

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

June 2001

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

05 - Engineering and Manufacturing Development**0604853F Evolved Expendable Launch Vehicle - EMD 0004**

COST (\$ in Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
0004 Evolved Expendable Launch Vehicle	321,969	329,897	320,321	39,862	0	0	0	0	0	1,277,274
Quantity of RDT&E Articles	0	0	0	1	0	0	0	0	0	1

FY03-FY07: This administration has not addressed FY 2003-2007 requirements. All FY 2003-2007 budget estimates included in this book are notional only and subject to change.

(U) A. Mission Description

The Evolved Expendable Launch Vehicle (EELV) program is a space launch system development program. The mission of the EELV program is to partner with industry to develop a national launch capability that satisfies the government's National Launch Forecast (NLF) requirements and reduces the cost of space launch by at least 25%. EELV is being developed as a jointly funded commercial launch service, EELV is not a weapon system. The EELV system includes launch vehicles, a standard payload interface, support systems, mission integration (includes mission unique requirements), flight instrumentation and range interfaces, special studies (mission feasibility analysis, secondary payloads, dual manifesting, special flight instrumentation, loads analysis, etc.), post-flight data and analysis, mission assurance, training, technical support, facility modifications and upgrades at Vandenberg AFB and Cape Canaveral AFS (including Building 34705), and launch site and launch operations activities. EELV provides two families of commercial launch vehicles that will launch the government portion of the NLF currently serviced by Titan II, Delta II, Atlas II/III, and Titan IV via contractor provided commercial launch services. Evolved from current expendable launch systems or components thereof; EELV will support military, intelligence, and civil mission requirements.

A new requirement for EELV Heavy Lift Vehicle (HLV) demonstration was added to the program in response to the Space Launch Broad Area Review (BAR) and the EELV Joint Assessment Team (JAT) to increase mission assurance and confidence in the HLV. HLV demo launch is scheduled for FY03. HLV demo cost is \$141M; FY00 \$12M (via FY00 OMNIBUS), FY01 \$48M (was included in the FY01 supplemental appropriation request), FY02 \$53M and FY03 \$28M in the current PB submission. HLV demo new start notification was included in the FY00 OMNIBUS.

(U) FY 2000 (\$ in Thousands)

(U) \$287,875	Continued system development/analysis
(U) \$12,582	Provided Systems Engineering
(U) \$9,512	Program management and other support costs
(U) \$12,000	Heavy Lift Vehicle (HLV) Demonstration
(U) \$321,969	Total

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05 - Engineering and Manufacturing Development

0604853F Evolved Expendable Launch Vehicle - EMD 0004

(U) **A. Mission Description Continued**(U) FY 2001 (\$ in Thousands)

(U)	\$304,226	Continue system development/analysis
(U)	\$13,182	Provides Systems Engineering
(U)	\$12,489	Program management and other support costs
(U)	\$329,897	Total

(U) FY 2002 (\$ in Thousands)

(U)	\$221,674	Continue system development/analysis
(U)	\$28,638	Provides Systems Engineering
(U)	\$17,009	Program management and other support costs
(U)	\$53,000	Heavy Lift Vehicle (HLV) demonstration
(U)	\$320,321	Total

(U) **B. Budget Activity Justification**

This program element is in Budget Activity 5, Engineering and Manufacturing Development, because it supports engineering and manufacturing development of the EELV concept leading to deployment of a lower cost expendable launch vehicle system.

(U) **C. Program Change Summary (\$ in Thousands)**

	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Total Cost</u>
(U) Previous President's Budget (FY 2001 PBR)	317,964	332,952	244,021	1,172,554
(U) Appropriated Value	322,803	332,952		
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions	-2,684	-2,332		
b. Small Business Innovative Research	-2,997			
c. Omnibus or Other Above Threshold Reprogram	8,000			
d. Below Threshold Reprogram	-1,891			
e. Rescissions	-1,262	-723		
(U) Adjustments to Budget Years Since FY 2001 PBR			76,300	
(U) Current Budget Submit/FY 2002 PBR	321,969	329,897	320,321	1,277,274

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(U) C. Program Change Summary (\$ in Thousands) Continued(U) Significant Program Changes:

The HLV demo is scheduled to launch approximately four months prior to the first operational government HLV launch. To support this effort the funding profile was developed as follows: FY00 - \$12M add (new start approval through FY00 Omnibus). FY01 - \$48M supplemental appropriations request . FY02 - \$53M added. FY03 - \$28M added. In addition to these HLV demo changes, FY 02 was increased in Systems Engineering by \$14M to meet the BAR/JAT recommendations for increased mission assurance manpower requirements. Additionally, \$8.5M was added in FY02 to cover GPS metric tracking.

(U) D. Other Program Funding Summary (\$ in Thousands)

	<u>FY 2000</u> <u>Actual</u>	<u>FY 2001</u> <u>Estimate</u>	<u>FY 2002</u> <u>Estimate</u>	<u>FY 2003</u> <u>Estimate</u>	<u>FY 2004</u> <u>Estimate</u>	<u>FY 2005</u> <u>Estimate</u>	<u>FY 2006</u> <u>Estimate</u>	<u>FY 2007</u> <u>Estimate</u>	<u>Cost to</u> <u>Complete</u>	<u>Total Cost</u>
(U) AF RDT&E										176,634
(U) Other APPN										
(U) NRO (Non-AF budget)*										95,100
(U) Missile Procurement, AF PE0305953F) (BA05,P-28)	68,127	280,397	98,007	569,081	358,791	657,453	812,078	706,887	6,210,300	9,761,121
(U) DARPA (Non-AF Budget) (PE 0603226E)**										9,845
* Total includes FY96 and FY97 funding										
** Total includes FY94 funding.										

(U) E. Acquisition Strategy

The EELV concept of a family of launch vehicles emphasizes commonality of hardware, infrastructure and economies of scale to enhance production, operations, and support efficiencies. Four initial contracts were awarded for the Low Cost Concept Validation (LCCV) phase in August 1995. The Air Force downselected to two contractors - Lockheed Martin Astronautics (LMA) and The Boeing Company (TBC - originally McDonnell Douglas) - for the Pre-Engineering and Manufacturing Development (Pre-EMD) phase in December 1996. On 16 Oct 1998, two \$500M Other Transaction Agreements (OTA) were awarded to TBC and LMA for the development effort. The contractors will contribute additional funds of their own, as necessary, to bring their national launch operational capability on line. It is estimated that each contractor is investing approximately \$1B. Simultaneous with the award of the development effort, an Initial Launch Services (ILS) contract was awarded to Boeing for \$1.38B (19 missions) and an ILS contract was awarded to Lockheed Martin for \$649M (9 missions).

On 18 Sep 2000, a revised acquisition strategy was reviewed by the DEPSECDEF and signed by USD (AT&L). Under the revised strategy, only TBC will develop a Vandenberg AFB launch facility. LMA transferred two west coast DMSP missions to TBC and provided the government additional consideration. Furthermore, the

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(U) **E. Acquisition Strategy Continued**

program restructure included the procurement of a SECAF-directed heavy lift demonstration launch to increase confidence in the Delta IV Heavy Lift Vehicle (HLV) prior to the first operational government HLV launch.

The Development/ILS approach maintains competition throughout the life of the program, leverages the growing commercial launch market, caps the government's development costs, and allows partnership with industry, while still reducing the program's overall cost to launch the NLF by at least 25% over existing systems. The EELV system will launch the government portion of the NLF through 2020.

(U) **F. Schedule Profile**

		<u>FY 2000</u>				<u>FY 2001</u>				<u>FY 2002</u>		
	1	2	3	4	1	2	3	4	1	2	3	4
(U) Atlas V Tailored Critical Design Review	*											
(U) Delta IV Tailored Critical Design Review	*											
(U) Launch of Delta Mariner	*											
(U) Atlas V Wrap-up System Design Review				*								
(U) Atlas V Roll-Out						*						
(U) Boeing Pad 37 Dedication									X			
(U) Boeing RS-68 Engine Certification									X			
(U) 1st Commercial Delta IV Launch											X	
(U) 1st Government Medium Launch											X	
(U) 1st Commercial Atlas V Launch												X

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)								DATE		June 2001	
BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT	
05 - Engineering and Manufacturing Development					0604853F Evolved Expendable Launch Vehicle - EMD					0004	
(U) A. Project Cost Breakdown (\$ in Thousands)											
					FY 2000		FY 2001		FY 2002		
(U)	System development				287,875		304,226		221,674		
(U)	Systems Engineering				12,582		13,182		28,638		
(U)	Program management and other support costs				9,512		12,489		17,009		
(U)	HLV demonstration				12,000				53,000		
(U)	Total				321,969		329,897		320,321		
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)											
(U) Performing Organizations:											
<u>Contractor or Government</u>		<u>Contract Method/Type or Funding</u>	<u>Award or Obligation</u>	<u>Performing Activity</u>	<u>Project Office</u>	<u>Total Prior to FY 2000</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget FY 2002</u>	<u>Budget to Complete</u>	<u>Total Program</u>
<u>Activity</u>		<u>Vehicle</u>	<u>Date</u>	<u>EAC</u>	<u>EAC</u>						
<u>Product Development Organizations</u>											
Prime Contractor Boeing		OTA	Oct 98	641,000	641,000	122,143	155,919	184,086	131,782	33,931	627,861
Prime Contractor Lockheed Martin		OTA	Oct 98	641,000	641,000	121,930	143,956	120,140	142,892	5,931	534,849
<u>Support and Management Organizations</u>											
SPO Mission Spt		Various	Various	N/A	N/A	6,844	7,276	8,015	11,202	0	33,337
FFRDC		SS/CPAF	Annual	N/A	N/A	12,812	12,582	13,182	28,638	0	67,214
Other Cntr Spt		Various	Various	N/A	N/A	1,496	2,236	4,474	5,807	0	14,013
<u>Test and Evaluation Organizations</u>											
None											
(U) Government Furnished Property:											
<u>Item</u>		<u>Contract Method/Type or Funding</u>	<u>Award or Obligation</u>	<u>Delivery</u>		<u>Total Prior to FY 2000</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget FY 2002</u>	<u>Budget to Complete</u>	<u>Total Program</u>
<u>Description</u>		<u>Vehicle</u>	<u>Date</u>	<u>Date</u>							
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							June 2001		
BUDGET ACTIVITY				PE NUMBER AND TITLE				PROJECT	
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(U) Government Furnished Property Continued:									
	<u>Contract</u>								
	<u>Method/Type</u>	<u>Award or</u>							
<u>Item</u>	<u>or Funding</u>	<u>Obligation</u>	<u>Delivery</u>	<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
<u>Description</u>	<u>Vehicle</u>	<u>Date</u>	<u>Date</u>	<u>to FY 2000</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Complete</u>	<u>Program</u>
<u>Product Development Property</u>									
None									
<u>Support and Management Property</u>									
None									
<u>Test and Evaluation Property</u>									
None									
				<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
<u>Subtotals</u>				<u>to FY 2000</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Complete</u>	<u>Program</u>
Subtotal Product Development				244,073	299,875	304,226	274,674	39,862	1,162,710
Subtotal Support and Management				21,152	22,094	25,671	45,647	0	114,564
Subtotal Test and Evaluation									
Total Project				265,225	321,969	329,897	320,321	39,862	1,277,274

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