

**UNCLASSIFIED**

PE NUMBER: 0604853F  
 PE TITLE: Evolved Expendable Launch Vehicle - EMD

<b>Exhibit R-2, RDT&amp;E Budget Item Justification</b>	DATE <b>February 2005</b>
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<b>BUDGET ACTIVITY</b> <b>05 System Development and Demonstration (SDD)</b>	<b>PE NUMBER AND TITLE</b> <b>0604853F Evolved Expendable Launch Vehicle - EMD</b>
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Cost (\$ in Millions)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	7.509	26.763	26.093	18.303	0.000	0.000	0.000	0.000	0.000	833.611
0004 Evolved Expendable Launch Vehicle	7.509	26.763	26.093	18.303	0.000	0.000	0.000	0.000	0.000	833.611

**(U) A. Mission Description and Budget Item Justification**

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 competitive families of launch vehicles (Delta IV & Atlas V). The program satisfies the government's National Launch Forecast (NLF) requirements, reduces the cost of space launch by at least 25%, and satisfies commercial satellites' launch services needs.

EELV is a commercial launch service, not a weapon system. The EELV program 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, dual integration, special flight instrumentation, loads analysis, etc.), post-flight data evaluation and analysis, mission assurance, assured access (RL-10 producibility, etc.), government mission director, system/process and reliability improvements, training, and technical support. In addition, the system includes launch site/operations activities, activities in support of assured access, systems integration and tests, and other related support activities. The program will also design and develop a Global Positioning System (GPS) Metric Tracking capability for obtaining real-time booster position data during flight.

The EELV system provides two families of launch vehicles (Delta IV and Atlas V). EELV is responsible for launching government manifested payloads, including those supported by Titan II, Delta II, Atlas II/III, and Titan IV. Evolved from current expendable launch systems and new applications of existing technology, EELV supports military, intelligence, civil, and commercial mission requirements.

An 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. An HLV demonstration test article was launched on 21 Dec 2004. This program element is in Budget Activity 5, System Development and Demonstration, because it supports development and demonstration of the EELV concept leading to deployment of a lower cost expendable launch vehicle system.

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

	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) Previous President's Budget	7.909	27.000	17.153	17.963
(U) Current PBR/President's Budget	7.509	26.763	26.093	18.303
(U) Total Adjustments	-0.400	-0.237		
(U) Congressional Program Reductions				
Congressional Rescissions		-0.237		
Congressional Increases				
Reprogrammings				
SBIR/STTR Transfer	-0.400			
(U) <u>Significant Program Changes:</u>				
FY06 includes additional \$8.8M for GPS Metric Tracking development				

## Exhibit R-2a, RDT&amp;E Project Justification

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<b>05 System Development and Demonstration (SDD)</b>		<b>0604853F Evolved Expendable Launch Vehicle - EMD</b>						<b>0004 Evolved Expendable Launch Vehicle</b>		
Cost (\$ in Millions)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
0004 Evolved Expendable Launch Vehicle	7.509	26.763	26.093	18.303	0.000	0.000	0.000	0.000	0.000	833.611
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

**(U) A. Mission Description and Budget Item Justification**

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

**(U) B. Accomplishments/Planned Program (\$ in Millions)**

	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) Continue GPS Metric Tracking Booster Capability Integration	0.509	12.763	12.093	8.303
(U) Assured Access initiatives	7.000	14.000	14.000	10.000
(U) Total Cost	7.509	26.763	26.093	18.303

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PROJECT NUMBER AND TITLE

0004 Evolved Expendable Launch  
Vehicle(U) **C. Other Program Funding Summary (\$ in Millions)**

	<u>FY 2004</u>	<u>FY 2005</u>	<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>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>Estimate</u>	<u>Complete</u>	
(U) Other APPN										
(U) MPAF (BA 05, PE 0305953F, P-28)*	624.788	506.389	838.347	1132.873	1163.979	1123.048	1156.133	1437.792	12,804.860	20,788.20 9

\* The Cost To Complete value is an estimate based on 95 AF launches in the current manifest, FY 2002-2020.

(U) **D. Acquisition Strategy**

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) and Lockheed Martin (LM) - 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 LM for the development effort. The contractors have contributed additional funds of their own, as necessary, to bring their national launch operational capability on line. It is estimated that each contractor has invested in excess of \$1B. At the same time as the award of the development effort, Initial Launch Services (ILS) contracts were awarded to Boeing for \$1.38B (19 missions) and 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 would develop a Vandenberg AFB launch facility. LM transferred two West Coast Defense Meteorological Satellite Program (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.

On 24 Jul 2003, the investigation into Procurement Integrity Act violations by TBC resulted in transferring seven ILS missions from TBC to LM. In addition, TBC's exclusive right to west coast missions was rescinded. LM is developing a Vandenberg AFB launch facility that is planned for completion in CY05.

All of the ILS (Buy 1/awarded) launch services are firm-fixed price contracts. Due to the decrease in the commercial market, the projected costs of the unawarded EELV launches have increased. The new acquisition strategy, which will begin in FY06, separates the launch price from the infrastructure costs. Follow-on Launch Service Buys will include launch service costs on a fixed-price contract. National launch capability infrastructure costs, to include launch and range operations, mission integration, mission unique development and integration, subcontract support engineering, factory engineering, etc., will be funded on an annual basis. The Space System Acquisition Strategy (SSAS) for EELV is being revised to reflect this modified approach to provide assured access to space with two viable launch service providers.

The acquisition approach supports the 2004 National Space Transportation Policy, 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 majority of 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

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0004 Evolved Expendable Launch  
Vehicle

reliability and reduce both the contractors' and government's total operating costs.

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**Exhibit R-3, RDT&E Project Cost Analysis**

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(U) Cost Categories (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method &amp; Type</u>	<u>Performing Activity &amp; Location</u>	<u>Total Prior to FY 2004 Cost</u>	<u>FY 2004 Cost</u>	<u>FY 2004 Award Date</u>	<u>FY 2005 Cost</u>	<u>FY 2005 Award Date</u>	<u>FY 2006 Cost</u>	<u>FY 2006 Award Date</u>	<u>FY 2007 Cost</u>	<u>FY 2007 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
(U) <u>Product Development</u>														
Prime Contractor Boeing	OTA/ILS		685.002	0.255	Aug-04	6.506	Oct-04	13.046	Nov-05	9.151	Nov-06		713.960	
Prime Contractor Lockheed Martin	OTA/ILS		537.092	7.254	Dec-03	20.257	Oct-04	13.047	Nov-05	9.152	Nov-06		586.802	
Subtotal Product Development			1,222.094	7.509		26.763		26.093		18.303		0.000	1,300.762	0.000
Remarks:														
(U) <u>Support</u>														
SPO/CTF Range Mission Spt	Various		39.529										39.529	
FFRDC	SS/CPAF		67.214										67.214	
Other Cntr Spt	Various		15.144										15.144	
Subtotal Support			121.887	0.000		0.000		0.000		0.000		0.000	121.887	0.000
Remarks:														
(U) <u>Test &amp; 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			1,343.981	7.509		26.763		26.093		18.303		0.000	1,422.649	0.000

Exhibit R-4, RDT&E Schedule Profile

DATE

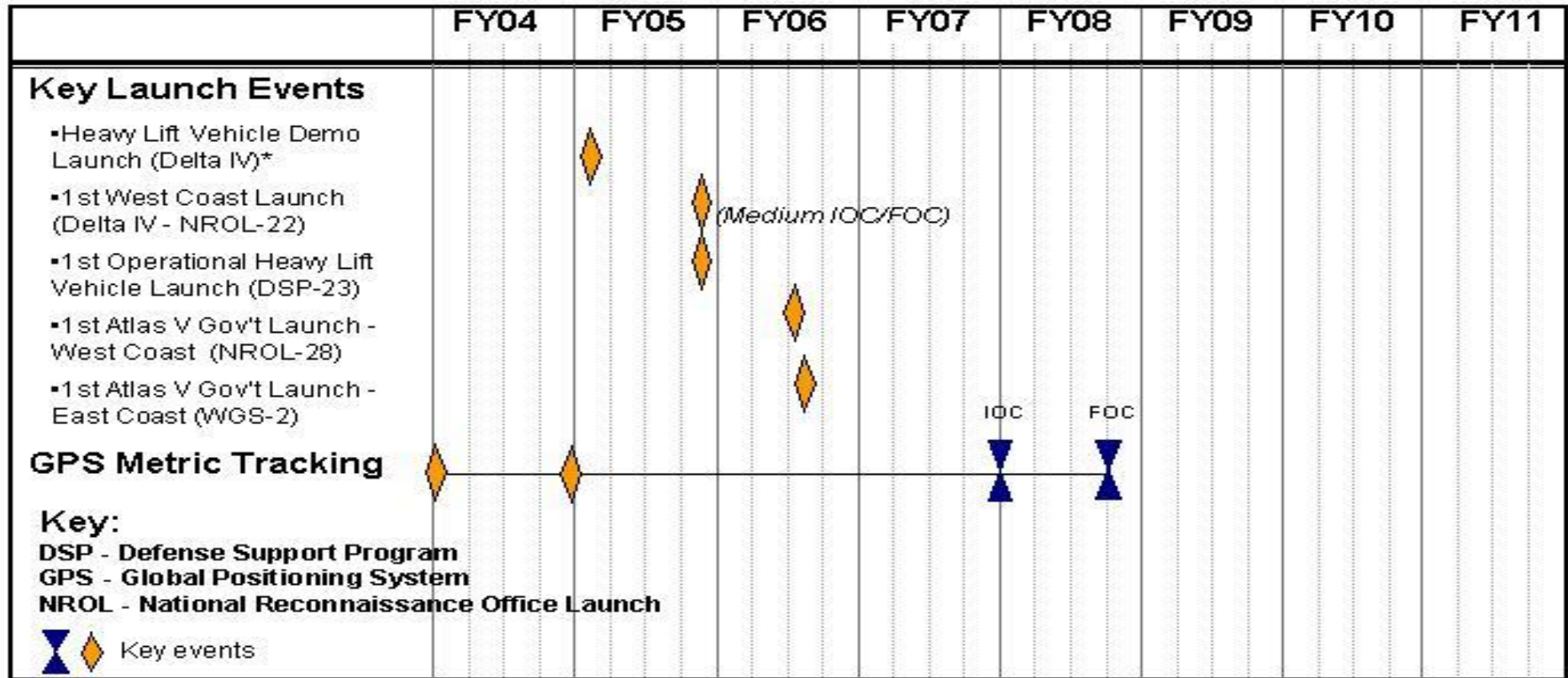
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PROJECT NUMBER AND TITLE  
0004 Evolved Expendable Launch  
Vehicle

EELV Program - Key Events



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<b>Exhibit R-4a, RDT&amp;E Schedule Detail</b>	DATE <b>February 2005</b>
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<b>(U) <u>Schedule Profile</u></b>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) GPS Metric Tracking Project Planning & Requirements Analysis	1-4Q			
(U) GPS Metric Tracking Project Planning & Requirements Integration	4Q	1-4Q	1-4Q	1-4Q
(U) HLV Demonstration Launch		1Q		
(U) 1st West Coast Launch of Delta IV		4Q		
(U) 1st Government Operational HLV Launch		4Q		
(U) 1st West Coast Launch of Atlas V			3Q	
(U) 1st Government East Coast Launch of Atlas V			3Q	