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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 1206431F I Advanced EHF MILSATCOM (SPACE)							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	372.471	208.095	259.131	145.610	0.000	145.610	129.946	47.179	38.773	14.852	Continuing	Continuing
657103: Advanced MILSATCOM	372.471	54.817	31.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	458.295
657104: MILSATCOM Space Modernization Initiative (SMI)	0.000	153.278	228.124	145.610	0.000	145.610	129.946	47.179	38.773	14.852	Continuing	Continuing
Program MDAP/MAIS Code: 261												
Note In FY2018, PE 0605431F, Advanced EHF MILSATCOM efforts were transferred to PE 1206431F, Advanced EHF MILSATCOM due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206431F. In FY 2018, Project 657103, Advanced MILSATCOM, will complete.												
A. Mission Description and Budget Item Justification Develop and acquire Advanced Extremely High Frequency (AEHF) Military Satellite Communications (MILSATCOM) satellites, mission control segment and cryptography for survivable, anti-jam, worldwide, secure communications for the strategic and tactical warfighters. AEHF satellites will replenish the existing EHF system (Milstar) providing much higher capacity and data rate (5x increase over Milstar II) capabilities. AEHF is a cooperative program that includes International Partners (Canada, the United Kingdom, and the Kingdom of the Netherlands). With SV-1 and SV-2 launched and Initial Operational Capability (IOC) declared on 28 July 2015, the AEHF program has completed its development phase and is now addressing obsolescence, ground control enhancements, and operational resiliency issues via MILSATCOM Space Modernization Initiative. Develop and conduct systems engineering, integration and test of the Protected SATCOM Key Management Architecture (PKMA). Enable testing and integration of AEHF Local Key Management functionality within the Key Management Infrastructure (KMI) client with the AEHF system. Initiate PKMA integration activities with the AEHF prime contractor and the Enhanced Polar System (EPS) Control and Planning Segment (CAPS) contractor. FY 2017 was the last year of PKMA funds in Project 657103. MILSATCOM SMI efforts are funded in Project 657104, MILSATCOM Space Modernization Initiative (SMI). The Space Modernization Initiative (SMI) strategy is to evolve current and future Protected MILSATCOM (i.e., strategic, tactical, and polar) systems and develop a more affordable and resilient MILSATCOM enterprise capable of meeting near term and emerging MILSATCOM requirements. A significant thrust for this initiative is to demonstrate technologies and Concepts of Operations (CONOPS) that lead to a future Protected Anti-Jam Tactical SATCOM (PATs) capability that provides tactical-level MILSATCOM users protected, anti-jam satellite communications while operating in a contested environment.												

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Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 1206431F I Advanced EHF MILSATCOM (SPACE)				
<p>A Materiel Development Decision meeting was held in November 2016 to formally initiate the Protected Tactical Enterprise Service (PTES) program. Beginning in FY18, the PTES funds have been transferred from the MILSATCOM SMI project to PE 1206760F.</p> <p>The Protected SATCOM Services (PSCS) Analysis of Alternatives completed and the report was delivered to Congress on 18 April 2016. The AoA concluded that an aggregated satellite proved the most cost effective. Beginning in FY18, the Evolved AEHF funds have been transferred from the MILSATCOM SMI project to PE 1206855F, PSCS - Aggregated. The Evolved Strategic SATCOM (ESS) system being developed under PE 1206855F will include a strategic payload, the capability to integrate a hosted Protected Tactical Waveform (PTW) payload, and on-board resilience features.</p> <p>Beginning in FY18, the hosted PTW payload, a new start effort, will be developed under PE 1206761F, Protected Tactical Service (PTS).</p> <p>The PSCS AoA Follow-on For Resiliency (PAFR) study recommended an Enhanced Polar System (EPS)-like system for midterm (2023-2030) polar tactical coverage as a risk mitigation between EPS and a 2030+ solution. Beginning in FY18, MILSATCOM SMI funds have been transferred to the EPS recapitalization program, funded in PE 1206434F, Midterm Polar MILSATCOM System.</p> <p>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.</p>						
B. Program Change Summary (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget		228.095	259.131	237.784	0.000	237.784
Current President's Budget		208.095	259.131	145.610	0.000	145.610
Total Adjustments		-20.000	0.000	-92.174	0.000	-92.174
• Congressional General Reductions		0.000	0.000			
• Congressional Directed Reductions		0.000	0.000			
• Congressional Rescissions		0.000	0.000			
• Congressional Adds		0.000	0.000			
• Congressional Directed Transfers		0.000	0.000			
• Reprogrammings		-10.000	0.000			
• SBIR/STTR Transfer		-10.000	0.000			
• Other Adjustments		0.000	0.000	-92.174	0.000	-92.174
Change Summary Explanation						
FY2016: -\$10.000M, transferred for higher Air Force priorities						
FY2018: -\$92.174M: -\$119.175, transferred to new Program Elements: 1) PE 1206760F, Protected Tactical Enterprise Service (PTES), 2) PE 1206855F, Protected SATCOM Services Aggregated (PSCS Aggregated), and 3) PE 1206434F, Midterm Polar MILSATCOM; +\$5.000M for AEHF Resiliency; and + \$21.600M for AEHF Mission Control Segment Increment 8.3; and +\$0.401M inflation adjustment						

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 1206431F / Advanced EHF MILSATCOM (SPACE)				Project (Number/Name) 657103 / Advanced MILSATCOM			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
657103: Advanced MILSATCOM	372.471	54.817	31.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	458.295
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note												
As of the December 2015 Selected Acquisition Report, Prior Years dollars total \$7,433.9M and include \$270.5M of International Partners funding.												
A. Mission Description and Budget Item Justification												
Develop and acquire Advanced Extremely High Frequency (AEHF) Military Satellite Communications (MILSATCOM) satellites, mission control segment and cryptography for survivable, anti-jam, worldwide, secure communications for the strategic and tactical warfighters. AEHF satellites will replenish the existing EHF system (Milstar) providing much higher capacity and data rate (5x increase over Milstar II) capabilities.												
AEHF is a cooperative program that includes International Partners (Canada, the United Kingdom, and the Kingdom of the Netherlands).												
AEHF Initial Operational Capability (IOC) was declared on 28 July 2015.												
Advanced EHF and Enhanced Polar System (EPS) Key Management Architectures (KMA) are not compatible with the National Security Agency's new enterprise system, Key Management Infrastructure (KMI). Per the Acquisition Decision Memorandum signed by (USD)AT&L on June 2013, the Air Force shall transition the AEHF and EPS KMA from the Electronic Key Management System (EKMS) to the KMI by March 2018. This funding supports development, acquisition, integration and testing of a Protected SATCOM Key Management Architecture (PKMA) that will replace the legacy EKMS to be compatible with the KMI by March 2018.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2016	FY 2017	FY 2018	
Title: AEHF Key Management Infrastructure (KMI) transition									54.817	31.007	0.000	
Description: Develop and conduct systems engineering, integration and test of the Protected SATCOM Key Management Architecture (PKMA). National Security Agency (NSA) will lead the development of the PKMA centralized elements. Enable testing and integration of AEHF Local Key Management functionality within the KMI client with the AEHF system. Initiate PKMA integration activities with the AEHF prime contractor and the Enhanced Polar System (EPS) Control and Planning Segment (CAPS) contractor.												
FY 2016 Accomplishments:												

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Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 1206431F / Advanced EHF MILSATCOM (SPACE)				Project (Number/Name) 657103 / Advanced MILSATCOM				
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
Transferred funds to NSA to develop Protected SATCOM Key Management Architecture (PKMA) critical factory components (FY2016) and supported Risk Reduction Tests and deficiency resolution of PKMA elements. Started testing AEHF Local Key Management functionality, with the KMI client, and AEHF system.												
FY 2017 Plans: Continue KMI transition. Develop and execute transition and testing with Lead Developmental Test Organization (LDTO), AEHF prime contractor, Lockheed Martin, and EPS CAPS contractor, Northrop Grumman Information Systems. Start operational test period, and transition AEHF & EPS operations to Protected SATCOM Key Management Architecture (PKMA). Begin pre-operational support of PKMA centralized elements.												
FY 2018 Plans: N/A												
Accomplishments/Planned Programs Subtotals										54.817	31.007	0.000
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• SPAF: BA01: Line Item # ADV555: Advanced EHF	327.366	645.569	56.974	0.000	56.974	29.299	31.180	31.742	0.000	0.000	1,122.130	
• RDT&E: BA05: PE 0605433F: Wideband Global SATCOM (Space)	8.249	12.248	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	20.497	
• RDT&E: BA05: PE 1206433F: Wideband Global SATCOM (Space)	0.000	0.000	4.263	0.000	4.263	4.000	1.934	0.000	0.000	0.000	10.197	
Remarks Wideband Global SATCOM (Space) funding is within the Command and Control System - Consolidated (CCS-C) project.												
D. Acquisition Strategy The Advanced MILSATCOM, also known as Advanced EHF (AEHF), program is a sole source acquisition to a contractor team comprised of Lockheed Martin (prime/integrator) and Northrop Grumman (provider of the satellite payload). This team performed the Advanced Component Development and Prototypes (ACD&P) and Systems Development and Demonstration (SDD) of two RDT&E-funded satellites and associated mission command and control ground capabilities under Cost Plus Award Fee line items on the contract. AEHF incorporated lessons learned and improvements from Milstar and commercial SATCOM practices into the next generation EHF secure, anti-jam military communications satellite system.												

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206431F / <i>Advanced EHF MILSATCOM (SPACE)</i>	Project (Number/Name) 657103 / <i>Advanced MILSATCOM</i>
<p>The Protected SATCOM Key Management Architecture (PKMA) acquisition is a software development effort to update DoD secure satellite communication encryption systems and become compatible with the National Security Agency's enterprise Key Management Infrastructure (KMI). The Acquisition Decision Memorandum was signed by USD(AT&L) on 17 June 2013. The prime contractor for the PKMA development under the NSA is Leidos with subcontracts to L3 Communications and General Dynamics. The acquisition strategy is managed by NSA.</p> <p><u>E. Performance Metrics</u></p> <p>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.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1206431F / <i>Advanced EHF MILSATCOM (SPACE)</i>				Project (Number/Name) 657103 / <i>Advanced MILSATCOM</i>					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 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
Crypto Interim Contractor Support	MIPR	Cryptologic Sys Group : San Antonio, TX	10.100	0.000		0.000		0.000		0.000		0.000	0.000	10.100	20.300
AEHF SVs 1-2 and MCS Interim Contractor Support	SS/CPIF	Lockheed Martin : Sunnyvale, CA	214.139	0.000		0.000		0.000		0.000		0.000	0.000	214.139	207.561
GFP - AEHF Calibration Facility (ACF)	Various	Lincoln Labs : Lexington, MA	3.286	0.000		0.000		0.000		0.000		0.000	0.000	3.286	3.286
PKMA MIT/LL Test Support	Various	Lincoln Labs : Lexington, MA	0.200	0.496	Apr 2016	0.509	Apr 2017	0.000		0.000		0.000	0.000	1.205	-
New KMI Component Development	MIPR	NSA : Ft Meade, MD	107.044	38.640	Dec 2015	8.864	Dec 2016	0.000		0.000		0.000	0.000	154.548	158.861
Enterprise SE&I	C/CPIF	Linquest Corp : Los Angeles, CA	1.141	1.662	Jul 2017	1.662	Jul 2018	0.000		0.000		0.000	0.000	4.465	-
NSA Interim Contractor Support	MIPR	NSA : Ft Meade, MD	0.000	0.000		11.089	Dec 2016	0.000		0.000		0.000	0.000	11.089	10.000
Install/Integrate/Test New AEHF KMI Components	SS/CPIF	Lockheed Martin : Sunnyvale, CA	9.804	2.659	Apr 2016	0.000		0.000		0.000		0.000	0.000	12.463	12.464
Install/Integrate/Test New EPS KMI Components	SS/CPIF	Northrop Grumman Information Systems : Redondo Beach, CA	6.959	1.871	Apr 2016	0.000		0.000		0.000		0.000	0.000	8.830	13.442
Test New KMI Hardware/ Software	MIPR	AFLCMC : San Antonio, TX	7.446	4.964	Apr 2016	7.042	Apr 2017	0.000		0.000		0.000	0.000	19.452	21.893
Operational Test Support	Various	17th Test Sqd : Peterson, CO	0.050	0.323	Nov 2015	0.344	Nov 2016	0.000		0.000		0.000	0.000	0.717	-
Subtotal			360.169	50.615		29.510		0.000		0.000		0.000	0.000	440.294	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 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			-	-		-		-		-		-	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force													Date: May 2017		
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1206431F / Advanced EHF MILSATCOM (SPACE)						Project (Number/Name) 657103 / Advanced MILSATCOM			
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 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
Development Test and Evaluation Support	Various	Various : Various	0.250	0.000		0.000		0.000		0.000		0.000	0.000	0.250	-
Subtotal			0.250	0.000		0.000		0.000		0.000		0.000	0.000	0.250	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 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
FFRDC	RO	The Aerospace Corporation : El Segundo, CA	3.146	0.000		0.000		0.000		0.000		0.000	0.000	3.146	-
A&AS	Various	Various : Various	8.830	2.719	Dec 2015	1.417	Dec 2016	0.000		0.000		0.000	0.000	12.966	-
Other Support	Various	Various : Various	0.076	1.483	Oct 2015	0.080	Oct 2016	0.000		0.000		0.000	0.000	1.639	-
Subtotal			12.052	4.202		1.497		0.000		0.000		0.000	0.000	17.751	-
			Prior Years	FY 2016	FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals			372.471	54.817	31.007		0.000		0.000		0.000	0.000	458.295	-	
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			Project (Number/Name)
3600 / 5		PE 1206431F / Advanced EHF MILSATCOM (SPACE)			657103 / Advanced MILSATCOM

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	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
PKMA Development Complete																												
Operations Transition/Acceptance of PKMA																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206431F / <i>Advanced EHF MILSATCOM (SPACE)</i>	Project (Number/Name) 657103 / <i>Advanced MILSATCOM</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
PKMA Development Complete	1	2017	1	2017
Operations Transition/Acceptance of PKMA	2	2018	1	2019

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 1206431F / Advanced EHF MILSATCOM (SPACE)				Project (Number/Name) 657104 / MILSATCOM Space Modernization Initiative (SMI)			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
657104: MILSATCOM Space Modernization Initiative (SMI)	0.000	153.278	228.124	145.610	0.000	145.610	129.946	47.179	38.773	14.852	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Space Modernization Initiative (SMI) strategy is to evolve current and future Protected MILSATCOM systems, replenish the existing AEHF system (Milstar) capability and develop a more affordable and resilient MILSATCOM enterprise capable of meeting near term and emerging MILSATCOM requirements. A significant thrust for this initiative is to demonstrate technologies and Concepts of Operations (CONOPS) that lead to a future Protected Anti-Jam Tactical SATCOM (PATs) capability that provides tactical-level MILSATCOM users protected, anti-jam satellite communications while operating in a contested environment. PATs will provide tactical users significantly higher data rates than AEHF and a security architecture that enables forward deployed users to have protected satellite communications in scenarios where AEHF terminals cannot be deployed. Under this construct the SMI will: 1) Reduce parts/obsolescence risk to future AEHF space vehicles, 2) Continue the AEHF Capabilities Insertion Program (CIP) to enhance the current AEHF constellation performance, and improve system operational resiliency, and 3) Invest in technologies/demonstrations (e.g. Protected Tactical Service Field Demonstration)/CONOPS that enable a future Protected Tactical Service capability by continued development of the Protected Tactical Waveform (PTW) technologies, maturing the Protected Tactical Testbed, and demonstrating resilient and affordable wideband protected technologies and CONOPS.

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

	FY 2016	FY 2017	FY 2018
Title: AEHF Capabilities Insertion Program (CIP)	32.116	31.900	57.194
Description: Develop software that will increase the current AEHF constellation capacity by 10%, broaden overall user base, and accommodate a larger user population through improved resource utilization efficiencies. Develop modifications that will improve the system's operational resiliency. Develop software to increase current AEHF terminal data rates with adaptive coding algorithms. These efforts are included in PNO 261.			
FY 2016 Accomplishments: Completed Phase II (INC 8.0) development and began verification. Awarded Phase III (INC 8.1) and began development to deliver faster tactical planning, improved international partner communication planning and terminal lock-on, and developed other software-based improvements to increase the system's operational resiliency.			
FY 2017 Plans: Complete Phase II (INC 8.0) verification. Continue Phase III (INC 8.1) development. Award and begin Phase IV (INC 8.2) development to accommodate a larger user population through improved communication planning, frequency planning and other improvements.			
FY 2018 Plans:			

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017
Complete Phase III INC (8.1) development and verifications. Continue Phase IV INC (8.2) development. Award and begin Phase V INC (8.3) development to enable endurance mission replan and other improvements. Develop modifications to increase the system's operational resiliency. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.			
Title: Evolved AEHF Description: The Evolved AEHF (E-AEHF) provides nuclear survivable, protected MILSATCOM to eXtended Data Rate (XDR) users only. E-AEHF supports strategic mission requirements such as Presidential and National Voice Conferencing (PNVC), Nuclear Command and Control (NC2) strategic networks, terminal report back, and Emergency Action Message (EAM) dissemination. FY 2016 Accomplishments: Continued requirements, architecture, and acquisition strategy development activities. Conducted threat analysis, ground architecture assessments and identified opportunities for improving system resiliency. Supported Protected Analysis of Alternatives (AoA) Follow-on for Resiliency (PAFR) Study and Space Enterprise Vision (SEV) tiger team efforts. FY 2017 Plans: Engage industry with market research, begin applicable risk reduction activities, and continue requirements, architecture, and acquisition strategy development. Develop and coordinate approvals for statutory and regulatory documentation to achieve DoD 5000.02 milestones. FY 2018 Plans: Effort has transitioned to PE 1206855F.		14.323	36.000
Title: Protected Testbed Description: Perform demonstrations and technology risk reduction on critical technology elements for the space payload, terminals and networking segments, with a focus on the PTW. Continue to develop the Protected Tactical testbed in support of PATS efforts. FY 2016 Accomplishments: Conducted Preliminary Design Review (PDR) on Mission Management System (MMS) for Protected Testbed 5 Feb 16. Continued development and enhancement of MMS, Key Management System (KMS), and ground hub segments of Protected Testbed. Performed multiple compatibility test events using simulators between MMS, KMS, and ground hub segments of Protected Testbed in 2QFY16-4QFY16. Completed three testbed simulators in 2QFY16 for 1QFY17 delivery to Protected Tactical Service		21.509	37.406
			13.000

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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2016	FY 2017	FY 2018
<p>Field Demonstration (PTSFD) contractors. Integrated PTW modems with two different airborne terminals and conducted over-the-air tests on commercial satellites in 2QFY16 and 3QFY16 in preparation of airborne flight technology demonstration in 1QFY17.</p> <p>FY 2017 Plans:</p> <p>Deliver three testbed simulators to PTSFD contractors in 1QFY17 for early risk reduction and developmental testing in preparation for laboratory and over-the-air technology demonstrations. Perform PDR of KMS and ground hub segments of Protected Testbed in 1QFY17 in support of PTSFD. Perform Critical Design Review (CDR) of entire Protected Testbed in 3QFY17 in support of PTSFD and finalize hardware baseline in preparation to support three PTSFD contractor modem-to-testbed PTW compatibility technology demonstrations. Conduct airborne technology demonstration over-the-air on commercial satellite to validate efficacy of PTW for airborne platforms in 2QFY17. Enhance network functionality of testbed to increase ability to perform integration tests with Service networks. Support further definition and refinement of PTW Interface Control Document (ICD) and other interface documents and standards in preparation for operation use of PTW over wideband systems.</p> <p>FY 2018 Plans:</p> <p>Conduct Protected Testbed test readiness-review in preparation for PTSFD contractor compatibility testing. Support three PTSFD contractor modem-to-testbed PTW compatibility technology demonstrations. Finalize Protected Testbed baseline configuration to support over-the-air technology demonstrations over Wideband Global SATCOM (WGS) and commercial satellites for PTSFD. Prepare Protected Testbed for over-the-air WGS certification testing. Enhance Protected Testbed capabilities to support Protected Tactical Enterprise Services (PTES) and Protected Tactical Satellite (PTS) risk-reduction efforts.</p>					
<p>Title: Protected Tactical Service Field Demonstration (PTSFD)</p> <p>Description: PTSFD is a technology demonstration that will develop and demonstrate prototype Terminal Modem (TM) Line Replaceable Units (LRUs) utilizing PTW over wideband space/ground systems with an option to demonstrate over a commercial SATCOM system and design and build the MMS simulator. Develop PTW components, protected tactical terminal modems that will be capable of being fully integrated into existing wideband terminals, and a new End Cryptographic Unit (ECU) that will support the PTW. The ECUs will be integrated with the PTW modem and certified by NSA. The PTSFD will demonstrate an Anti-Jam (AJ) and Low Probability of Intercept (LPI)/Low Probability of Detection (LPD) communications capability that can be provided to tactical users in all Services through fielded terminals, existing wideband MILSATCOM assets, and potential COMSATCOM assets. Conduct trade space and requirements definition to support future PTW-related capabilities. Identify potential assets such as ground hubs and information assurance components that can be further developed by future PTW-related programs for wideband users and explore releasability of PTW-related technologies to International Partners.</p> <p>FY 2016 Accomplishments:</p> <p>Conducted source selection activities for PTSFD in 1QFY16-4QFY16. Awarded three contracts for the development of TM LRUs to support PTSFD in 4QFY16. Reviewed system/functional requirements, prepared for a System Functional and Requirements</p>			85.330	93.518	75.416

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017	
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206431F / <i>Advanced EHF MILSATCOM (SPACE)</i>	Project (Number/Name) 657104 / <i>MILSATCOM Space Modernization Initiative (SMI)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017
<p>Review (SFRR), a PDR, and a CDR. Conducted PDR for the MMS segment of government testbed in 2QFY16. Began development of PTSFD contractor prototype PTW terminal modems and ECUs in 4QFY16. Continued to develop/mature requirements and ICDs for PTSFD system components.</p> <p>FY 2017 Plans: Baseline terminal modem and ECU requirements in preparation for contractor-built modem and ECU test articles. Conduct SFRR and PDR. Provide oversight of PTSFD contractor design and development of TM LRUs and ECU certification process. Provide oversight of preparations for contractor-led factory test events of TM LRU and ECU. Deliver government testbed simulators to three PTSFD contractors for use in contractor modem and ECU development and risk-reduction testing.</p> <p>FY 2018 Plans: Conduct Protected Testbed test readiness-review in preparation for PTSFD contractor compatibility testing. Support three PTSFD contractor modem-to-testbed PTW compatibility technology demonstrations. Finalize Protected Testbed baseline configuration to support over-the-air technology demonstrations over WGS and commercial satellites for PTSFD. Prepare Protected Testbed for over-the-air WGS certification testing. Enhance Protected Testbed capabilities to support Protected Tactical Enterprise Services (PTES) and Protected Tactical Satellite (PTS) risk-reduction efforts. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.</p>			
<p>Title: Protected Tactical Enterprise Service (PTES)</p> <p>Description: The PTES will utilize the PTW to provide a protected anti-jam communications capability over the WGS system. The PTES system will consist of three segments: a MMS, a KMS, and Joint Hubs integrated into existing SATCOM gateways. PTES will enable, along with the TM LRU's developed during the PTSFD, an anti-jam communications capability over WGS for tactical users in all Services and International Partners.</p> <p>FY 2016 Accomplishments: N/A</p> <p>FY 2017 Plans: Develop technical baseline and system requirements. Develop PTES Acquisition Strategy and associated documentation. Develop the documents required for the PTES Development Request for Proposal (RFP) Decision Point. Release PTES RFP to industry.</p> <p>FY 2018 Plans: Effort has transitioned to PE 1206760F.</p>		0.000	19.800
Title: Enterprise Ground Services (EGS)		0.000	9.500
			0.000

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Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 1206431F / Advanced EHF MILSATCOM (SPACE)				Project (Number/Name) 657104 / MILSATCOM Space Modernization Initiative (SMI)				
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
<p>Description: EGS is envisioned to provide a robust enterprise ground architecture for Air Force space systems, which leverages mission commonality and automation to reduce sustainment costs and re-focus manpower on warfighting capabilities. In addition, EGS will enable a near-real-time common operating picture of enterprise-wide tactical health, status, indications, and warnings for Air Force satellites. The end-state will be a modern technical infrastructure which is cyber-secure and resilient against the Advanced Persistent Threat and employs streamlined architecting, acquisition, and operational processes. Through early architecture studies and prototyping, the government will establish clear ownership of the technical baseline to meet Better Buying Power principles as the EGS effort evolves through development. This effort provides focus and expertise for the development, test, certification and enforcement of standards and interfaces for all AFSPC satellite ground systems to enable transition planning for legacy ground systems, new capability demonstrations, and systems acquisition leading to an enterprise ground architecture for Air Force space systems.</p> <p>FY 2016 Accomplishments: N/A.</p> <p>FY 2017 Plans: Conduct developmental planning, mature technologies, and develop initial small-scale prototype capability for the enterprise ground architecture. Efforts in 2017 will include, but not be limited to, systems engineering, special studies, cyber security planning and implementation, standards and interface development and codification, integration and test efforts in support of demonstrations, and operational architecture planning. In addition, this effort will build the technical and programmatic roadmap to enable a phased enterprise transition in the future.</p> <p>FY 2018 Plans: In FY18, Enterprise Ground Services has been consolidated under Space and Missile Test and Evaluation Center; PE 1203173F.</p>												
Accomplishments/Planned Programs Subtotals										153.278	228.124	145.610
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• SPAF: BA01: Line Item # ADV555: Advanced EHF	327.366	645.569	56.974	0.000	56.974	29.299	31.180	31.742	0.000	0.000	1,122.130	
Remarks												

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206431F / <i>Advanced EHF MILSATCOM (SPACE)</i>	Project (Number/Name) 657104 / <i>MILSATCOM Space Modernization Initiative (SMI)</i>
<p>D. Acquisition Strategy</p> <p>MILSATCOM SMI includes parts obsolescence redesign and incremental capability upgrades contracted with current Prime contractor team. Enterprise studies, system design for affordability, protected tactical awards and risk reduction efforts for next generation capabilities.</p> <p>The PTSFD is a technology maturation and risk reduction effort that will demonstrate the ability to provide wideband anti-jam communications to tactical users using the WGS constellation and Commercial SATCOM by developing production-representative Terminal Modem Line Replaceable Units (TM LRUs) that implement the government-developed PTW, and integrating and demonstrating them with existing WGS-certified terminals. The effort includes the design, development, factory testing and fabrication of PTW-enabled TM LRU prototypes for integration, compatibility testing and Type-1 cryptographic certification evaluation by the NSA to support potential future acquisitions by the service Terminal Program Offices (TPOs). The acquisition strategy includes the award of up to three TM LRU contracts; each a four-year, Cost-Plus Incentive Fee, Cost-Plus Fixed Fee with a Firm Fixed Price option contract, awarded through a full and open competitive, best-value source selection process. The PTSFD will use a Government-built ground test bed to facilitate the demonstrations and to allow for compatibility and integration testing for the TM LRU.</p> <p>E. Performance Metrics</p> <p>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.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1206431F / <i>Advanced EHF MILSATCOM (SPACE)</i>						Project (Number/Name) 657104 / <i>MILSATCOM Space Modernization Initiative (SMI)</i>			
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 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
AEHF Capabilities Insertion Program (CIP)	SS/CPIF	Lockheed Martin : Sunnyvale, CA	0.000	24.243	Jun 2016	31.900	Jun 2017	57.194	Jun 2018	0.000		57.194	Continuing	Continuing	56.151
Protected Tactical Demonstration (Modem)	Various	Various : various	0.000	5.149	May 2016	7.328	Jan 2017	6.415	Jan 2018	0.000		6.415	Continuing	Continuing	-
Protected Tactical Demonstration (Modem) Contractor 1	C/CPIF	L3 : Camden, NJ	0.000	18.500	Aug 2016	20.044	Jan 2017	14.869	Jan 2018	0.000		14.869	Continuing	Continuing	35.700
Protected Tactical Demonstration (Modem) Contractor 2	C/CPIF	VIASAT : Carlsbad, CA	0.000	16.000	Aug 2016	20.044	Jan 2017	14.868	Jan 2018	0.000		14.868	Continuing	Continuing	31.400
Protected Tactical Demonstration (Modem) Contractor 3	C/CPIF	Raytheon : Marlborough, MA	0.000	20.000	Aug 2016	20.044	Jan 2017	14.868	Jan 2018	0.000		14.868	Continuing	Continuing	37.500
Protected Tactical Demonstration (Mission Management System simulator)	Various	Aerospace : El Segundo, CA	0.000	10.245	Jan 2016	10.955	Jan 2017	1.254	Jan 2018	0.000		1.254	Continuing	Continuing	-
Technical Mission Analysis	MIPR	Aerospace : El Segundo, CA	0.000	0.669	Oct 2015	2.033	Oct 2016	3.175	Oct 2017	0.000		3.175	Continuing	Continuing	-
Evolved AEHF (E-AEHF)	Various	Various : Various	0.000	3.689	Jan 2016	33.102	Jan 2017	0.000		0.000		0.000	0.000	36.791	-
Protected Testbed	Various	MIT/LL : Various	0.000	18.638	Jan 2016	19.792	Jan 2017	11.960	Jan 2018	0.000		11.960	Continuing	Continuing	-
Protected Tactical Enterprise Services (PTES)	TBD	TBD : TBD	0.000	0.000		18.595	Jul 2017	0.000		0.000		0.000	0.000	18.595	-
Enterprise SE&I	C/CPAF	Linquest : Los Angeles, CA	0.000	17.323	Jan 2016	11.542	Jan 2017	14.205	Jan 2018	0.000		14.205	Continuing	Continuing	-
Enterprise Ground Services (EGS)	Various	Various : Various	0.000	0.000		9.500	Jan 2017	0.000		0.000		0.000	0.000	9.500	-
Subtotal			0.000	134.456		204.879		138.808		0.000		138.808	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force													Date: May 2017		
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1206431F / Advanced EHF MILSATCOM (SPACE)				Project (Number/Name) 657104 / MILSATCOM Space Modernization Initiative (SMI)					
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 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
FFRDC	Various	Various : Various	0.000	6.109	Jan 2016	10.526	Jan 2017	0.167	Jan 2018	0.000		0.167	Continuing	Continuing	-
Other Support	Various	Various : Various	0.000	0.173	Dec 2015	0.100	Dec 2016	0.050	Dec 2017	0.000		0.050	Continuing	Continuing	-
A&AS	Various	Various : Various	0.000	12.540	Jan 2016	12.619	Jan 2017	6.585	Jan 2018	0.000		6.585	Continuing	Continuing	-
Subtotal			0.000	18.822		23.245		6.802		0.000		6.802	-	-	-
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	153.278		228.124		145.610		0.000		145.610	-	-	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206431F / Advanced EHF MILSATCOM (SPACE)	Project (Number/Name) 657104 / MILSATCOM Space Modernization Initiative (SMI)	

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	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
AEHF CIP: Award Phase III Contract 8.1																												
AEHF CIP: Award Phase IV Contract 8.2																												
AEHF CIP: Award Phase V Contract 8.3																												
AEHF CIP: Award Operational Resiliency																												
PTW Demo (PTSFD) : Award Demo (Modem) Contracts																												
PTW Demo (PTSFD) : Factory Tests (TM LRU, MMS, KMS)																												
Protected Testbed : Factory Tests (TM LRU, MMS, KMS)																												
PTW Demo (PTSFD) : Conduct End to End OTA Demonstration																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206431F / <i>Advanced EHF MILSATCOM (SPACE)</i>	Project (Number/Name) 657104 / <i>MILSATCOM Space Modernization Initiative (SMI)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AEHF CIP: Award Phase III Contract 8.1	3	2016	3	2016
AEHF CIP: Award Phase IV Contract 8.2	3	2017	3	2017
AEHF CIP: Award Phase V Contract 8.3	3	2018	3	2018
AEHF CIP: Award Operational Resiliency	2	2018	2	2018
PTW Demo (PTSFD) : Award Demo (Modem) Contracts	4	2016	4	2016
PTW Demo (PTSFD) : Factory Tests (TM LRU, MMS, KMS)	2	2018	4	2018
Protected Testbed : Factory Tests (TM LRU, MMS, KMS)	1	2018	4	2018
PTW Demo (PTSFD) : Conduct End to End OTA Demonstration	1	2019	2	2020