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 0305110F / *Satellite Control Network (SPACE)*							
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	-	34.488	20.806	7.879	-	7.879	21.385	15.572	15.865	16.148	Continuing	Continuing
673276: *Satellite Control Network*	-	34.488	20.806	7.879	-	7.879	21.385	15.572	15.865	16.148	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Air Force Satellite Control Network (AFSCN) is a satellite ground terminal network comprised of two communication nodes and 15 antenna systems. The antennas are distributed around the globe at seven locations to ensure global coverage for 170 satellites in various orbits. The AFSCN conducts an average of 450 satellite contacts per day supporting Positioning, Navigation and Timing (PNT); Intelligence, Surveillance and Reconnaissance (ISR); Missile Warning; Communications; Weather; Launch Vehicle Support; Research and Development (R&D) in support of Department of Defense (DoD), Intelligence Community (IC), and National Aeronautics and Space Administration (NASA) operations. While most of the 450 satellite contacts/day are routine command and control activities, the AFSCN is also used for satellite emergencies (e.g. tumbling satellite) because its high power antennas are often the only earthbound assets that can contact a non-responsive satellite to re-establish command & control. In FY14 alone, the AFSCN supported 17 space vehicle emergencies resulting in the preservation of $6B worth of satellites. In addition to routine and emergency satellite operations C2, the AFSCN provides support to launch vehicle and early orbit operations, ensuring worldwide antennas receive telemetry as the rocket travels through the atmosphere and transmit commands to a newly orbiting satellite to initiate early orbit checkout. Finally, the AFSCN provides Factory Compatibility Testing (FCT) to ensure satellites and rockets can communicate via the AFSCN before the satellite is launched. These funds are used to develop next-generation tools to improve the AFSCN and ensure the capability is available to support DoD, Intelligence, and civil users.

MISSION PLANNING UPGRADE: The Air Force will complete the Electronic Scheduling and Dissemination (ESD) 3.0 program, modernizing worldwide antenna system scheduling to support all 170 satellites. Satellite operators will be able to request contact time with their satellites via the shared AFSCN antennas and ESD 3.0 will deconflict overlapping requests, create a schedule, and publish real-time to all users. FY16 funds support ESD follow-on capability along with deferred network cyber security requirements.

SATELLITE ANOMALY RECOVERY AND SUPPORT UPGRADE: The Air Force will complete development testing of the enhanced High Power Amplifier (EHPA) first article. The AFSCN is in jeopardy of losing the emergency high power satellite contact capability due to obsolete parts used in the legacy AFSCN system. The EHPA program will develop a new high power amplifier that resolves the obsolescence issue well into the 2020's. FY16 funds support the transition and operational turn-over of the first EHPA.

UNIFIED S-BAND UPGRADE: The Air Force is adjusting the AFSCN for spectrum-sharing with industry and demonstrating the ability to migrate away from the current L-Band uplink / S-Band downlink spectrum to the Unified S-Band (USB) spectrum. RDT&E funds support a first article integration of USB into the AFSCN baseline to begin supporting factory compatibility testing.

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
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This program is in 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.

The FY2016 funding request was reduced by $6.206 million to account for the availability of prior execution balances.

B. Program Change Summary ($ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	35.657	20.806	14.085	-	14.085
Current President's Budget	34.488	20.806	7.879	-	7.879
Total Adjustments	-1.169	-	-6.206	-	-6.206
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.169	-			
• Other Adjustments	-	-	-6.206	-	-6.206

Change Summary Explanation

FY16: The FY2016 funding request was reduced by $6.206 million to account for the availability of prior execution balances.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Title: Remote Tracking Station (RTS) Block Change (RBC)	4.695	4.112	4.157
Description: RBC development replaces outdated, unique RTS equipment with standardized equipment and technology to reduce failures and enhance sustainability.			
FY 2014 Accomplishments: Began development of the Enhanced High Power Amplifier (EHPA) project in preparation for Preliminary Design Review.			
FY 2015 Plans: Continue Enhanced High Power Amplifier (EHPA) development through Critical Design Review and initial developmental testing. Provides Program Management Administration costs to execute the RBC upgrade effort.			
FY 2016 Plans: Continue Enhanced High Power Amplifier (EHPA) development through developmental testing and fielding. Provides Program Management Administration costs to execute the RBC upgrade effort. Analyze and begin development of modifications to address			

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
highest priority deferred AFSCN requirements which include, but are not limited to, RBC cybersecurity enhancements and RBC Automation critical to the continued availability of the RBC system.			
Title: Unified S-band (USB) uplink ***Description:*** Develop First Article Demonstration of USB uplink transmitter to enable commanding of satellites using USB frequency in addition to the legacy L-band frequency uplink commanding. Also provides FFRDC (Aerospace) support. ***FY 2014 Accomplishments:*** Prepared for Preliminary Design and Critical Design Reviews. ***FY 2015 Plans:*** Complete Preliminary and Critical Design Reviews; integrate and install hardware and software. Test USB with critical DOD users and conduct project completion and close-out. ***FY 2016 Plans:*** N/A	10.277	6.050	-
Title: Systems Engineering ***Description:*** Provide test, Information Assurance (IA), requirements management, and system architecture support to the AFSCN. Also provides FFRDC (Aerospace) support. ***FY 2014 Accomplishments:*** Provided test, IA, and work package planning for RBC electronics core activities; monitored RTS performance at RBC sites; continued future requirements development; update AFSCN architecture roadmap; perform Systems Engineering and Integration (SE&I) activites in support of the AFSCN. ***FY 2015 Plans:*** Provide test, IA, and work package planning for RBC electronics core activities; resolve design deficiencies; monitor RTS performance at RBC sites; continue future requirements development; update AFSCN architecture roadmap; perform Systems Engineering and Integration (SE&I) activites in support of the AFSCN. ***FY 2016 Plans:*** Provide test, IA, and work package planning for RBC electronics core activities; monitor RTS performance at RBC sites; continue future requirements development; update AFSCN architecture roadmap; perform Systems Engineering and Integration (SE&I) activites in support of the AFSCN.	1.954	1.499	2.904
Title: Electronic Scheduling and Dissemination System (ESD) 3.0	17.562	9.145	0.818

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Description: Develop an upgrade for the aging, increasingly-unsustainable resource scheduling system needed to coordinate and manage satellite supports using the AFSCN antennas. Also provides FFRDC (Aerospace) support. ***FY 2014 Accomplishments:*** Completed Segment Verification testing and final software builds. ***FY 2015 Plans:*** Complete developmental and initiate operational testing. ***FY 2016 Plans:*** Complete operational testing. Deliver ESD 3.0 to operations.			
Accomplishments/Planned Programs Subtotals	34.488	20.806	7.879

D. 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 # 836760: *AF Satellite Control Network Space*	19.863	54.636	76.673	-	76.673	61.563	46.525	39.665	48.297	Continuing	Continuing

Remarks

Procures the mission critical electronics and telecommunications equipment to upgrade the aging AFSCN Range and Network Operations segments.

E. Acquisition Strategy

RDT&E efforts focus on completing upgrades as well as future architectures and studies to ensure the best use of investment funding. The SE&I contractor maintains the DoD Architecture Framework (DoDAF) architecture and requirements baseline for Government approval and may perform studies to determine Government options. Limited RDT&E will be applied to the Consolidated Air Force Satellite Control Network (AFSCN) Modifications, Maintenance, and Operations (CAMMO) contract when sustaining engineering expertise is needed to finalize Government-approved architectures. FFRDC technical depth and breadth will be leveraged to ensure AFSCN modernization efforts are compatible with mission rules and do not pose a risk to safe and cost-effective satellite contacts.

F. 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 0305110F / *Satellite Control Network (SPACE)*	Project (Number/Name) 673276 / *Satellite Control Network*	

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
Satellite Control Network Contract	Various	Honeywell : Colorado Springs, CO	-	31.311	Dec 2013	17.588	Dec 2014	2.670	Dec 2015	-		2.670	Continuing	Continuing	TBD
Systems Engineering and Integration Contract	C/T&M	Leidos : El Segundo, CA	-	1.544	Dec 2013	0.980	Oct 2014	-		-		-	Continuing	Continuing	TBD
System Engineering and Intergration Contract	C/T&M	TBD : El Segundo, CA	-	-		-		2.904	Dec 2015	-		2.904	Continuing	Continuing	TBD
		Subtotal	-	32.855		18.568		5.574		-		5.574	-	-	-

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
		Subtotal	-	-		-		-		-		-	-	-	-

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
FFRDC support to program office management (PMA)	RO	Aerospace Corp : El Segundo, CA	-	1.633	Dec 2013	2.238	Oct 2014	2.305	Oct 2015	-		2.305	Continuing	Continuing	TBD
		Subtotal	-	1.633		2.238		2.305		-		2.305	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force			Date: February 2015
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	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	-	34.488		20.806		7.879		-		7.879	-	-	-

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 0305110F / *Satellite Control Network (SPACE)*	**Project (Number/Name)** 673276 / *Satellite Control Network*

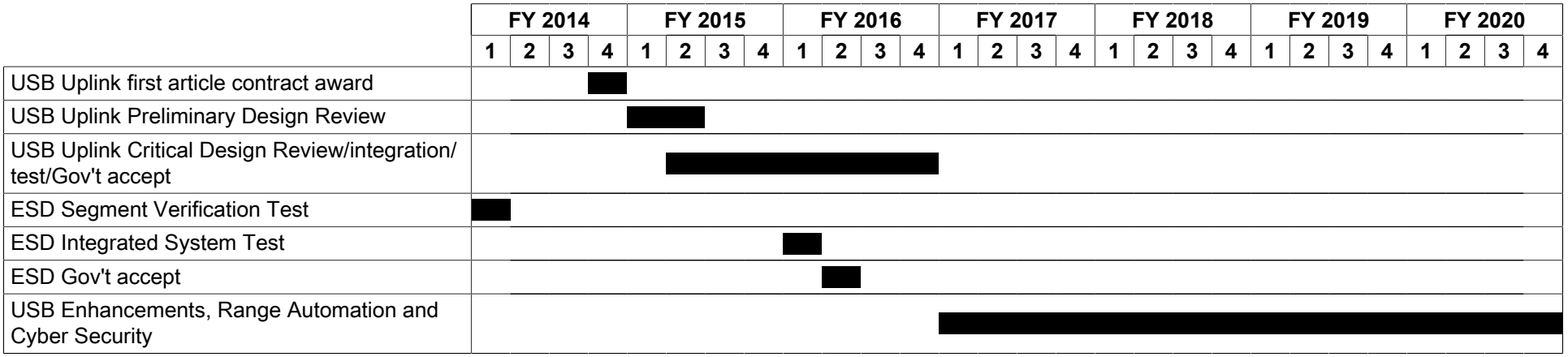

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
USB Uplink first article contract award	4	2014	4	2014
USB Uplink Preliminary Design Review	1	2015	2	2015
USB Uplink Critical Design Review/integration/test/Gov't accept	2	2015	4	2016
ESD Segment Verification Test	1	2014	1	2014
ESD Integrated System Test	1	2016	1	2016
ESD Gov't accept	2	2016	2	2016
USB Enhancements, Range Automation and Cyber Security	1	2017	4	2020