Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force											Date: February 2015	
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 0603423F / *Global Positioning System III - Operational Control Segment*							
COST ($ in Millions)	**Prior Years**	**FY 2014**	**FY 2015**	**FY 2016 Base**	**FY 2016 OCO**	**FY 2016 Total**	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**Cost To Complete**	**Total Cost**
Total Program Element	1,962.237	361.381	299.060	350.232	-	350.232	222.288	136.475	139.029	87.982	380.153	3,938.837
67A021: *OCX*	1,918.400	302.865	236.064	288.992	-	288.992	159.765	72.751	74.103	37.122	376.238	3,466.300
67A025: *GPS Enterprise Integrator*	43.837	58.516	62.996	61.240	-	61.240	62.523	63.724	64.926	50.860	3.915	472.537
Program MDAP/MAIS Code: 456												

A. Mission Description and Budget Item Justification

The Global Positioning System (GPS) is a space based positioning, navigation and timing distribution system, which operates through all weather. GPS supports both civil and military users in air, space, sea and land operations. GPS is a satellite-based radio navigation system that serves military and civil users worldwide. GPS users process satellite signals to determine accurate position, velocity and time. GPS must comply with 10 United States Code (USC) sec 2281 which requires that the Secretary of Defense ensures the continued sustainment and operation of GPS for military and civilian purposes and 51 USC sec 50112, which requires that GPS complies with certain standards and facilitates international cooperation.

This Program Element (PE) funds the Research & Development (R&D) for the GPS next generation operational control system (OCX) and the GPS Enterprise Integrator (EI). This includes advanced concept development, systems analysis, modernized control segment development, mission planning development, training simulators, integrated logistics support products, test resources, systems engineering required to meet the government's obligations to the international, military and civil communities, and system requirements verification. OCX acquisition was established to 1) provide command and control of legacy and GPS III satellites, 2) incorporate situational awareness to support Navigation Warfare (NAVWAR) and signal monitoring, 3) enable mission capability upgrades to support warfighter effects-based approach to operations and 4) integrate DoD information assurance and cyber security controls and capabilities. GPS Enterprise Integrator is responsible for architecture and system definition (the analysis and definition, management, maintenance, and evolution of the GPS Enterprise requirements and interface technical documents) as well as for the planning, execution, and fielding of the GPS Enterprise.

OCX funds will support efforts such as engineering studies and analyses, architectural engineering studies, trade studies, technology needs forecasting, modernization initiatives, systems engineering, system development, test and evaluation efforts and mission operations. These activities support upgrades and product improvements for military and civil applications necessary to enable efforts to protect U.S. military and allies' use of GPS. Additionally, funds will ensure OCX efforts meet current and future Joint Requirements Oversight Council approved required capabilities.

GPS benefits both military and civil users in air, space, sea and land operations. The GPS Enterprise consists of Space, Ground Control, Nuclear Detonation (NUDET) Detection System (NDS) and User Equipment Segments. The government is responsible for the integration of the GPS Segments such that they provide worldwide GPS capability to support the warfighter and over a billion national security, civil, allied, and commercial GPS users.

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0603423F / *Global Positioning System III - Operational Control Segment*

The GPS Enterprise Integrator project includes the efforts associated with the Government's prime contract tasks necessary to accomplish this critical integrating function with the entire GPS user community. The Enterprise Integrator maintains the GPS current architecture and system definition, controls and validates interfaces, ensures compatibility of Generation II and III systems, and develops/manages plans for execution and fielding of the GPS Enterprise. Further, the Enterprise Integrator provides modeling, simulation and technical analyses of impacts for Government-directed enterprise-level trades among the GPS segments leading to definition, management, maintenance, and evolution of the GPS Enterprise requirements and interface technical documents to build and ensure the integrity of the enterprise technical baseline, and perform system requirements verification.

In addition, the GPS Enterprise Integrator project funds the technical evolution, risk reduction, enterprise-level testing and delivery of all GPS Enterprise capabilities. Examples for Generation II include electronic protection and additional civil signals; for Generation III, additional anti-jamming protection. To accomplish this, the GPS Enterprise Integrator delivers Test and Verification capabilities, Requirements and Interface Management, and Systems Integration support across the Space, Control, and User Segments. In this capacity, the Enterprise Integrator is responsible for managing this cross-program work to provide these and other capabilities. GPS Enterprise Integrator's analyses guide government decisions to ensure efficient and effective synchronization and execution across all Generation II and III GPS programs. For Enterprise-wide integration to be successful, the Integrator: works with the GPS and NDS prime contractor teams to develop plans for early risk reduction System Integration Demonstrations to ensure system interfaces and functionality meet user and system requirements; ensures all equipment and documentation is ready when needed; integrates and analyzes enterprise schedules, conducts formal test and verification, including Requirement Verification Plans, and System Test Plans and Procedures. GPS Enterprise Integrator performs all these efforts across all GPS programs in all acquisition phases. The government owns the Enterprise system requirements and integration, and highly leverages the Enterprise Integrator team to eliminate the need to fund a development prime contractor to perform these functions. This enhances government control, oversight and program accountability.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that were fielded or received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

B. Program Change Summary ($ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	373.062	299.760	282.138	-	282.138
Current President's Budget	361.381	299.060	350.232	-	350.232
Total Adjustments	-11.681	-0.700	68.094	-	68.094
• Congressional General Reductions	-	-0.700			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-11.681	-			
• Other Adjustments	-	-	68.094	-	68.094

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0603423F / *Global Positioning System III - Operational Control Segment*

Change Summary Explanation

FY16: +$68.094M to fund OCX development to current cost estimate.

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force			Date: February 2015
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0603423F / *Global Positioning System III - Operational Control Segment*	Project (Number/Name) 67A021 / *OCX*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
67A021: *OCX*	1,918.400	302.865	236.064	288.992	-	288.992	159.765	72.751	74.103	37.122	376.238	3,466.300
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Global Positioning System (GPS) is a space based positioning, navigation and timing distribution system, which operates through all weather. This project funds the research and development for the GPS next generation operational control system (OCX). This includes, but is not limited to, advanced concept development, systems engineering and analysis, modernized control segment and mission planning, development, training simulators, integrated logistics support products, and test resources.

OCX acquisition was established to 1) provide command and control of legacy and GPS III satellites, 2) incorporate situational awareness to support Navigation Warfare (NAVWAR) and signal monitoring, 3) enable mission capability upgrades to support warfighter effects-based approach to operations and 4) integrate DoD information assurance and cyber security controls and capabilities. OCX funds will support efforts such as engineering studies and analyses, architectural engineering studies, trade studies, technology needs forecasting, technology development, systems engineering, system development, test and evaluation efforts and mission operations in support of upgrades and product improvements for military and civil applications necessary to support efforts to protect U.S. military and allies' use of GPS. Additionally, funds will ensure efforts to meet current and future Joint Requirements Oversight Council (JROC) approved required capabilities.

OCX Block 0 (Iterations 1.4 and 1.5) is the Launch and Control System (LCS) intended to conduct Launch and Early Orbit (LEO) operations and the on-orbit checkout of all GPS III satellites. OCX Block 0 is a subset of OCX Block 1.

OCX Block 1 (adds Iterations 1.6, 1.7 and 2.1 to Block 0) fields the operational capability to control all legacy satellites and civil signals (L1C/A), military signals (L1P(Y), L2P(Y)) as well as the GPS III satellites and the modernized civil signal (L2C) and the aviation safety-of-flight signal (L5). In addition, Block 1 will field the basic operational capability to control the modernized signals (L1M and L2M (M-Code)), and the globally compatible signal (L1C). It also fully meets information assurance/ cyber defense requirements.

OCX Block 2 (adds Iteration 2.2 to Block 1) fields the advanced operational capability to control the modernized signals (L1M and L2M (M-Code)).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Title: OCX Development	297.165	215.964	265.692
Description: Development of the GPS next generation operational control system to launch and operate GPS II and GPS III constellation and provide a robust Information Assurance system.			
FY 2014 Accomplishments: Completed testing of the information assurance controls required for OCX Block 0 and OCX Block 1 (Interation 1.4a)			

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0603423F / *Global Positioning System III - Operational Control Segment*	**Project (Number/Name)** 67A021 / *OCX*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Continued to develop GPS III launch and checkout capability (Block 0). Continued systems engineering and development of command and control for GPS II satellites, legacy signals, and modernized signals. Revalidated the systems engineering baseline for Blocks 0 and 1. ***FY 2015 Plans:*** Conduct qualification testing for OCX Block 0. Complete Iteration 1.6, 1.7, and 2.1 systems engineering (remainder of OCX Block 1) for the command and control for GPS II satellites, legacy signals, and modernized signals. Conduct Iteration 1.6 CDR. Continue systems engineering and development of remaining military modernized signals (M-code) for OCX Block 2 (Iteration 2.2). ***FY 2016 Plans:*** Conduct site acceptance testing, receive approval to operate and connect, and certify & accept OCX Block 0 for launch and checkout operations of GPS III satellites. Conduct Iteration 1.7 and 2.1 CDRs, and finalize qualification testing for OCX Monitor Station Receiver Equipment (OMSRE). Continue development of the remaining modernized civil and military signals.			
Title: Technical Support ***Description:*** Development of the Standardized Space Trainer (SST), Enterprise Mission Planning Systems to provide GPS III operator training. Automation study to examine the feasibility of implementing control segment automation to increase command and control efficiencies. Facilities upgrades for Control Stations and associated equipment and servers. ***FY 2014 Accomplishments:*** Continued work on the facility upgrades and hardware installation to prepare for OCX testing and transition to include the Master Control Station (MCS) and Alternate Master Control Station (AMCS). ***FY 2015 Plans:*** Continue work on the SST and develop demonstration capabilities; continue development of Enterprise Mission Planning Systems. Continue work on the facility upgrades to include the MCS, AMCS, and remote monitor station sites. ***FY 2016 Plans:*** Continue efforts on operation and maintenance training, technical orders development, and Enterprise Mission Planning development. Plan and prepare to conduct Block 1 testing leading to Block 1 DD250.	5.700	20.100	23.300
Accomplishments/Planned Programs Subtotals	302.865	236.064	288.992

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force			Date: February 2015
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0603423F / *Global Positioning System III - Operational Control Segment*	**Project (Number/Name)** 67A021 / *OCX*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• RDTE: BA07: PE 0305265F: *GPS III Space Segment*	195.950	211.907	180.902	-	180.902	154.630	76.731	78.176	79.575	170.134	1,148.005
• MPAF: BA05: Line Item # GPSIII: *GPS III TOA*	450.238	315.398	199.218	-	199.218	257.697	767.498	906.239	902.397	3,872.270	7,670.955
• DOT: *DOT (FAA) Civil Funding*	4.300	23.000	10.100	-	10.100	-	-	-	-	-	37.400

Remarks

DOT (FAA) funding in FY 2015 - 2018 is TBD. $33.1M is required.

D. Acquisition Strategy

The Air Force is pursuing a "Block" approach to the next generation GPS control segment (OCX) to rapidly respond to warfighter capability requirements. The Block acquisition strategy approach follows the "Back to Basics" space program acquisition philosophy which focuses on mission success and on-time delivery. Additionally, the strategy calls for capability (e.g., better signal maintainability, Unified S-Band (USB), Search and Rescue (SAR) GPS, and near-real time C2) on-ramps for the follow-on contract for GPS III SVs (starting no earlier than SV11) which will require updates to the OCX ground segment. Enterprise studies will ensure GPS Enterprise synchronization across space and ground segments.

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 2016 Air Force			Date: February 2015
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0603423F / *Global Positioning System III - Operational Control Segment*	**Project (Number/Name)** 67A021 / *OCX*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
GPS OCX Phase B OCX Block 1 & 2 Development	C/CPAF	Raytheon : Aurora, CO	1,349.172	267.665	Dec 2013	181.564	Dec 2014	231.202	Dec 2015	-		231.202	565.179	2,594.782	-
GPS OCX Enterprise Studies	C/CPAF	Leidos : Huntington Beach, CA	35.549	3.800	Dec 2013	5.700	Dec 2014	4.400	Dec 2015	-		4.400	7.800	57.249	-
GPS OCX Modernization/ SE & Technical Support	Various	Various : Various,	52.228	0.800	Jan 2014	5.800	Jan 2015	0.800	Jan 2016	-		0.800	3.200	62.828	-
AMCS Facility Dev	Various	Various : Various,	0.000	0.300	Mar 2014	2.900	Mar 2015	5.300	Mar 2016	-		5.300	13.800	22.300	-
GPS OCX Standard Space Trainer (SST)	C/CPAF	Sonalyst, Inc : Waterford, CT	3.500	3.000	Jan 2014	5.000	Jan 2015	5.000	Jan 2016	-		5.000	-	16.500	-
GPS OCX Enterprise Mission Planning	C/CPIF	Booz Allen Hamilton Eng Services : El Segundo, CA	7.000	-		3.000	Jan 2015	8.000	Jan 2016	-		8.000	25.200	43.200	-
GPS OCX Completed Activities	Various	Various : ,	289.000	-		-		-		-		-	-	289.000	-
		Subtotal	1,736.449	275.565		203.964		254.702		-		254.702	615.179	3,085.859	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 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 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
T&E	C/CPAF	Various : Various,	0.000	1.600	Mar 2014	3.400	Mar 2015	4.200	Mar 2016	-		4.200	20.400	29.600	-
		Subtotal	0.000	1.600		3.400		4.200		-		4.200	20.400	29.600	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force			Date: February 2015
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0603423F / *Global Positioning System III - Operational Control Segment*	Project (Number/Name) 67A021 / *OCX*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
GPS OCX FFRDC 1	RO	Aerospace : El Segundo, CA	91.575	10.400	Jan 2014	12.700	Jan 2015	13.500	Jan 2016	-		13.500	53.100	181.275	-
GPS OCX FFRDC 2	C/CPFF	MITRE : Bedford, MA	5.390	3.300	Jan 2014	3.200	Jan 2015	3.400	Jan 2016	-		3.400	11.289	26.579	-
GPS OCX FFRDC 3	C/CPFF	SEI : Pittsburgh, PA	1.030	-		-		-		-		-	-	1.030	-
GPS OCX Program Management Administration (PMA)	Various	Various : ,	83.956	12.000	Feb 2014	12.800	Feb 2015	13.190	Feb 2016	-		13.190	20.011	141.957	-
		Subtotal	181.951	25.700		28.700		30.090		-		30.090	84.400	350.841	-

	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1,918.400	302.865		236.064		288.992		-		288.992	719.979	3,466.300	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0603423F / *Global Positioning System III - Operational Control Segment*	**Project (Number/Name)** 67A021 / *OCX*

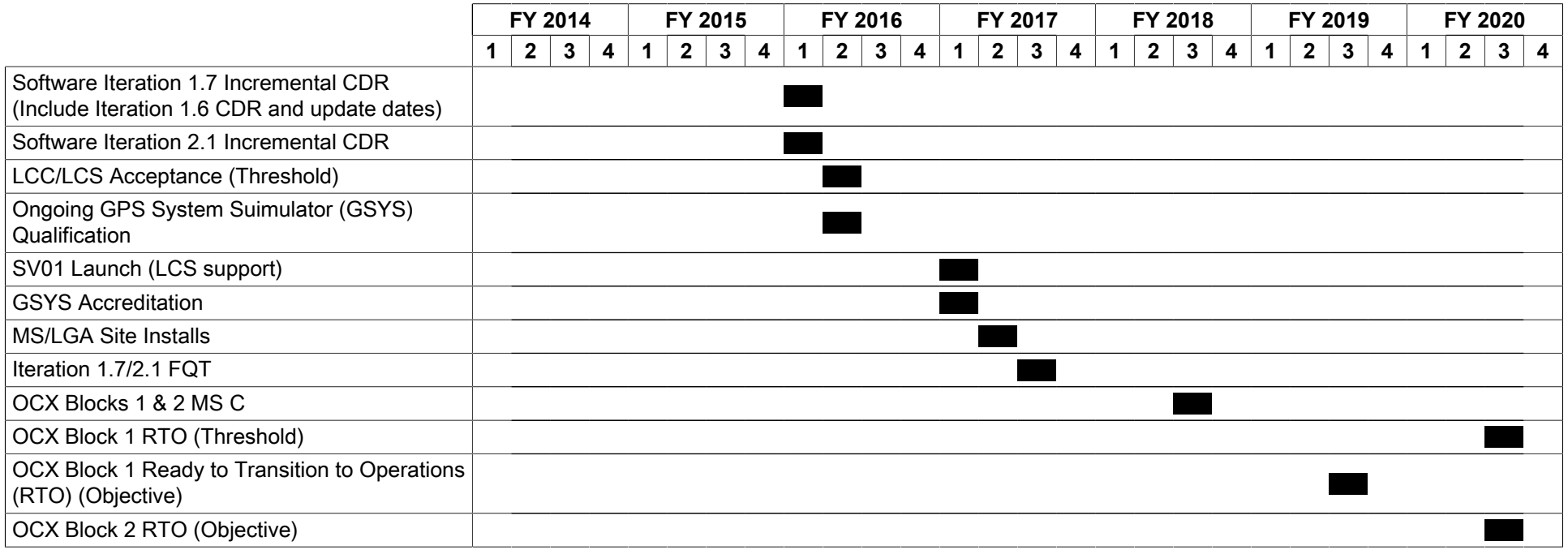

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0603423F / *Global Positioning System III - Operational Control Segment*	**Project (Number/Name)** 67A021 / *OCX*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Software Iteration 1.7 Incremental CDR (Include Iteration 1.6 CDR and update dates)	1	2016	1	2016
Software Iteration 2.1 Incremental CDR	1	2016	1	2016
LCC/LCS Acceptance (Threshold)	2	2016	2	2016
Ongoing GPS System Suimulator (GSYS) Qualification	2	2016	2	2016
SV01 Launch (LCS support)	1	2017	1	2017
GSYS Accreditation	1	2017	1	2017
MS/LGA Site Installs	2	2017	2	2017
Iteration 1.7/2.1 FQT	3	2017	3	2017
OCX Blocks 1 & 2 MS C	3	2018	3	2018
OCX Block 1 RTO (Threshold)	3	2020	3	2020
OCX Block 1 Ready to Transition to Operations (RTO) (Objective)	3	2019	3	2019
OCX Block 2 RTO (Objective)	3	2020	3	2020

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force			Date: February 2015
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0603423F / *Global Positioning System III - Operational Control Segment*	Project (Number/Name) 67A025 / *GPS Enterprise Integrator*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
67A025: *GPS Enterprise Integrator*	43.837	58.516	62.996	61.240	-	61.240	62.523	63.724	64.926	50.860	3.915	472.537
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Global Positioning System (GPS) Enterprise Integrator (EI) integrates, synchronizes, tests and verifies the four ACAT I Defense Acquisition Programs that constitute the GPS Enterprise to deliver reliable Positioning, Navigation, and Timing signal capability to military operators, the civil user community, and international partners. The Government Program Office owns and approves the technical baseline and is responsible for the successful fielding of all the GPS Segments. To successfully execute its responsibilities, the Government relies upon the specific expertise of the GPS Enterprise Integrator to integrate segment products and verify that system requirements are met.

The GPS Enterprise Integrator project is responsible for the development and management of the Enterprise technical baseline. The technical baseline consists of more than 6400 specifications and 330 interface documents. The technical baseline reflects the requirements of multiple stakeholder groups such as the Department of Defense (DoD), foreign governments and allies, industry, the general public (through four Interface specifications), and ensures GPS capabilities meet the needs of warfighters, civil agencies, commercial entities, international treaties, and over 4B global GPS users. The Enterprise Integrator manages the process through which the JROC requirements are matured and flowed down to the segments of the system and that interfaces are clearly defined. This enables the GPS system to meet Title 10 of the U.S. Code, Section 2281, mandated GPS capabilities as well as obligations to the international community and allied nations, to provide, inter-operable PNT signals. The Enterprise Integrator is also responsible for all aspects of schedule and technical alignment across the segments. The Enterprise Integrator creates and manages plans that provide for early exercise of the products under development, compatibility analysis, and intersegment testing thereby reducing risk. The intersegment tests are required to prove the interoperability of OCX, GPS III, and modernized user equipment. The Enterprise Integrator's test efforts also extend to validating that GPS can be used for civil aircraft navigation.

The Enterprise Integrator activity supports the Government Program Office's GPS spectrum protection at international forums such as the International Telecommunications Union, assisting the United States when negotiating with foreign partners. In addition, the Enterprise Integrator provides technical expertise and continuity for maintaining relationships with other U.S. government agencies to include the FAA, NGA, NASA, as well as the Departments of State, Transportation, Homeland Security, and Commerce. Spectrum expertise from the Enterprise Integrator ensures GPS priority over eight essential spectrum signals such as the safety of life signal, L5, which is required for civil air navigation. Spectrum Protection prevents encroachment from commercial or foreign entities, which preserves reliable signals to warfighters and civil users, ensuring military operations and the integrity of the global economic infrastructure. The Enterprise Integrator is the GPS enterprise expert for Information Assurance (IA), Cyber Security, System Safety, and System Security, ultimately ensuring a protected GPS Signal for both the military and civil users from emerging cyber threats. The Enterprise Integrator is accountable for the development, execution, and analysis of OCX cyber security and IA test cases, which are necessary to deliver a secure, operational system, protected against adversarial cyber-attacks intended to deny, disrupt, or degrade GPS operations.

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0603423F / *Global Positioning System III - Operational Control Segment*	**Project (Number/Name)** 67A025 / *GPS Enterprise Integrator*

The Enterprise Integrator supports the Government development and implementation of various Systems engineering documents, defines the methods of verification, conducts the analyses or tests, and assists the government in leading Integrated System Tests. The Enterprise Integrator validates the system performance in various mission threat scenarios during its development. The Enterprise Integrator provides deep, technical, highly specific expertise. The GPS EI functions enhance government control, oversight and program accountability.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Title: GPS Enterprise Integrator	58.516	62.996	61.240
Description: The integration and technical baseline control of all elements of the GPS system (space/ground/user equipment) with one another in support of both military and civil users. Execute four major integration exercises, multiple mini-exercises, and five rehearsals between space and ground leading up to the launch of GPS III SV-01. ***FY 2014 Accomplishments:*** Conducted fourth integration exercise and begin planning for a series of mini integration exercise events, during which LCS software iteration 1.5 will be in use. Conducted system integration demos to simulate key aspects of launch and on orbit operations. Oversaw multiple Mission Readiness testing activities. ***FY 2015 Plans:*** Conduct a series of mini integration exercise events, which will conclude the 'exercise' portion of readiness for launch. Perform SV01 verification tests and begin LCC/LCS Enterprise Assessments. Conduct multiple systems integration risk reduction demos. Initiate Integrated System Test (IST) 3-3 testing (Phases 0-2) for MGUE verification. Develop GPS Enterprise End-to-End Validation (GENEVA) model. ***FY 2016 Plans:*** Continue IST 3-3 Phase 3 MGUE verification tests. Conduct launch and early orbit operation rehearsals on the delivered system between ground and space segment in support of SV01 launch. Continue LCC/LCS Enterprise Assessments. Conduct multiple system integration demos. Support SV01 FCA/PCA. Continue developing GENEVA model.			
Accomplishments/Planned Programs Subtotals	58.516	62.996	61.240

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• RDTE: BA04: PE 0305164F: *NAVSTAR Global Positioning System (User Equipment) (Space)*	123.081	156.221	142.288	-	142.288	219.043	221.884	189.800	171.827	55.700	1,279.844
• RDTE: BA07: PE 0305265F: *GPS III Space Segment*	193.367	210.473	179.612	-	179.612	153.322	75.398	76.819	78.194	50.884	1,018.069

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force			Date: February 2015
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0603423F / *Global Positioning System III - Operational Control Segment*	**Project (Number/Name)** 67A025 / *GPS Enterprise Integrator*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• RDTE: BA07: PE 0305913F: *NUDET Detection System*	42.506	20.405	14.447	-	14.447	18.785	24.253	13.898	14.147	Continuing	Continuing
• MPAF: BA05: Line Item # MGPS00: *Global Positioning System (Space)*	55.895	49.887	66.135	-	66.135	13.276	-	-	-	-	185.193
• MPAF: BA05: Line Item # GPSIII: *GPS III TOA*	450.238	315.398	199.218	-	199.218	257.697	767.498	906.239	902.397	3,872.270	7,670.955

Remarks

D. Acquisition Strategy

In accordance with a "back to basics" acquisition approach and exercise of strong oversight of development contractors, the Air Force is required to exercise complete ownership of the architecture, system definition, and integration of the GPS space, ground, and user segments. This complex inter-segment integration is traditionally performed by a prime contractor under a systems development contract. To eliminate the need to fund a development prime contractor to perform these functions, the government leverages systems engineering and integration expertise from both Federally Funded Research and Development Center (FFRDC) contractors and a Systems Engineering & Integration (SE&I) contractor. GPS Enterprise Integrator function of the SE&I contractor is currently funded within this Program Element (PE). The SE&I effort was originally procured in 2007 through a full and open competition. It was subsequently extended to support the timing and competitive award of a new SE&I contract which is currently in a full and open competition source selection. The SE&I follow-on strategy builds in year over year cost reductions as requirements stabilize.

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 2016 Air Force			Date: February 2015
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0603423F / *Global Positioning System III - Operational Control Segment*	Project (Number/Name) 67A025 / *GPS Enterprise Integrator*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
GPS Enterprise Integrator	C/CPAF	Leidos : El Segundo, CA	28.050	37.325	Jan 2014	39.158	Jan 2015	36.935	Jan 2016	-		36.935	140.045	281.513	-
GPS Enterprise Integrator 2	MIPR	Aerospace : El Segundo, CA	6.509	9.626	Oct 2013	11.020	Oct 2014	11.012	Oct 2015	-		11.012	45.953	84.120	-
GPS Enterprise Integrator 3	WR	MITRE : Bedford, MA	8.726	8.615	Oct 2013	8.858	Oct 2014	9.213	Oct 2015	-		9.213	40.685	76.097	-
		Subtotal	43.285	55.566		59.036		57.160		-		57.160	226.683	441.730	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 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 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
T&E	C/Various	Various : Various,	0.000	-		-		0.100	Nov 2015	-		0.100	0.450	0.550	-
		Subtotal	0.000	-		-		0.100		-		0.100	0.450	0.550	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Admistration	Various	Various : El Segundo, CA	0.552	2.950	Oct 2013	3.960	Oct 2014	3.980	Oct 2015	-		3.980	14.900	26.342	-
		Subtotal	0.552	2.950		3.960		3.980		-		3.980	14.900	26.342	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force			Date: February 2015
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0603423F / *Global Positioning System III - Operational Control Segment*	**Project (Number/Name)** 67A025 / *GPS Enterprise Integrator*	

	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	43.837	58.516		62.996		61.240		-		61.240	242.033	468.622	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0603423F / *Global Positioning System III - Operational Control Segment*	**Project (Number/Name)** 67A025 / *GPS Enterprise Integrator*

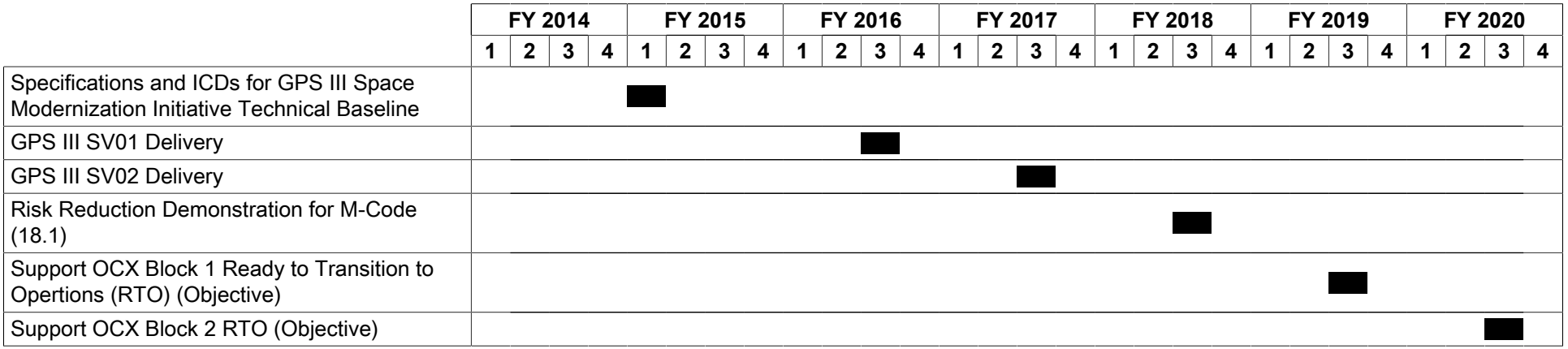

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0603423F / *Global Positioning System III - Operational Control Segment*	**Project (Number/Name)** 67A025 / *GPS Enterprise Integrator*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Specifications and ICDs for GPS III Space Modernization Initiative Technical Baseline	1	2015	1	2015
GPS III SV01 Delivery	3	2016	3	2016
GPS III SV02 Delivery	3	2017	3	2017
Risk Reduction Demonstration for M-Code (18.1)	3	2018	3	2018
Support OCX Block 1 Ready to Transition to Opertions (RTO) (Objective)	3	2019	3	2019
Support OCX Block 2 RTO (Objective)	3	2020	3	2020