Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Air Force										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*				R-1 ITEM NOMENCLATURE PE 0603432F: *Polar MILSATCOM (Space)*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	246.660	164.232	122.991	-	122.991	121.419	127.770	101.202	73.359	Continuing	Continuing
644052: *Polar Satellite Communications*	246.660	164.232	122.991	-	122.991	121.419	127.770	101.202	73.359	Continuing	Continuing

Note

Totals include funding for PRCP Program Number 121, EPS.

The program funding includes Overhead reduction efficiencies that are not intended to impact program content. The efficiencies reductions total $1.8M in FY12.

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 had 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 type host vehicle (i.e., Enhanced Polar System (EPS)). The host spacecraft and the polar communications packages require design modifications to replace obsolete components and take advantage of the more capable Advanced Extremely High Frequency (AEHF) technology including the eXtended Data Rate (XDR) waveform. The EPS Capability Development Document, Joint Requirements Oversight Council approved in September 2006, is based on a two-package, hosted XDR program with operational availability in FY15 and FY17. The EPS system is intended to be comprised of four segments: Payload, Ground Control, Gateway, and Terminal (acquired by each Service's Terminal Program Office).

FY12 funds will complete the fabrication of the two hosted EPS packages (payloads) and begin integration onto the host satellites. Due to AF priorities, the Ground Control segment and Ground Gateway segment have been scaled down to focus on continuity of service to current polar users, however; Global Information Grid (GIG) capability is being added to support other future users.

The Polar MILSATCOM program is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P) because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Air Force	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603432F: *Polar MILSATCOM (Space)*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	252.071	164.232	101.086	-	101.086
Current President's Budget	246.660	164.232	122.991	-	122.991
Total Adjustments	-5.411	-	21.905	-	21.905
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-4.355	-			
• Other Adjustments	-1.056	-	21.905	-	21.905

Change Summary Explanation

FY12 funds adjusted due to revised cost estimate as EPS prepares for an FY12 Milestone B decision.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Air Force			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603432F: *Polar MILSATCOM (Space)*	PROJECT 644052: *Polar Satellite Communications*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
644052: *Polar Satellite Communications*	246.660	164.232	122.991	-	122.991	121.419	127.770	101.202	73.359	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

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 had 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 type host vehicle (i.e., Enhanced Polar System (EPS)). The host spacecraft and the polar communications packages require design modifications to replace obsolete components and take advantage of the more capable Advanced Extremely High Frequency (AEHF) technology including the eXtended Data Rate (XDR) waveform. The EPS Capability Development Document, Joint Requirements Oversight Council approved in September 2006, is based on a two-package, hosted XDR program with operational availability in FY15 and FY17. The EPS system is intended to be comprised of four segments: Payload, Ground Control, Gateway, and Terminal (acquired by each Service's Terminal Program Office).

FY12 funds will complete the fabrication of the two hosted EPS packages (payloads) and begin integration onto the host satellites. Due to AF priorities, the Ground Control segment and Ground Gateway segment have been scaled down to focus on continuity of service to current polar users, however; Global Information Grid (GIG) capability is being added to support other future users.

The Polar MILSATCOM program is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P) because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Title: EPS	246.660	164.232	122.991	-	122.991
Description: Develop and acquire EPS MILSATCOM					
FY 2010 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: PB 2012 Air Force		DATE: February 2011
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
In FY2010: Held the payload segment Critical Design Review (CDR) and began manufacturing of the engineering test bed. ***FY 2011 Plans:*** In FY2011: Will acquire the payload engineering model test bed from the Developer to support intersegment testing and complete integration of both payload #1 and #2 subsystems. Will start architecture development of the Gateway and will plan the development of a scaled down ground control segment. ***FY 2012 Base Plans:*** In FY2012: Deliver two payloads to the host and initiate integration of payloads onto host satellites. Will continue development of the Gateway and will begin development of the ground control segment. ***FY 2012 OCO Plans:*** Not applicable					
Accomplishments/Planned Programs Subtotals	246.660	164.232	122.991	-	122.991

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• Activity Not Provided: *Title Not Provided*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

D. Acquisition Strategy

The Enhanced Polar System (EPS) is the follow-on to the currently operational Interm Polar System (IPS) and is a component of the Extremely High Frequency SATCOM architecture providing secure, protected communications to worldwide users. The EPS acquisition will consist of four segments (Payload, Ground Control, Gateway, and Terminal) acquired by separate procurement actions. The EPS payloads will be hosted on a classified satellite and acquired by the organization hosting the EPS payloads. The MILSATCOM Systems Directorate will procure the Ground Control and Gateway segments. The Terminals which will use EPS will be acquired by each Service's Terminal Program Office.

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.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Air Force			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603432F: *Polar MILSATCOM (Space)*	PROJECT 644052: *Polar Satellite Communications*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Classified	TBD	TBD:TBD,	299.594	-		-		-		-	0.000	299.594	0.000
EPS Requirement Analyses and Design Trade Studies	Various	Various:Various,	76.187	-		-		-		-	0.000	76.187	0.000
Ground study and Emulator development	SS/CPAF	Johns Hopkins University/Applied Physics Lab:Columbia, MD	-	16.600	Jul 2011	15.000	Dec 2011	-		15.000	0.000	31.600	0.000
Gateway development	MIPR	SPAWAR:San Diego, CA	-	10.900	Jul 2011	10.000	Dec 2011	-		10.000	0.000	20.900	0.000
EPS Design/Development Contract	SS/CPAF	NGAS:Redondo Beach, CA	469.906	84.776	Dec 2010	56.615	Dec 2011	-		56.615	Continuing	Continuing	0.000
Mission Control Segment Design Trade Studies	SS/CPAF	Lockheed Martin:Sunnyvale, CA	28.882	0.600	Dec 2010	-		-		-	0.000	29.482	0.000
Cryptographic Modifications	MIPR	NSA:Camden, NJ	6.745	1.907	Dec 2010	4.525	Dec 2011	-		4.525	0.000	13.177	0.000
		Subtotal	881.314	114.783		86.140		-		86.140			0.000

Remarks

Classified Contract Method/Type/Activity and Location are classified

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Technical Support	Various	The Aerospace Corporation:El Segundo, CA	38.535	22.288	Dec 2010	15.142	Dec 2011	-		15.142	0.000	75.965	0.000
Program Office Support	Various	Linquest:Los Angeles, CA	48.299	24.561	Dec 2010	17.809	Dec 2011	-		17.809	0.000	90.669	0.000
Govt Furnished Property	Various	Various:Various,	10.957	2.600	Dec 2010	3.900	Dec 2011	-		3.900	0.000	17.457	0.000
		Subtotal	97.791	49.449		36.851		-		36.851	0.000	184.091	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Air Force		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603432F: *Polar MILSATCOM (Space)*	PROJECT 644052: *Polar Satellite Communications*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-	0.000	0.000	0.000

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-	0.000	0.000	0.000

Remarks

TBD

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	979.105	164.232		122.991		-		122.991			0.000

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Air Force		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603432F: *Polar MILSATCOM (Space)*	**PROJECT** 644052: *Polar Satellite Communications*

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Air Force		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603432F: *Polar MILSATCOM (Space)*	PROJECT 644052: *Polar Satellite Communications*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Begin fabrication of first Enhanced Polar package	2	2010	2	2010
Begin fabrication of second Enhanced Polar package	3	2010	3	2010
Ground Control and Gateway System Design Review	2	2011	2	2011
Deliver payloads and begin integration onto host satellites	2	2012	2	2012
Ground Control and Gateway Preliminary Design Review	2	2012	2	2012
Milestone B Review	4	2012	4	2012