Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force											Date: May 2017	
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 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	2,799.129	147.398	179.188	243.435	0.000	243.435	127.699	44.129	12.254	8.771	Continuing	Continuing
676007: *SAR- GPS*	7.668	1.286	1.295	1.324	0.000	1.324	1.345	1.370	1.393	1.422	Continuing	Continuing
67A011: *Space Analysis and Application Development*	0.000	0.000	0.000	10.029	0.000	10.029	10.004	0.000	0.000	0.000	Continuing	Continuing
67A019: *GPS III*	2,791.461	146.112	177.893	232.082	0.000	232.082	116.350	42.759	10.861	7.349	40.618	3,565.485
Program MDAP/MAIS Code: 292												

Note

This program, BA 07 PE 1203265F, project 67A011, M-Code Hosted Payload, is a new start.

In FY2018, PE 0305265F, GPS III Space Segment efforts were transferred to PE 1203265F, GPS III Space Segment, due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1203265F.

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 that 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 and PE 1203165F) and a Control Network (funded under PE 1203165F and PE 1203423F). 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 (NDS) 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) to join the GPS constellation. GPS III SVs will deliver significant enhancements, including a new civil (L1C) Galileo-compatible signal, and enhanced anti-jam power. Two auxiliary payloads, Search and Rescue/GPS (SAR/GPS) and Laser Retro-reflector Array (LRA) will be added no earlier than SV11. The SAR/GPS payload provided by Canada will fill 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 will improve accuracy and provide better ephemeris data. National Geospatial-Intelligence Agency (NGA) funds the integration costs of the LRA.

This program funds GPS III and supports research, development, test and evaluation (RDT&E) of GPS III SV01-02 and risk-reducing simulators through a systems engineering approach that matures and delivers SVs for launch. This PE includes SV01-02 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 risk mitigation to late Next Generation Operational Control System (OCX) delivery. COps will fly GPS III SVs to be brought into the operational constellation, sustaining current levels of performance and avoiding degradation. The current acquisition schedule of OCX Block 1 (capability to operate GPS III satellites) puts GPS constellation sustainment at risk since the current control segment cannot operate GPS III satellites. GPS III COps is a modification to the current control segment to operate GPS III satellites' PNT and NUDET Detection System (NDS) and maintain limited test M-Code capability until OCX Block 1 is delivered.

On 3 July 2015, USD(AT&L) approved the first phase of a two-phased GPS III SV acquisition strategy starting no earlier than SV11. Phase 1 is a Production Readiness Feasibility Assessment which will provide data and insight into contractors' GPS III Production Design with emphasis on a mature navigation payload to include a regional M-Code capability that is consistent with the GPS Enterprise Analysis of Alternatives (AOA). Phase 1 utilizes FY2015-2018 RDTE funding for up to three contractors' GPS production designs. Phase 2 has not been approved and options continue to be explored. Notionally, Phase 2 will be a full and open competition for up to 22 GPS III SVs with an expected decision no earlier than SV11. Phase 2 is funded via Space Procurement Air Force (SPAF) in PE 1203265F, BPAC: 23GPS3.

Space Modernization Initiative (SMI) focuses on space vehicle affordability and capability, addresses obsolescence, future requirements and resiliency needs, and expands the industrial base to enhance future competition. Phase 1 will address GPS Enterprise AoA recommendations to increase GPS signal strength from space by maturing navigation payload technologies that include a new regional M-Code capability. The Air Force is using its research laboratories to mature an On-Orbit Reprogrammable Digital Waveform Generator 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 Lab’s Science & Technology (S&T) funding and PE 1203265F to increase the number of alternate navigation payload awards.

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.

The Global Positioning System (GPS) supports the early deployment of Global M-Code to meet congressional mandate limiting user equipment purchase to M-Code capable receivers starting in FY17. The funds will cover the M-Code Early Use (MCEU) program and support development costs associated with updating the legacy 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 the Next Generation Operational Control Segment (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 AFSPC/CC 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

The FY 2018 funding request was reduced by $35.000 million to account for the availability of prior year execution balances.

In FY 2018, BPAC 67A011, Space Analysis Application Development M-Code Hosted Payload includes new start efforts.

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 or subsequent fiscal year.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	180.359	141.888	110.860	0.000	110.860
Current President's Budget	147.398	179.188	243.435	0.000	243.435
Total Adjustments	-32.961	37.300	132.575	0.000	132.575
• 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	-32.961	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	37.300	132.575	0.000	132.575

Change Summary Explanation

FY16: -$32.961M Transfer to fund OCX to cost estimate
FY17: +$26.300M FY17 Request for Additional Appropriation - Fund GPS Mission Readiness Campaign
FY17: +$11.000M FY17 Request for Additional Appropriation - Fund M-Code Early Use (MCEU)
FY18: +$36.000M to fund GPS III Mission Readiness Campaign
FY18: +$67.800M realignment for GPS III 11+
FY18: -$35.000M reduction due to availability of prior year execution balances

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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*

FY18: +$53.229M to fund M-Code Early Use
FY18: +$10.000M increase for M-Code Hosted Payload
FY18: +$0.575M inflation adjustment

Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
676007: *SAR- GPS*	7.668	1.286	1.295	1.324	0.000	1.324	1.345	1.370	1.393	1.422	Continuing	Continuing
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 SV11. SAR/GPS fills validated National Search and Rescue 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 Search and Rescue.

In addition, the USAF has on-going requirements to rescue US Military personnel in harm's way per Air Force Doctrine Document 2-1.6. The implementation of a US Medium Earth Orbiting (MEO) Search and Rescue 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 USCG, the US operators of the civil Cosmicheskaya Sistyema Poiska Avariynich Sudov-Search and Rescue Satellite-Aided Tracking (COSPAS/SARSAT) system and the international search and rescue system will integrate the Canadian-provided SAR repeater into GPS III beginning no earlier than SV11.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
Title: SAR/GPS	1.286	1.295	1.324
Description: Nonrecurring costs for systems engineering activities to integrate the payload onto the GPS III SVs starting no earlier than SV11.			
FY 2016 Accomplishments: Continued to design and develop SAR/GPS antennas, associated hardware and cabling, and space vehicle software; systems engineering associated with integrating SAR payload onto the GPS III SVs; enterprise-level System Engineering, Integration, Test and Program Management (SEIT/PM). Costs do not include development and production of Canadian payload unit.			
FY 2017 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 III SVs; enterprise-level SEIT/PM, and award contract. Costs do not include development and production of Canadian payload unit.			
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 III SVs; enterprise-level SEIT/PM. Continue			

Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
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 2016	FY 2017	FY 2018
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 Canadian payload unit.			
Accomplishments/Planned Programs Subtotals	1.286	1.295	1.324

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• SPAF: BA01: Line Item # GPSIII: *GPS III*	198.370	34.059	85.894	0.000	85.894	783.805	796.375	779.683	1,131.497	7,395.744	11,205.427
• NGA: *National Geospatial-Intelligence Agency*	0.000	2.000	1.000	0.000	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 SV11.

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: FY 2018 Air Force			Date: May 2017
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 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Search and Rescue SAR/ GPS	C/CPIF	Lockheed Martin : Littleton, CO	7.668	1.286	Jul 2016	1.295	Dec 2016	1.324	Dec 2017	0.000		1.324	Continuing	Continuing	17.093
		Subtotal	7.668	1.286		1.295		1.324		0.000		1.324	-	-	17.093

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-		-	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-		-	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-		-	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	7.668	1.286		1.295		1.324		0.000		1.324	-	-	-

Remarks

Search and Rescue/SAR

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1203265F / *GPS III Space Segment*	**Project (Number/Name)** 676007 / *SAR- GPS*

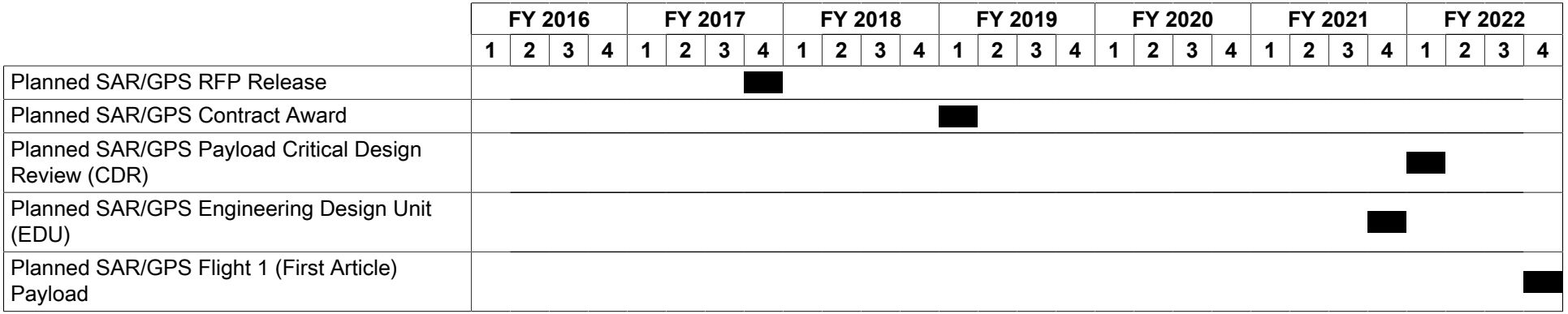

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1203265F / *GPS III Space Segment*	**Project (Number/Name)** 676007 / *SAR- GPS*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Planned SAR/GPS RFP Release	4	2017	4	2017
Planned SAR/GPS Contract Award	1	2019	1	2019
Planned SAR/GPS Payload Critical Design Review (CDR)	1	2022	1	2022
Planned SAR/GPS Engineering Design Unit (EDU)	4	2021	4	2021
Planned SAR/GPS Flight 1 (First Article) Payload	4	2022	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
67A011: *Space Analysis and Application Development*	0.000	0.000	0.000	10.029	0.000	10.029	10.004	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 07 PE 1203265F, project 67A011, M-Code Hosted Payload, is a new start.

A. Mission Description and Budget Item Justification

Space Analysis and Application Development M-Code Hosted Payload is an FY2018 New Start effort that will provide additional mission assurance through redundant systems not directly connected with the current US GPS satellite constellation. The feasibility studies and preliminary engineering analyses funded in this project will determine whether an initiative to host Global Positioning System (GPS) M-Code augmentation payloads on other satellite systems is practical and beneficial.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
Title: M-Code Hosted Payload	-	-	10.029
Description: The initial studies will explore size, weight, and power (SWAP) requirements of potential payloads, the level of broadcast power as received on the ground, 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 requirement and launch schedule, requiring immediate action by the US if it is to deliver a payload in time for integration into the host vehicles. ***FY 2018 Plans:*** Begin and/or continue initial feasibility study and preliminary engineering analysis, with the goal of a PDR-level design NLT 1QFY2019. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.			
Accomplishments/Planned Programs Subtotals	-	-	10.029

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• N/A: *N/A*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
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*

D. Acquisition Strategy

Hosted payload studies and engineering analysis to be conducted by GPS satellite vendors, as well as those involved with Increment 1 of the Military GPS User Equipment (MGUE) contract

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: FY 2018 Air Force			Date: May 2017
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 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
M-Code Hosted Payload	TBD	TBD : El Segundo, CA	0.000	0.000		0.000		8.729		0.000		8.729	8.504	17.233	17.233
		Subtotal	0.000	0.000		0.000		8.729		0.000		8.729	8.504	17.233	17.233

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-		-	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-		-	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	TBD	Various : Various	0.000	0.000		0.000		1.300		0.000		1.300	1.500	2.800	2.800
		Subtotal	0.000	0.000		0.000		1.300		0.000		1.300	1.500	2.800	2.800

	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		0.000		10.029		0.000		10.029	10.004	20.033	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force		Date: May 2017
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*

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	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
Hosted Payload PDR-level design																												

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force		Date: May 2017
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	**Quarter**	**Year**	**Quarter**	**Year**
Hosted Payload PDR-level design	1	2018	4	2019

Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
67A019: *GPS III*	2,791.461	146.112	177.893	232.082	0.000	232.082	116.350	42.759	10.861	7.349	40.618	3,565.485
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 PE 1203265F. GPS III SVs will deliver significant enhancements, including a new civil (L1C) Galileo-compatible signal, enhanced anti-jam power, and a growth path to full warfighter capabilities. GPS III SV03-10 is in the Production & Deployment Phase.

RDT&E, AF PE 1203265F funds GPS III and supports research, development, test and evaluation of GPS III SV01-02 and risk-reducing simulators through a systems engineering approach that matures and delivers SVs for launch. This PE includes SV01-02 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 Next Generation Operational Control System (OCX) delivery.

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 GPS Enterprise Analysis of Alternative (AoA) recommendations to increase GPS signal strength from space by maturing navigation payload technologies that include a new regional M-Code capability. The Air Force 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 Lab's Science & Technology (S&T) funding and PE 1203265F to increase the number of alternate navigation payloads.

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.

The Global Positioning System (GPS) supports the early deployment of Global M-Code to meet congressional mandate limiting user equipment purchase to M-Code capable receivers starting in FY17. 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 the Next Generation Operational Control Segment (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 AFSPC/CC 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.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1203265F / *GPS III Space Segment*	**Project (Number/Name)** 67A019 / *GPS III*

- 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 Global Positioning System (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 US GPS satellite constellation.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
Title: GPS III SV01-02	101.277	93.377	82.165
Description: Development, test and evaluation of two GPS III space vehicles and associated simulators, engineering studies and analyses, trade studies, system development, test and evaluation efforts, and integrated logistics support products. ***FY 2016 Accomplishments:*** Continued GPS III space vehicle development, SE&I, technical and program support. Completed SV01 post-environmental final system performance testing. Delivered SV02 Navigation Payload. ***FY 2017 Plans:*** Continue GPS III space vehicle development, SE&I, technical and program support. Begin SV02 Thermal Vacuum (TVAC) testing and perform qualification testing. Complete SV01 Available For Launch (AFL) activities. Begin Mission Readiness Campaign (MRC) for GPS III SV01. MRC events will initiate GPS III SV01-SV02 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 be incorporated into the GPS III launch baseline. Integration requires the development of plans and procedures, and procurement of special support equipment. ***FY 2018 Plans:*** Continue GPS III space vehicle development, SE&I, systems engineering, integration support, EELV early and detailed integration, mission unique items to support launch activities, technical and program support of SV01-02. Complete SV02 Thermal Vacuum (TVAC) testing and all qualification testing. Complete SV02 Available For Launch (AFL) activities. Finalize MRC for GPS III SV01 and initiate MRC activities for SV02. MRC events will continue and complete GPS III SV01 and begin SV02 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 CCAFS. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.			
Title: GPS III SV11+ (Production Readiness)	9.429	24.816	47.888

Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
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 2016	FY 2017	FY 2018
Description: USD(AT&L) approved the first phase of a two-phased GPS III SV acquisition strategy starting no earlier than SV11. The strategy utilizes FY 2015-2017 RDTE funding for the Phase 1 effort to mature three contractors' GPS III production designs. The Phase 1 Production Readiness Feasibility Assessment is providing data and insight into contractors GPS III Production Design with emphasis on a mature navigation payload and production-ready designs. Phase 1 requires contractors to provide a GPS III space vehicle and navigation payload production designs, manufacturing plans, and a navigation payload engineering brass board (hardware). ***FY 2016 Accomplishments:*** Released Phase 1 RFP in January 2016 and awarded three Phase 1 contracts in May 2016. Delivered Phase 1 navigation payload and initial production design and manufacturing plans (Preliminary Design Review (PDR)-level). Awarded On Orbit Reprogrammable Digital Waveform Generator (ORDWG) maturation contracts via AFRL to support SMI activities. ***FY 2017 Plans:*** Deliver Phase 1 space vehicle initial production design (PDR-level), navigation payload production design (Critical Design Review (CDR)-level) and engineering brass board (hardware) results. Exercise Phase 1 contract options, to continue navigation payload maturity. Continue ORDWG maturation via AFRL to support SMI activities. Explore further Phase 1 risk reduction opportunities to ensure a viable, production-ready, GPS III Follow-On competition in FY 2018. Release Phase 2 Request for Proposal (RFP). ***FY 2018 Plans:*** Complete Source Selection activities to award Phase 2 in FY2018, 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.			
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 the Next Generation GPS Operational Control System (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, NDS support, and external interfaces for the GPS III Space Vehicle (SV). COps includes integrating GPS III SV simulation modules to the GPS System Simulator (GSS) and updates to the Positional Training Emulator (PTE). ***FY 2016 Accomplishments:***	35.406	41.200	48.800

Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
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 2016	FY 2017	FY 2018
Negotiated and awarded COps contract vehicle (2QFY 2016). Completed COps PDR, and began activities for CDR. Completed development laboratory set-up; began component integration Test planning; began GSS development and integration planning; completed GSS drawings. Obtained Milestone B approval (4QFY 2016). ***FY 2017 Plans:*** Complete Critical Design Review; begin code and unit testing; obtain initial Defense Security Service (DSS) certifications for the development laboratory; complete integration test planning, begin and complete 1 AEP sustainment software baseline merge; begin Factory Qualification Test (FQT) planning; begin TT&C, Navigation, and Software Infrastructure integration test; complete GSS hardware purchase, installation, and integration planning; start PTE development. ***FY 2018 Plans:*** Complete code and unit testing; complete Software integration testing: obtain final DSS certifications for the development laboratory; complete 2 AEP sustainment software baseline merges; complete Factory Qualification Test (FQT) risk reduction activities; complete 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.			
Title: Enterprise Ground Services (EGS) ***Description:*** Enterprise Ground Services (EGS) will provide a robust enterprise ground architecture for Air Force 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 Air Force 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 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 Air Force space systems. In FY2018, this effort transfers to Space and Missile Test and Evaluation Center, PE 1203173F. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Conduct developmental planning, mature technologies, and develop initial small-scale prototype capability for the enterprise ground architecture. Efforts in 2017 will include, but are not limited to, systems engineering, special studies, cybersecurity planning and implementation, standards and interface development and codification, integration and test efforts in support of	0.000	7.500	0.000

Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
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 2016	FY 2017	FY 2018
demonstrations, and operational architecture planning. In addition, this effort will build the technical and programmatic roadmap to enable a phased enterprise transition in the future. ***FY 2018 Plans:*** N/A			
Title: AEP M-Code Monitoring ***Description:*** The M-Code Early Use (MCEU) program initiative will cover the development costs associated with updating the legacy control segment software, AEP (Architectural Evolution Program), 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. ***FY 2017 Plans:*** Efforts in 2017 will include, but are not limited to: contract award, development planning, systems engineering, standards and interface development, and architectural planning. ***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.	-	11.000	53.229
Accomplishments/Planned Programs Subtotals	146.112	177.893	232.082

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• SPAF: BA01: Line Item # GPS III: *GPS III*	198.370	34.059	85.894	0.000	85.894	783.805	796.375	779.683	1,131.497	7,395.744	11,205.427

Remarks

D. Acquisition Strategy

The GPS III next generation space segment 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.

On 3 Jul 2015 USD(AT&L) approved the first phase of a two-phased GPS III SV acquisition strategy starting no earlier than SV11. The strategy utilizes FY2015-2017 RDTE funding for the Phase 1 effort to mature three contractors' GPS III production designs. The Phase 1 Production Readiness Feasibility Assessment is providing data and insight into contractors GPS III Production Design with emphasis on a mature navigation payload and production-ready designs. Phase 1 requires contractors to provide GPS III space vehicle and navigation payload production designs, manufacturing plans, and a navigation payload engineering brass board (hardware). The Air Force is using its research laboratories to mature an On-Orbit Reprogrammable Digital Waveform Generator 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 Lab's Science & Technology (S&T) funding and PE 1203265F to increase the number of alternate navigation payload awards.

On 19 Jul 2016 the PEO approved the Acquisition Strategy Document (ASD) for the COps effort. The strategy utilizes contingency constellation sustainment capability for GPS III Positioning, Navigation, and Timing (PNT). GPS III COps is needed because the GPS Next Generation Operational Control System (OCX) will not deliver in time to support initial GPS III Space Vehicle 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 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 OCX delivery. MCEU will also support the scheduled operational testing of Military GPS User Equipment (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 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 funds in FY16-FY18. Performance monitoring, integration and test will be conducted by M-Code Early Use 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: FY 2018 Air Force			Date: May 2017
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 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
GPS III Development	C/CPIF	Lockheed Martin : Denver, CO	2,443.810	65.244	Dec 2015	33.824	Dec 2016	24.005	Dec 2017	0.000		24.005	55.812	2,622.695	2,622.695
GPS III Development _ 11+	TBD	TBD : TBD, CA	5.000	6.029	May 2016	0.000	May 2017	10.000	May 2018	0.000		10.000	35.000	56.029	436.701
GPS III Development_ COps	C/CPIF	Lockheed Martin : Denver, CO	0.856	31.462	Feb 2016	32.702	Feb 2017	42.874	Feb 2018	0.000		42.874	26.941	134.835	136.827
GPS III Development_MCEU	C/CPIF	Lockheed Martin : Denver, CO	0.000	0.000		9.487	Jun 2017	49.533	Oct 2017	0.000		49.533	51.157	110.177	120.000
GPS III Technical Mission Analysis	MIPR	Various : Various	1.884	7.600	Oct 2015	14.053	Oct 2016	27.923	Oct 2017	0.000		27.923	5.310	56.770	84.160
GPS III Enterprise SE&I	C/CPAF	TASC : El Segundo, CA	77.461	8.533	Nov 2015	4.287	Nov 2016	4.800	Nov 2017	0.000		4.800	8.099	103.180	132.760
GPS III Launch Support	RO	45th : Cape Canaveral, FL	18.538	2.975	Mar 2016	32.059	Mar 2017	37.974	Mar 2018	0.000		37.974	42.028	133.574	-
GPS III Production Readiness/SMI	C/CPAF	TBD : TBD	15.000	3.400	Feb 2016	17.306	Feb 2017	9.156	Feb 2018	0.000		9.156	0.000	44.862	44.862
GPS III Enterprise Ground Service	C/CPAF	TBD : TBD	0.000	0.000		7.500	Jan 2017	0.000		0.000		0.000	0.000	7.500	7.500
		Subtotal	2,562.549	125.243		151.218		206.265		0.000		206.265	224.347	3,269.622	-

Remarks

GPS III 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).

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-		-	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force			Date: May 2017
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Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
GPS III T&E	Various	Various : TBD	28.252	4.410	May 2016	0.205	May 2017	0.000		0.000		0.000	0.000	32.867	34.505
		Subtotal	28.252	4.410		0.205		0.000		0.000		0.000	0.000	32.867	34.505

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
GPS III FFRDC	MIPR	Aerospace : El Segundo, CA	101.672	3.637	Dec 2015	8.101	Dec 2016	12.953	Dec 2017	0.000		12.953	2.430	128.793	134.457
GPS III A&AS	Various	Various : Various	91.174	10.461	Apr 2016	15.530	Apr 2017	10.664	Apr 2018	0.000		10.664	9.243	137.072	172.596
GPS III Other Support	Various	Various : Various	7.814	2.361	Oct 2015	2.839	Oct 2016	2.200	Oct 2017	0.000		2.200	1.950	17.164	-
		Subtotal	200.660	16.459		26.470		25.817		0.000		25.817	13.623	283.029	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	2,791.461	146.112		177.893		232.082		0.000		232.082	237.970	3,585.518	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1203265F / *GPS III Space Segment*	**Project (Number/Name)** 67A019 / *GPS III*

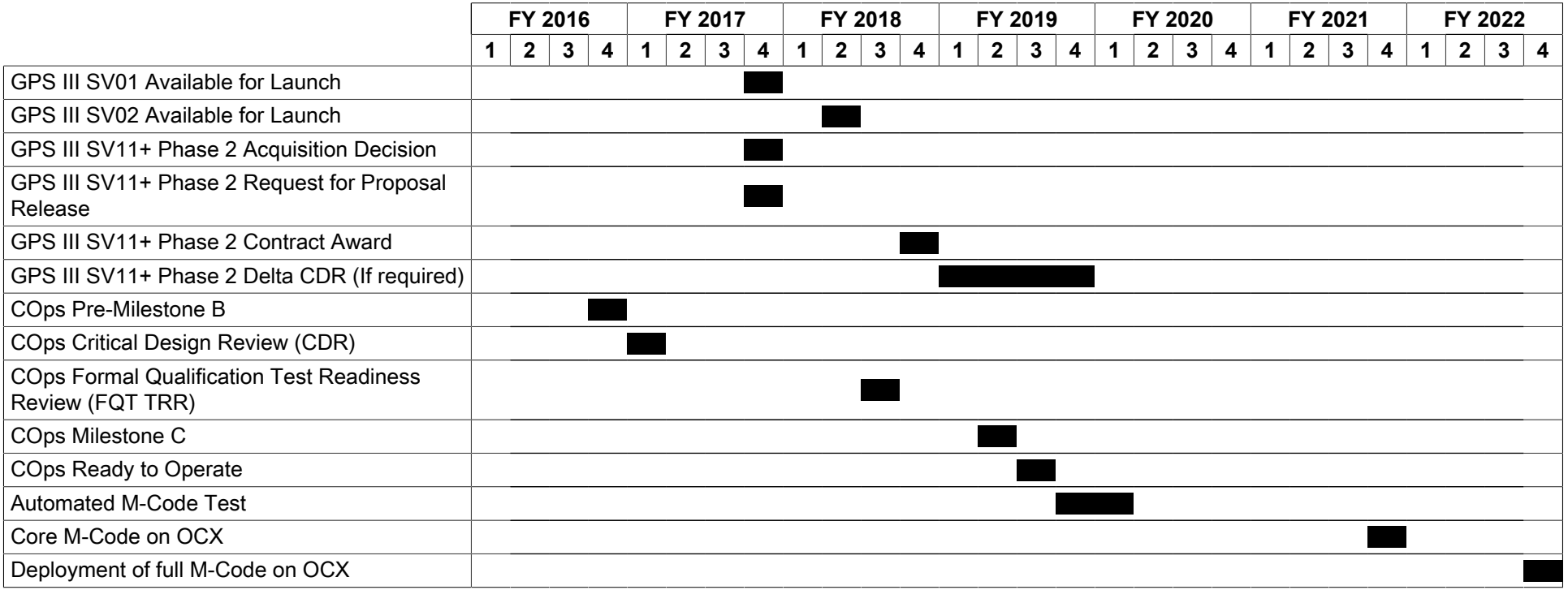

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1203265F / *GPS III Space Segment*	**Project (Number/Name)** 67A019 / *GPS III*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
GPS III SV01 Available for Launch	4	2017	4	2017
GPS III SV02 Available for Launch	2	2018	2	2018
GPS III SV11+ Phase 2 Acquisition Decision	4	2017	4	2017
GPS III SV11+ Phase 2 Request for Proposal Release	4	2017	4	2017
GPS III SV11+ Phase 2 Contract Award	4	2018	4	2018
GPS III SV11+ Phase 2 Delta CDR (If required)	1	2019	4	2019
COps Pre-Milestone B	4	2016	4	2016
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 OCX	4	2021	4	2021
Deployment of full M-Code on OCX	4	2022	4	2022