Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force											Date: February 2016	
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 0305265F / *GPS III Space Segment*							
COST ($ in Millions)	**Prior Years**	**FY 2015**	**FY 2016**	**FY 2017 Base**	**FY 2017 OCO**	**FY 2017 Total**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	**Cost To Complete**	**Total Cost**
Total Program Element	2,172.921	204.864	180.359	141.888	0.000	141.888	110.860	43.561	78.866	80.265	464.191	3,477.775
676007: *SAR- GPS*	6.521	1.147	1.286	1.295	0.000	1.295	1.320	1.344	1.369	1.393	0.000	15.675
67A019: *GPS III*	2,166.400	203.717	179.073	140.593	0.000	140.593	109.540	42.217	77.497	78.872	464.191	3,462.100
Program MDAP/MAIS Code: 292												

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 0305164F), Space (funded under this PE and PE 0305165F) and a Control Network (funded under PE 0305165F and PE 0603423F). 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. SAR integration costs are split 50%/50% between the Coast Guard and the Air Force (costs presented in this document represent the USAF 50% share). 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

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305265F / *GPS III Space Segment*

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. 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) 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 FY15-17 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 (3021) in PE 0305265F, 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 0305265F to increase the number of alternate navigation payload awards.

In FY17, this Program Element supports Enterprise Ground Services (EGS). EGS is performing tech maturation, experiments and prototyping for increased commonality and resiliency in space program ground systems.

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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force					Date: February 2016
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*		**R-1 Program Element (Number/Name)** PE 0305265F / *GPS III Space Segment*			
B. Program Change Summary ($ in Millions)	**FY 2015**	**FY 2016**	**FY 2017 Base**	**FY 2017 OCO**	**FY 2017 Total**
Previous President's Budget	211.907	180.902	154.630	0.000	154.630
Current President's Budget	204.864	180.359	141.888	0.000	141.888
Total Adjustments	-7.043	-0.543	-12.742	0.000	-12.742
• Congressional General Reductions	0.000	-0.543			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-7.043	0.000			
• Other Adjustments	0.000	0.000	-12.742	0.000	-12.742

Change Summary Explanation

FY17: -$12.742M for higher Department priorities

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305265F / *GPS III Space Segment*	Project (Number/Name) 676007 / *SAR- GPS*	

COST ($ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
676007: *SAR- GPS*	6.521	1.147	1.286	1.295	0.000	1.295	1.320	1.344	1.369	1.393	0.000	15.675
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, share costs (50/50) associated with integrating the Canadian-provided SAR repeater to GPS III beginning no earlier than SV11. Costs presented in this document represent the USAF 50% Share.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017
Title: SAR/GPS	1.147	1.286	1.295
Description: Nonrecurring costs for systems engineering activities to integrate the payload onto the GPS III SVs starting no earlier than SV11.			
FY 2015 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 Systems Engineering Integration Test/ Program Management (SEIT/PM). Costs do not include development and production of Canadian payload unit.			
FY 2016 Plans: Continue 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:			

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305265F / *GPS III Space Segment*	**Project (Number/Name)** 676007 / *SAR- GPS*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017
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. Costs do not include development and production of Canadian payload unit.			
Accomplishments/Planned Programs Subtotals	1.147	1.286	1.295

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• MPAF: BA05: Line Item # GPSIII: *GPS III*	312.326	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	282.326
• SPAF: BA01: Line Item # GPSIII: *GPS III*	0.000	199.218	34.059	0.000	34.059	761.515	899.241	761.565	554.763	3,738.790	6,949.151
• USCG: *U.S. Coast Guard*	2.915	2.915	2.915	0.000	2.915	2.915	2.915	2.915	2.915	2.915	23.320
• NGA: *National Geospatial-Intelligence Agency*	0.419	2.000	2.000	0.000	2.000	1.000	1.000	0.400	0.000	0.000	6.819

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: PB 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305265F / *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 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Search and Rescue SAR/ GPS	C/CPIF	Lockheed Martin : Littleton, CO	6.521	1.147	Mar 2016	1.286	Jul 2016	1.295	Dec 2016	0.000		1.295	5.426	15.675	16.030
		Subtotal	6.521	1.147		1.286		1.295		0.000		1.295	5.426	15.675	16.030

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 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 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 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 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-		-	-	-	-

	Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	6.521	1.147		1.286		1.295		0.000		1.295	5.426	15.675	16.030

Remarks

Search and Rescue/SAR

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305265F / *GPS III Space Segment*	**Project (Number/Name)** 676007 / *SAR- GPS*

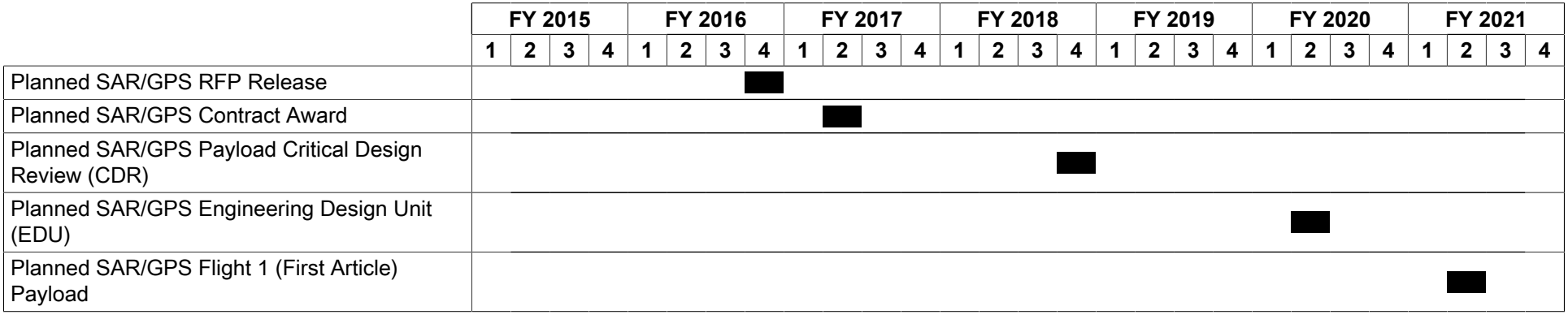

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305265F / *GPS III Space Segment*	**Project (Number/Name)** 676007 / *SAR- GPS*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Planned SAR/GPS RFP Release	4	2016	4	2016
Planned SAR/GPS Contract Award	2	2017	2	2017
Planned SAR/GPS Payload Critical Design Review (CDR)	4	2018	4	2018
Planned SAR/GPS Engineering Design Unit (EDU)	2	2020	2	2020
Planned SAR/GPS Flight 1 (First Article) Payload	2	2021	2	2021

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305265F / *GPS III Space Segment*	Project (Number/Name) 67A019 / *GPS III*	

COST ($ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
67A019: *GPS III*	2,166.400	203.717	179.073	140.593	0.000	140.593	109.540	42.217	77.497	78.872	464.191	3,462.100
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 35265F. 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 0305265F 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 as risk mitigation to late Next Generation Operational Control System (OCX) delivery which will allow for command and control of GPS III SVs.

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 0305265F to increase the number of alternate navigation payload awards.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017
Title: GPS III SV01-2	171.331	137.310	88.153
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 2015 Accomplishments: Continued GPS III space vehicle development, SE&I, technical and program support. Delivered SV01 Navigation Payload and final bus assemblies. Completed SV01 system module core mate. Completed flight software qualification for the MDU. Started SV01 Thermal Vacuum (TVAC) testing.			
FY 2016 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305265F / *GPS III Space Segment*	**Project (Number/Name)** 67A019 / *GPS III*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017
Continue GPS III space vehicle development, SE&I, technical and program support. Complete SV01 TVAC testing and complete all qualification testing. Complete SV01 Available For Launch (AFL) activities. Deliver SV02 Navigation Payload. Complete SV02 Thermal Vacuum (TVAC) testing. ***FY 2017 Plans:*** Continue GPS III space vehicle development, SE&I, technical and program support. Complete SV02 acceptance testing. Complete SV02 Available For Launch (AFL) activities.			
Title: Production Readiness ***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 FY15-17 RDTE funding for the Phase 1 effort to mature up to three contractors' GPS III production designs. The Phase 1 Production Readiness Feasibility Assessment will provide data and insight into contractors GPS III Production Design with emphasis on a mature navigation payload that includes a regional M-Code capability that is consistent with the GPS Enterprise analysis of alternatives. 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 2015 Accomplishments:*** Prepared Phase 1 RFP to mature GPS III SV11+ production designs with release and award in FY16. 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 Plans:*** Release Phase 1 RFP in 2QFY16 and award up to three contracts during 3QFY16. Deliver Phase 1 initial navigation payload and space vehicle production design and manufacturing plans (PDR-level). Award ORDWG maturation contracts via AFRL to support SMI activities. ***FY 2017 Plans:*** Deliver Phase 1 navigation payload production design (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.	20.000	3.400	4.800
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 in the (now realized) event that the Next Generation OCS was unable to support the initial support of GPS III SVs. 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	0.000	29.200	32.700

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305265F / *GPS III Space Segment*	**Project (Number/Name)** 67A019 / *GPS III*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017
Vehicle (SV). COps also includes the addition of GPS III SV simulation modules to the GPS System Simulator (GSS) and updates to the Positional Training Emulator (PTE). ***FY 2015 Accomplishments:*** Completed the second of three major requirements reviews under the COps Special Study #2 task (CLIN 2009) to speed the preliminary software design modifications to AEP. Released Request For Proposal (RFP) to implement the COps program. ***FY 2016 Plans:*** Negotiate and award COps contract vehicle (2QFY16). Complete COps Preliminary Design Review (PDR), and begin activities for Critical Design Review (CDR). Begin Code and Unit Testing; initiate and complete development laboratory set-up including requisite NSA certifications; begin integration test planning; begin GSS development and integration planning; start and complete GSS drawings. ***FY 2017 Plans:*** Complete Critical Design Review; continue and complete code and unit testing; complete integration test planning, complete TT&C integration test, and begin NAV integration test; complete GSS hardware purchase and installation, integration planning and testing, and Factory Qualification Test (FQT) planning; begin GSS FQT; begin PTE development--purchase and install hardware, and begin code and unit test; prepare and begin AEP FQT.			
Title: Systems Engineering/Launch/On-Orbit Support & Testing ***Description:*** Support costs include such activities as development of Launch & Checkout System (LCS) to ensure space and ground communications, on-orbit checkout, storage, testing, and system engineering. ***FY 2015 Accomplishments:*** Continued systems engineering and integration support to the development of SV01-02, and Evolved Expendable Launch Vehicle (EELV) early integration and mission unique items to support launch processing. Continued processing and technical support for the launch processing facility at CCAFS. ***FY 2016 Plans:*** Continue systems engineering and integration support to the development of SV01-02, and EELV early integration and mission unique items to support launch processing. Continue technical support for the launch processing facility at CCAFS. ***FY 2017 Plans:*** Continue systems engineering and integration support to the development of SV01-02, and EELV early integration and mission unique items to support launch processing. Continue technical support for the launch processing facility at CCAFS.	12.386	9.163	7.440
Title: Enterprise Ground Services (EGS)	0.000	0.000	7.500

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305265F / *GPS III Space Segment*	**Project (Number/Name)** 67A019 / *GPS III*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017
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. ***FY 2015 Accomplishments:*** N/A ***FY 2016 Plans:*** 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 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.			
Accomplishments/Planned Programs Subtotals	203.717	179.073	140.593

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• MPAF: BA05: Line Item # GPSIII: *GPS III*	312.326	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	312.326
• SPAF: BA01: Line Item # GPS III: *GPS III*	0.000	286.218	34.059	0.000	34.059	761.515	899.241	761.565	554.763	4,011.491	7,308.852

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305265F / *GPS III Space Segment*	**Project (Number/Name)** 67A019 / *GPS III*

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 FY15-17 RDTE funding for the Phase 1 effort to mature up to three contractors' GPS III production designs. The Phase 1 Production Readiness Feasibility Assessment will provide data and insight into contractors GPS III Production Design with emphasis on a mature navigation payload that includes a regional M-Code capability that is consistent with the GPS Enterprise analysis of alternatives. 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). 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 0305265F to increase the number of alternate navigation payload awards.

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 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305265F / *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 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
GPS III Development	C/CPIF	Lockheed Martin : Denver, CO	1,783.847	146.041	Dec 2014	116.242	Dec 2015	67.509	Dec 2016	0.000		67.509	51.541	2,165.180	2,168.242
GPS III Technical Mission Analysis	MIPR	Various : Various	0.000	1.884	Oct 2015	7.600	Oct 2016	7.523	Oct 2017	0.000		7.523	27.173	44.180	44.180
GPS III Enterprise SE&I	C/CPAF	TASC : El Segundo, CA	51.001	3.818	Nov 2014	3.793	Nov 2015	2.015	Nov 2016	0.000		2.015	11.202	71.829	71.839
GPS III Launch Support	RO	45th : Cape Canaveral, FL	2.325	1.560	Mar 2015	2.370	Mar 2016	0.000		0.000		0.000	0.930	7.185	5.013
GPS III Production Readiness/SMI	C/CPAF	TBD : TBD	0.000	20.000	Feb 2016	3.400	Feb 2016	4.800	Feb 2017	0.000		4.800	579.178	607.378	606.478
GPS III Contingency Ops	C/CPAF	TBD : TBD	0.000	0.000		29.200	Feb 2016	32.700	Dec 2016	0.000		32.700	24.400	86.300	86.300
GPS III Enterprise Ground Service	C/CPAF	TBD : TBD	0.000	0.000		0.000		7.500	Jan 2017	0.000		7.500	0.000	7.500	7.500
GPS III Phase A Development	Various	Various : Various	157.305	0.000		0.000		0.000		0.000		0.000	0.000	157.305	-
		Subtotal	1,994.478	173.303		162.605		122.047		0.000		122.047	694.424	3,146.857	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 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 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
GPS III T&E	Various	Various : TBD	21.657	7.008	May 2015	3.000	May 2016	5.425	May 2017	0.000		5.425	22.785	59.875	59.875
		Subtotal	21.657	7.008		3.000		5.425		0.000		5.425	22.785	59.875	59.875

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305265F / *GPS III Space Segment*	Project (Number/Name) 67A019 / *GPS III*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
GPS III FFRDC	MIPR	Aerospace : El Segundo, CA	54.592	14.613	Dec 2014	3.637	Dec 2015	4.349	Dec 2016	0.000		4.349	18.266	95.457	95.457
GPS III A&AS	Various	Various : Various	95.673	6.731	Apr 2015	7.058	Apr 2016	6.372	Apr 2017	0.000		6.372	26.762	142.596	142.596
GPS III Other Support	Various	Various : Various	0.000	2.062	Oct 2014	2.773	Oct 2015	2.400	Oct 2016	0.000		2.400	10.080	17.315	17.315
		Subtotal	150.265	23.406		13.468		13.121		0.000		13.121	55.108	255.368	255.368

	Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	2,166.400	203.717		179.073		140.593		0.000		140.593	772.317	3,462.100	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305265F / *GPS III Space Segment*	**Project (Number/Name)** 67A019 / *GPS III*

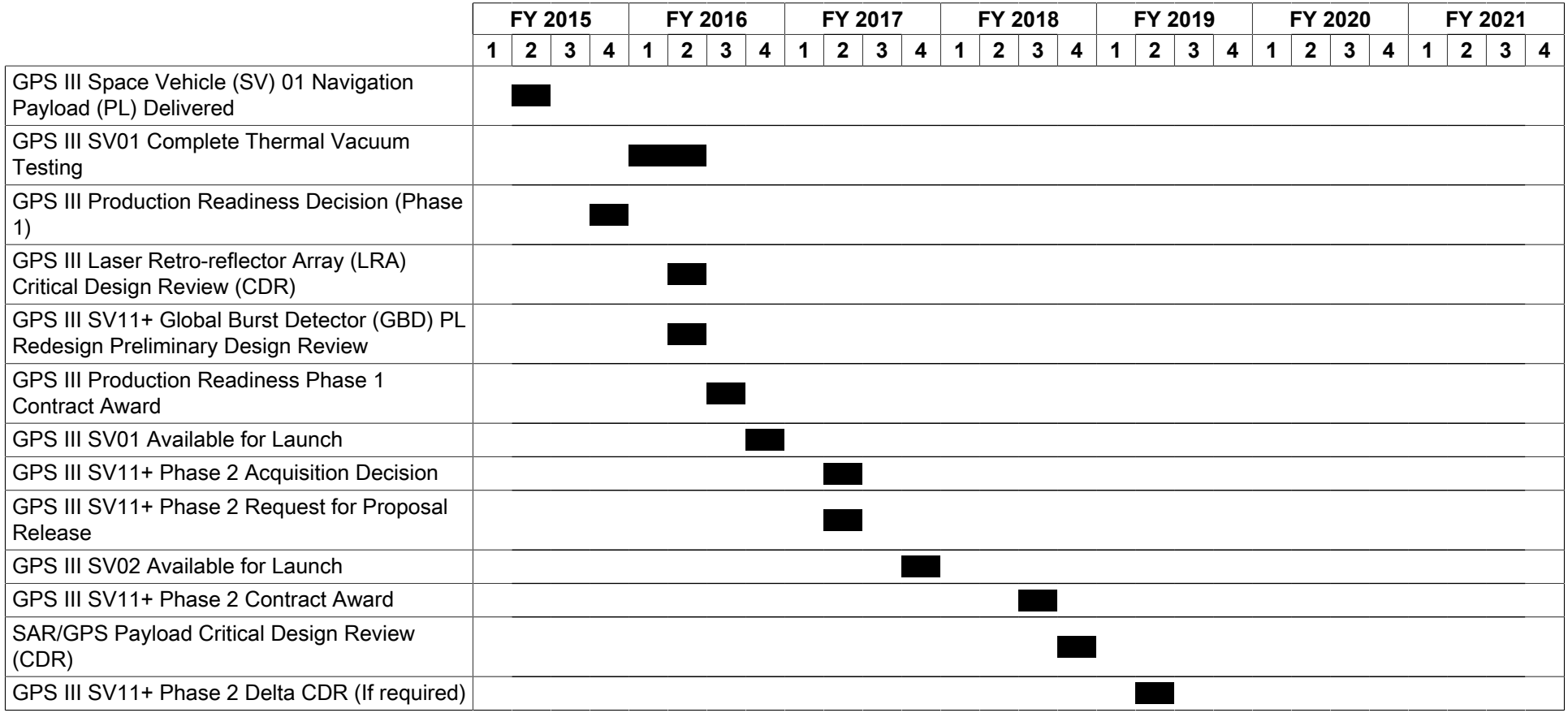

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305265F / *GPS III Space Segment*	**Project (Number/Name)** 67A019 / *GPS III*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
GPS III Space Vehicle (SV) 01 Navigation Payload (PL) Delivered	2	2015	2	2015
GPS III SV01 Complete Thermal Vacuum Testing	1	2016	2	2016
GPS III Production Readiness Decision (Phase 1)	4	2015	4	2015
GPS III Laser Retro-reflector Array (LRA) Critical Design Review (CDR)	2	2016	2	2016
GPS III SV11+ Global Burst Detector (GBD) PL Redesign Preliminary Design Review	2	2016	2	2016
GPS III Production Readiness Phase 1 Contract Award	3	2016	3	2016
GPS III SV01 Available for Launch	4	2016	4	2016
GPS III SV11+ Phase 2 Acquisition Decision	2	2017	2	2017
GPS III SV11+ Phase 2 Request for Proposal Release	2	2017	2	2017
GPS III SV02 Available for Launch	4	2017	4	2017
GPS III SV11+ Phase 2 Contract Award	3	2018	3	2018
SAR/GPS Payload Critical Design Review (CDR)	4	2018	4	2018
GPS III SV11+ Phase 2 Delta CDR (If required)	2	2019	2	2019

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