Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force											Date: February 2018	
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 1203265F / *GPS III Space Segment*							
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
Total Program Element	2,946.527	165.794	243.435	144.543	0.000	144.543	42.440	10.780	7.296	8.893	Continuing	Continuing
676007: *SAR- GPS*	8.954	1.065	1.324	0.000	0.000	0.000	0.000	0.000	0.000	1.442	0.000	12.785
67A011: *Space Analysis and Application Development*	0.000	0.000	10.029	69.481	0.000	69.481	0.000	0.000	0.000	0.000	Continuing	Continuing
67A019: *GPS III*	2,937.573	164.729	232.082	75.062	0.000	75.062	42.440	10.780	7.296	7.451	12.008	3,489.421
Program MDAP/MAIS Code: 292												

Note

In FY2019, Program Element (PE) 1203265F, GPS III Space Segment, Project 67A019, GPS III funding for GPS IIIC Follow-On efforts were transferred to PE 1203269F, Project 653170, GPS IIIC due to the establishment of a new PE for GPS III Follow-on SVs 11+ to provide MDAP transparency.

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 operations 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), Space (funded under this PE, 1203165F, and PE 1203269F) and a Control Network (funded under PE 1203165F and PE 1206423F). The satellites broadcast high accuracy data using precisely synchronized signals which are received and processed by user equipment installed in military platforms. This 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 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; Air Mobility; and Space Launch Orbital Support.

GPS III is the next generation Space Vehicle (SV) supporting the GPS constellation and is funded in PE 1203265F and PE 1203269F. GPS III SVs will deliver significant enhancements, including a new international civil (L1C) signal, enhanced anti-jam power, and a growth path to full warfighter capabilities. GPS III SVs 03-10 are in the Production & Deployment Phase.

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 1203265F / *GPS III Space Segment*

PE 1203265F funds GPS III and supports the Research, Development, Test and Evaluation (RDT&E) of GPS III SVs 01-02, and risk-reducing simulators through a systems engineering approach that matures and delivers SVs for launch. This PE includes SVs 01-02 engineering studies and analyses, trade studies, system development, test and evaluation efforts, integrated logistics support products, on-orbit support, and mission operations support for civil and military applications that protect U.S. military and allied use of GPS. The program also includes Contingency Operations (COps) as a bridge capability to fly GPS III SVs until the delivery of the GPS Next Generation Operational Control System (OCX).

Starting in FY2019 PE 1203269F will fund the RDT&E of GPS III Follow-On SVs 11 and 12 which will include Non-Recurring Engineering (NRE) support efforts. This production design activity includes risk-reducing simulators and systems engineering associated with delivering the new capabilities required of GPS III Follow-On SVs, including backward compatibility, dual band Telemetry, Tracking and Control (TT&C), integration of Government Furnished Equipment (GFE) hosted payloads, a new civil (L1C) Galileo-compatible signal, and Regional Military Protection (RMP) which provides the ability to deliver high-power regional Military Code (M-Code) signals in specific areas of intended effect.

Space Modernization Initiative (SMI) focuses on space vehicle affordability and capability, addresses future requirements and resiliency needs, and expands the industrial base supply. The Air Force (AF) is using its research laboratories to mature an On-Orbit Reprogrammable Digital Waveform Generator (ORDWG) which will provide signal flexibility to change the signal form while the satellite is on-orbit. This effort will be funded with Air Force Research Laboratory (AFRL) Science & Technology (S&T) funding and PE 1203265F to increase the number of alternate navigation payloads and inform future PNT architectures.

Mission Readiness Campaign (MRC) activities include launch preparation, planning, mission readiness testing to validate space-ground-user interfaces, mission crew exercises and rehearsals, launch vehicle integration, and On-Orbit Checkout activities to validate performance prior to launch. Newly certified launch vehicles must be incorporated into the GPS III launch baseline. Integration requires the development of plans and procedures, and procurement of special support equipment.

GPS supports the early deployment of Global M-Code to meet the congressional mandate limiting user equipment purchases to M-Code capable receivers starting in FY2017. The funds will cover the M-Code Early Use (MCEU) program and support development costs associated with the GPS control segment software to provide core M-Code capabilities to the warfighter, as well as the ability to command and control, process, and monitor the M-Code signal. MCEU mitigates delays with OCX, supports Military Global Positioning System User Equipment (MGUE) testing, and allows for early M-Code operations. M-Code provides greater security to protect navigation and timing in electronically contested environments.

Impacts of the M-Code deployment include:
- Compliance with Commander, Air Force Space Command mandate to provide global monitoring necessary for Early M-Code Operational Use and verification of Navigation Warfare (NAVWAR) effects.
- Direction to improve the resiliency of the GPS capability.
- Confirmation that Enterprise modernization efforts are integrated and deployed properly.
- Testing and Verification of M-Code capability on MGUE/GPS III solution and early M-Code use tied to MGUE fielding

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 1203265F / *GPS III Space Segment*

The feasibility studies and preliminary engineering analyses that are funded with this budget item will determine whether or not an initiative to host GPS M-Code augmentation payloads on other satellite systems is practical and beneficial. The primary goal is to provide additional mission assurance and resiliency through redundant systems not directly connected with the current U.S. GPS satellite constellation. This augmentation to the GPS constellation enables future rapid technology on-ramps with minimal risk.

The current and future space domain demands that space systems be responsive to new and changing threats, and can rapidly integrate new capabilities to make our warfighting force more resilient in a contested battlespace. This agility, survivability, and rapid reconstitution must extend through the entire space warfighting enterprise, to include how we learn about the threat; develop solutions; acquire, test, deploy, train, operate and integrate new systems into the greater system of systems; and ensure our space mission force is ready to defeat a thinking adversary in a complex, multi-domain battlespace. The enterprise will use all of its elements to accelerate decision-making, prototype potential solutions, rapidly integrate decision-making tools and sustain a war-winning capability by delivering multi-domain effects in, from, and through space and cyberspace enabling battle management and resilience options to "fight through."

This PE may include necessary civilian pay expenses required to manage, execute, and deliver GPS III Space Segment weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in PEs 1206392F and 1206398F.

This PE encompasses the GPS III (SV 01-10), COps, MCEU, M-Code Hosted Payload, and prior to FY2019, GPS III Follow-On Production Readiness effort.

This program is a 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 and subsequent fiscal year.

B. Program Change Summary ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	179.188	243.435	127.699	0.000	127.699
Current President's Budget	165.794	243.435	144.543	0.000	144.543
Total Adjustments	-13.394	0.000	16.844	0.000	16.844
• Congressional General Reductions	-0.045	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	30.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-6.049	0.000			
• Other Adjustments	-37.300	0.000	16.844	0.000	16.844

Change Summary Explanation

FY2017: -$37.300M Request for Additional Appropriations (RAA) Back-out
FY2017: +$30.000M Congressional Add for MCEU

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 1203265F / *GPS III Space Segment*

FY2019: -$48.723M Transfer to GPS III Follow-On PE 1203269F to create GPS IIIC MDAP program transparency
FY2019: -$ 1.345M Transfer GPS III SAR to GPS III SPAF funding
FY2019: -$ 1.088M Inflation
FY2019: +$ 8.000M Fund GPS III SV-2
FY2019: +$60.000M Fund M-Code Hosted Payload

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203265F / *GPS III Space Segment*	Project (Number/Name) 676007 / *SAR- GPS*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
676007: *SAR- GPS*	8.954	1.065	1.324	0.000	0.000	0.000	0.000	0.000	0.000	1.442	0.000	12.785
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Search and Rescue GPS (SAR/GPS) is an approved auxiliary payload on GPS III beginning no earlier than SV 11. SAR/GPS fills validated National Search and Rescue (SAR) Committee requirements to provide enduring, space-based distress alerting capability to detect, locate, and relay distress alerts to fulfill its responsibilities under international agreements for SAR.

In addition, the United States Air Force (USAF) has on-going requirements to rescue US Military personnel in harm's way per AF Doctrine Document 2-1.6. The implementation of a U.S. Medium Earth Orbiting (MEO) SAR Space Segment is via a Canadian-provided 406 MHz SAR repeater on GPS III SVs. This system presents a cost effective, low-risk opportunity that accommodates existing and planned 406 MHz beacons across the globe. Per National Security Presidential Directive (NSPD)-39, USAF and United States Coast Guard (USCG), the U.S. operators of the civil Cosmicheskaya Sistyema Poiska Avariynich Sudov-Search and Rescue Satellite-Aided Tracking (COSPAS/SARSAT) system, and the international SAR system will integrate the Canadian provided SAR repeater into GPS III beginning no earlier than SV 11.

SAR/GPS funds are transferred to GPS III SPAF beginning in FY19.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: SAR/GPS	1.065	1.324	0.000
Description: Nonrecurring costs for systems engineering activities to integrate the payload onto the GPS III SVs starting no earlier than SV 11.			
FY 2018 Plans: Continue to complete the design and development of SAR/GPS antennas, associated hardware and cabling, and space vehicle software; systems engineering associated with integrating SAR payload onto the GPS lll SVs; enterprise-level Systems Engineering & Integration, Program Management (SE&I/PM). Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc. Costs do not include development and production of the Canadian payload unit.			
FY 2019 Plans: N/A			
FY 2018 to FY 2019 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1203265F / *GPS III Space Segment*	**Project (Number/Name)** 676007 / *SAR- GPS*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
N/A			
Accomplishments/Planned Programs Subtotals	1.065	1.324	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• SPAF 01 Line Item GPSIII: *GPS III*	33.974	85.894	69.386	-	69.386	773.398	782.838	1,152.975	1,152.796	4,704.949	8,756.210
• NGA: *National Geospatial-Intelligence Agency*	2.000	1.000	1.000	-	1.000	0.400	0.000	0.000	-	0.000	4.400

Remarks

D. Acquisition Strategy

SAR/GPS and Laser Retroreflector Array (LRA) will be integrated as part of the GPS III program no earlier than SV 11.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203265F / *GPS III Space Segment*	Project (Number/Name) 676007 / *SAR- GPS*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Search and Rescue SAR/ GPS Integration	Various	Engility Corp (TASC) : El Segundo, CA	8.954	0.565	Nov 2017	0.824	Nov 2017	-		-		-	1.442	11.785	-
		Subtotal	8.954	0.565		0.824		-		-		-	1.442	11.785	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Search and Rescue SAR/ GPS FFRDC	MIPR	Aerospace Corp : El Segundo, CA	0.000	0.500	Dec 2016	0.500	Dec 2017	-		-		-	0.000	1.000	-
		Subtotal	0.000	0.500		0.500		-		-		-	0.000	1.000	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	8.954	1.065		1.324		-		-		-	1.442	12.785	N/A

Remarks

Cost to Complete includes FY2023 Baseline Extension which was incorrectly added to Project 676007. Funds will be transferred to Project 67A019 in the next budget cycle.

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1203265F / *GPS III Space Segment*	**Project (Number/Name)** 676007 / *SAR- GPS*

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
SAR/GPS																												
Planned Canadian SAR/GPS RFP Release					■																							

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1203265F / *GPS III Space Segment*	**Project (Number/Name)** 676007 / *SAR- GPS*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
SAR/GPS				
Planned Canadian SAR/GPS RFP Release	1	2018	1	2018

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203265F / *GPS III Space Segment*	Project (Number/Name) 67A011 / *Space Analysis and Application Development*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
67A011: *Space Analysis and Application Development*	0.000	0.000	10.029	69.481	0.000	69.481	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Space Analysis and Application Development Military Code (M-Code) Hosted Payload will provide additional mission assurance through redundant systems not directly connected with the current U.S. GPS satellite constellation. The feasibility studies and preliminary engineering analyses funded in this project will determine whether an initiative to host GPS M-Code augmentation payloads on other satellite systems is practical and beneficial. The primary goal is to provide additional mission assurance and resiliency through redundant systems not directly connected with the current U.S. GPS satellite constellation. This augmentation to the GPS constellation enables future rapid technology on-ramps with minimal risk.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: M-Code Hosted Payload	-	10.029	69.481
Description: The initial studies, prototyping and experiments will explore size, weight, power, and cost (SWAP-C) requirements of potential payloads, the level of broadcast power as received on the ground, advanced signal capabilities, the needed modifications that will allow current and future GPS ground control systems to communicate with these payloads, and how best to upgrade GPS user equipment with minimal impact on cost and downtime to existing GPS users. The current program under investigation has both a challenging SWAP-C requirement and launch schedule, requiring immediate action by the U.S. if it is to deliver a payload in time for integration into host vehicles.			
FY 2018 Plans: Begin initial feasibility study and preliminary engineering analysis. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.			
FY 2019 Plans: Complete initial feasibility study and preliminary engineering analysis, with the goal of starting a Preliminary Design Review (PDR) no later than the fourth quarter FY2019. Begin long lead procurement activities. Leverage AFRL efforts to initiate technology maturation on modular, host agnostic payloads in order to bridge technologies to multiple future hosts and promote standardized interfaces for competition. 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, prototyping, etc.			
FY 2018 to FY 2019 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1203265F / *GPS III Space Segment*	**Project (Number/Name)** 67A011 / *Space Analysis and Application Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
FY 2019 increased compared to FY 2018 by $59.452M. Justification for this increase is described in plans above.			
Accomplishments/Planned Programs Subtotals	-	10.029	69.481

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Hosted payload studies and engineering analysis to be conducted by Federally Funded Research and Development Centers (FFRDCs), GPS satellite vendors, as well as contractors involved with user equipment development.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1203265F / *GPS III Space Segment*	**Project (Number/Name)** 67A011 / *Space Analysis and Application Development*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
M-Code Hosted Payload	TBD	TBD : TBD	0.000	-		8.729	Nov 2017	59.100		-		59.100	Continuing	Continuing	-
Technical Mission Analysis	MIPR	Aerospace : El Segundo, CA	0.000	-		0.000		2.600	Nov 2018	-		2.600	Continuing	Continuing	-
Enterprise SE&I	C/CPAF	Engility : El Segundo, CA	0.000	-		0.000		0.900	Nov 2018	-		0.900	Continuing	Continuing	-
		Subtotal	0.000	-		8.729		62.600		-		62.600	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	MIPR	Various : Various	0.000	-		1.300	Nov 2017	0.900	Nov 2018	-		0.900	Continuing	Continuing	-
A&AS	Various	Various : Various	0.000	-		0.000		5.481	Jan 2019	-		5.481	Continuing	Continuing	-
Other Support	Various	Various : El Segundo, CA	0.000	-		0.000		0.500	Oct 2018	-		0.500	Continuing	Continuing	-
		Subtotal	0.000	-		1.300		6.881		-		6.881	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	-		10.029		69.481		-		69.481	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1203265F / *GPS III Space Segment*	**Project (Number/Name)** 67A011 / *Space Analysis and Application Development*

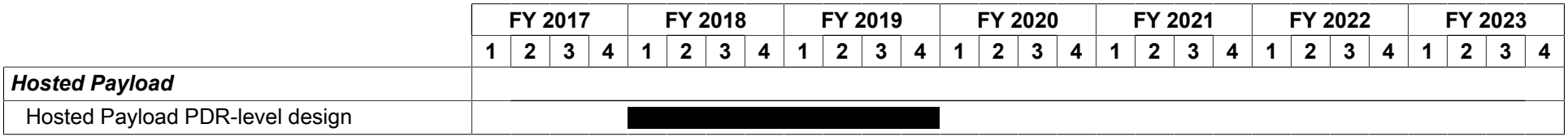

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1203265F / *GPS III Space Segment*	**Project (Number/Name)** 67A011 / *Space Analysis and Application Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Hosted Payload				
Hosted Payload PDR-level design	1	2018	4	2019

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203265F / *GPS III Space Segment*	Project (Number/Name) 67A019 / *GPS III*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
67A019: *GPS III*	2,937.573	164.729	232.082	75.062	0.000	75.062	42.440	10.780	7.296	7.451	12.008	3,489.421
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

GPS III is the next generation Space Vehicle (SV) supporting the GPS constellation and is funded in Program Element (PE) 1203265F. GPS III SVs will deliver significant enhancements, including a new international civil (L1C) signal, enhanced anti-jam power, and a growth path to full warfighter capabilities. GPS III SVs 03-10 are in the Production & Deployment Phase.

PE 1203265F funds GPS III and supports Research, Development, Test and Evaluation (RDT&E) of GPS III SVs 01-02, and risk-reducing simulators through a systems engineering approach that matures and delivers SVs for launch. This program includes SVs 01-02 engineering studies and analyses, trade studies, system development, test and evaluation efforts, integrated logistics support products, on-orbit support, and mission operations support for civil and military applications that protect U.S. military and allied use of GPS. The program also includes Contingency Operations (COps) as a bridge capability to fly GPS III SVs until the delivery of the GPS Next Generation Operational Control System (OCX).

Mission Readiness Campaign (MRC) activities include launch preparation, planning, mission readiness testing to validate space-ground-user interfaces, mission crew exercises and rehearsals, launch vehicle integration, and On-Orbit Checkout activities to validate performance prior to launch. Newly certified launch vehicles must be incorporated into the GPS III launch baseline. Integration requires the development of plans and procedures, and procurement of special support equipment.

Space Modernization Initiative (SMI) focuses on space vehicle affordability and capability, addresses future requirements and resiliency needs, and expands the industrial base to enhance future competition. Phase 1 will address a GPS Enterprise Analysis of Alternative (AoA) recommendations to increase GPS signal strength from space by maturing navigation payload technologies that include a new regional Military Code (M-Code) capability. The Air Force (AF) is using its research laboratories to mature an On-Orbit Reprogrammable Digital Waveform Generator (ORDWG) which will provide signal flexibility to change the signal form while the satellite is on-orbit. This effort will be funded with AFRL's Science & Technology (S&T) funding, PE 1203265F, and starting in FY2019 PE 1203269F to increase the number of alternate navigation payloads.

GPS supports the early deployment of Global M-Code to meet a congressional mandate limiting user equipment purchase to M-Code capable receivers starting in FY2017. The funds will cover the M-Code Early Use (MCEU) program and support development costs associated with the GPS control segment software to provide core M-Code capabilities to the warfighter, as well as the ability to command and control, process, and monitor the M-Code signal. MCEU mitigates delays with GPS OCX, supports Military GPS User Equipment (MGUE) testing, and allows for early M-Code operations. M-Code provides greater security to protect navigation and timing in electronically contested environments.

Impacts of the M-Code deployment include:
- Compliance with Commander, Air Force Space Command mandate to provide global monitoring necessary for Early M-Code Operational Use and verification of Navigation Warfare (NAVWAR) effects.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1203265F / *GPS III Space Segment*	**Project (Number/Name)** 67A019 / *GPS III*

- Direction to improve the resiliency of the GPS capability.
- Confirmation that Enterprise modernization efforts are integrated and deployed properly.
- Testing and Verification of M-Code capability on MGUE/GPS III solution and early M-Code use tied to MGUE fielding

The feasibility studies and preliminary engineering analyses that are funded by this budget item will determine whether or not an initiative to host GPS M-Code augmentation payloads on other satellite systems is practical and beneficial. The primary goal is to provide additional mission assurance through redundant systems not directly connected with the current U.S. GPS satellite constellation.

This PE encompasses the GPS III (SVs 01-10), COps, MCEU, M-Code Hosted Payload, and prior to FY2019, GPS III Follow-On Production Readiness effort.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: GPS III SVs 01-02	64.635	82.165	36.066

Description: Development, test and evaluation of GPS III SVs 01-02 and associated simulators, engineering studies and analyses, trade studies, system development, test and evaluation efforts, and integrated logistics support products.

FY 2018 Plans:
Continue GPS III SV development, Systems Engineering, Integration (SE&I) support, Evolved Expendable Launch Vehicle (EELV) early and detailed integration, mission unique items to support launch activities, technical and program support of SVs 01-02. Complete SV 02 Thermal Vacuum (TVAC) testing and all qualification testing. Complete SV 02 Available For Launch (AFL) activities. Finalize Mission Readiness Campaign (MRC) for GPS III SV 01 and initiate Mission Readiness Campaign (MRC) activities for SV 02. MRC events will continue and complete GPS III SV 01 and begin SV 02 MRC activities which include launch preparation, planning, mission readiness testing to validate space-ground-user interfaces, mission crew exercises and rehearsals, launch vehicle integration, and On-Orbit Checkout activities to validate performance prior to launch. In addition, newly certified launch vehicles must continue incorporation into the GPS III launch baseline. Integration requires the development and refinement of plans and procedures, and procurement of special support equipment. Continue technical support for the launch processing facility at Cape Canaveral Air Force Station (CCAFS). Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.

FY 2019 Plans:
Begin and complete the launch campaign for GPS III SV 01 mission and On-Orbit Checkout activities.

Continue and finalize MRC events for SV 02 which include launch preparation, planning, mission readiness testing to validate space-ground-user interfaces, mission crew exercises and rehearsals, launch vehicle integration, and On-Orbit Checkout activities to validate performance prior to launch. Begin and complete the launch campaign for the GPS III SV 02 mission and On-Orbit Checkout activities.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1203265F / *GPS III Space Segment*	**Project (Number/Name)** 67A019 / *GPS III*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
In addition, newly certified launch vehicles must continue incorporation into the GPS III launch baseline. Integration requires the development and refinement of plans and procedures, and procurement of special support equipment. Continue technical support for the launch processing facility at CCAFS. 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, prototyping, etc. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** FY 2019 decreased compared to FY 2018 by $46.099M. Justification for this decrease is described in plans above.			
Title: GPS III Follow-On (Production Readiness) ***Description:*** Under Secretary of Defense for Acquisition, Technology, and Logistics USD(AT&L) approved the first phase of a two-phased GPS III Follow-On Acquisition Strategy starting no earlier than SV 11. The strategy utilizes FY 2015-2017 RDT&E funding for the Phase 1 effort to mature three contractors; GPS III Follow-On production designs. The Phase 1 Production Readiness Feasibility Assessment is providing data and insight into contractors GPS III Follow-On Production Design with emphasis on a mature navigation payload and production ready designs. Phase 1 requires contractors to provide a GPS III Follow-On SV and navigation payload production designs, manufacturing plans, and a navigation payload engineering brass board (hardware). ***FY 2018 Plans:*** Complete Source Selection activities to award Phase 2 in FY 2018, initiating design turn documentation efforts preparing for delta Critical Design Review (CDR) in FY 2019. Continue ORDWG maturation via AFRL to support SMI activities. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc. ***FY 2019 Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** FY 2019 funds are reported in PE 1203269F.	22.553	47.888	0.000
Title: Contingency Operations (COps) ***Description:*** COps is a risk reduction activity to maintain constellation sustainment as prescribed by the GPS III Space Vehicle Acquisition Strategy if GPS OCX will not deliver in time to support initial GPS III operations. COps adds to the existing Operational Control System (OCS) Architecture Evolution Plan (AEP) command, control, maneuver planning, re-programmability, navigation functionality, Nuclear Detonation (NUDET) Detection System (NDS) support, and external interfaces for the GPS III SV. COps includes integrating GPS III SV simulation modules to the GPS System Simulator (GSS) and updates to the Positional Training Emulator (PTE).	40.041	48.800	24.400

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1203265F / *GPS III Space Segment*	**Project (Number/Name)** 67A019 / *GPS III*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
FY 2018 Plans: Complete code and unit testing; complete Software integration testing: obtain final Defense Security Service (DSS) certifications for the development laboratory; complete two AEP sustainment software baseline mergers; complete Factory Qualification Test (FQT) risk reduction activities; complete Generic Security Service (GSS) hardware purchase, installation, and integration; Start Development Test and Evaluation activities; continue PTE development and testing. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc. ***FY 2019 Plans:*** Complete FQT and all Development Test and Evaluation activities; deliver PTE updates; obtain Milestone C approval; handoff to sustainment complete Operational Use Evaluation; complete Program Executive Officer (PEO) certification and Transition to Operations. 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, prototyping, etc. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** FY 2019 decreased compared to FY 2018 by $24.400M. Justification for this decrease is described in plans above.			
Title: Architecture Evolution Plan (AEP) M-Code Monitoring	30.000	53.229	14.596
Description: The M-Code Early Use (MCEU) program initiative will cover the development costs associated with updating the legacy control segment software, AEP, with additional capabilities needed to provide M-Code operations. MCEU will provide the Joint Space Operations Center (JSpOC) with command and control (C2), processing, and integrity monitoring for the M-Code signal. The development will also include the integration of modernized Monitor Station Technology Improvement Capability (MSTIC) receivers, which are being procured separately using O&M as a Form-Fit-Functional replacement for the legacy Monitor Station Receiver Element (MSRE) Y-Code receivers. MCEU will take those MSTIC receivers and add a software upgrade to allow it to process M-Code signals. Prime contract was awarded to start software development and test activities; includes insertion of Legacy Hot Start and Demilitarized Zone (DMZ) requirements into the MCEU baseline. ***FY 2018 Plans:*** Complete and deliver Modernized Monitoring Station Technology Improvement and Capability (M-MSTIC) receiver upgrade and begin integrating the receivers into the GPS enterprise. Continue program office operations and other related support activities that may include, but are not limited to studies, technical analysis, etc. ***FY 2019 Plans:*** Finish software development phase and start test phase; complete Code and Unit Test; complete Component Integration Test; start FQT. 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, prototyping, etc. ***FY 2018 to FY 2019 Increase/Decrease Statement:***			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1203265F / *GPS III Space Segment*	**Project (Number/Name)** 67A019 / *GPS III*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
FY 2019 decreased compared to FY 2018 by $38.633M. Justification for this decrease is described in plans above.			
Title: Enterprise Ground Services (EGS)	7.500	0.000	0.000
Description: Enterprise Ground Services (EGS) will provide a robust enterprise ground architecture for AF space systems, which leverages mission commonality and automation to reduce sustainment costs and re-focus manpower on warfighting capabilities. In addition, EGS will enable a near-real-time common operating picture of enterprise-wide tactical health, status, indications, and warnings for AF satellites. The end-state will be a modern technical infrastructure which is cyber-secure and resilient against the Advanced Persistent Threat and employs streamlined architecting, acquisition, and operational processes. Through early architecture studies and prototyping, the government will establish clear ownership of the technical baseline to meet Better Buying Power principles as the EGS effort evolves through development. This effort provides focus and expertise for the development, test, certification and enforcement of standards and interfaces for all Air Force Space Command (AFSPC) satellite ground systems to enable transition planning for legacy ground systems, new capability demonstrations, and systems acquisition leading to an enterprise ground architecture for AF space systems. ***FY 2018 Plans:*** In FY 2018, this effort transfers to Space and Missile Test and Evaluation Center, PE 1203173F. ***FY 2019 Plans:*** N/A			
Accomplishments/Planned Programs Subtotals	164.729	232.082	75.062

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• SPAF 01 Line Item GPS III: *GPS III*	34.059	85.894	69.955	-	69.955	850.030	789.470	1,162.883	1,161.833	4,680.293	8,834.417
• RDTE 05 PE 1203629F: *GPS III Follow-On*	-	-	451.889	-	451.889	474.235	435.063	371.441	306.158	Continuing	Continuing

Remarks

D. Acquisition Strategy

The GPS III next generation space segment (SV01-10) rapidly and affordably responds to warfighter capability requirements. The acquisition approach utilizes a disciplined systems engineering approach which focuses on mitigating cost and schedule risk through a lower risk incremental delivery of mature technologies. This approach focuses on mission success and on time delivery. The GPS III SVs will have GPS IIF capabilities plus up to a 3x-8x increase in anti-jam signal power, 3x

improved accuracy, 3+ year increased design life, a new civil (L1C) signal compatible with the European Galileo system and a satellite bus capable of supporting future SV capability additions.

The AF is starting a new program for the second phase of the two-phased GPS III Follow-On production acquisition strategy for SVs 11-32 with SAF/AQ as the Milestone Decision Authority (MDA). The Phase 1 Production Readiness Feasibility Assessment provided data and insight into contractors' GPS III 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 transfers funding to PE 1203269F to conduct a full-and-open competition for 22 GPS III Follow-On SVs and specifies the use of RDT&E funds to deliver SVs 11 and 12, and conduct associated Non-Recurring Engineering (NRE). Upon Milestone C approval, the AF will procure SVs 13-32 via annual contract options exercised using Space Procurement Air Force (SPAF) funds consistent with full-funding policy under an annual buy approach. In addition to SVs 11 and 12, the RDT&E effort will be comprised of developing risk reducing simulators, support test equipment, and conducting the systems engineering associated with delivering the new capabilities required of GPS III Follow-On SVs 11-32 including backward compatibility, dual band Telemetry, Tracking and Control (TT&C), integration of GFE hosted payloads including a redesigned NDS payload, SAR/GPS payload, LRA, and RMP, which provides the ability to deliver high-power regional M-Code signals in specific areas of intended effect. RDT&E funding for SVs 11 and 12 will be in PE 1203269F, Project GPS III Follow-On. SPAF funding for SVs 13-32 will be in PE 1203269F, Project GPS III Follow-On beginning in FY2020.

The AF is using its research laboratories to mature an On-Orbit Reprogrammable Digital Waveform Generator (ORDWG) which will provide signal flexibility to change the signal form while the satellite is on-orbit. This effort will be funded with AFRL's S&T funding, PE 1203265F, and starting in FY2019 PE 1203269F to increase the number of alternate navigation payloads and inform future PNT architectures.

On 19 July 2016 the Program Executive Officer (PEO) Space, approved the Acquisition Strategy Document (ASD) for the Contingency Operations (COps) effort. The strategy utilizes contingency constellation sustainment capability for GPS III Positioning, Navigation, and Timing (PNT). GPS III COps is needed because GPS OCX will not deliver in time to support initial GPS III SV operations. COps operates (post-launch and check-out) GPS III SVs at the capability level of GPS IIR-M or GPS IIF using the existing Architecture Evolution Plan (AEP) control segment.

On 21 Jan 2017, the PEO Space, approved the ASD for the M-Code Early Use (MCEU) program. The MCEU acquisition strategy, when executed, will enable the GPS Enterprise to provide core M-Code capabilities to the warfighter prior to GPS OCX delivery. MCEU will also support the scheduled operational testing of MGUE. MCEU will update the GPS control segment software, AEP, to allow for command and control, processing, and integrity monitoring of the M-Code signal. MCEU will acquire this capability by using the existing GPS III prime contract vehicle to modify the operational AEP software.

HQ USAF/A5R approved reinstatement of a previously deferred Key Support Area (KSA) on 10 Feb 2016. The MSTIC receivers currently under development will get a software upgrade to process M-Code data. This $7.96M project to procure the M-MSTIC receivers is being funded through 3400/SPAF funds in FY2016-FY2018. Performance monitoring, integration and test will be conducted by the MCEU program and sustained under the GPL Lockheed Martin Contract. Funding is sent through a Form-9 from DoD to Lockheed Martin.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203265F / *GPS III Space Segment*	Project (Number/Name) 67A019 / *GPS III*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
GPS III Development	C/CPIF	Lockheed Martin : Denver, CO	2,509.054	47.015	Dec 2016	24.005	Dec 2017	7.641	Dec 2018	-		7.641	5.266	2,592.981	2,592.981
GPS III Development 11+	C/Various	TBD : TBD	11.029	-		10.000	Oct 2018	-		-		-	0.000	21.029	21.029
GPS III Development_ COps	C/CPIF	Lockheed Martin : Denver, CO	32.318	31.212	Feb 2017	42.874	Feb 2018	17.318	Feb 2019	-		17.318	0.000	123.722	123.722
GPS III Development_MCEU	C/CPIF	Lockheed Martin : Denver, CO	0.000	26.284	Aug 2017	49.533	Oct 2017	9.186	Oct 2018	-		9.186	18.082	103.085	103.085
GPS III Technical Mission Analysis	MIPR	Various : Various	9.484	8.864	Oct 2016	27.923	Oct 2017	6.954	Oct 2018	-		6.954	0.328	53.553	53.553
GPS III Enterprise SE&I	C/CPAF	TASC : El Segundo, CA	85.994	3.906	Nov 2016	4.800	Nov 2017	4.312	Oct 2018	-		4.312	3.787	102.799	102.799
GPS III Launch Support	RO	45th : Cape Canaveral, FL	21.513	7.000	Mar 2017	37.974	Mar 2018	18.185	Mar 2019	-		18.185	45.265	129.937	129.937
GPS III Production SMI	C/CPFF	TBD : TBD	18.400	17.756		9.156	Nov 2017	-		-		-	0.000	45.312	45.312
GPS III Enterprise Ground Service	C/CPAF	TBD : TBD	-	7.500	Jan 2017	-		-		-		-	0.000	7.500	7.500
		Subtotal	2,687.792	149.537		206.265		63.596		-		63.596	72.728	3,179.918	N/A

Remarks

GPS IIIF SV11+ Phase 1 Production Readiness Feasibility Assessment contracts awarded to Lockheed Martin Space Systems Corp (Littleton, CO), Northrop Grumman Aerospace Systems Corp (Redondo Beach, CA), and Boeing Aerospace Corp (El Segundo, CA). Air Force Research Laboratory (AFRL) contracts for On-Orbit Reprogrammable Digital Waveform Generator (ORDWG) supporting GPS III SMI activities awarded to Northrop Grumman Aerospace Systems Corp (Redondo Beach, CA), Boeing Aerospace Corp (El Segundo, CA), and General Dynamics Mission Systems Corp (Scottsdale, AZ).

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
GPS III T&E	Various	Various : TBD	32.662	0.000	May 2017	-		-		-		-	0.000	32.662	-
		Subtotal	32.662	0.000		-		-		-		-	0.000	32.662	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force			Date: February 2018
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
GPS III FFRDC	MIPR	Various : El Segundo, CA	105.309	3.906	Dec 2016	12.953	Apr 2018	2.294	Apr 2019	-		2.294	0.783	125.245	-
GPS III A&AS	Various	Various : Various	101.635	9.260	Apr 2017	10.664	Apr 2018	8.522	Apr 2019	-		8.522	6.364	136.445	-
GPS III Other Support	Various	Various : Various	10.175	2.026	Oct 2016	2.200	Oct 2017	0.650	Oct 2018	-		0.650	0.100	15.151	-
		Subtotal	217.119	15.192		25.817		11.466		-		11.466	7.247	276.841	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	2,937.573	164.729		232.082		75.062		-		75.062	79.975	3,489.421	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1203265F / *GPS III Space Segment*	**Project (Number/Name)** 67A019 / *GPS III*

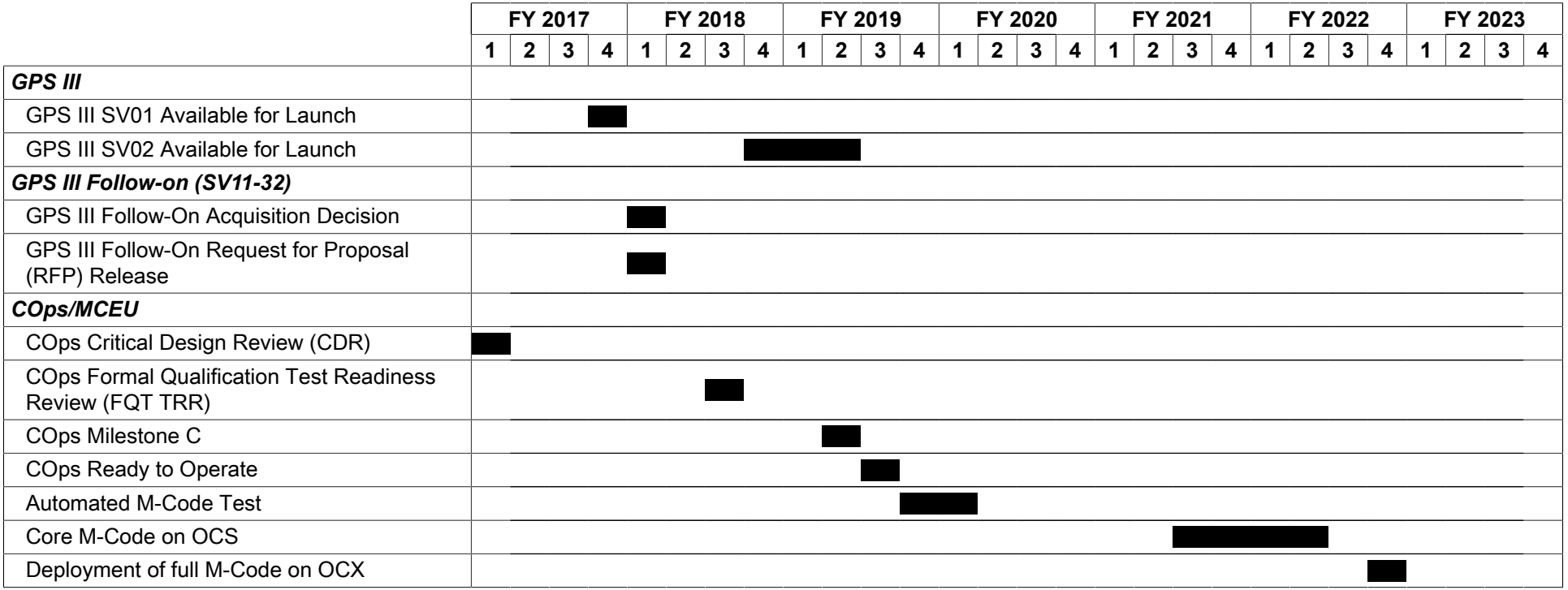

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1203265F / *GPS III Space Segment*	**Project (Number/Name)** 67A019 / *GPS III*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
GPS III				
GPS III SV01 Available for Launch	4	2017	4	2017
GPS III SV02 Available for Launch	4	2018	2	2019
GPS III Follow-on (SV11-32)				
GPS III Follow-On Acquisition Decision	1	2018	1	2018
GPS III Follow-On Request for Proposal (RFP) Release	1	2018	1	2018
COps/MCEU				
COps Critical Design Review (CDR)	1	2017	1	2017
COps Formal Qualification Test Readiness Review (FQT TRR)	3	2018	3	2018
COps Milestone C	2	2019	2	2019
COps Ready to Operate	3	2019	3	2019
Automated M-Code Test	4	2019	1	2020
Core M-Code on OCS	3	2021	2	2022
Deployment of full M-Code on OCX	4	2022	4	2022

Note

Starting FY2019 Events for GPS III Follow-On will be reported in PE 1203269F.