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Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Air Force									DATE: February 2010		
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 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	221.065	252.071	164.232	0.000	164.232	101.086	53.076	27.361	13.576	Continuing	Continuing
644052: Polar Satellite Communications	221.065	252.071	164.232	0.000	164.232	101.086	53.076	27.361	13.576	0.000	1,001.495
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.											
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.											
FY11 funds continue the fabrication of the two hosted EPS packages, pursue technology needs forecasting, and continue the development of the associated ground segment and related support.											
The Polar MILSATCOM program is in Budget Activity 4, Advanced Component Development and Prototypes, based on the 8 Dec 07 USD(AT&L) memorandum to develop the enhanced polar hosted solution.											

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3600: Research, Development, Test & Evaluation, Air Force		PE 0603432F: Polar MILSATCOM (Space)			
BA 4: Advanced Component Development & Prototypes (ACD&P)					
B. Program Change Summary (\$ in Millions)					
	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	236.965	253.150	0.000	0.000	0.000
Current President's Budget	221.065	252.071	164.232	0.000	164.232
Total Adjustments	-15.900	-1.079	164.232	0.000	164.232
• Congressional General Reductions		-1.079			
• Congressional Directed Reductions		0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds		0.000			
• Congressional Directed Transfers		0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-9.900	0.000			
• Other Adjustments	-6.000	0.000	164.232	0.000	164.232
Change Summary Explanation					
FY09 funds reprogrammed for higher priorities.					
The FY 2010 President's Budget submittal did not reflect FY 2011 through FY2015 funding. Therefore, explanation of changes between the two budget positions cannot be made in a relevant manner.					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2011 Air Force								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603432F: <i>Polar MILSATCOM (Space)</i>				<b>PROJECT</b> 644052: <i>Polar Satellite Communications</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>FY 2011 Base Estimate</b>	<b>FY 2011 OCO Estimate</b>	<b>FY 2011 Total Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
644052: <i>Polar Satellite Communications</i>	221.065	252.071	164.232	0.000	164.232	101.086	53.076	27.361	13.576	0.000	1,001.495
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		
<b>A. Mission Description and Budget Item Justification</b> <p>This project (often referred to as Interim Polar) is currently acquiring protected communications services for warfighters operating in the northern polar region. It is similar to Milstar and based on the 1995 JROC approved Polar ORD that contains a subset of requirements for an expedited solution. The expedited program adds small Milstar-compatible packages to 3 classified host satellites to provide limited capability while a long term solution is pursued. The first hosted package was launched in 1997, the next two will be available in FY05 and FY06.</p> <p>Delay of the first launch follow-on program (Advanced Polar System (APS)) from FY09 to FY13 has caused the Air Force to revisit the polar requirements and explore the possible purchase of a 4th package on a classified host satellite. NOT a TEST</p>											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
						<b>FY 2009</b>	<b>FY 2010</b>	<b>FY 2011 Base</b>	<b>FY 2011 OCO</b>	<b>FY 2011 Total</b>	
<b>MAJOR THRUST:</b> Develop and acquire EPS MILSATCOM payloads, mission control segment, and cryptography  <b>FY 2009 Accomplishments:</b> In FY2009: Held a successful Preliminary Design Review (PDR) for the payload segment. Executed risk reduction efforts, developed Interface Control Document (ICD)/specification, and conducted trade studies for the Mission Control Segment. Developed requirements and prepared team for pending source selection on the gateway segment. Developed Interim Command and Control terminal specification and collaborated with the Navy Terminal Program Office to ensure the Navy Multi-band Terminal (NMT) will support the Gateway segment. The Systems Engineering Integration Team executed a successful System Design Review (SDR), matured system level ICDs/specifications/						221.065	252.071	164.232	0.000	164.232	

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B. Accomplishments/Planned Program (\$ in Millions)					
	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
requirements allocation, extended the crypto architecture, procured keys and crypto chips, matured configuration management, and held engineering reviews and system risk boards.  FY 2010 Plans: In FY2010: Will hold the payload segment Critical Design Review (CDR) and begin manufacturing of the engineering test bed. Will hold the Mission Control Segment PDR and begin software coding. Will release the Request For Propossal (RFP) and hold the source selection for the gateway segment. Will deliver two (2) AEHF Universal System Test-Terminals (AUST-Ts) and contract with the Navy to procure NMTs for the Gateway segment. The Systems Engineering Integration Team will hold the Independent Program Review (IPR) and the Defense Acquisition Executive (DAE) review. In addition, the program will prepare for and conduct the system level PDR.  FY 2011 Base Plans: In FY2011: Will deliver the engineering model test bed for the payload segment and complete integration of payload #1 subsystems. Will hold the Mission Control Segment CDR and begin intersegment testing with the payload and terminal segments. Will award a gateway contract and will conduct the PDR. Will provide an engineering model NMT to the Gateway segment for development. The Systems Engineering Integration Team will execute segment and inter-segment testing (validation/verification).  FY 2011 OCO Plans: In FY2011 OCO: Not applicable					
Accomplishments/Planned Programs Subtotals	221.065	252.071	164.232	0.000	164.232

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2011 Air Force								<b>DATE:</b> February 2010		
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**C. Other Program Funding Summary (\$ in Millions)**

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• PE Not Provided (2978): <i>N/A</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

**D. Acquisition Strategy**

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

**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.

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2011 Air Force</b>											<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603432F: <i>Polar MILSATCOM (Space)</i>				<b>PROJECT</b> 644052: <i>Polar Satellite Communications</i>					
 <b>Product Development (\$ in Millions)</b>													
				<b>FY 2010</b>		<b>FY 2011 Base</b>		<b>FY 2011 OCO</b>		<b>FY 2011 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Classified	TBD/TBD	TBD TBD	299.594	0.000		0.000		0.000		0.000	0.000	299.594	0.000
EPS Requirement Analyses and Design Trade Studies	Various/ Various	Various Various	65.416	18.566	Dec 2009	0.000		0.000		0.000	Continuing	Continuing	0.000
NGST EPS Design/ Development Contract	SS/CPAF	NGST Redondo Beach, CA	287.709	164.374	Dec 2009	54.796	Dec 2010	0.000		54.796	Continuing	Continuing	0.000
Lockheed Martin (Mission Control Segment)	SS/CPAF	Lockheed Martin Sunnyvale, CA	13.900	27.010	Oct 2009	40.000	Oct 2010	0.000		40.000	Continuing	Continuing	0.000
Cryptographic Modifications (NSA)	MIPR	NSA Camden, NJ	6.120	3.960	Jan 2010	3.907	Dec 2010	0.000		3.907	Continuing	Continuing	0.000
TBD Gateway Segment	C/TBD	TBD TBD	0.000	0.000		30.000	Dec 2010	0.000		30.000	0.000	30.000	0.000
<b>Subtotal</b>			672.739	213.910		128.703		0.000		128.703			0.000
 <b>Remarks</b> Classified Contract Method/Type/Activity and Location are classified													

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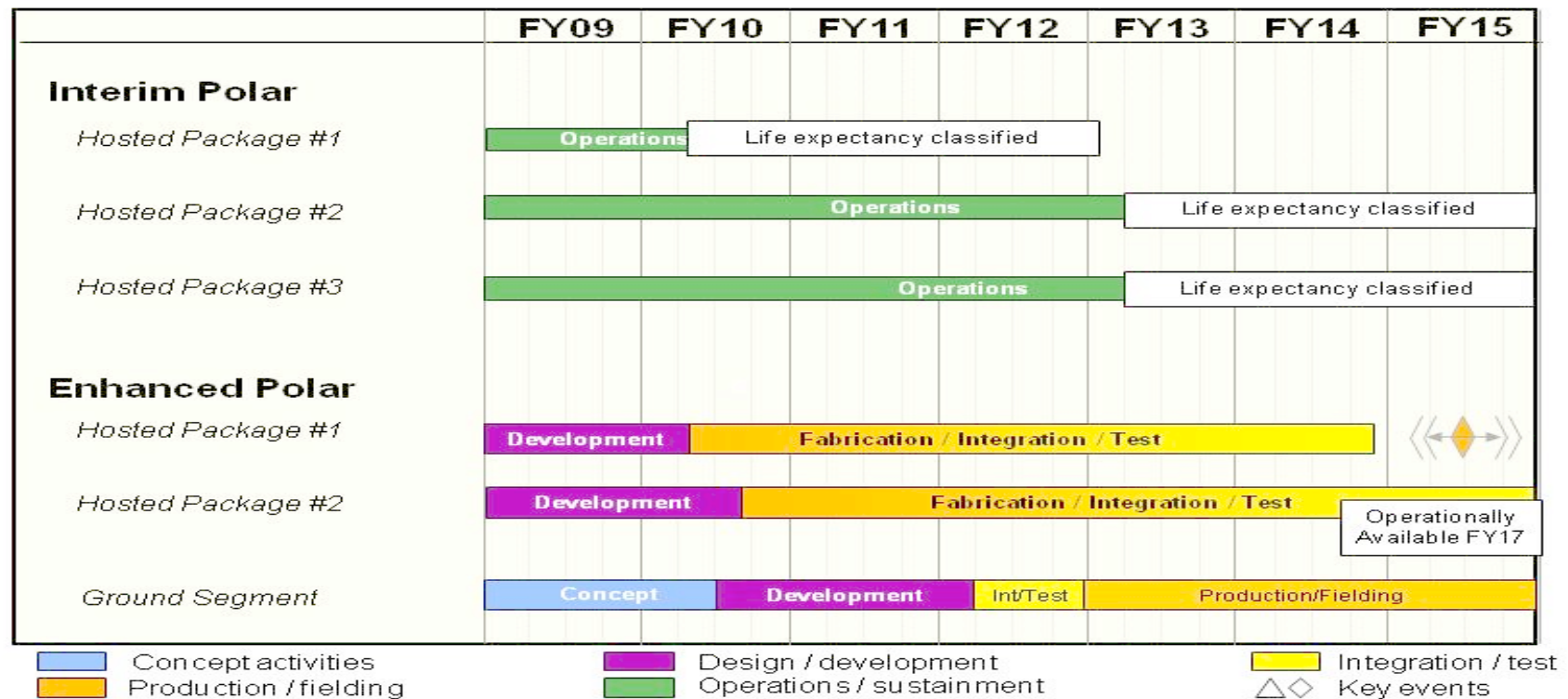
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Support (\$ in Millions)													
				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Technical Support	Various/ Various	Various Various	19.207	14.153	Dec 2009	15.000	Dec 2010	0.000		15.000	Continuing	Continuing	0.000
Program Office Support	Various/ Various	Various Various	34.299	14.308	Dec 2009	17.809	Dec 2010	0.000		17.809	Continuing	Continuing	0.000
Govt Furnished Property	Various/ Various	Various Various	6.200	9.700	Dec 2009	2.720	Dec 2010	0.000		2.720	Continuing	Continuing	0.000
<b>Subtotal</b>			59.706	38.161		35.529		0.000		35.529			0.000
<b>Remarks</b>													
			Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			732.445	252.071		164.232		0.000		164.232			0.000
<b>Remarks</b>													
Total Prior Years Cost may include only FY 2009 data.													

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2011 Air Force</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603432F: <i>Polar MILSATCOM (Space)</i>	<b>PROJECT</b> 644052: <i>Polar Satellite Communications</i>



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2011 Air Force			<b>DATE:</b> February 2010
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**Schedule Details**

<b>Event</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
Begin fabrication of first Enhanced Polar package	1	2010	1	2010
Begin fabrication of second Enhanced Polar package	2	2010	2	2010
Begin design and development of the Mission Control Segment	3	2010	3	2010
Mission Control Segment Critical Design Review	2	2011	2	2011
Ground Gateway Segment Preliminary Design Review	4	2011	4	2011

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