Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force											Date: February 2018	
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 1206433F / *Wideband Global SATCOM (SPACE)*							
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
Total Program Element	-	73.901	14.263	3.970	0.000	3.970	1.920	0.000	0.000	0.000	Continuing	Continuing
657102: *Command & Control Sys-Consolidated (CCS-C)*	-	11.800	4.263	3.970	0.000	3.970	1.920	0.000	0.000	0.000	Continuing	Continuing
657107: *WGS Space Systems Resiliency Upgrade*	-	62.101	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Military Satellite Communications (MILSATCOM) Command and Control System-Consolidated (CCS-C) system provides integrated launch and on-orbit command and control (C2) functionality at Schriever AFB and Vandenberg AFB for MILSATCOM satellites. Schriever AFB is used for primary operations and Vandenberg AFB is used for backup operations. CCS-C uses modified commercial off the shelf hardware/software to control emerging and legacy MILSATCOM systems including Milstar, Defense Satellite Communications System (DSCS), Wideband Global SATCOM (WGS) and Advanced Extremely High Frequency (AEHF) satellites.

The CCS-C project 657102 funds system architecture evolution to provide increased performance for additional satellites and to comply with DoD, Air Force, and AFSPC-directed standards for Information Assurance, Satellite Control Standardization, and Net-Readiness. This continuing effort was previously funded in the FY14PB and prior as an Acquisition Category II (ACAT II) program. With the 10 October 2013 Final Operational Capability (FOC) declaration, the program has transitioned to an ACAT III program, the Command and Control System-Consolidated Assurance and Capability Enhancement (CACE), beginning FY2014. The WGS and AEHF procurement program elements fund the mission unique software and databases for the WGS Block II Follow-On satellites and the AEHF 4-6 satellites, respectively.

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

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Wideband Global SATCOM (Space) weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392F and 1206398F.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 1206433F / *Wideband Global SATCOM (SPACE)*

B. Program Change Summary ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	41.632	14.263	4.000	0.000	4.000
Current President's Budget	73.901	14.263	3.970	0.000	3.970
Total Adjustments	32.269	0.000	-0.030	0.000	-0.030
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	-5.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	40.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-2.731	0.000			
• Other Adjustments	0.000	0.000	-0.030	0.000	-0.030

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2017	FY 2018
Project: 657107: *WGS Space Systems Resiliency Upgrade*		
Congressional Add: *COMSATCOM Pilot Program, Phase 2*	10.000	0.000
Congressional Add: *COMSATCOM Pathfinder #3*	28.977	0.000
Congressional Add Subtotals for Project: 657107	38.977	0.000
Congressional Add Totals for all Projects	38.977	0.000

Change Summary Explanation

FY2017:
-$5.0M Congressional directed reduction for prior year carryover
+$40.0M Congressional adds: $10.0M for COMSATCOM Pilot Program, +$30.0M transferred from SPAF, GAP000/Wideband Gapfiller Satellite (SPACE) PE 1203600F to RDT&E, PE 1206433F for COMSATCOM Pathfinder #3
FY2019: -$0.030M Inflation adjustment

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206433F / *Wideband Global SATCOM (SPACE)*	Project (Number/Name) 657102 / *Command & Control Sys-Consolidated (CCS-C)*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
657102: *Command & Control Sys-Consolidated (CCS-C)*	-	11.800	4.263	3.970	0.000	3.970	1.920	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Military Satellite Communications (MILSATCOM) Command and Control System-Consolidated (CCS-C) system provides integrated launch and on-orbit command and control (C2) functionality at Schriever AFB and Vandenberg AFB for MILSATCOM satellites. Schriever AFB is used for primary operations and Vandenberg AFB is used for backup operations. CCS-C uses modified commercial off the shelf hardware/software to control emerging and legacy MILSATCOM systems including Milstar, Defense Satellite Communications System (DSCS), Wideband Global SATCOM (WGS) and Advanced Extremely High Frequency (AEHF) satellites.

The CCS-C project 657102 funds system architecture evolution to provide increased performance for additional satellites and to comply with DoD, Air Force, and AFSPC-directed standards for Information Assurance, Satellite Control Standardization, and Net-Readiness. This continuing effort was previously funded in the FY14PB and prior as an Acquisition Category II (ACAT II) program. With the 10 October 2013 Final Operational Capability (FOC) declaration, the program has transitioned to an ACAT III program, the Command and Control System-Consolidated Assurance and Capability Enhancement (CACE), beginning FY2014. The WGS and AEHF procurement program elements fund the mission unique software and databases for the WGS Block II Follow-On satellites and the AEHF 4-6 satellites, respectively.

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: CCS-C development	11.800	4.263	3.970
Description: Develop system architecture to provide enhanced C2 of MILSATCOM satellites.			
FY 2018 Plans: Continue to execute implementation, integration, and conduct test verification activities for all CCS-C modifications. Continue to manage the operational CCS-C & CACE baseline throughout testing activities. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, and contract actions.			
FY 2019 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 1206433F / *Wideband Global SATCOM (SPACE)*	**Project (Number/Name)** 657102 / *Command & Control Sys-Consolidated (CCS-C)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Continue to execute implementation, integration, and conduct test verification activities for all CCS-C modifications. Continue to execute Development Test and initiate Operational Test at Schriever AFB. Continue to manage the operational CCS-C & CACE baseline throughout testing activities. Continue program office support and other related support activities. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, prototyping, etc. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** FY2019 decreased compared to FY2018 by $0.293M. Justification for this decrease is described in plans above.			
Accomplishments/Planned Programs Subtotals	11.800	4.263	3.970

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• SPAF 01 Line Item MILSAT: *Milsatcom Space*	0.272	0.277	0.000	-	0.000	0.000	0.000	0.000	-	0.000	0.549
• SPAF 01 Line Item GAP000: *Wideband Global System Procurement*	0.000	0.208	0.000	-	0.000	0.000	0.000	0.000	-	0.000	0.208

Remarks

D. Acquisition Strategy

Competitive contract was awarded in November 2012 and began performance in January 2013. The CCS-C Production and Sustainment Contract (CPASC) includes effort to increase the capability of the CCS-C system to provide ongoing C2, launch readiness support, and anomaly resolution for MILSATCOM satellite families. The CCS-C project 657102 funds system architecture evolution to provide increased performance for additional satellites and to comply with DoD, Air Force, and AFSPC-directed standards for Information Assurance, Satellite Control Standardization, and Net-Readiness.

E. Performance Metrics

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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 1206433F / *Wideband Global SATCOM (SPACE)*	**Project (Number/Name)** 657102 / *Command & Control Sys-Consolidated (CCS-C)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Production and Sustainment Contract	C/FPIF	Kratos : San Diego, CA	-	10.154	Oct 2016	2.619	Oct 2017	2.423		-		2.423	Continuing	Continuing	-
Technical Mission Analysis	C/Various	Aerospace : El Segundo, CA	-	0.000	Oct 2016	0.192	Oct 2017	0.195		-		0.195	Continuing	Continuing	-
Enterprise SE&I	C/CPIF	LinQuest : Los Angeles, CA	-	0.457	Oct 2016	0.236	Oct 2017	0.240		-		0.240	Continuing	Continuing	-
		Subtotal	-	10.611		3.047		2.858		-		2.858	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	Various	Aerospace : El Segundo, CA	-	0.000	Oct 2016	0.398	Oct 2017	0.382		-		0.382	Continuing	Continuing	-
A&AS	Various	Various : Various	-	1.183	Oct 2016	0.768	Oct 2017	0.680		-		0.680	Continuing	Continuing	-
Other Support	Various	Various : Various	-	0.006	Oct 2016	0.050	Oct 2017	0.050		-		0.050	Continuing	Continuing	-
		Subtotal	-	1.189		1.216		1.112		-		1.112	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	11.800		4.263		3.970		-		3.970	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 1206433F / *Wideband Global SATCOM (SPACE)*	**Project (Number/Name)** 657102 / *Command & Control Sys-Consolidated (CCS-C)*

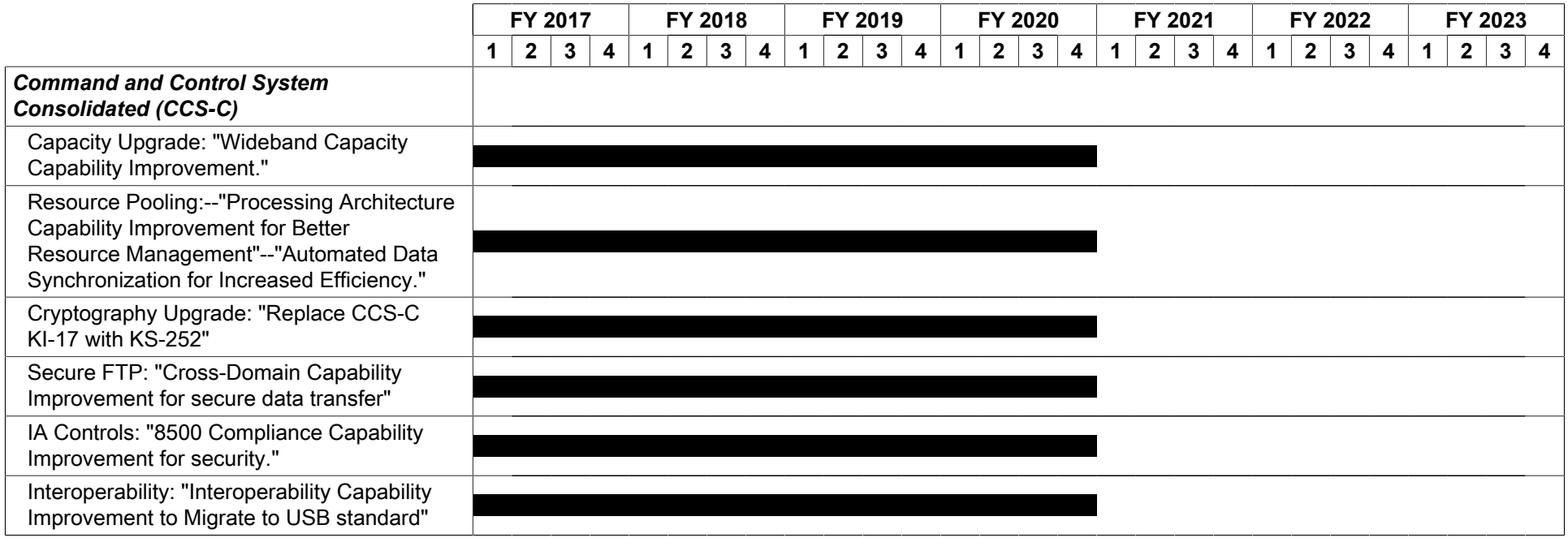

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 1206433F / *Wideband Global SATCOM (SPACE)*	**Project (Number/Name)** 657102 / *Command & Control Sys-Consolidated (CCS-C)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Command and Control System Consolidated (CCS-C)				
Capacity Upgrade: "Wideband Capacity Capability Improvement."	1	2017	4	2020
Resource Pooling:--"Processing Architecture Capability Improvement for Better Resource Management"--"Automated Data Synchronization for Increased Efficiency."	1	2017	4	2020
Cryptography Upgrade: "Replace CCS-C KI-17 with KS-252"	1	2017	4	2020
Secure FTP: "Cross-Domain Capability Improvement for secure data transfer"	1	2017	4	2020
IA Controls: "8500 Compliance Capability Improvement for security."	1	2017	4	2020
Interoperability: "Interoperability Capability Improvement to Migrate to USB standard"	1	2017	4	2020

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206433F / *Wideband Global SATCOM (SPACE)*	Project (Number/Name) 657107 / *WGS Space Systems Resiliency Upgrade*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
657107: *WGS Space Systems Resiliency Upgrade*	-	62.101	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Wideband Global SATCOM (WGS) System provides the DoD with high data rate military satellite communications (MILSATCOM) services in accordance with the Joint Space Management Board-approved MILSATCOM architecture (August 1996), the Joint Requirements Oversight Council (JROC)-approved MILSATCOM Capstone Requirements Document (October 1997), and JROC-approved WGS Operational Requirements Document (May 2000). This program was originally conceived to augment the near-term "bandwidth gap" in warfighter communications needs. Dual-frequency WGS satellites augment, then replace the DoD's Defense Satellite Communications System X-band service and augment one-way Global Broadcast Service Ka-band capabilities. In addition, WGS provides a high capacity two-way Ka-band service.

All WGS Block I (Satellites 1-3), Block II (Satellites 4-6), and the first Block II Follow-on (Satellite 7) have been launched and are operational. Satellites 8-9 successfully launched on 7 December 2016 and 18 March 2017, respectively. With the operation of WGS-5, the constellation has global coverage and Full Operational Capability (FOC) was declared on 12 May 2014. Project 657107, WGS Space Systems Resiliency Upgrade, is an Acquisition Category III (ACAT III) effort. The WGS resiliency upgrade will enable the WGS system to both locate and neutralize ground-based jamming threats to the X-band.

The Commercial SATCOM (COMSATCOM) Pilot Program consists of three phases. Pilot Phase I was awarded in April 2017, Pilot Phase II is expected to be awarded 2Qtr FY18 and Pilot Phase III 4Qtr FY18. These efforts will demonstrate the feasibility and utility of the DoD using order-of-magnitude SATCOM capability improvements advertised by commercial companies.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: WGS Upgrade	21.624	0.000	0.000
Description: Upgrade WGS system to both locate and neutralize ground-based jamming threats.			
FY 2018 Plans: N/A			
FY 2019 Plans: N/A			
FY 2018 to FY 2019 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 1206433F / *Wideband Global SATCOM (SPACE)*	**Project (Number/Name)** 657107 / *WGS Space Systems Resiliency Upgrade*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
N/A			
Title: Wideband AoA ***Description:*** Analysis of alternatives for a follow-on wideband communications system to the WGS system. ***FY 2018 Plans:*** N/A ***FY 2019 Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** N/A	1.500	0.000	0.000
Title: COMSATCOM Pilot Program ***Description:*** The COMSATCOM Pilot Program will be conducted in 3 Phases. Pilot Phase 1 will study future wideband SATCOM architecture. Pilot Phase 2 will develop and demonstrate a Flexible Modem Interface (FMI). Pilot Phase 3 will conduct end-to-end demonstrations of order-of-magnitude improvements in SATCOM capability, affordability, and resiliency. ***FY 2018 Plans:*** Implement flexible modem/terminal interface and centralized management process enabling demonstration of order of magnitude improvements in commercial satellite communications. ***FY 2019 Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** FY 2019 decrease compared to FY 2018 by $10.0M. Justification for this decrease is described in plans above.	0.000	10.000	0.000
Accomplishments/Planned Programs Subtotals	23.124	10.000	0.000

	FY 2017	FY 2018
Congressional Add: COMSATCOM Pilot Program, Phase 2 ***FY 2017 Accomplishments:*** N/A ***FY 2018 Plans:*** N/A	10.000	0.000
Congressional Add: COMSATCOM Pathfinder #3	28.977	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 1206433F / *Wideband Global SATCOM (SPACE)*	**Project (Number/Name)** 657107 / *WGS Space Systems Resiliency Upgrade*

	FY 2017	FY 2018
FY 2017 Accomplishments: N/A ***FY 2018 Plans:*** N/A		
Congressional Adds Subtotals	38.977	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• SPAF 01 Line Item GAP000: *Wideband Global System Procurement*	48.772	80.849	61.606	-	61.606	0.000	0.000	0.000	-	0.000	191.227

Remarks

D. Acquisition Strategy

The Wideband Global SATCOM (WGS) Space Systems Resiliency Upgrade will be accomplished by modifying the WGS Block II Follow-On (B2FO) Firm Fixed Price (FFP) contract definitized in August 2010. The B2FO contract currently provides development, production, and deployment of WGS satellites 7-10. The COMSATCOM Pilot Program Phase II will be awarded under Other Transaction Authority (OTA) to multiple vendors.

E. Performance Metrics

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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 1206433F / *Wideband Global SATCOM (SPACE)*	**Project (Number/Name)** 657107 / *WGS Space Systems Resiliency Upgrade*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
WGS Upgrade: X-band Anti-jam enhancement	SS/FFP	The Boeing Company : El Segundo, CA	-	20.260	Jan 2017	-		-		-		-	Continuing	Continuing	55.560
Technical Mission Analysis	Various	Aerospace : El Segundo, CA	-	0.707	Feb 2017	2.000	Nov 2017	-		-		-	Continuing	Continuing	-
Lincoln Labs (COMSATCOM Pilot Program)	Various	Lincoln Labs : Lexington, MA	-	0.000		7.800	Apr 2018	-		-		-	Continuing	Continuing	-
Wideband Analysis of Alternatives (AoA)	Various	Multiple : Multiple	-	1.500	Jun 2017	-		-		-		-	Continuing	Continuing	-
Congressional Add: COMSATCOM Pilot Program, Phase 2	TBD	TBD : TBD	-	10.000	Jan 2018	-		-		-		-	Continuing	Continuing	-
Congressional Add: COMSATCOM Pathfinder #3	SS/FFP	ARDEC : Washington, DC	-	28.977	Dec 2017	-		-		-		-	Continuing	Continuing	-
		Subtotal	-	61.444		9.800		-		-		-	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	Various	Aerospace : El Segundo, CA	-	0.069	May 2017	-		-		-		-	Continuing	Continuing	6.180
Other Support	Various	Various : Various	-	0.588	Dec 2016	0.200	Oct 2017	-		-		-	Continuing	Continuing	1.200
		Subtotal	-	0.657		0.200		-		-		-	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	62.101		10.000		-		-		-	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206433F / *Wideband Global SATCOM (SPACE)*	Project (Number/Name) 657107 / *WGS Space Systems Resiliency Upgrade*	

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

FY16 Lincoln Labs (COMSATCOM Pilot Program) Subcontractors: Boeing, Northrop Grumman, Space Systems-Loral, Hughes, KRATOS, and ViaSat

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 1206433F / *Wideband Global SATCOM (SPACE)*	**Project (Number/Name)** 657107 / *WGS Space Systems Resiliency Upgrade*

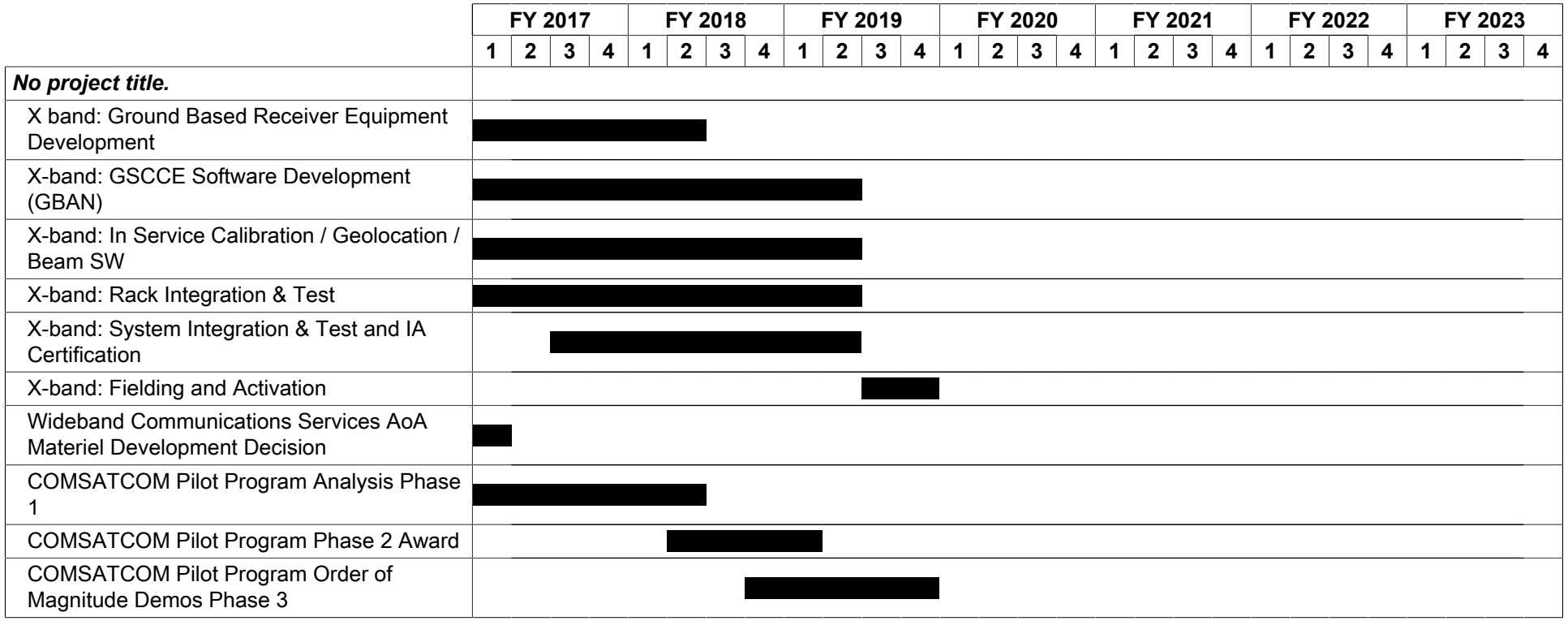

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 1206433F / *Wideband Global SATCOM (SPACE)*	**Project (Number/Name)** 657107 / *WGS Space Systems Resiliency Upgrade*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
No project title.				
X band: Ground Based Receiver Equipment Development	1	2017	2	2018
X-band: GSCCE Software Development (GBAN)	1	2017	2	2019
X-band: In Service Calibration / Geolocation / Beam SW	1	2017	2	2019
X-band: Rack Integration & Test	1	2017	2	2019
X-band: System Integration & Test and IA Certification	3	2017	2	2019
X-band: Fielding and Activation	3	2019	4	2019
Wideband Communications Services AoA Materiel Development Decision	1	2017	1	2017
COMSATCOM Pilot Program Analysis Phase 1	1	2017	2	2018
COMSATCOM Pilot Program Phase 2 Award	2	2018	1	2019
COMSATCOM Pilot Program Order of Magnitude Demos Phase 3	4	2018	4	2019