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PE NUMBER: 0603430F

PE TITLE: Advanced (EHF MILSATCOM (Space))

Exhibit R-2, RDT&E Budget Item Justification	DATE February 2007
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BUDGET ACTIVITY 04 Advanced Component Development and Prototypes (ACD&P)	PE NUMBER AND TITLE 0603430F Advanced (EHF MILSATCOM (Space))
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Cost (\$ in Millions)	FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	639.179	630.868	603.179	363.582	110.727	26.333	0.000	0.000	0.000	5,536.830
4050 Advanced MILSATCOM	639.179	630.868	603.179	363.582	110.727	26.333	0.000	0.000	0.000	5,536.830

Beginning FY08, funds for qualification and productization of radiation-hardened components for USAF/DOD space programs have been transferred from PE 63430F, Advanced MILSATCOM (Space), to PE 63845F, Transformational SATCOM.

(U) 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 warfighter. AEHF satellites will replenish the existing EHF system (Milstar) at much higher capacity and data rate (5x increase over Milstar II) capabilities. On 10 October 2001, a Milestone B decision was approved by the Defense Acquisition Executive to enter the System Development and Demonstration (SDD) phase. The SDD letter contract was awarded in Nov 01 and was definitized in Aug 02. The program is a sole source acquisition to a contractor team comprised of Lockheed Martin (prime/integrator) and Northrop-Grumman (provider of satellite payload). The follow-on buy for Satellite Vehicle 3 was approved in Jun 04 and awarded on 12 Jan 06. Satellites 1 and 2 are funded with RDT&E funds and satellite 3 is funded with procurement funds. An Interim Program Review was held 22 Oct 04 to decide if a fourth AEHF satellite would be added to the program to meet Full Operational Capability (FOC). The Milestone Decision Authority (MDA) decided to maintain the AEHF and Transformational Satellite Communications System (TSAT) baselines, achieving AEHF FOC-equivalency with the first TSAT. The Department of Defense in its Quadrennial Defense Review (as part of the FY07 PB) and the FY08 PB reaffirms the decision to buy three AEHF satellites and use the first TSAT satellite to complete the eXtended Data Rate (XDR) constellation. AEHF is a cooperative program that includes International Partners (Canada, the United Kingdom, and The Netherlands).

This program is in Budget Activity 4, Advanced Component Development and Prototypes, since it funds Advanced EHF technology validation and modeling.

(U) B. Program Change Summary (\$ in Millions)

	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) Previous President's Budget	655.779	633.258	429.268	227.743
(U) Current PBR/President's Budget	639.179	630.868	603.179	363.582
(U) Total Adjustments	-16.600	-2.390		
(U) Congressional Program Reductions	-0.020			
Congressional Rescissions		-2.390		
Congressional Increases				
Reprogrammings				
SBIR/STTR Transfer	-16.580			

(U) Significant Program Changes:

Funded program disconnects to keep first launch April 2008. 1) Variance at Completion (FY08/09 \$177M): funds Assembly Integration and Test to maintain first launch;

Exhibit R-2, RDT&E Budget Item Justification

DATE

February 2007

BUDGET ACTIVITY

04 Advanced Component Development and Prototypes (ACD&P)

PE NUMBER AND TITLE

0603430F Advanced (EHF MILSATCOM (Space)

driven by technical issues (e.g., qualification re-work on Antennas and Solar Arrays). 2) FAB-T work-arounds (FY08/09 \$130M): FAB-T program replan delayed delivery of terminals required to support first AEHF launch. Mitigation plan requires alternate payload C2 terminal and support. 3) Milstar Backwards Compatibility (FY08 \$28M): funds incorporation of changes to the 2001 Milstar baseline (i.e., detailed analysis of ~2700 changes to Milstar baseline identified/costed items that must be fixed in order for AEHF to be backwards compatible with Milstar)
FY08-09 \$44M transferred to TSAT PE 63845F for radiation-hardened parts.

Exhibit R-2a, RDT&E Project Justification

DATE
February 2007

BUDGET ACTIVITY 04 Advanced Component Development and Prototypes (ACD&P)					PE NUMBER AND TITLE 0603430F Advanced (EHF MILSATCOM (Space))			PROJECT NUMBER AND TITLE 4050 Advanced MILSATCOM		
Cost (\$ in Millions)	FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total
4050 Advanced MILSATCOM	639.179	630.868	603.179	363.582	110.727	26.333	0.000	0.000	0.000	5,536.830
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

(U) 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 warfighter. AEHF satellites will replenish the existing EHF system (Milstar) at much higher capacity and data rate (5x increase over Milstar II) capabilities. On 10 October 2001, a Milestone B decision was approved by the Defense Acquisition Executive to enter the System Development and Demonstration (SDD) phase. The SDD letter contract was awarded in Nov 01 and was definitized in Aug 02. The program is a sole source acquisition to a contractor team comprised of Lockheed Martin (prime/integrator) and Northrop-Grumman (provider of satellite payload). The follow-on buy for Satellite Vehicle 3 was approved in Jun 04 and awarded on 12 Jan 06. Satellites 1 and 2 are funded with RDT&E funds and satellite 3 is funded with procurement funds. An Interim Program Review was held 22 Oct 04 to decide if a fourth AEHF satellite would be added to the program to meet Full Operational Capability (FOC). The Milestone Decision Authority (MDA) decided to maintain the AEHF and Transformational Satellite Communications System (TSAT) baselines, achieving AEHF FOC-equivalency with the first TSAT. The Department of Defense in its Quadrennial Defense Review (as part of the FY07 PB) and the FY08 PB reaffirms the decision to buy three AEHF satellites and use the first TSAT satellite to complete the eXtended Data Rate (XDR) constellation. AEHF is a cooperative program that includes International Partners (Canada, the United Kingdom, and The Netherlands).

This program is in Budget Activity 4, Advanced Component Development and Prototypes, since it funds Advanced EHF technology validation and modeling.

(U) B. Accomplishments/Planned Program (\$ in Millions)	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) Continue SDD of the AEHF satellites and MCS, continue build of Satellite 1 and 2 flight hardware, and intermediate software increments for bus, payload and MCS	544.954	533.840	544.758	317.328
(U) Continue satellite cryptographic development	28.632	27.682	16.250	7.304
(U) Continue qualification and productization of radiation-hardened components for USAF/DOD space programs	20.000	21.000		
(U) Government Furnished Property (e.g., Launch Prep, Radiation Hardening Testing, Communication Circuit)	2.848	4.567	3.317	2.019
(U) Continue Technical Analysis	21.590	22.774	21.684	22.551
(U) Continue Program Office and related support activities, to include Systems Engineering and Integration	21.155	21.005	17.170	14.380
(U) Total Cost	639.179	630.868	603.179	363.582

Exhibit R-2a, RDT&E Project Justification

DATE

February 2007

BUDGET ACTIVITY

04 Advanced Component Development and Prototypes (ACD&P)

PE NUMBER AND TITLE

0603430F Advanced (EHF
MILSATCOM (Space))

PROJECT NUMBER AND TITLE

4050 Advanced MILSATCOM

(U) **C. Other Program Funding Summary (\$ in Millions)**

	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Complete</u>							
(U) Related Proc:										
(U) MPAF, PE 0303604F, Advanced EHF, P-17/18	521.888	0.000	0.744	16.787	40.078	22.444	12.444	8.451	0.000	700.021
(U) RDT&E, PE 0603854F, Wideband MILSATCOM (Space), Project #644870, CCS-C, R-52	19.216	6.634	19.213	12.606	13.402	10.024	9.168	6.629	Continuing	TBD
(U) OPAF, PE 0303600F Wideband Gapfiller System, Project #836780, CCS-C	0.285	0.000	0.535	0.000	0.000	0.000	0.000	0.000	0.000	17.664
(U) RDT&E, PE 0303601F, MILSATCOM Terminals, BA-7, R-175	254.052	269.926	388.491	372.443	357.847	244.607	193.949	192.759	Continuing	TBD

(U) **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 will perform the Advanced Component Development and Prototypes (ACD&P) and SDD of three satellites and associated mission command and control ground capabilities under Cost Plus Award Fee line items on the contract. AEHF will incorporate lessons learned and improvements from Milstar and commercial SATCOM practices into the next generation EHF secure, anti-jam military communications satellite system.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis

DATE
February 2007

BUDGET ACTIVITY			PE NUMBER AND TITLE								PROJECT NUMBER AND TITLE			
04 Advanced Component Development and Prototypes (ACD&P)			0603430F Advanced (EHF MILSATCOM (Space))								4050 Advanced MILSATCOM			
(U) Cost Categories (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior to FY 2006 Cost</u>	<u>FY 2006 Cost</u>	<u>FY 2006 Award Date</u>	<u>FY 2007 Cost</u>	<u>FY 2007 Award Date</u>	<u>FY 2008 Cost</u>	<u>FY 2008 Award Date</u>	<u>FY 2009 Cost</u>	<u>FY 2009 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
(U) <u>Product Development</u>														
NSA	MIPR	Camden, NJ	175.670	28.632	Feb-06	27.682	Dec-06	16.250	Dec-07	7.304	Dec-08	0.000	255.538	
JTEO	PR	San Diego, CA	15.491									0.000	15.491	
MIT/LL	MIPR	Hanscom AFB, MA	4.988									0.000	4.988	
Hughes	CPFF	El Segundo, CA	67.175									0.000	67.175	
TRW	CPFF	Redondo Beach, CA	62.083									0.000	62.083	
Various	Various	Various	66.659									0.000	66.659	
Lockheed Martin (Pre-EMD)	FFP	Sunnyvale, CA	225.011									0.000	225.011	
Hughes	FFP	El Segundo, CA										0.000	0.000	
SDD Contractor (Lockheed Martin)	CPAF		2,331.795	544.954	Nov-05	533.840	Dec-06	544.758	Dec-07	317.328	Dec-08	Continuing	TBD	
Radiation Hardened parts developers	Various		59.000	20.000		21.000							100.000	
Subtotal Product Development			3,007.872	593.586		582.522		561.008		324.632		Continuing	TBD	0.000
Remarks:														
(U) <u>Support</u>														
Various	Various		123.696									Continuing	TBD	
Technical Support				21.590	Oct-05	22.774	Dec-06	21.684	Dec-07	22.551	Dec-08	Continuing	TBD	
GFP				2.848		4.567		3.317		2.019		Continuing	TBD	
Program Office Support			31.394	21.155		21.005		17.170		14.380		Continuing	TBD	
Subtotal Support			155.090	45.593		48.346		42.171		38.950		Continuing	TBD	0.000
Remarks:														
(U) <u>Test & Evaluation</u>														
Subtotal Test & Evaluation			0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000
Remarks:														
(U) <u>Management</u>														
Subtotal Management			0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000
Remarks:														
(U) Total Cost			3,162.962	639.179		630.868		603.179		363.582		Continuing	TBD	0.000

UNCLASSIFIED

Exhibit R-4a, RDT&E Schedule Detail	DATE February 2007
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BUDGET ACTIVITY 04 Advanced Component Development and Prototypes (ACD&P)	PE NUMBER AND TITLE 0603430F Advanced (EHF MILSATCOM (Space))	PROJECT NUMBER AND TITLE 4050 Advanced MILSATCOM
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(U) <u>Schedule Profile</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) Field Ground Segment Software Increment 3 (World-wide Planning for Resource Allocation of 5 Milstar payloads and 1st AEHF Comm Payload)		2Q		
(U) Payload delivery for integration onto Space Vehicle		2Q		
(U) Field Ground Segment Software Increment 4 (World-wide Flight and Payload Control of 5 Milstar satellites and 1 AEHF satellite)		4Q		
(U) Launch first satellite			3Q	
(U) Field Ground Segment Software Increment 5 (XDR Planning/Products)			4Q	
(U) Launch second satellite				3Q
(U) Field Ground Segment Software Increment 6 (XDR capability to International Partners)				4Q
(U) AEHF Software uploaded to AEHF #1				4Q