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 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0605432F / *Polar MILSATCOM (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	0.000	101.401	103.245	72.084	-	72.084	51.320	24.724	-	-	-	352.774
657105: *Polar Satellite Communications*	0.000	101.401	103.245	72.084	-	72.084	51.320	24.724	-	-	-	352.774
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Program MDAP/MAIS Code: 121												

Note

Prior Years funds for Polar MILSATCOM (SPACE) are in PE 0603432F, Project 644052 Polar Satellite Communications, Budget Activity 4.

A. Mission Description and Budget Item Justification

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.

Through FY05, 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.

In FY06, 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 CY15 and CY17. The EPS system 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.

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.

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 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605432F / *Polar MILSATCOM (SPACE)*	

B. Program Change Summary ($ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	104.582	103.552	72.563	-	72.563
Current President's Budget	101.401	103.245	72.084	-	72.084
Total Adjustments	-3.181	-0.307	-0.479	-	-0.479
• Congressional General Reductions	-	-0.307			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-3.181	-			
• Other Adjustments	-	-	-0.479	-	-0.479

C. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Title: EPS	101.401	103.245	72.084
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 2014 Accomplishments:*** Continued to integrate the two EPS payloads onto the host satellites. Completed the CDR for CAPS and initiated build, integration and test for the segment. Continued integrating and testing of the ground Gateway segment and completed site preparation at Clear AFS, AK. Successfully completed EPS Milestone B review and EPS system-level CDR. ***FY 2015 Plans:*** Continue integration of Payload #2 onto host satellite and conduct Payload #1 check out. Will begin Gateway segment installation. Will continue developing, integrating and testing CAPS to verify full functionality with the other segments. ***FY 2016 Plans:*** Complete Integration & Test and finalize system installation for CAPS at Schriever AFB. Execute factory intersegment testing between CAPS, payload, and the terminals. Execute EPS Key Management Architecture (KMA) testing. Execute CAPS to Mission Ground Station (MGS) intersegment testing. Execute payload on-orbit intersegment testing between CAPS, Interim Command and Control (IC2), Payload, Gateway and the polar user terminals. Complete lead development test organization (LDTO) part 1.			
Accomplishments/Planned Programs Subtotals	101.401	103.245	72.084

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 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605432F / *Polar MILSATCOM (SPACE)*

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
• None: *None*	-	-	-	-	-	-	-	-	-	-	-

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 System 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). The MILSATCOM System 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.

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 0605432F / *Polar MILSATCOM (SPACE)*	Project (Number/Name) 657105 / *Polar Satellite Communications*	

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
Control and Planning Segment	C/CPIF	Northrop Grumman Information Systems : Redondo Beach, CA	0.000	52.520	Dec 2013	55.607	Nov 2014	27.562	Nov 2015	-		27.562	20.668	156.357	148.600
Gateway architecture development	MIPR	Space and Naval Warfare Systems Command (SPAWAR) Systems Center - Pacific : San Diego, CA	0.000	17.590	Dec 2013	9.512	Nov 2014	8.687	Nov 2015	-		8.687	11.709	47.498	-
EPS Design/Development Contract	SS/CPAF	NGAS : Redondo Beach, CA	0.000	0.670	Dec 2013	11.761	Nov 2014	12.415	Nov 2015	-		12.415	21.080	45.926	-
IC2 Development	MIPR	Lincoln Labs : Boston, MA	0.000	1.080	Dec 2013	0.850	Nov 2014	4.000	Nov 2015	-		4.000	-	5.930	-
		Subtotal	0.000	71.860		77.730		52.664		-		52.664	53.457	255.711	-

Remarks

FY14 funds transferred from PE 0603432F, Project 644052.

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
Systems Engineering & Integration	C/Various	Linquest : Los Angeles, CA	0.000	7.400	Dec 2013	4.420	Nov 2014	6.498	Nov 2015	-		6.498	5.419	23.737	-
Systems Integration/ Ground Software Support	MIPR	Johns Hopkins University/Applied Physics Lab : Columbia, MD	0.000	2.300	Dec 2013	1.280	Nov 2014	1.386	Nov 2015	-		1.386	1.380	6.346	-
		Subtotal	0.000	9.700		5.700		7.884		-		7.884	6.799	30.083	-

Remarks

FY14 funds transferred from PE 0603432F, Project 644052.

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 0605432F / *Polar MILSATCOM (SPACE)*	Project (Number/Name) 657105 / *Polar Satellite Communications*	

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
Planning/Management Support for T&E	MIPR	Space and Naval Warfare Systems Center - Pacific : San Diego, CA	0.000	0.461	Dec 2013	-		-		-		-	-	0.461	-
		Subtotal	0.000	0.461		-		-		-		-	-	0.461	-

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
Program Office FFRDC engineering (PMA)	Various	Various : Various,	0.000	10.180	Dec 2013	10.037	Nov 2014	8.270	Nov 2015	-		8.270	10.908	39.395	-
Program Office Support	Various	Various : Various,	0.000	0.400	Dec 2013	1.604	Nov 2014	0.966	Nov 2015	-		0.966	0.986	3.956	-
Business Ops Support Services/Acquisition Mission Support (PMA)	Various	Various : Various,	0.000	8.800	Dec 2013	8.174	Nov 2014	2.300	Nov 2015	-		2.300	3.894	23.168	-
		Subtotal	0.000	19.380		19.815		11.536		-		11.536	15.788	66.519	-

Remarks

FY14 funds transferred from PE 0603432F, Project 644052.

	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	0.000	101.401		103.245		72.084		-		72.084	76.044	352.774	-

Remarks

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 0605432F / *Polar MILSATCOM (SPACE)*	**Project (Number/Name)** 657105 / *Polar Satellite Communications*

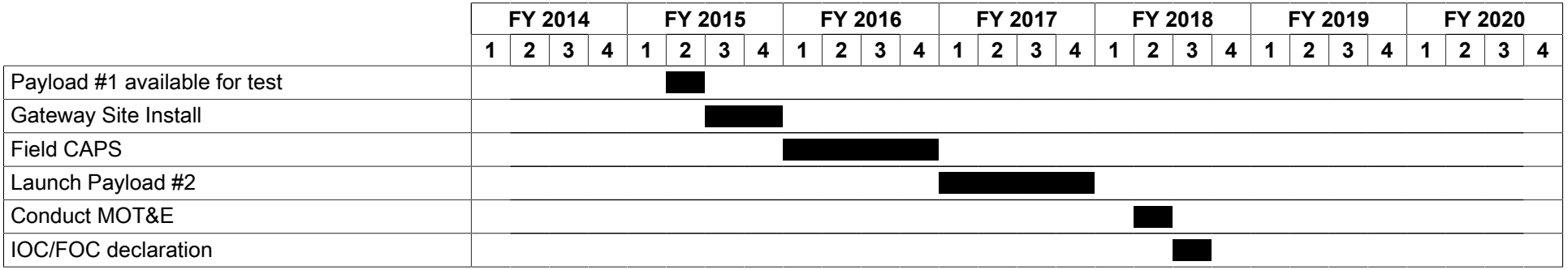

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 0605432F / *Polar MILSATCOM (SPACE)*	**Project (Number/Name)** 657105 / *Polar Satellite Communications*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Payload #1 available for test	2	2015	2	2015
Gateway Site Install	3	2015	4	2015
Field CAPS	1	2016	4	2016
Launch Payload #2	1	2017	4	2017
Conduct MOT&E	2	2018	2	2018
IOC/FOC declaration	3	2018	3	2018