

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>	DATE <b>February 2002</b>
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<b>BUDGET ACTIVITY</b> <b>05 - Engineering and Manufacturing Development</b>	<b>PE NUMBER AND TITLE</b> <b>0604853F Evolved Expendable Launch Vehicle - EMD 0004</b>
	<b>PROJECT</b>

COST (\$ in Thousands)	FY 2001 Actual	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	377,628	315,321	57,562	1,000	1,000	0	0	0	1,339,705
Quantity of RDT&E Articles	0	0	1	0	0	0	0	0	1

**(U) A. Mission Description**

The Evolved Expendable Launch Vehicle (EELV) program is a jointly funded (government and industry) space launch system developed in partnership with industry to provide two internationally competitive families of launch vehicles (Delta IV & Atlas V). The program will satisfy the government's National Launch Forecast (NLF) requirements, reduce the cost of space launch by at least 25%, and satisfy commercial satellites industrial launch services needs.

EELV is a commercial launch service, 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 evaluation and analysis, mission assurance, system/process and reliability improvements, training, and technical support. The program will also design and develop a Global Positioning System (GPS) Metric Tracking capability to modify boosters needed to use GPS for obtaining real-time position data. In addition, the system includes facility modifications and upgrades at Vandenberg AFB, CA, and Cape Canaveral AFS, FL, (including Building 34705), and launch site / operations activities.

The EELV system 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 service. Evolved from current expendable launch systems or components thereof, EELV will support military, intelligence, and civil mission requirements.

An EELV Heavy Lift Vehicle (HLV) demonstration was added to the program in response to the Space Broad Area Review (BAR) and the EELV Joint Assessment Team (JAT) to increase mission assurance and confidence in the HLV. A HLV demonstration test article is scheduled for launch in FY03.

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<p>(U) <b><u>A. Mission Description Continued</u></b></p> <p>(U) <u>FY 2001 (\$ in Thousands)</u></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 15%;">(U) \$303,957</td> <td>Continued System Development/Analysis</td> </tr> <tr> <td>(U) \$13,182</td> <td>Provided Systems Engineering</td> </tr> <tr> <td>(U) \$12,489</td> <td>Program Management and Other Support Costs</td> </tr> <tr> <td>(U) \$48,000</td> <td>Continued Heavy Lift Vehicle (HLV) Demonstration Integration</td> </tr> <tr> <td>(U) \$377,628</td> <td>Total</td> </tr> </table> <p>(U) <u>FY 2002 (\$ in Thousands)</u></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 15%;">(U) \$213,174</td> <td>Continue System Development/Analysis</td> </tr> <tr> <td>(U) \$25,504</td> <td>Provide Systems Engineering</td> </tr> <tr> <td>(U) \$15,143</td> <td>Program Management and Other Support Costs</td> </tr> <tr> <td>(U) \$8,500</td> <td>Begin GPS Metric Tracking Booster Capability Integration</td> </tr> <tr> <td>(U) \$53,000</td> <td>Continue HLV Demonstration Integration</td> </tr> <tr> <td>(U) \$315,321</td> <td>Total</td> </tr> </table> <p>(U) <u>FY 2003 (\$ in Thousands)</u></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 15%;">(U) \$9,031</td> <td>Complete System Development/Analysis</td> </tr> <tr> <td>(U) \$2,831</td> <td>Other Support Costs</td> </tr> <tr> <td>(U) \$17,700</td> <td>Continue GPS Metric Tracking Booster Capability Integration</td> </tr> <tr> <td>(U) \$28,000</td> <td>Continue HLV Demonstration Integration; Accomplish Demonstration Article Launch and Delivery/Review</td> </tr> <tr> <td>(U) \$57,562</td> <td>Total</td> </tr> </table> <p>(U) <b><u>B. Budget Activity Justification</u></b></p> <p>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.</p>			(U) \$303,957	Continued System Development/Analysis	(U) \$13,182	Provided Systems Engineering	(U) \$12,489	Program Management and Other Support Costs	(U) \$48,000	Continued Heavy Lift Vehicle (HLV) Demonstration Integration	(U) \$377,628	Total	(U) \$213,174	Continue System Development/Analysis	(U) \$25,504	Provide Systems Engineering	(U) \$15,143	Program Management and Other Support Costs	(U) \$8,500	Begin GPS Metric Tracking Booster Capability Integration	(U) \$53,000	Continue HLV Demonstration Integration	(U) \$315,321	Total	(U) \$9,031	Complete System Development/Analysis	(U) \$2,831	Other Support Costs	(U) \$17,700	Continue GPS Metric Tracking Booster Capability Integration	(U) \$28,000	Continue HLV Demonstration Integration; Accomplish Demonstration Article Launch and Delivery/Review	(U) \$57,562	Total
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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)							DATE February 2002		
BUDGET ACTIVITY				PE NUMBER AND TITLE			PROJECT		
<b>05 - Engineering and Manufacturing Development</b>				<b>0604853F Evolved Expendable Launch Vehicle - EMD</b>			<b>0004</b>		
<b>(U) C. Program Change Summary (\$ in Thousands)</b>									
			<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>			<u>Total Cost</u>	
(U)	Previous President's Budget		329,897	320,321	39,862			1,288,724	
(U)	Appropriated Value		332,952	315,321					
(U)	Adjustments to Appropriated Value								
	a. Congressional/General Reductions		-2,331						
	b. Small Business Innovative Research								
	c. Omnibus or Other Above Threshold Reprogram								
	d. Below Threshold Reprogram		-270						
	e. Rescissions		-723						
(U)	Adjustments to Budget Years Since FY 2002 PBR		48,000		17,700				
(U)	Current Budget Submit/FY 2003 PBR		377,628	315,321	57,562			1,339,705	
<b>(U) Significant Program Changes:</b>									
FY 2001: \$48M increase was funded in the FY01 Supplemental Appropriation to support the HLV demonstration which is scheduled to launch in FY03, approximately four months prior to the first operational government HLV launch.									
FY 2003: \$17.7M increase is a result of additional funds to provide GPS Metric Tracking capability to the boosters.									
SPO Management costs for FY03 and beyond are funded in PE0305953F, MPAF due to transition to production									
<b>(U) D. Other Program Funding Summary (\$ in Thousands)</b>									
		<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>Total Cost</u>
		<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	
(U)	AF RDT&E								176,634
(U)	Other APPN								
(U)	NRO (Non-AF budget)*								95,100
(U)	MPAF (BA 05, PE 0305953F, P-28)**	286,287	98,007	158,867	621,450	570,180	710,264	930,384	7,749,910
(U)	DARPA (Non-AF Budget)								9,845

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BUDGET ACTIVITY							PROJECT		
<b>05 - Engineering and Manufacturing Development</b>							<b>0604853F Evolved Expendable Launch Vehicle - EMD 0004</b>		
<b>(U) D. Other Program Funding Summary (\$ in Thousands)</b>									
	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	
(PE 0603226E)***									
* Total includes FY96 and FY97 funding.									
** The Cost To Complete value is an estimate that fluctuates driven by the commercial market demand for launch services. The current estimate of \$7,749.9M is derived from the 2001 Commercial Space Transportation Advisory Committee (COMSTAC) Report based on 491 launches through 2020 (reduced from 941 projected launches in the 2000 COMSTAC Report). It should be noted that market demands/projections beyond 24 months are fluid, and significant swings in annual market demand and Cost To Complete values should be expected.									
*** Total includes FY94 funding.									
<b>(U) E. Acquisition Strategy</b>									
<p>The EELV concept of families 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 - The Boeing Company (TBC - originally McDonnell Douglas) and Lockheed Martin Astronautics (LMA) - 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, 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).</p> <p>On 18 Sep 2000, a revised acquisition strategy was reviewed by the DEPSECDEF and signed by USD (AT&amp;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 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.</p> <p>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 and the government will continue to work in partnership with industry to capture continuous product and process improvements that will enhance reliability and reduce both the contractors' and government's total operating costs..</p>									
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BUDGET ACTIVITY 05 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604853F Evolved Expendable Launch Vehicle - EMD 0004					PROJECT				
<b>(U) F. Schedule Profile</b>														
		<u>FY 2001</u>					<u>FY 2002</u>					<u>FY 2003</u>		
	1	2	3	4	1	2	3	4	1	2	3	4		
(U) Atlas V Roll-Out		*												
(U) Boeing Pad 37 Dedication					*									
(U) Boeing RS-68 Engine Certification					*									
(U) 1st Commercial Atlas V Launch							X							
(U) 1st Commercial Delta IV Launch								X						
(U) 1st Government Medium Launch									X					
(U) HLV Demonstration Launch									X					
* completed event														
X planned event														
Project 0004														
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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE February 2002				
BUDGET ACTIVITY					PE NUMBER AND TITLE			PROJECT			
<b>05 - Engineering and Manufacturing Development</b>					<b>0604853F Evolved Expendable Launch Vehicle - EMD</b>			<b>0004</b>			
<b>(U) A. Project Cost Breakdown (\$ in Thousands)</b>											
						<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>			
(U)	System development					303,957	221,674	26,731			
(U)	Systems Engineering					13,182	25,504				
(U)	Program management and other support costs					12,489	15,143	2,831			
(U)	HLV demonstration					48,000	53,000	28,000			
(U)	Total					377,628	315,321	57,562			
<b>(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)</b>											
<b>(U) Performing Organizations:</b>											
	<u>Contractor or Government Performing Activity</u>	<u>Contract Method/Type or Funding Vehicle</u>	<u>Award or Obligation Date</u>	<u>Performing Activity EAC</u>	<u>Project Office EAC</u>	<u>Total Prior to FY 2001</u>	<u>Budget FY 2001</u>	<u>Budget FY 2002</u>	<u>Budget FY 2003</u>	<u>Budget to Complete</u>	<u>Total Program</u>
	<u>Product Development Organizations</u>										
	Prime Contractor Boeing	OTA	Oct 98	641,452	641,452	278,062	231,817	131,782	45,881	1,000	688,542
	Prime Contractor Lockheed Martin	OTA	Oct 98	500,000	500,000	265,886	120,140	142,892	8,850	1,000	538,768
	<u>Support and Management Organizations</u>										
	SPO/CTF Mission Spt	Various	Various	33,337	33,337	14,120	8,015	9,973	2,831	0	34,939
	FFRDC	SS/CPAF	Annual	67,214	67,214	25,394	13,182	25,504	0	0	64,080
	Other Cntr Spt	Various	Various	14,013	14,013	3,732	4,474	5,170	0	0	13,376
	<u>Test and Evaluation Organizations</u>										
	None										
<b>(U) Government Furnished Property:</b>											
	<u>Item Description</u>	<u>Contract Method/Type or Funding Vehicle</u>	<u>Award or Obligation Date</u>	<u>Delivery Date</u>		<u>Total Prior to FY 2001</u>	<u>Budget FY 2001</u>	<u>Budget FY 2002</u>	<u>Budget FY 2003</u>	<u>Budget to Complete</u>	<u>Total Program</u>
	Project 0004										

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE February 2002					
BUDGET ACTIVITY				PE NUMBER AND TITLE				PROJECT	
<b>05 - Engineering and Manufacturing Development</b>				<b>0604853F Evolved Expendable Launch Vehicle - EMD</b>				<b>0004</b>	
<b>(U) Government Furnished Property Continued:</b>									
	<u>Contract</u>	<u>Award or</u>							
<u>Item</u>	<u>Method/Type</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>or Funding</u>	<u>Date</u>	<u>Date</u>	<u>to FY 2001</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</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 2001</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Complete</u>	<u>Program</u>
Subtotal Product Development				543,948	351,957	274,674	54,731	2,000	1,227,310
Subtotal Support and Management				43,246	25,671	40,647	2,831	0	112,395
Subtotal Test and Evaluation									
Total Project				587,194	377,628	315,321	57,562	2,000	1,339,705