

UNCLASSIFIED

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 1206432F I Polar 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	201.189	71.867	50.815	33.644	0.000	33.644	0.000	0.000	0.000	0.000	0.000	357.515
657105: Polar Satellite Communications	201.189	71.867	50.815	33.644	0.000	33.644	0.000	0.000	0.000	0.000	0.000	357.515
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Program MDAP/MAIS Code: 121												
<p>Note</p> <p>In FY2018, PE 0605432F, Polar MILSATCOM efforts were transferred to PE 1206432F, Polar 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 1206432F.</p> <p>As of the December 2015 Selected Acquisition Report, Prior Years dollars total \$1,187.0M.</p> <p>A. Mission Description and Budget Item Justification</p> <p>This program element acquires the Polar Military Satellite Communications (MILSATCOM) system that provides protected communications (anti-jam and low probability of intercept and detection) for users in the north polar region.</p> <p>Through FY 2005, Polar Satellite Communications funded three low data rate (LDR) Milstar packages on three classified host satellites as an expedited, interim solution for protected connectivity requirements in the north polar region (i.e., Interim Polar System (IPS)). Two satellites with hosted packages are required to provide the necessary 24-hour coverage. The third package went into operations in November 2008 to sustain the 24-hour coverage.</p> <p>In FY 2006, the DoD began funding the next generation Polar Satellite Communications capability with two more polar packages via the same host vehicle type (i.e., Enhanced Polar System (EPS)). The host spacecraft and the polar communications packages required design modifications that replaced obsolete components and took advantage of the more capable Advanced Extremely High Frequency (AEHF) technology including the eXtended Data Rate (XDR) waveform. The EPS Capability Development Document (CDD), approved by the Joint Requirements Oversight Council in September 2006, is based on a two-package, hosted XDR program with operational availability in CY 2015 and CY 2017. EPS is comprised of four segments: Payload, Ground Control, Gateway, and Terminal (acquired by each Service's Terminal Program Office). Milestone B review was completed 2 April 2014.</p> <p>The Polar MILSATCOM 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.</p>												

UNCLASSIFIED

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 1206432F I Polar MILSATCOM (SPACE)				
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Previous President's Budget	71.867	50.815	24.487	0.000	24.487	
Current President's Budget	71.867	50.815	33.644	0.000	33.644	
Total Adjustments	0.000	0.000	9.157	0.000	9.157	
• 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	0.000	0.000				
• SBIR/STTR Transfer	0.000	0.000				
• Other Adjustments	0.000	0.000	9.157	0.000	9.157	
Change Summary Explanation						
FY 2018: +\$9.157M for timely execution of payload on orbit test, Lead Development Test Organization (LDTO), PEO Certification, Authority to Operate (ATO) and Multiservice Operational Test and Evaluation (MOT&E) events						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: EPS				71.867	50.815	33.644
Description: Develop and acquire EPS MILSATCOM which consists of: 1) two Extremely High Frequency payloads, using AEHF's eXtended Data Rate (XDR) waveform, on hosted spacecraft; 2) a standalone Control and Planning Segment (CAPS) to provide command and control and XDR mission planning capability; and 3) one gateway to provide connectivity between polar and mid-latitude users through the Global Information Grid.						
FY 2016 Accomplishments: Continued Integration & Test, completed Gateway installation and Installation Qualification Test at Clear AFS and Camp Roberts.						
FY 2017 Plans: Finalize system installation for CAPS at Schriever AFB. Execute factory intersegment testing between CAPS, payload, and the terminals. Execute EPS Key Management Architecture testing. Execute CAPS to Mission Ground Station (MGS) intersegment testing. Execute payload on-orbit intersegment testing between CAPS, Telemetry and Command Terminal (T&C-T), Payload, Gateway and the polar user terminals. Execute end-to-end system functionality testing with Payload #1.						
FY 2018 Plans:						

UNCLASSIFIED

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 1206432F I Polar MILSATCOM (SPACE)							
C. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
Complete test activities for Lead Developmental Test Organization. Execute MOT&E. Complete PEO certification. Execute Payload #2 on-orbit testing. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.												
Accomplishments/Planned Programs Subtotals										71.867	50.815	33.644
D. 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	
• None: None	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.000	
Remarks												
E. Acquisition Strategy												
The Enhanced Polar System (EPS) is the follow-on to the currently operational Interim Polar System (IPS) and is a component of the Extremely High Frequency SATCOM architecture providing secure, protected communications to worldwide users. The EPS acquisition consists of four segments (Payload, Ground Control, Gateway, and Terminal) acquired by separate procurement actions. Each EPS payload and its integration onto classified host satellites is funded by the EPS program while the development and integration is performed by the host organization. The MILSATCOM Systems Directorate will procure the Ground Control and Planning Segment. The Ground Gateway segment, funded by the EPS program, will be organically developed by the Navy's Space and Naval Warfare Systems Center Pacific (SSC-Pacific), San Diego, CA. The MILSATCOM Systems Directorate is the prime systems integrator for the EPS payload, ground control, and gateway segments. The Terminals that will use EPS will be acquired by each Service's Terminal Program Office.												
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.												

UNCLASSIFIED

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 1206432F / Polar MILSATCOM (SPACE)				Project (Number/Name) 657105 / Polar Satellite Communications					
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
Control and Planning Segment	C/CPIF	Northrop Grumman Information Systems : Redondo Beach, CA	104.550	34.984	Nov 2015	19.026	Nov 2016	12.720	Nov 2017	0.000		12.720	0.000	171.280	148.600
Gateway architecture development	MIPR	Space and Naval Warfare Systems Command (SPAWAR) Systems Center - Pacific : San Diego, CA	30.269	8.943	Nov 2015	8.157	Nov 2016	3.496	Nov 2017	0.000		3.496	0.000	50.865	75.454
EPS Design/Development Contract	SS/CPAF	NGAS : Redondo Beach, CA	5.005	1.944	Nov 2015	2.803	Nov 2016	2.911	Nov 2017	0.000		2.911	0.000	12.663	606.693
T&C-T Development	MIPR	Lincoln Labs : Boston, MA	3.107	3.270	Nov 2015	2.980	Nov 2016	3.060	Nov 2017	0.000		3.060	0.000	12.417	-
Technical Mission Analysis	Various	Various : Various	1.795	6.640	Nov 2015	5.739	Nov 2016	3.886	Nov 2017	0.000		3.886	0.000	18.060	-
Enterprise SE&I	Various	Various : Various	20.417	7.830	Nov 2015	6.624	Nov 2016	3.976	Nov 2017	0.000		3.976	0.000	38.847	-
Subtotal			165.143	63.611		45.329		30.049		0.000		30.049	0.000	304.132	-
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
Planning/Management Support for T&E	MIPR	Various : Various	1.279	0.000		0.000		0.000		0.000		0.000	0.000	1.279	-
Subtotal			1.279	0.000		0.000		0.000		0.000		0.000	0.000	1.279	-

UNCLASSIFIED

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 1206432F / Polar MILSATCOM (SPACE)				Project (Number/Name) 657105 / Polar Satellite Communications					
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	17.863	0.420	Nov 2015	1.150	Nov 2016	0.633	Nov 2017	0.000		0.633	0.000	20.066	-
A&AS	Various	Various : Various	16.617	7.663	Nov 2015	4.066	Nov 2016	2.692	Nov 2017	0.000		2.692	0.000	31.038	-
Other Support	Various	Various : Various	0.287	0.173	Nov 2015	0.270	Nov 2016	0.270	Nov 2017	0.000		0.270	0.000	1.000	-
Subtotal			34.767	8.256		5.486		3.595		0.000		3.595	0.000	52.104	-
			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			201.189	71.867		50.815		33.644		0.000		33.644	0.000	357.515	-
Remarks															

UNCLASSIFIED

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 1206432F / <i>Polar MILSATCOM (SPACE)</i>	Project (Number/Name) 657105 / <i>Polar Satellite Communications</i>
--	--	--

	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
Field Control and Planning Segment (CAPS)																												
Availability of Payload #2																												
Conduct Multiservice Operational Test and Evaluation (MOT&E)																												
IOC/FOC declaration																												

UNCLASSIFIED

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 1206432F / <i>Polar MILSATCOM (SPACE)</i>	Project (Number/Name) 657105 / <i>Polar Satellite Communications</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Field Control and Planning Segment (CAPS)	1	2016	3	2017
Availability of Payload #2	2	2017	1	2018
Conduct Multiservice Operational Test and Evaluation (MOT&E)	3	2018	3	2018
IOC/FOC declaration	1	2019	1	2019