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Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>					R-1 Program Element (Number/Name) PE 0605433F / <i>WIDEBAND GLOBAL SATCOM (SPACE)</i>							
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	-	11.674	31.328	56.343	-	56.343	44.116	20.266	-	-	-	163.727
657102: <i>Command and Control Sys-Consolidated (CCS-C)</i>	-	11.674	16.328	8.660	-	8.660	18.320	20.266	-	-	-	75.248
657107: <i>WGS Space Systems Resiliency Upgrade</i>	-	-	15.000	47.683	-	47.683	25.796	-	-	-	-	88.479

A. Mission Description and Budget Item Justification

The Wideband Global SATCOM (WGS) System provides DoD users with high data rate military satellite communications (MILSATCOM) services in accordance with the Joint Space Management-approved MILSATCOM architecture (Aug 96), the Joint Requirements Oversight Council (JROC)-approved MILSATCOM Capstone Requirements Document (Oct 97), and the JROC-approved WGS Operational Requirements Document (May 00). Dual-frequency WGS satellites augment, then replace the DoD's Defense Satellite Communications System (DSCS) X-band service and augment one-way Global Broadcast Service Ka-band capabilities. In addition, WGS provides a new high capacity two-way Ka-band service.

All WGS Block I (Satellites 1-3) and Block II (Satellites 4-6) have been launched and are operational. 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 both X-band and Ka-band.

The MILSATCOM Command and Control System-Consolidated (CCS-C) system provides integrated launch and on-orbit command and control (C2) functionality, and backup operations at Schriever AFB and Vandenberg AFB, for MILSATCOM satellites as the legacy capability provided by the Air Force Satellite Control Network (PE 0305110F) has phased out according to plan. CCS-C uses modified commercial off the shelf hardware/software to control emerging and legacy MILSATCOM systems including Milstar, DSCS, 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 ACAT II program. With the 10 October 2013 FOC declaration, the program has transitioned to an ACAT III 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.

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

The FY2016 funding request was reduced by \$5.397 million to account for the availability of prior execution balances.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force				Date: February 2015	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		PE 0605433F I WIDEBAND GLOBAL SATCOM (SPACE)			
B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	12.489	31.425	41.615	-	41.615
Current President's Budget	11.674	31.328	56.343	-	56.343
Total Adjustments	-0.815	-0.097	14.728	-	14.728
• Congressional General Reductions	-	-0.097			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.815	-			
• Other Adjustments	-	-	14.728	-	14.728
Change Summary Explanation					
FY2016 net change is +\$14.728M which is composed of the following: +\$23.0M for the WGS Ka-band anti-jam enhancement, -\$2.5M for reduced number of modifications incorporated into CCS-C software, -\$5.397M to account for the availability of prior execution balances, and -\$0.375M inflation adjustment					

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force									Date: February 2015			
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0605433F / WIDEBAND GLOBAL SATCOM (SPACE)				Project (Number/Name) 657102 / Command and Control Sys-Consolidated (CCS-C)			
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
657102: Command and Control Sys-Consolidated (CCS-C)	-	11.674	16.328	8.660	-	8.660	18.320	20.266	-	-	-	75.248
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, and backup operations at Schriever AFB and Vandenberg AFB, for MILSATCOM satellites as the legacy capability provided by the Air Force Satellite Control Network (PE 0305110F) has phased out according to plan. 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 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.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2014	FY 2015	FY 2016	
Title: CCS-C development									11.674	16.328	8.660	
Description: Develop system architecture to provide enhanced C2 of MILSATCOM satellites.												
FY 2014 Accomplishments: Funded engineering studies to explore/define architecture evolution prototypes for risk reduction, addition of new cross-domain capability, enhancement of Information Assurance posture, integration and testing of upgraded ground based cryptologic equipment, and initiation of architecture changes to increase WGS capacity and reduce system downtime.												
FY 2015 Plans: Continue CCS-C contract to implement new Cross-Domain Solution and Host Based Security System to enhance Information Assurance posture; upgrade, integrate, and test new cryptologic equipment; and implement new architecture changes to increase WGS capacity, reduce system downtime, and decrease O&M costs. Conduct Preliminary Design Review (PDR).												
FY 2016 Plans:												

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force								Date: February 2015			
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0605433F / <i>WIDEBAND GLOBAL SATCOM (SPACE)</i>				Project (Number/Name) 657102 / <i>Command and Control Sys-Consolidated (CCS-C)</i>			

B. Accomplishments/Planned Programs (\$ in Millions)							FY 2014	FY 2015	FY 2016
Execute CCS-C modifications to implement new Cross-Domain Solution and Host Based Security System to enhance Information Assurance posture; upgrade, integrate, and test new cryptologic equipment; and implement new architecture changes to increase WGS capacity, reduce system downtime, and decrease O&M costs. Conduct Critical Design Review (CDR).									
Accomplishments/Planned Programs Subtotals							11.674	16.328	8.660

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
• OPAF: BA03: Line Item # 836780: <i>Milsatcom Space</i>	0.261	0.265	0.271	-	0.271	0.276	0.280	0.285	-	-	1.638
• MPAF: BA05: Line Item # ADV555: <i>Advanced EHF</i>	2.350	3.670	1.890	-	1.890	2.338	-	-	-	-	10.248
• MPAF: BA05: Line Item # GAP000: <i>Wideband Global System Procurement</i>	-	5.609	2.083	-	2.083	2.083	-	-	-	-	11.114

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.

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.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force												Date: February 2015			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0605433F / <i>WIDEBAND GLOBAL SATCOM (SPACE)</i>						Project (Number/Name) 657102 / <i>Command and Control Sys-Consolidated (CCS-C)</i>			
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Production and Sustainment Contract	C/FPIF	Kratos : San Diego, CA	-	8.852	May 2014	11.198	Oct 2014	3.535	Oct 2015	-		3.535	Continuing	Continuing	TBD
Subtotal			-	8.852		11.198		3.535		-		3.535	-	-	-
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CCS-C Systems Engineering and Integration (SE&I)	C/CPIF	LinQuest : Los Angeles, CA	-	0.889	Mar 2014	0.794	Oct 2014	0.723	Oct 2015	-		0.723	Continuing	Continuing	TBD
Subtotal			-	0.889		0.794		0.723		-		0.723	-	-	-
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CCS-C Program Support Cost (PMA)	Various	Various : Various,	-	1.933	May 2014	4.336	Oct 2014	4.402	Oct 2015	-		4.402	Continuing	Continuing	TBD
Subtotal			-	1.933		4.336		4.402		-		4.402	-	-	-
Project Cost Totals			Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
			-	11.674		16.328		8.660		-		8.660	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force							Date: February 2015			
Appropriation/Budget Activity 3600 / 5			R-1 Program Element (Number/Name) PE 0605433F / <i>WIDEBAND GLOBAL SATCOM (SPACE)</i>			Project (Number/Name) 657102 / <i>Command and Control Sys-Consolidated (CCS-C)</i>				
	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract	
Remarks										

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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force	Date: February 2015
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Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605433F / <i>WIDEBAND GLOBAL SATCOM (SPACE)</i>	Project (Number/Name) 657102 / <i>Command and Control Sys-Consolidated (CCS-C)</i>
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	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Capacity Upgrade: "Wideband Capacity Capability Improvement."																												
Resource Pooling:--"Processing Architecture Capability Improvement for Better Resource Management" --"Automated Data Synchronization for Increased Efficiency."																												
Cryptography Upgrade: "Replace CCS-C KI-17 with KS-252"																												
Interoperability: "Interoperability Capability Improvement to Migrate to USB standard"																												
Secure FTP: "Cross-Domain Capability Improvement for secure data transfer"																												
IA Controls: "8500 Compliance Capability Improvement for security."																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force			Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605433F / <i>WIDEBAND GLOBAL SATCOM (SPACE)</i>	Project (Number/Name) 657102 / <i>Command and Control Sys-Consolidated (CCS-C)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Capacity Upgrade: "Wideband Capacity Capability Improvement."	1	2015	4	2018
Resource Pooling:--"Processing Architecture Capability Improvement for Better Resource Management" --"Automated Data Synchronization for Increased Efficiency."	1	2015	4	2018
Cryptography Upgrade: "Replace CCS-C KI-17 with KS-252"	1	2015	4	2018
Interoperability: "Interoperability Capability Improvement to Migrate to USB standard"	1	2017	4	2018
Secure FTP: "Cross-Domain Capability Improvement for secure data transfer"	1	2015	4	2018
IA Controls: "8500 Compliance Capability Improvement for security."	1	2015	4	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0605433F / WIDEBAND GLOBAL SATCOM (SPACE)				Project (Number/Name) 657107 / WGS Space Systems Resiliency Upgrade			
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
657107: WGS Space Systems Resiliency Upgrade	-	-	15.000	47.683	-	47.683	25.796	-	-	-	-	88.479
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) and Block II (Satellites 4-6) have been launched and are operational. 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 both X-band and Ka-band. FY15 funds initiated an X-band ground based anti-jam development. FY16 PB adds funding for a Ka-band ground based anti-jam development.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2014	FY 2015	FY 2016
Title: WGS Upgrade	-	15.000	47.683
Description: Upgrade WGS system to both locate and neutralize ground-based jamming threats.			
FY 2014 Accomplishments: Not Applicable.			
FY 2015 Plans: Funds System Requirements Definition, and initial Ground Based Receiver Equipment Development for X-band.			
FY 2016 Plans: X-band: continues Ground Based Receiver Equipment Development, Global SATCOM Command and Control Element (GSCCE) Software (SW) Development (GBAN), Random Access Memory (RAM) Patch Development, In Service Calibration/Geolocation/Beam SW, and initial Rack Integration and Test (I&T).			

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force								Date: February 2015			
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0605433F / <i>WIDEBAND GLOBAL SATCOM (SPACE)</i>				Project (Number/Name) 657107 / <i>WGS Space Systems Resiliency Upgrade</i>			
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2014	FY 2015	FY 2016	
Ka-band: anti-jam development; covers system requirements definition and initial ground based receiver equipment development.											
Accomplishments/Planned Programs Subtotals								-	15.000	47.683	
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
• MPAF: BA05: Line Item # GAP000: <i>Wideband Global System Procurement</i>	33.998	36.071	53.476	-	53.476	65.397	48.310	11.220	-	-	3,203.649
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 and beyond.											
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.											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force												Date: February 2015			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0605433F / WIDEBAND GLOBAL SATCOM (SPACE)				Project (Number/Name) 657107 / WGS Space Systems Resiliency Upgrade					
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
WGS Upgrade	SS/FFP	The Boeing Company : El Segundo, CA	-	-		13.700	Mar 2015	46.040	Oct 2015	-		46.040	Continuing	Continuing	52.620
Subtotal			-	-		13.700		46.040		-		46.040	-	-	52.620
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
WGS FFRDC (PMA)	Various	Aerospace : El Segundo, CA	-	-		1.000	Feb 2015	0.689	Oct 2015	-		0.689	Continuing	Continuing	6.180
Business Operating Support Services & Acquisition Mission Support (PMA)	Various	Various : ,	-	-		0.300	Feb 2015	0.954	Nov 2015	-		0.954	Continuing	Continuing	1.200
Subtotal			-	-		1.300		1.643		-		1.643	-	-	7.380

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Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0605433F / WIDEBAND GLOBAL SATCOM (SPACE)					Project (Number/Name) 657107 / WGS Space Systems Resiliency Upgrade					
			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			-	-		15.000		47.683		-		47.683	-	-	60.000

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force										Date: February 2015			
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0605433F / <i>WIDEBAND GLOBAL SATCOM (SPACE)</i>					Project (Number/Name) 657107 / <i>WGS Space Systems Resiliency Upgrade</i>			

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Contract Award (X-band)																												
Ground Based Receiver Equipment Development																												
GSCCE Software Development (GBAN)																												
RAM Patch Development																												
In Service Calibration / Geolocation / Beam SW																												
Rack Integration & Test																												
Fielding and Activation																												
Contract Award (Ka-band)																												
Ground Based Receiver Equipment Development (Ka)																												
GSCCE Software Development (GBAN) (Ka)																												
RAM Patch Development (Ka)																												
Geolocation / Beam Pointing SW (Ka)																												
Rack Integration & Test (Ka)																												
System Integration & Test and IA Certification (Ka)																												
Fielding and Activation (Ka)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force			Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605433F / <i>WIDEBAND GLOBAL SATCOM (SPACE)</i>	Project (Number/Name) 657107 / <i>WGS Space Systems Resiliency Upgrade</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Contract Award (X-band)	3	2015	3	2015
Ground Based Receiver Equipment Development	4	2015	3	2016
GSCCE Software Development (GBAN)	1	2016	3	2016
RAM Patch Development	1	2016	3	2016
In Service Calibration / Geolocation / Beam SW	2	2016	4	2016
Rack Integration & Test	4	2016	2	2017
Fielding and Activation	3	2017	2	2018
Contract Award (Ka-band)	1	2016	1	2016
Ground Based Receiver Equipment Development (Ka)	2	2016	1	2017
GSCCE Software Development (GBAN) (Ka)	2	2016	1	2017
RAM Patch Development (Ka)	3	2016	2	2017
Geolocation / Beam Pointing SW (Ka)	3	2016	2	2017
Rack Integration & Test (Ka)	2	2017	3	2017
System Integration & Test and IA Certification (Ka)	2	2017	4	2017
Fielding and Activation (Ka)	3	2017	1	2018