launch	3	2023	3	2023
GPS IIIF SV11 Available for Launch	2	2026	2	2026
GPS IIIF SV12 Available for Launch	3	2026	3	2026
GPS IIIF SV13 Available for Launch	4	2026	4	2026
GPS IIIF SV14 Available for Launch	2	2027	2	2027
Enterprise Integration Support				
Mission Integration and Technical Baseline Management	1	2023	4	2027
OCX Block 1 Ready to Transition to Operations (RTO)	1	2023	1	2023
M-Code, L5 and L2C Initial Operational Capability (IOC)	1	2024	1	2024
M-Code PNT IOC	2	2025	2	2025
OCX 3F Operational Acceptance	4	2027	4	2027