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 0603430F: *Advanced (EHF 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	460.351	461.380	351.817	0.000	351.817	740.127	997.888	1,022.755	1,327.126	Continuing	Continuing
644050: *Advanced MILSATCOM*	460.351	461.380	351.817	0.000	351.817	740.127	997.888	1,022.755	1,327.126	Continuing	Continuing

Note

FY09 Omnibus reprogramming funding in the amount of $35.0M is a new start effort in support of the AEHF program.

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 warfighters. AEHF satellites will replenish the existing EHF system (Milstar) providing much higher capacity and data rate (5x increase over Milstar II) capabilities. AEHF is a cooperative program that includes International Partners (Canada, the United Kingdom, and the Kingdom of the Netherlands). Conduct studies, analyses, and technology risk reduction activities to evolve protected MILSATCOM capabilities.

First time integration and test challenges and flight hardware problems with Space Vehicle-1 (SV-1) delayed the projected launch to September 2010. These issues also impact SV-2 cost and schedule. SV-2 projected launch is now September 2011. A Nunn-McCurdy review, to include an OSD Cost Analysis Improvement Group (CAIG) Independent Cost Estimate (ICE), has completed and the program was certified on 29 December 2008. Added RDT&E funding in FY10-13 to fully fund SV-1 and SV-2 overruns and match the OSD CAIG cost estimate.

The FY10 PB eliminated funding for the Transformational Satellite Communications System (TSAT) program.

The FY11 PB funds the procurement of AEHF SV-5 and SV-6, and initiates an AEHF upgrade program (RDT&E) in FY12 for SV-7 and beyond. The FY11PB also funds efforts such as SV-1 on-orbit test and operations support, SV-2 integration, test and launch; technology needs forecasting; obsolescence and studies for future SVs; and incremental Mission Control Segment (MCS) including ground mobile command and control development, test/fielding and support.

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

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 0603430F: *Advanced (EHF MILSATCOM (Space)*

B. Program Change Summary ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	386.425	464.335	0.000	0.000	0.000
Current President's Budget	460.351	461.380	351.817	0.000	351.817
Total Adjustments	73.926	-2.955	351.817	0.000	351.817
• Congressional General Reductions		-2.955			
• 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	0.000	0.000			
• Other Adjustments	73.926	0.000	351.817	0.000	351.817

Change Summary Explanation

$36.4.0M FY09 funds were reprogrammed in order to fund the program to the OSD Cost Analysis Improvement Group (CAIG) Independent Cost Estimate.

With the termination of the TSAT program beginning in FY10, the FY09 Omnibus included the following for the AEHF program: 1) $35.0M to ensure the Air Force can leverage the TSAT technology investment and critical industrial expertise for the protected MILSATCOM capabilities required by strategic and tactical users worldwide. These technologies will be assessed for incorporation onto future AEHF satellites; and 2) $18.95M for the productization and qualification of radiation hardened electronics for DoD space systems. Funds are required to ensure the advancement of components, brought to the prototype stage by the S&T community, reach a maturity level that programs can use.

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.

Exhibit R-2A, RDT&E Project 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 0603430F: *Advanced (EHF MILSATCOM (Space)*	PROJECT 644050: *Advanced MILSATCOM*	

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
644050: *Advanced MILSATCOM*	460.351	461.380	351.817	0.000	351.817	740.127	997.888	1,022.755	1,327.126	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

FY09 Omnibus reprogramming funding in the amount of $35.0M is a new start effort in support of the AEHF program.

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 warfighters. AEHF satellites will replenish the existing EHF system (Milstar) providing much higher capacity and data rate (5x increase over Milstar II) capabilities. AEHF is a cooperative program that includes International Partners (Canada, the United Kingdom, and the Kingdom of the Netherlands). Conduct studies, analyses, and technology risk reduction activities to evolve protected MILSATCOM capabilities.

First time integration and test challenges and flight hardware problems with Space Vehicle-1 (SV-1) delayed the projected launch to September 2010. These issues also impact SV-2 cost and schedule. SV-2 projected launch is now September 2011. A Nunn-McCurdy review, to include an OSD Cost Analysis Improvement Group (CAIG) Independent Cost Estimate (ICE), has completed and the program was certified on 29 December 2008. Added RDT&E funding in FY10-13 to fully fund SV-1 and SV-2 overruns and match the OSD CAIG cost estimate.

The FY10 PB eliminated funding for the Transformational Satellite Communications System (TSAT) program.

The FY11 PB funds the procurement of AEHF SV-5 and SV-6, and initiates an AEHF upgrade program (RDT&E) in FY12 for SV-7 and beyond. The FY11PB also funds efforts such as SV-1 on-orbit test and operations support, SV-2 integration, test and launch; technology needs forecasting; obsolescence and studies for future SVs; and incremental Mission Control Segment (MCS) including ground mobile command and control development, test/fielding and support.

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

B. Accomplishments/Planned Program ($ in Millions)

Exhibit R-2A, RDT&E Project 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 0603430F: *Advanced (EHF MILSATCOM (Space)*	PROJECT 644050: *Advanced MILSATCOM*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
MAJOR THRUST: Develop and acquire AEHF MILSATCOM satellites, mission control segment, and cryptography *FY 2009 Accomplishments:* In FY 2009, Continued integration and test of Space Vehicle-1 (SV-1) and SV-2 to include completion of Post-Thermal Vacuum (TVAC) Remove & Replace of reworked boxes and added TVAC. Initiated SV-1 Final Integrated System Test (FIST). Continued incremental development of the Mission Control Segment (MCS), including ground mobiles, to include maturation of Increment 4 in preparation for an FY10 readiness for operations. Continued technology needs forecasting and obsolescence studies. *FY 2010 Plans:* In FY 2010, Complete SV-1 FIST, launch readiness and launch. Continue SV-2 Integration and Test and complete FIST. Deliver MCS Increment 4 to support AEHF-Milstar Command and Control (C2) cutover and SV-1 launch operations and complete MCS Increment 5. Continue technology needs forecasting, obsolescence studies, and initiate an AEHF Capability Insertion Program (CIP) [FY09 OMNIBUS funds]. Conduct qualification and productization of radiation-hardened components for USAF/DOD space programs [FY09 OMNIBUS funds]. *FY 2011 Base Plans:* In FY 2011, Conduct SV-1 on-orbit test and operations. Complete SV-2 launch readiness and launch. Complete and deliver MCS Increment 7. Continue technology needs forecasting, obsolescence studies, and support CIP for future capability enhancements. *FY 2011 OCO Plans:* In FY 2011 OCO: N/A	460.351	461.380	351.817	0.000	351.817
Accomplishments/Planned Programs Subtotals	460.351	461.380	351.817	0.000	351.817

Exhibit R-2A, RDT&E Project 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 0603430F: *Advanced (EHF MILSATCOM (Space)*	PROJECT 644050: *Advanced MILSATCOM*

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 (2464): *Related Proc:*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
• PE 0303604F: *Advanced EHF, MPAF*	182.622	1,837.302	246.598	0.000	246.598	875.862	287.001	953.411	322.273	0.000	0.000
• PE 0603854F: *Wideband MILSATCOM (Space), Project #644870, CCS-C, RDT&E*	19.629	18.321	18.174	0.000	18.174	12.847	12.549	14.615	17.579	0.000	0.000
• PE 0303601F: *MILSATCOM Terminals, RDT&E*	277.501	253.818	186.582	0.000	186.582	105.274	79.768	15.301	13.723	0.000	0.000

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 Systems Development and Demonstration (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. The Program Office has updated the acquisition strategy to include AEHF SV-4, SV-5, and SV-6.

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 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 0603430F: *Advanced (EHF MILSATCOM (Space)*	PROJECT 644050: *Advanced MILSATCOM*

Product Development ($ 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
NSA	MIPR	NSA Camden, NJ	246.530	5.348	Dec 2009	0.712	Dec 2010	0.000		0.712	Continuing	Continuing	0.000
JTEO	C/CPFF	JTEO San Diego, CA	15.491	0.000		0.000		0.000		0.000	0.000	15.491	0.000
MIT/LL	FFRDC	MIT/LL Lexington, MA	21.538	0.000		0.000		0.000		0.000	0.000	21.538	0.000
MITRE	FFRDC	MITRE Bedford, MA	0.779	0.000		0.000		0.000		0.000	0.000	0.779	0.000
Hughes	Various/ CPFF	Hughes El Segundo, CA	67.175	0.000		0.000		0.000		0.000	0.000	67.175	0.000
TRW	Various/ CPFF	TRW Redondo Beach, CA	62.083	0.000		0.000		0.000		0.000	0.000	62.083	0.000
Various	Various/ Various	Various Various	66.659	0.000		0.000		0.000		0.000	0.000	66.659	0.000
Lockheed Martin (Pre-EMD)	Various/ FFP	Lockheed Martin Sunnyvale, CA	225.011	0.000		0.000		0.000		0.000	0.000	225.011	0.000
SDD Contractor (Lockheed Martin)	Various/ CPAF	Lockheed Martin Sunnyvale, CA	4,332.552	408.419	Dec 2009	306.253	Dec 2010	0.000		306.253	Continuing	Continuing	0.000
Radiation Hardened parts developers	Various/ Various	Various Various	117.480	0.000		0.000		0.000		0.000	0.000	117.480	0.000
		Subtotal	5,155.298	413.767		306.965		0.000		306.965			0.000

Remarks

Exhibit R-3, RDT&E Project Cost Analysis: 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 0603430F: *Advanced (EHF MILSATCOM (Space)*	PROJECT 644050: *Advanced MILSATCOM*

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
Various	Various/ Various	TBD TBD	123.696	0.000		0.000		0.000		0.000	0.000	123.696	0.000
Technical Support	TBD/TBD	TBD TBD	82.917	14.746	Dec 2009	13.232	Dec 2009	0.000		13.232	Continuing	Continuing	0.000
GFP	TBD/TBD	TBD TBD	10.837	3.408		2.700		0.000		2.700	0.000	16.945	0.000
Program Office Support	TBD/TBD	TBD TBD	119.356	29.459		28.920		0.000		28.920	Continuing	Continuing	0.000
		Subtotal	336.806	47.613		44.852		0.000		44.852			0.000

Remarks

	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	5,492.104	461.380		351.817		0.000		351.817			0.000

Remarks

Total Prior Years Cost may include only FY 2009 data.

Exhibit R-4, RDT&E Schedule Profile: 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 0603430F: *Advanced (EHF MILSATCOM (Space)*	**PROJECT** 644050: *Advanced MILSATCOM*

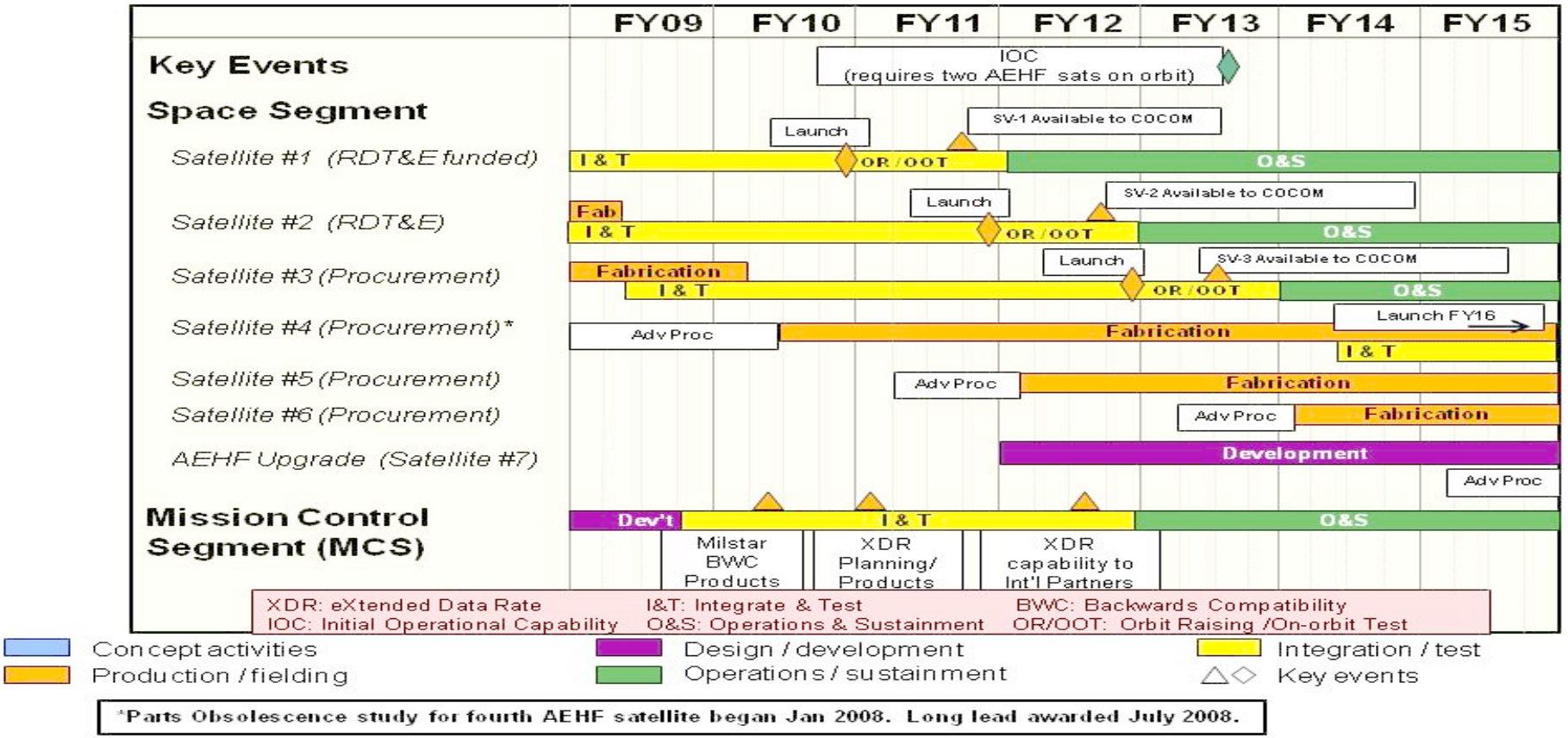

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Air Force		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603430F: *Advanced (EHF MILSATCOM (Space)*	**PROJECT** 644050: *Advanced MILSATCOM*

Schedule Details

	Start		End	
Event	**Quarter**	**Year**	**Quarter**	**Year**
Field Ground Segment Software Increment 4 (World-wide Flight and Payload Control of 5 Milstar satellites and 1 AEHF satellite - BWC Products)	2	2010	2	2010
Launch first AEHF satellite	4	2010	4	2010
Field Ground Segment Software Increment 5 (eXtended Data Rate)	1	2011	1	2011
Launch second AEHF satellite	4	2011	4	2011