Evolved Expendable Launch Vehicle (EELV)

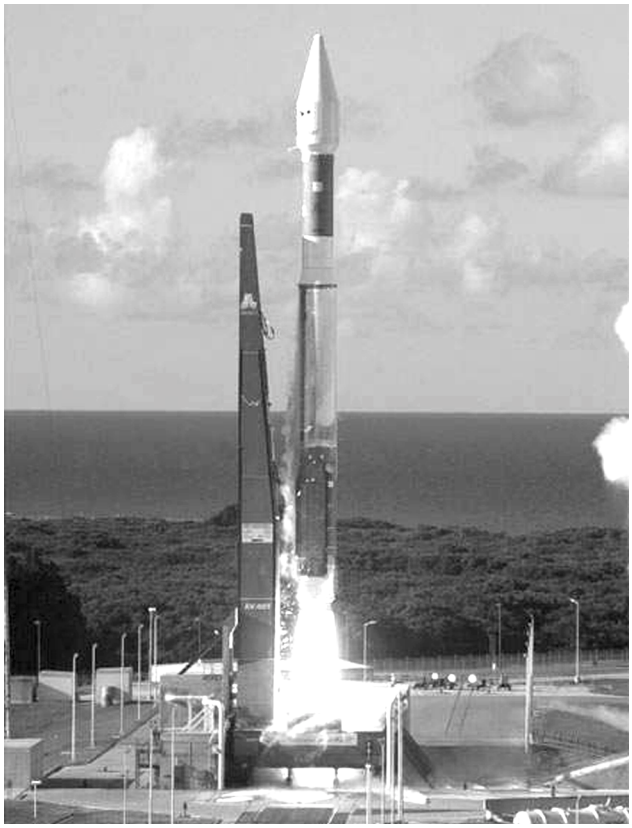
The Evolved Expendable Launch Vehicle (EELV) program will fulfill government satellite launch requirements currently served by Delta II, Atlas II, Titan II, and Titan IV. The EELV will be DoD's only medium, intermediate, and heavy payload space launch capability after current heritage inventories are exhausted. The transition from current launch systems begins in FY03. EELV is expected to provide launch services through 2020.

DoD will acquire launch services. Production and launch operations responsibilities, and ownership of all EELV flight hardware and launch pad structures remain with the contractor. Launch pad real property and other on-base facilities required for operations are leased to the contractors. The government will maintain an ongoing competition between two contractors, Boeing and Lockheed Martin, rather than down-select to one. Boeing's EELV family of launch vehicles is designated the Delta IV, and Lockheed Martin's family of launch vehicles is designated the Atlas V. The contractors share development costs with the government to satisfy both DoD/civil launch requirements and commercial launch needs.

The EELV system includes launch vehicles, infrastructure, support systems, and interfaces. Payload interfaces, launch pads, and infrastructure will be standardized so all configurations of each contractor's EELV family can be launched from the same pad and so payloads can be interchanged between vehicles in the same class (i.e., medium, intermediate, or heavy). The EELV program will maintain current mass-to-orbit capability while increasing launch rate and decreasing costs. Potential savings will be generated through the commercial launch market and shared development by government and commercial customers.

The 1998 EELV Test and Evaluation Master Plan (TEMP), which is currently outdated and in need of revision, describes a test strategy that relies almost exclusively on combined developmental/operational testing. Due to the current acquisition strategy, there are no scheduled dedicated operational test events. The test strategy includes extensive use of models and simulations to predict individual sub-system and total system performance. Despite the commercial nature of the program, the government needs to evaluate system performance, interoperability, standardization, and the ability of each launch system to support launch requirements using only two national launch ranges.

An Operational Assessment was completed in late 2002. DOT&E continues to advocate additional system performance analysis. DOT&E is working with the Air Force to ensure that data sufficient to evaluate the operational effectiveness and suitability of the EELV system will be made available to DOT&E for independent analysis, after the Air Force Operational Test and Evaluation Center's (AFOTEC) test activity ends. Specifically, DOT&E requires an operational 'test' phase that encompasses several launches presently planned for from each contractor and will include Medium Launch Vehicles, Heavy Launch Vehicles, East Coast launches, and at least one West Coast launch.



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TEST & EVALUATION ACTIVITY

- Early in FY02, Boeing and Lockheed Martin continued conducting qualification testing at the component and sub-system level for their respective families of launch vehicles.
    - Government insight was provided by the EELV System Program Office (SPO).
    - The SPO has made very little of this data available to the DoD test community, citing a lack of contractual requirements for formal reporting of the results due to streamlined acquisition and the attendant difficulties of assembling products suitable for external distribution due to the competition sensitivity of the program.
    - As first launch approached, the contractor testing progressed to the system level, culminating in Wet Dress Rehearsals (WDRs).
- DOT&E participation to date has consisted of:
    - Participation in periodic, SPO-conducted, government-only reviews of the entire program as well as integration activities.
    - Attendance at several WDRs, contractor lead system reviews, users' conferences.
    - Visits to production/launch facilities of both contractors.
- DOT&E also participated in Test Integrated Product Team meetings, with the goal of establishing a process for updating the TEMP and ensuring critical documentation and data are available for independent review and analysis.
- AFOTEC conducted an EELV Operational Assessment II from April 2001 to December 2002 to support the first government launch.
- DOT&E witnessed the first two commercial EELV launches; an Atlas V with a commercial payload, and a Delta IV with a commercial payload.

TEST & EVALUATION ASSESSMENT

Based on DOT&E's participation in the periodic program reviews and insight into contractor-conducted test activities, there does not appear to be any insurmountable problem areas affecting the EELV program as a whole. There is, however, critical documentation that needs to be evaluated by DOT&E prior to the first government payload launch on Delta IV, now scheduled for February 2, 2003. Most important are the Technical Operations Review (TOR) and the TEMP. The TOR has not yet been released from the SPO for outside review, and the TEMP, as stated above, is in need of revision.

Operational Assessment II was completed by AFOTEC on December 18, 2002, and found the system to be a potentially effective and potentially suitable launch service which can support the requirements of the National Launch Forecast. Operational Assessment II supported Air Force Space Command's launch readiness review for the first government payload launch, a Defense Satellite Communications System payload scheduled for February 2, 2003. Areas that were rated as making less than Satisfactory Progress included Vehicle Design Reliability, Logistics Supportability, Number of Payload Interfaces, and Information Assurance.

Successful launches with the Atlas V and Delta IV boosters mated to commercial payloads took place in August and November 2002, respectively. Post flight analysis for the Atlas V indicates that first and second stage engine performance and orbital insertion were nominal. Initial indications are that all was successful. The Delta IV's first and second stage engines and Graphite Epoxy Motors (strap-on solid rocket motors) performed as expected.

DOT&E will base its assessment of readiness for the first government launch on having observed the first two commercial EELV flights and having attended the contractor-run post-flight data reviews. DOT&E is still awaiting the SPO's Delta IV first-flight final assessment, which is due prior to the first government launch, now scheduled for February 2, 2003.