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Report to the Subcommittee on Defense, Committee on Appropriations, House of Representatives

September 2008

# SPACE ACQUISITIONS

# Uncertainties in the Evolved Expendable Launch Vehicle Program Pose Management and Oversight Challenges


GAO-08-1039

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## Uncertainties in the Evolved Expendable Launch Vehicle Program Pose Management and Oversight Challenges

GAO Accountability • Integrity • Reliability

Highlights

Highlights of GAO-08-1039, a report to the Subcommittee on Defense, Committee on Appropriations, House of Representatives

### Why GAO Did This Study

The Department of Defense (DOD) plans to spend over $27 billion acquiring launch services through the Evolved Expendable Launch Vehicle (EELV) program over the next 12 years. The EELV program uses two families of commercially owned and operated vehicles to launch satellites.

Partly because the commercial space market did not develop as expected, the EELV program has undergone significant changes. These include: adoption of a new acquisition strategy in 2005 that sought to ensure the viability of the two EELV launch vehicle providers, Boeing and Lockheed Martin; the subsequent decision by those two companies to form a joint venture called the United Launch Alliance (ULA); and a 10-year increase in the life of the program. In light of these changes, GAO was asked to (1) determine what uncertainties DOD faces in the EELV program and in the transition to ULA, and (2) assess how DOD is positioned to manage and oversee the effort. To accomplish this, GAO reviewed a wide variety of DOD documents and interviewed DOD and program officials.

### What GAO Recommends

GAO recommends the Secretary of Defense take actions to: ensure the regular reporting of key information on program status, produce an independent life-cycle cost estimate, and ensure the program's staffing meets its needs. DOD concurred with the recommendations.

To view the full product, including the scope and methodology, click on GAO-08-1039. For more information, contact Cristina Chaplain at (202) 512-4841 or chaplainc@gao.gov.

### What GAO Found

The EELV program currently faces uncertainties in the reliability of the vehicles used to launch military and other government spacecraft as well as its budget for future years and in the merger of its two principal suppliers. Taken together, these unknowns require careful monitoring and oversight to ensure a fairly long track record of launch successes can continue.

- Though the program has had 21 successful operational launches, no single configuration from either family of launch vehicles has been launched enough times to demonstrate production process reliability. The ULA transition may also influence the demonstration of vehicle reliability because ULA plans to relocate production activities and may alter manufacturing processes.
- The consolidation of Boeing and Lockheed into ULA—a massive undertaking that seeks to combine two distinct corporate cultures, and consolidate launch infrastructure and business operations from five locations across the country to two—poses a variety of other cost, schedule, and performance uncertainties and risks.
- DOD does not know whether its EELV program budget is sufficient to manage the program in the short term because the Air Force reduced the EELV program budget to incorporate anticipated savings from the ULA transition, even though savings estimates were based on preliminary data.

DOD has taken steps to position itself to effectively oversee and manage the ULA transition and EELV program but still faces significant challenges in these areas. More specifically, DOD has established a well-defined process for how the ULA transition will be overseen and established mechanisms that allow the diverse agencies involved to coordinate the analysis and raise critical issues to senior leaders. However, when DOD moved the EELV program from the research and development phases in 2007 to the sustainment phase, DOD eliminated requirements on the program to produce data that would illuminate what impacts the transition is having on the program, what cost increases are occurring and why, and what other programmatic and technical vulnerabilities exist and how they are being addressed. Furthermore, a new independent life-cycle cost estimate was not required for the program when it moved to the sustainment phase; as a result, DOD will not be able to rely on this estimate for making long-term investment planning decisions. According to DOD officials, the latest life-cycle cost estimate for the program is not realistic. In addition, as part of its effort to increase its oversight and gain program knowledge, in 2005 the Under Secretary of the Air Force expanded the program office's management responsibilities when he approved a new acquisition strategy for the EELV program. At the same time, program officials stated that they do not have the government staff necessary to perform what they consider to be inherently governmental functions related to the expansion of oversight.

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**Abbreviations**

| | |
|---|---|
| AFB | Air Force Base |
| CAE | component acquisition executive |
| DAES | Defense Acquisition Executive Summary |
| DCAA | Defense Contract Audit Agency |
| DCMA | Defense Contract Management Agency |
| DOD | Department of Defense |
| EELV | Evolved Expendable Launch Vehicle |
| EVM | earned value management |
| FAR | Federal Acquisition Regulation |
| FFRDC | federally funded research and development center |
| FTC | Federal Trade Commission |
| FTE | full-time equivalent |
| NASA | National Aeronautics and Space Administration |
| NRO | National Reconnaissance Office |
| NSSO | National Security Space Office |
| OSD | Office of the Secretary of Defense |
| PBD | Program Budget Decision |
| PEO | program executive officer |
| SAR | Selected Acquisition Report |
| SETA | systems engineering and technical assistance |
| SMC | Space and Missile Systems Center |
| ULA | United Launch Alliance |

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Accountability * Integrity * Reliability

**United States Government Accountability Office**
**Washington, DC 20548**

September 26, 2008

The Honorable John P. Murtha
Chairman
The Honorable C.W. Bill Young
Ranking Member
Subcommittee on Defense
Committee on Appropriations
House of Representatives

The Department of Defense (DOD) plans to spend over $27 billion acquiring launch services through the Evolved Expendable Launch Vehicle (EELV) program over the next 12 years. DOD's investment in the EELV program, which uses two families of commercially owned and operated vehicles to launch satellites, is intended to reduce the overall cost of space launches, assure access to space, and preserve the space launch industrial base.

The EELV program has undergone significant changes since its inception. DOD's initial acquisition strategy was to have multiple companies develop launch vehicles and then pick one launch vehicle provider in 1998. However, in November 1997 DOD decided to keep the two contractors then competing, Boeing and Lockheed Martin, as EELV providers, and later awarded contracts to both companies. DOD officials had expected the emergence of a healthy commercial launch market that would support two families of launch vehicles and ultimately mean lower costs to the government. DOD determined launch service prices in the contracts based on an assumption that a robust commercial market would help pay for the launch providers' infrastructure costs. However, in the late 1990s the commercial launch market collapsed, and in late 2003 DOD estimated that average launch cost would increase significantly. DOD responded to these developments with a new acquisition strategy in March 2005 that recognized the government as the primary customer of EELV services and sought to ensure the viability of the two EELV launch vehicle providers.

Additionally, in December 2006 Boeing and Lockheed Martin formed a joint venture called the United Launch Alliance (ULA) to provide EELV launch services to the government. The ULA intends to maintain two separate launch vehicle families while consolidating business, engineering, and manufacturing activities to reduce costs. This consolidation entails moving launch vehicle production facilities and work forces to new

locations. Finally, another significant change is a recent 10-year extension to the life of the EELV program.

In light of the changes the EELV program has experienced, you asked us to (1) determine what uncertainties DOD faces in the EELV program and in the transition to the United Launch Alliance, and (2) assess how DOD is positioned to manage and oversee the program.

To determine what uncertainties DOD faces in the EELV program and ULA transition, we reviewed EELV budget and program status documents, studies of EELV reliability and launch history, ULA joint venture transition plans and status, and DOD risk tracking and mitigation documentation. To assess how DOD is positioned to manage and oversee the EELV program, we analyzed data on EELV program office[1] authorized staffing levels and compared them to filled positions. We also reviewed reporting requirements under the new EELV acquisition strategy, contract data requirements lists for both Atlas and Delta contracts, EELV program oversight documentation, and DOD acquisition policies. We interviewed officials from various DOD organizations as well as launch contractors. We conducted this performance audit between June 2007 and September 2008 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

## Results in Brief

DOD faces numerous uncertainties in the EELV program and ULA transition related to the reliability of the launch vehicles, the amount of work remaining in the ULA transition, and program budget decisions based on preliminary data. First, though the program has had 21 successful operational launches, DOD does not yet know whether EELVs are reliable because no single configuration from either family of launch vehicles has been launched at least 7 times to demonstrate production process reliability. According to a widely accepted measurement practice, production process maturity can be demonstrated through 7 successful launches. Additionally, DOD may be less certain of EELV reliability as the ULA transition progresses, because ULA plans to relocate production

[1] The EELV program office's official name is the Launch and Range Systems Wing.

activities and may alter manufacturing processes. Second, DOD faces uncertainties relating to the cost, schedule, and performance risks of the ULA transition, mainly because the transition is still in its initial stages, and numerous unknowns exist in areas such as production, personnel management, and cost savings. Furthermore, the ULA consolidation is a massive undertaking as it attempts to combine two distinct corporate cultures into a unified workforce, and consolidate launch infrastructure and business operations from five locations across the country to two. Third, DOD does not know whether its EELV program budget is sufficient to manage the program in the short term because the Air Force reduced the EELV program budget to incorporate anticipated savings from the ULA transition, even though savings estimates were based on preliminary data.

DOD has taken steps to position itself to effectively oversee and manage the ULA transition and EELV program but still faces significant challenges in these areas. More specifically, DOD has a well-defined process for how the ULA transition will be overseen and established mechanisms that allow the diverse agencies with oversight responsibilities to coordinate the analysis of the transition and raise critical issues to senior leaders. However, by moving the EELV program in 2007 to the sustainment phase, as opposed to the research and development and production phases, DOD eliminated requirements on the program to submit data to DOD offices responsible for program oversight—data which could illuminate program variances and technical risks and how they are being addressed. Furthermore a new independent life-cycle cost estimate was not required for the program when DOD moved it from the research and development phases to the sustainment phase. As a result, DOD will not be able to depend on a reliable life-cycle cost estimate for making long-term investment planning decisions because, according to DOD officials, the latest life-cycle cost estimate for the program is not realistic. In addition, as part of its effort to increase its oversight and gain program knowledge, in 2005 the Under Secretary of the Air Force expanded the program office's management responsibilities when it approved a new acquisition strategy for the EELV program. However, program officials stated that they do not have the government staff necessary to perform these expanded duties, which include activities such negotiating contracts, performing earned value management reviews, determining award fees, and assessing contractor performance.

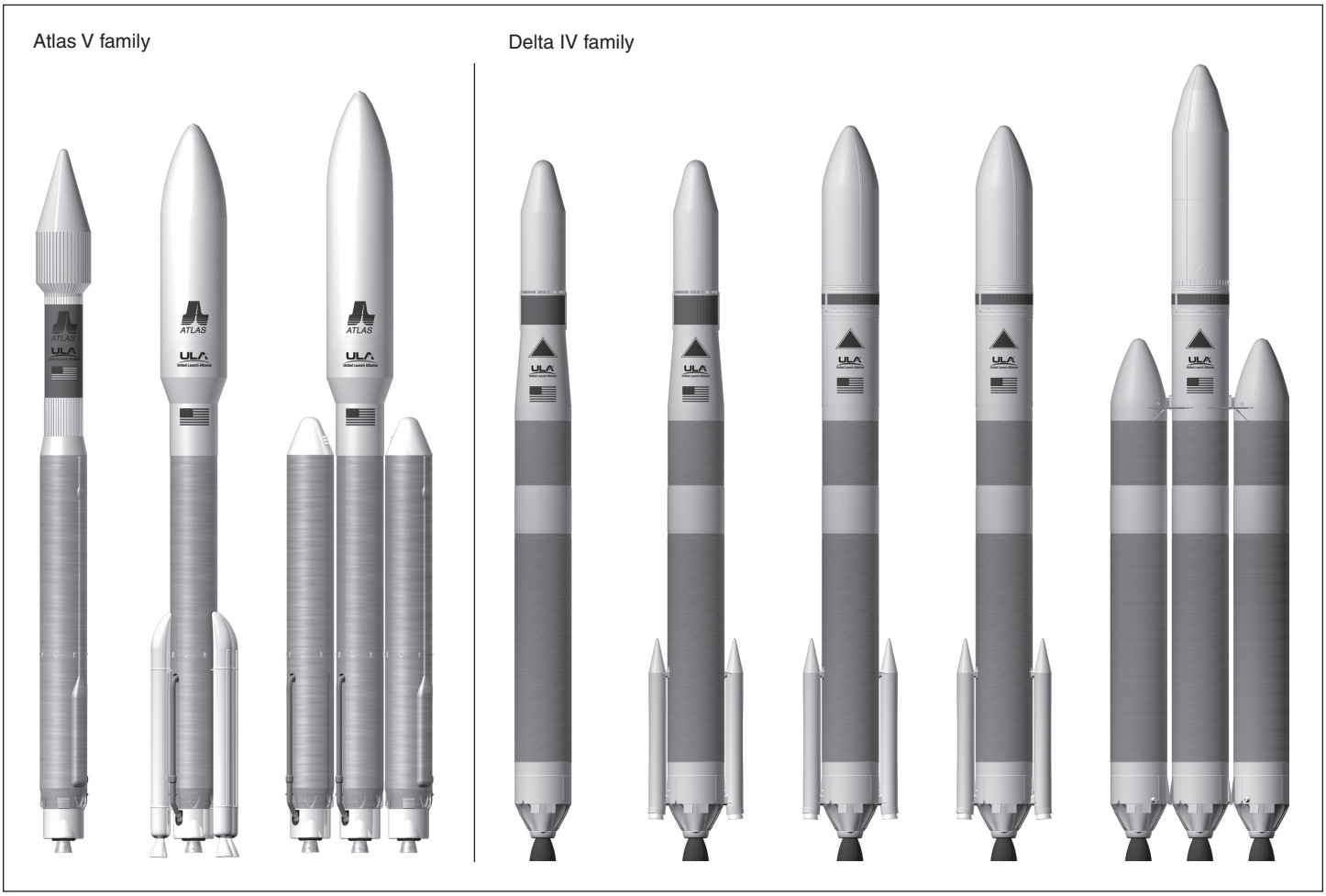
To improve DOD's ability to effectively oversee and manage the EELV program, we are recommending that DOD (1) continue to produce and share data with senior leaders on program cost and status using criteria that apply to major research and development and procurement programs

and (2) prepare an independent life-cycle cost estimate once the ULA joint venture transition is completed so that senior leaders and the program can make decisions based on an estimate that reflects the span of changes that have occurred in recent years. We are also recommending that the Air Force assess the EELV program's staffing needs to determine the extent to which personnel shortages exist, particularly as they relate to functions integral to achieving DOD's goals for enhanced program oversight. DOD agreed with our recommendations.

## Background

DOD initiated the EELV program in 1995 to develop a new generation of launch vehicles. The EELV program— designed to provide assured, affordable access to space for government satellites—consists of two families of commercially owned and operated launch vehicles, the Atlas V and Delta IV launch vehicles. It also includes manufacturing and launch site facilities, and ground support systems. Each family of launch vehicles consists of medium-, intermediate-, and heavy-lift vehicles. To simplify the design and manufacture of the vehicles, common components (such as booster engines) are being extensively used. See figures 1 and 2 for depictions of the Atlas V and Delta IV launch vehicle families and major components of the launch vehicles.

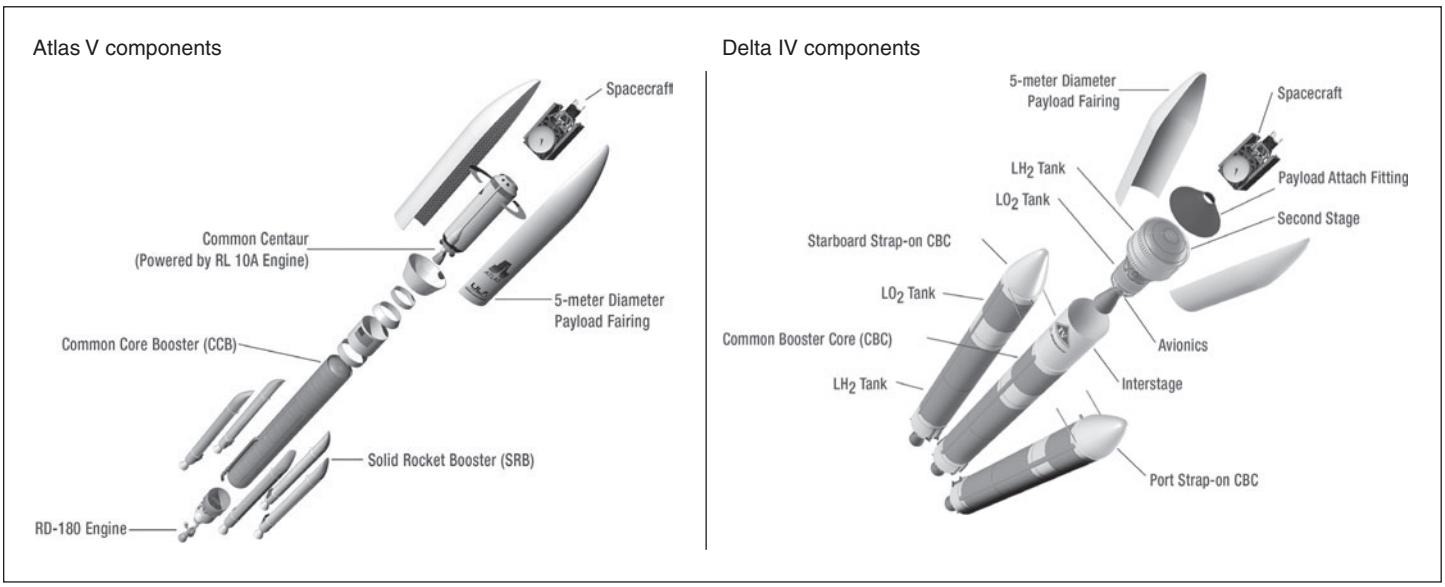
**Figure 1: Atlas V and Delta IV Families of Launch Vehicles**




Source: Copyright © 2008 United Launch Alliance, LLC. All Rights Reserved. Used with Permission.

Note: The Atlas V heavy-lift vehicle has not been built.

**Figure 2: Major Components of Atlas V and Delta IV Launch Vehicles**

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In 1995, the Air Force awarded $30 million firm fixed-price contracts to four companies to define EELV system concepts and complete preliminary system designs. In December 1996, two of those companies, McDonnell Douglas (which became part of Boeing in 1997) and Lockheed Martin, were each awarded an 18-month, $60 million cost-plus fixed-fee contract to continue EELV design activities. At the end of their contracts, DOD planned to down-select to one contractor with the most reliable and cost-effective launch vehicle design. However, in November 1997 the Office of the Secretary of Defense (OSD) approved maintaining competition between the two contractors. This decision was based on forecasts that growth in the commercial space launch services market would support more than one launch provider and translate into lower costs for the government. More specifically, the strategy was designed to

- promote competition for launch services over the life of the program;
- encourage contractor investment and innovation for launch vehicle development;
- procure launch services that include the vehicle, the lift-off, and flight to orbit under one contract at a fixed price instead of procuring launch vehicles and launch operations under two or more separate contracts; and
- leverage the benefits of a robust commercial marketplace.

In October 1998, the Air Force competitively awarded two $500 million "other transaction agreements" to McDonnell Douglas before it merged with Boeing and Lockheed Martin for the development of EELV families of launch vehicles and launch infrastructure. Other transaction agreements are transactions that are other than contracts, grants, or cooperative agreements that are subject to federal laws and regulations applicable to contracts, grants, or cooperative agreements. The Air Force used other transaction agreements to provide flexibility in accommodating the unique needs of the EELV program and the government. Simultaneous with the Air Force's execution of the other transaction agreements, the Air Force also competitively awarded firm fixed-price contracts, one each to McDonnell Douglas (now Boeing) and Lockheed Martin, to procure 28 launches. At the time of award, the launch services contracts had a combined value of $2.03 billion.

The robust commercial launch market upon which OSD based the EELV acquisition strategy did not materialize. As a consequence, estimated prices for future contracts for launch services increased, along with the total cost of the program. DOD's December 2003 cost estimate for the program showed an average procurement unit cost for EELV launch services that was 77 percent higher than its 2002 cost estimate. This resulted in a Nunn-McCurdy unit cost breach, which occurs when a major defense acquisition program experiences a unit cost increase of at least 15 or 25 percent.[2] In April 2004, in response to the unit cost breach, the Secretary of Defense sent Congress a certification that the program was essential to national security and established a new cost estimate. The new cost estimate increased the launch service's average procurement unit costs by an additional 29 percent, due primarily to a reduction in the number of planned EELV launches.

In March 2005, DOD revised the EELV acquisition strategy to reflect changes in the commercial market assumptions since 1998 and the role of the government as the primary EELV customer. The revised approach

[2] The Nunn-McCurdy provision (10 U.S.C. § 2433) currently requires DOD to take specific actions when a major defense acquisition program's growth exceeds certain cost thresholds. Some of the key provisions of the law require, for example, that for major defense acquisition programs, (1) Congress must be notified when a program has an increase of at least 15 percent in program acquisition unit cost above the unit cost in the current baseline estimate and (2) the Secretary of Defense must certify the program to Congress when the program has unit cost increases of at least 25 percent of the current baseline estimate or at least 50 percent of the original baseline estimate. The current law also includes cost growth thresholds from the program's original baseline estimate.

involved a new contracting strategy consisting of two negotiated contracts—EELV Launch Capability and EELV Launch Services—for each of the two launch service providers. The EELV Launch Capability cost-plus award fee contract is primarily for launch infrastructure, while the EELV Launch Services fixed-price incentive fee contract is for launch services. Under this contract approach, the government purchases launch services through competitive negotiated acquisitions that provide more government insight into contractor costs than contracts awarded under commercial item acquisition procedures.[3] This enables the Air Force to collect previously unavailable certified cost or pricing data. As with the original acquisition strategy, there are no government ownership costs—the EELV program continues to provide launch services and ownership of hardware and facilities is retained by the contractors.

In May 2005, Boeing and Lockheed Martin announced plans to create a joint venture that would combine the production, engineering, test, and launch operations associated with U.S. government launches of Boeing's Delta and Lockheed Martin's Atlas rockets. According to both contractors, the joint venture, named the United Launch Alliance, would reduce the cost of meeting critical national security and National Aeronautics and Space Administration (NASA) expendable launch vehicle needs. By joining together, the companies stated they could provide the government with assured access to space at the lowest possible cost.

The ULA was structured as a 50-50 joint venture between Boeing and Lockheed Martin—combining services provided separately by Boeing Integrated Defense Systems' Expendable Launch Systems division and by Lockheed Martin's Space Systems Company—for launches of each company's respective rockets. Based upon initial contractor estimates, annual savings to the government resulting from the joint venture were expected to be approximately $100 million to $150 million.

The ULA joint venture—which was subject to government and regulatory approval in the United States and internationally—drew initial criticism from various organizations. The Federal Trade Commission (FTC) was initially opposed to the ULA joint venture because of the potential to limit competition in the launch industry—an industry with already high barriers

[3] Under Federal Acquisition Regulation (FAR) Part 12 procedures, the government had less insight into a contractor's costs since cost or pricing data cannot be required in the acquisition of commercial items.

to entry. Other companies in the launch industry also submitted formal concerns citing unfair competition. In response, DOD stated that having two launch vehicle families would present unique national security benefits that would outweigh the loss of competition. FTC agreed to allow the joint venture to move forward under the conditions of a consent order, which requires ULA to be nondiscriminatory to other companies seeking launch services. FTC provided preliminary approval of the consent order in October 2006,[4] and the joint venture officially began operations in December 2006. To ensure that ULA follows the provisions of the consent order, the order requires the Secretary of Defense to appoint a compliance officer, currently the Director of the National Security Space Office (NSSO),[5] to have broad investigative and remedial powers to ensure compliance. In addition, the consent order requires ULA to establish—no later than 24 months after the formation of ULA, or December 2008—separate communication networks and management information systems from its parent companies, Boeing and Lockheed Martin.

The first Atlas V and Delta IV launches occurred in 2002. According to the Air Force, all 21 Atlas V and Delta IV launches through June 2008 have been successful.[6] DOD estimates its investment in the EELV program through fiscal year 2008 to be about $8.2 billion, and future investment to be about $27.5 billion.

## DOD Faces Numerous Uncertainties in the EELV Program and ULA Transition

DOD faces numerous uncertainties in the EELV program and ULA transition related to the reliability of the launch vehicles, the amount of work remaining in the ULA transition, and program budget decisions based on premature data. First, DOD does not yet have enough launch experience with EELVs to demonstrate their reliability, which may be accomplished by carrying out a set number of successful launches. While all Atlas V and Delta IV operational launches conducted thus far have been successful, launch vehicle design and production reliability have yet be demonstrated due to the limited number of launches. Additionally, DOD may be even less certain of EELV reliability as the program progresses as

[4] The FTC finalized the consent order on May 1, 2007, following a public comment period.

[5] NSSO facilitates the integration and coordination of defense, intelligence, civil, and commercial space activities.

[6] Of these 21 launches, 10 have been for DOD, 3 for civil government agencies (NASA and the National Oceanic and Atmospheric Administration), and 8 for commercial companies (based on payload).

plans to relocate production activities under the ULA transition may undo some of the progress made toward demonstrating EELV reliability. Second, DOD faces uncertainties relating to the cost, schedule, and performance risks of the ULA transition, mainly because the transition is still in its initial stages, and numerous unknowns exist in areas such as business and production processes, personnel management, and cost savings. Third, DOD does not know whether its EELV program budget is sufficient to manage the program over the next 5 years because the Air Force accounted for anticipated savings from the ULA transition in the program budget,[7] even though savings estimates were based on preliminary data.

## DOD Does Not Yet Know if EELVs Are Reliable

DOD does not yet have enough launch experience with EELVs to demonstrate their reliability. According to the Air Force, since the first launches in 2002, all 21 Atlas V and Delta IV operational launches have been successful.[8] However, these launches represent experience with only 9 of 15 possible EELV configurations across both families of launch vehicles. As depicted in table 1, only 1 EELV configuration has been launched more than 3 times. This is significant because the number of times a configuration has been successfully launched can be an indicator of a configuration's design and production process reliability, according to an Aerospace Corporation[9] study of EELV launch risk.[10]

Through a study of the causes of worldwide launch vehicle success and failures over a 13-year period, the Aerospace Corporation developed a widely accepted measurement for demonstrating launch vehicle design and production process reliability called the "3/7 Reliability Rule." According to this rule, if a failure occurs during a configuration's first

[7] The fiscal year 2008 EELV program budget spans 6 years: fiscal years 2008 through 2013.

[8] The program office defines launch success as placing a satellite into orbit such that the payload is able to perform its mission. For example, during a June 2007 Atlas V launch of a National Reconnaissance Office (NRO) payload, an upper stage engine cut off 4 seconds early, placing the payload in a lower-than-desired orbit; however, the Air Force is confident the payload will be able perform its mission, and thus considers the launch a success.

[9] The Aerospace Corporation is a federally funded research and development center that provides objective technical analyses and assessments for military, civil, and commercial space programs.

[10] This 2002 report, entitled "Building Confidence in EELV," was an assessment of EELV launch risk and was prepared for the Air Force Assured Access Study.

three launches, the problem is most likely a design issue, and if a failure occurs after the third successful launch but before the seventh, the problem is most likely a production process issue. Once a launch vehicle configuration is launched successfully three times, its design can be considered to have demonstrated maturity; similarly, if a vehicle is successfully launched seven times, both the design and production process maturity of that launch vehicle configuration can be considered as having been demonstrated. Until a launch vehicle configuration demonstrates maturity, problems encountered during launches of these configurations are more likely to uncover fleetwide design or production process issues that could cause significant cost and schedule impacts to the program.

Table 1 shows that only 3 of the 15 EELV configurations have been launched three or more times, and none has been launched seven times. The EELV program office agrees that the 3/7 Reliability Rule is applicable to EELV configurations, and program officials state that the program will continue to apply the rule when assessing the requisite level of quality assurance activities for each configuration. However, according to OSD officials, the 3/7 Reliability Rule is only partially applicable to EELV configurations because of the commonality among the vehicles. For example, the same common core boosters are used on all Atlas vehicles; therefore, according to these officials, reliability on the Atlas launch vehicle line can be demonstrated through fewer launches of individual configurations than the 3/7 Reliability Rule dictates. The same is true of Delta launch vehicles. Nevertheless, these officials agreed that inherent risk lies in the integration of launch vehicle configurations, which can be lessened with each consecutive flight.

**Table 1: Evolved Expendable Launch Vehicle Configurations by Number of Operational Launches**

| | Launch vehicle name | | Vehicle configuration[a] | Number of operational launches |
|---|---|---|---|---|
| 1 | Atlas V | 401 | 4 – 0 | 6 |
| 2 | | 411 | 4 – 1 | 2 |
| 3 | | 421 | 4 – 2 | 2 |
| 4 | | 431 | 4 – 3 | 1 |
| 5 | | 501 | 5 – 0 | 0 |
| 6 | | 511 | 5 – 1 | 0 |
| 7 | | 521 | 5 – 2 | 2 |
| 8 | | 531 | 5 – 3 | 0 |

| | Launch vehicle name | | Vehicle configuration[a] | Number of operational launches |
|---|---|---|---|---|
| 9 | | 541 | 5 – 4 | 0 |
| 10 | | 551 | 5 – 5 | 1 |
| 11 | Delta IV | Medium | 4 – 0 | 3 |
| 12 | | Medium+ (4,2) | 4 – 2 | 3 |
| 13 | | Medium+ (5,2) | 5 – 2 | 0 |
| 14 | | Medium+ (5,4) | 5 – 4 | 0 |
| 15 | | Heavy[b] | Heavy | 1 |
| | **Total** | | | **21** |

Source: GAO analysis of Air Force data.

[a]The first number refers to the diameter (in meters) of the compartment on the launch vehicle that houses the payload and the second number refers to the number of add-on solid rocket boosters mounted to the primary booster. The heavy configuration refers to a launch vehicle consisting of three primary boosters. See figs. 1 and 2 for depictions of the launch vehicles and their components.

[b]Does not include a 2004 Delta IV heavy demonstration launch which did not deliver the payload to the proper orbit.

## ULA Transition Activities May Undermine Progress Made in Demonstrating EELV Reliability

Transition activities under the ULA joint venture include moving production equipment to different facilities and possibly changing manufacturing processes, and could reverse some of the progress made toward demonstrating production process maturity of those EELV configurations launched previously. Specifically, part of the ULA transition plan includes relocating production of the Atlas line of launch vehicles from San Diego, California, and Denver, Colorado, to Decatur, Alabama. According to Aerospace Corporation officials and a 2007 study by Booz Allen Hamilton,[11] relocating highly calibrated production equipment from one facility to another and changing manufacturing processes increases risk to launch vehicle quality and may detract from progress made toward demonstrating production process maturity. This means that launch vehicle configurations (shown in table 1) that have been successfully launched, and have therefore begun the process of establishing production process maturity, may lose some of their accumulated progress.

[11] Booz Allen Hamilton, *Launch Mission Assurance Assessment Study* (April 2007). This study was requested by the Director, National Reconnaissance Office and the Commander, U.S. Air Force Space Command.

The ULA transition plan also allows for changing one of its key manufacturing processes. While the process may be more effective, it has not been used before in Atlas production, though it is currently used in the production of Delta launch vehicles. According to ULA officials, incorporating the new process on Atlas vehicles could potentially reduce the need for some rework. Risk reduction testing through July 2008 has shown the technical viability of the new process, according to the EELV program office, and additional discussions with ULA will determine whether ULA will pursue it on the Atlas line of vehicles.

Given the limited EELV launches to date, and the possibility that some progress toward demonstrating maturity may be lost due to relocation of production or changes to the process, DOD can not be fully confident in the design and production process maturity of most of the EELV configurations. According to program officials, although some EELV configurations may never demonstrate design or production process maturity throughout the life of the EELV program because of their limited demand, using data from launches of other configurations provides insight into the reliability estimates for those vehicles that have not yet flown.

## DOD Faces Numerous Uncertainties about the Cost, Schedule, and Performance Risks of the ULA Transition

Any corporate consolidation on the scale of the ULA joint venture poses challenges and a great deal of uncertainty. In addition to bringing together diverse cultures and ways of doing business, such endeavors may involve complicated personnel relocations, the closing and opening of facilities, implementation of new information technology systems, and rethinking of business processes, while at the same time maintaining high-quality customer service. Because many ULA transition activities have only recently begun or are still in the planning stages, numerous uncertainties exist, many of which are inherent in the transition itself. They span business and production operations, personnel management, and cost savings, and have the potential to significantly affect the cost of the transition, and ultimately, launch vehicle quality. Following are a few examples of these uncertainties.

- In addition to possibly introducing a new manufacturing process as stated earlier, ULA will incorporate Atlas manufacturing equipment into the Decatur facility. Current plans include a physical reconfiguration of the facility to accommodate the influx of Atlas production, including the movement of interior walls and a change in production flow for the Delta production line, both of which could affect launch vehicle quality.
- As Atlas production operations move to Decatur, ULA will try to relocate as many Atlas staff as possible. ULA's goal is to move roughly 30 percent of staff from San Diego and Denver to Decatur, but Defense Contract

Management Agency (DCMA) officials state that they expect it will be a challenge for ULA to retain even 10 percent of targeted Atlas staff. The loss of manufacturing knowledge likely to result from the relocation of Atlas production operations is regarded by DOD, Aerospace Corporation, and ULA officials as one of the top risks of the transition because the loss of critical manufacturing skills and process knowledge could ultimately affect launch vehicle quality. The relocation of Delta engineering and program operations from Huntington Beach, California, to Denver as part of the ULA consolidation may also result in the loss of critical engineering skills, according to Aerospace Corporation officials, as many experienced staff will not remain under ULA employment. ULA offered positions in Denver to all of its salaried employees in the Huntington Beach facility, and 41 percent reportedly accepted the offer to relocate.

- Efforts to separate information technology and management networks from parent companies and to set up accounting practices are proving more complex and time consuming than originally anticipated and a recent 10-month extension to the goal date of separation is expected to result in higher-than-anticipated costs. As it moves toward separation, ULA is buying infrastructure support services from its parent companies, through "transition service agreements," and the additional costs associated with prolonging the use of these agreements could ultimately increase the cost of the separation effort. Furthermore, financial repercussions are possible due to the large amount and complexity of the work remaining to accomplish the FTC-mandated information systems separation. The ULA recently requested a formal extension to the FTC's specified deadline of December 2008, which was granted by the NSSO Compliance Officer. The revised deadline for separation is October 2009, representing a 10-month delay.
- ULA has provided DOD with a restructure proposal which projects the cost and savings of the transition. According to DCMA, as a result of review, the proposal currently meets federal statutory requirements for the reimbursement of restructuring expenses. An advance agreement that accompanies the proposal specifies the maximum amount of reimbursement ULA may recover from DOD for restructuring expenses. DOD is currently reviewing the proposal and advance agreement, in part, to determine if they are based on sound business judgment and are equitable to all parties. However, much of the transition has yet to occur, and some of the transition activities that have begun are proving more complex than anticipated. ULA estimates that consolidation of launch infrastructure and operations under the ULA joint venture from fiscal years 2008 through 2012 will cost about $205 million, and it plans to recover much of this expense from the government. According to federal statute, the government may not reimburse a contractor—in this case ULA—for the costs of the restructure, unless DOD determines in writing

that (1) the savings to DOD are at least twice the amount of the costs allowed, or (2) the amount of projected savings to DOD will exceed the amount of the costs allowed and that the business combination will result in the preservation of a critical capability that otherwise might be lost to the department.[12] Should the cost of transition activities exceed ULA's estimate, then according to DCMA, ULA may face pressure to meet the requirements for reimbursement of restructure costs. We agree with DCMA that if this happens, ULA may be at risk of making decisions based more on cost considerations than on assuring quality within the launch vehicle manufacturing process.

Table 2 provides a more complete description of ULA transition uncertainties.

[12] 10 U.S.C. § 2325 (a) (1) (A) and (B).

**Table 2: Uncertainties of the ULA Transition**

| ULA uncertainties | Description |
|---|---|
| Business and production uncertainties | • Implementation of information technology systems has experienced multiple delays, and actual implementation time frames are unknown.<br>  • Implementation of the Enterprise Resource Planning system is taking significantly longer than expected, and DCMA expects deployment of this system to cost nearly twice as much as originally estimated.<br>  • According to DCMA, milestones for implementing the Manufacturing Execution System, a part of the Enterprise Resource Planning system, have slipped as much as 1 year because ULA's original schedule was too aggressive; ULA agrees schedule was inadequate.<br>• Several company stand-up activities have experienced delays and as of September 2008 approval is still pending for<br>  • disclosure statement amendments outlining new accounting practices and rate structures, and<br>  • a restructure proposal which finalizes the transition plan and resulting cost savings.<br>• Separation of information technology and management networks from parent companies is taking longer than planned, and has required a 10-month extension to FTC's December 2008 deadline.<br>• Relocating Atlas production and reconfiguring Delta equipment may reverse some of the progress made toward establishing production process reliability.<br>• Modifications to the Decatur facility's building to accommodate Atlas production could disrupt current processes for Delta production, resulting in potential loss of progress toward demonstrating production process reliability.<br>• Changing one of the key manufacturing processes on the Atlas family of launch vehicles may reverse some of the progress made toward establishing production process reliability. |
| Personnel management uncertainties | • Loss of critical Atlas manufacturing and process knowledge could result from inadequate personnel relocation and could impact launch vehicle quality.<br>• Loss of engineering knowledge could result from impending separation of senior Delta engineering staff from ULA, in turn impacting launch vehicle quality.<br>• Combining two distinct corporate cultures while maintaining a motivated, workforce may be difficult and morale could suffer. |

| ULA uncertainties | Description |
|---|---|
| Cost savings uncertainties | • Many ULA activities have yet to begin; if ULA underestimated resources needed for these activities, costs could increase.<br>• Extending the FTC deadline for ULA separation of information technology and management networks from parent companies could result in prolonged need to purchase infrastructure support services from parents, potentially increasing costs.<br>• Additional training costs could arise if ULA does not retain adequate personnel following relocation of Atlas production.<br>• According to DCMA, if ULA does not pursue the new manufacturing process on Atlas vehicles as originally planned, ULA will have to replace the equipment currently used, potentially increasing cost, as relocating this equipment to the Decatur facility is not an option.<br>• The EELV program office and DCMA are evaluating the qualification requirements for the first Centaur tank produced following relocating production to Decatur. One option could entail the production of a tank solely for testing purposes, and if this option is executed, it would deviate from ULA's baseline, which includes testing a tank intended for operational use. This means production of the testing tank and the associated testing regimen could increase costs. |

Source: GAO analysis of data from DCAA, DCMA, the EELV program office, and ULA.

## DOD Adjusted the EELV Program Budget Using Premature Savings Estimates

As described in table 2, despite the magnitude of activities that have yet to be completed under the ULA transition, DOD has accounted for over $100 million in savings in the EELV program budget, beginning in 2011. In 2005, before the joint venture was finalized, a small contractor team that was formed to review the proposed joint venture estimated the likely implementation costs and projected the savings that would result. Preliminary calculations showed that the consolidation of launch infrastructure and operations would yield up to $150 million in savings per year, beginning in 2011. The Air Force portion of these savings was projected at $105 million per year.[13] Program officials stated that while formulating the program budget in 2006, prior even to final government approval of the ULA joint venture, the Air Force was confident enough in the estimates to subtract $105 million in savings per year from the EELV program budget, to begin in 2011. Given the many activities remaining in

[13]The Air Force portion of savings corresponds to the proportion of program costs for which it pays—70 percent (the NRO pays 30 percent)—and the resulting annual savings to the Air Force were projected at $105 million (70 percent of $150 million), beginning in 2011.

the transition, and the preliminary nature of the data used to calculate the savings, it may have been premature for DOD to reflect the anticipated savings in the EELV program budget. Furthermore, some transition activities that have begun are expected to take longer than originally planned, as discussed above. DOD officials stated that ULA's current proposed savings estimate undergoing DOD review shows greater annual savings than originally estimated. However, if the cost or duration of the ULA transition is different than anticipated, actual savings could differ from the predicted $105 million per year beginning in 2011, leaving DOD at risk of EELV program budget shortfalls.

## DOD Has Made Strides to Effectively Oversee and Manage the EELV Program but Challenges Exist in These Areas

In recent years, DOD has taken steps to effectively oversee and manage the EELV program by closely monitoring the ULA transition and changing its strategy for acquiring launch services. However, OSD's decision to advance the program into the sustainment phase is limiting its ability to provide effective oversight. In addition, the EELV program office believes a shortage of staff with the right skills and experience is limiting its ability to effectively manage the program. Air Force staffing initiatives have done little to alleviate this shortage.

### Multiple Offices within DOD Are Monitoring the ULA Transition

DOD has taken positive steps to oversee the ULA transition. Various organizations are monitoring the transition efforts and providing input to OSD, the Air Force, and ULA on ways to mitigate risk. These efforts range from activities by high-level OSD offices such as the Under Secretary of Defense for Acquisitions, Technology and Logistics, down to the day-to-day monitoring activities coordinated by the EELV program office. For example, the Secretary of Defense assigned the Director of the National Security Space Office as the FTC consent order compliance officer to meet periodically with ULA to determine progress made and formally report to FTC on an annual basis, while the EELV program office holds regular meetings with ULA and provides progress updates to Air Force leadership. DCMA conducts ongoing technical risk evaluations, and advises the program office and ULA on a consistent basis of relevant risk reduction measures. As table 3 shows, multiple organizations coordinate with each other to monitor the transition.

**Table 3: DOD Responsibilities in Monitoring the ULA transition**

| Organization | Responsibilities |
|---|---|
| National Security Space Office (NSSO) | • Verifies compliance with the FTC decision and order<br>• Meets periodically with ULA to determine progress made<br>• Reviews written reports by Lockheed Martin, Boeing, and ULA showing progress made in achieving compliance with the FTC consent order<br>• Reports conclusions to the FTC annually |
| Defense Contract Management Agency (DCMA) | • Performs the majority of transition monitoring efforts, conducts surveillance through communications with ULA, conducts risk assessments, and documents and reports results of its evaluations to the program office<br>• Participates in periodic Executive Board meetings to review progress of transition<br>• Provides status updates and raises critical issues to DCMA Headquarters for guidance<br>• Set up "Red Teams" consisting of DCMA officials at ULA facilities in Decatur, Alabama, San Diego, California, and Denver, Colorado, to monitor transition operations<br>• Makes determinations and recommendations including, but not limited to, indemnification packages, cost accounting system acceptability, novation[a] agreements, and restructure proposal |
| EELV Program Office | • Reviews documents such as indemnification packages, novation agreements, and the restructure proposal and coordinates with DCMA and other appropriate offices<br>• Holds regular meetings with ULA to obtain updates of transition<br>• Provides progress updates to Air Force leadership in Executive Board meetings<br>• Monitors, with Aerospace Corporation assistance, the risks of the ULA transition to launch success |
| Defense Contract Audit Agency (DCAA) | • Supports DCMA and the program office by reviewing and providing audit findings on ULA proposals |
| Office of the Under Secretary of Defense for Acquisitions, Technology and Logistics[b] | • Approves final restructure proposal |

Source: GAO presentation of DOD data from DCAA, DCMA, EELV program office, and NSSO.

[a]With respect to government contracts, a novation agreement is a legal instrument executed by the contractor (transferor), successor in interest (transferee), and government, and by which, among other things, the transferor guarantees performance of the contract, the transferee assumes all obligations under the contract, and the government recognizes the transfer of the contract and related assets. FAR 2.101.

[b]The Under Secretary of Defense for Acquisitions, Technology and Logistics serves as an advisor to the Secretary of Defense for all matters involving acquisitions, technology, and logistics.

DOD officials stated that frequent coordination and communication between the contractor and the government and among the various offices within DOD have ensured a good understanding of progress and issues to date. For example, according to a DCMA senior official, DCMA—which is responsible for many of the transition monitoring efforts—actively participates in Executive Board meetings where all issues pertaining to the transition are raised. The Executive Board consists of senior representatives of several organizations and is chaired by the Air Force Program Executive Officer for Space, who is responsible for all acquisition programs at the Air Force Space Command's Space and Missile Systems Center. The EELV program office, DCMA, NASA, DCAA, National Reconnaissance Office (NRO), and the consent order compliance team are all members of the Executive Board, which convenes approximately quarterly to discuss transition issues, discuss major obstacles, and collectively resolve them. For example, at an Executive Board meeting earlier this year, it was noted that the ULA transition efforts required a detailed master schedule in order to review all schedules for each critical work stream. Consequently, the transition plans now include a much more detailed master schedule that has made it easier to track all critical work activities.

## OSD's Capability to Provide Effective Oversight Hampered by Sustainment Decision

While DOD has taken positive steps to oversee and manage the ULA transition, another action within DOD will make it more difficult to monitor the ongoing progress of the EELV program. OSD's decision to advance the EELV program from the development and production phases, which began in 1998, to the sustainment phase will significantly reduce EELV's reporting requirements to OSD, such as program cost and status information, limiting its own ability to oversee the program.[14] According to OSD, the program was placed in sustainment in August 2007 because OSD had determined EELV had completed its development and production phases. However, according to OSD officials, the sustainment decision may have been influenced by other factors such as avoiding imminent Nunn-McCurdy unit cost breaches and possible subsequent certification efforts that invariably would have led to decisions to continue DOD's investment in the EELV program. According to these officials, in 2006 the program was facing one or more possible Nunn-McCurdy unit cost

[14] Typically, for nonspace major defense acquisition programs, the sustainment phase begins when the acquired weapons or automated information systems have been fielded or deployed. In this phase, DOD oversight is normally reduced and program emphasis is on activities such as supply, maintenance, and transportation.

breaches, as a result of unplanned cost increases resulting from the change in the acquisition strategy and a decrease in the demand for EELV launches (factors include satellite program development delays and cancellations, and operational satellites lasting longer than anticipated). These officials stated that even given the anticipated cost savings associated with the ULA joint venture, the program would still have faced a unit cost breach.

When the program was placed into sustainment, however, certain program cost and status information was no longer required because sustainment programs, having completed their development and production phases, generally do not generate the types and kinds of information traditionally produced during development or production. Since this information is generally not produced, program offices are not required to report it to OSD or Congress. For example, the EELV program will no longer be required to submit to OSD a quarterly cost and status report called the Defense Acquisition Executive Summary (DAES). The DAES is a detailed, multipart document that serves as an early-warning report to OSD by describing actual program problems, or warning of potential program problems, and describing mitigating actions taken or planned. According to DOD guidance, the DAES report contains the minimum necessary information for oversight purposes. (See app. II for a more extensive list of what the DAES contains.) Table 4 lists other OSD oversight reporting requirements that do not apply to sustainment programs. According to officials in the program office and the office of the Assistant Secretary of Defense for Networks and Information Integration, the EELV program is still required to prepare and submit annual budget request documentation and congressional program status briefings, and the program office still reviews earned value management data and produces monthly program cost and status reports for the Air Force Program Executive Officer for Space. Additionally, the OSD officials stated that while at this time there were no plans to continue performing oversight analysis of the data required by the reports we cite, they agreed that finding a way to continue reporting these data would be valuable.

**Table 4: OSD Program Cost and Status Reporting Requirements Not Applicable to Programs in the Sustainment Phase**

| Reporting requirement | Description | Primary user |
|---|---|---|
| Defense Acquisition Executive Summary (DAES) | At a minimum, the DAES should report program assessments, unit costs, and current estimates. It should also report the status of exit criteria and vulnerability assessments. | OSD |
| Nunn-McCurdy unit cost tracking provisions | The Secretary of Defense is required to notify Congress when a major defense acquisition program exceeds certain thresholds. | Congress |
| Updated program life-cycle cost estimate | Contains summary of program office cost estimate and Cost Analysis Improvement Group independent cost estimate and compares or reconciles the two estimates, includes assessment of program risks, compares (time-phased) Cost Analysis Improvement Group cost estimate to current program funding, and makes recommendations concerning program funding. | OSD and program office |
| Earned value management (EVM) data | Contains pertinent data that combine measurements of contractor technical performance, such as accomplishment of planned work, schedule performance, and cost performance. | OSD and program office |
| Selected Acquisition Report (SAR) | Submitted to Congress, contains details on major defense acquisition program cost, schedule, and performance changes on a periodic basis, summarizing the latest estimates of a program's cost, schedule, and technical status. | Congress |

Source: GAO presentation of DOD data.

In addition, a new independent life-cycle cost estimate was not required for the program when it transitioned into the sustainment phase. As a result, OSD will not be able to rely on an updated life-cycle cost estimate for making long-term investment planning decisions. According to DOD officials, the latest life-cycle cost estimate for the program is not realistic, due in part to an optimistic launch vehicle production rate. Additionally, Air Force Space Command recently extended the life of the program by 10 years to fiscal year 2030, making the current life-cycle cost estimate—which only includes costs up until 2020—even less realistic. An updated independent life-cycle cost estimate for the program (developed once the ULA joint venture transition is completed and periodically updated thereafter to account for significant changes, such as fluctuations in launch vehicle demand) could help DOD to establish relevant and reliable baselines for the program as it moves forward and increase congressional insight into program costs. As we reported in 2006, costs for DOD space

acquisitions over the past several decades have been consistently underestimated—sometimes by billions of dollars—because DOD typically does not update life-cycle cost estimates frequently enough to account for significant events and changes.[15] As we reported, at times the only mechanism that forced an updated estimate was DOD policy that the OSD Cost Analysis Improvement Group support the Nunn-McCurdy certification process for programs breaching a certain unit cost threshold. Prior to the August 2007 OSD decision to move EELV into the sustainment phase, the Air Force revised its acquisition strategy in part to obtain greater insight into contractor performance.

## DOD Expanded Its Program Management Responsibilities

As part of its effort to increase its oversight and gain program knowledge, in 2005 the Under Secretary of the Air Force expanded the program office's management responsibilities when he approved a new acquisition strategy for the EELV program. Under the previous acquisition strategy, the government had less insight into contractor performance because it did not collect or have access to cost or pricing data and contractor performance data, making program costs difficult to estimate and limiting congressional insight into the program. Additionally, due to the size of the program office, there were limited opportunities to review and provide comments on launch vehicle technical design and production. The new acquisition strategy, "Buy 3," allows the government significantly more insight into the contractor's technical, cost, and schedule performance information because of the change in contract type and contracting strategy. For example, program officials told us that the launch capabilities contract now requires full earned value management[16] reviews that assess cost, schedule, and performance. In addition, contractor performance is more thoroughly evaluated and documented through assessment reports. Table 5 summarizes some of the additional primary program office responsibilities under the new acquisition strategy.

[15] GAO, *Space Acquisitions: DOD Needs to Take More Action to Address Unrealistic Initial Cost Estimates of Space Systems*, GAO-07-96 (Washington, D.C.: Nov. 17, 2006).

[16] Earned value management (EVM) is a program management tool that integrates the technical, cost, and schedule parameters of a contract. During the planning phase, an integrated baseline is developed by time-phasing budget resources for defined work. As work is performed and measured against the baseline, the corresponding budget value is "earned". Using this earned value metric, cost and schedule variances can be determined and analyzed. EVM provides significant benefits to both the government and the contractor. An EVM system is required on all DOD space program-related contracts meeting certain thresholds unless waived by the DOD Space Milestone Decision Authority. National Security Space Acquisition Policy, No. 03-01 (Dec. 27, 2004).

**Table 5: Additional EELV Program Office Responsibilities Resulting from New Acquisition Strategy**

| **Program office responsibilities** | |
|---|---|
| Award fee criteria determination and evaluation | Sets criteria for award fees including fee determination, evaluates contractor performance, and recommends the amount of the award fee |
| Earned value management (EVM) reviews | Reviews new data requirements and cost data reports and complies with defense acquisition regulations for EVM data monitoring requirements |
| Report reviews/new reporting requirements | Reviews contractor cost data reports that include financial information on the costs that DOD contractors will incur while working on the program<br><br>Generates a Contractor Performance Assessment Report that assesses and records a contractor's performance on a given contract during a specific period; each assessment is based on objective facts and supported by program and contract management data, such as cost performance reports, quality reviews, etc. |
| Integrated business reviews | Attends meetings to discuss cost performance and business issues resulting from EVM data reviews |
| Contract negotiations (the procuring contracting officer, who resides in the program office, performs these activities) | On behalf of the government, conducts complex contract negotiations for both Atlas and Delta launch vehicles whenever a new launch is ordered and/or major changes are made to the infrastructure contracts<br><br>Is responsible for all oversight operations at the launch ranges including operations and maintenance associated with facilities and facility upgrades; consequently, the program office must validate requirements for facility maintenance and upgrades and determine the roles and responsibilities for paying for these activities including:<br>• determining cost-sharing responsibilities because facilities are used for both commercial and governmental purposes, and<br>• addressing issues such as how to provide additional facilities for the contractor's use and making modifications to contractor property (leaky roofs, rusting tooling, etc.) |
| New entrant process | Certifies whether launch providers other than ULA meet program requirements, including key performance parameters and cost savings, via formal reviews of design, cost, and flight data |
| **Engineering responsibilities** | |
| Pedigree reviews | Reviews vehicle and component data packages to ensure that the subject articles have been manufactured and tested in accordance with approved processes |

| | |
|---|---|
| Design reviews | Conducts many design engineering analysis evaluations (as resources permit) due to earlier nonparticipation in launch vehicle design, larger number of launch vehicle configurations than heritage launch vehicles, and executing first-time satellite-to-launch vehicle integration activities |
| Flight worthiness certification | Evaluates systems analyses, mission design and integration tasks, unplanned technical issue resolution, etc. to support certification of launch vehicle as ready to launch |
| Launch Operations | In conjunction with launch base personnel, conducts day-of-launch operation to execute mission assurance activities leading to launch and deployment of DOD payloads |
| **ULA transition responsibilities** | |
| Monitoring teams | Will monitor the technical transitions from both California to Colorado and from California and Colorado to Alabama |
| Senior leadership involvement | Are responsible for coordinating key transition goals such as the approval of the restructure proposal by the Under Secretary of Defense for Acquisition, Technology and Logistics, novation of contracts, and negotiation of leases |

Source: GAO presentation of EELV program office data.

## Staffing Shortage Impacts Program Office Ability to Manage the EELV Program

Although the increase in program management responsibilities has positioned the program office to better manage the EELV program, program officials told us that staffing in the EELV program office has not grown commensurately. As a result, they said the program now faces a shortage of government personnel with the right skills and experience to fulfill these new responsibilities. Program officials told us the staff shortage is a result of funding limitations, including the recent "force shaping" initiative to reduce Air Force military positions, as well as overall Air Force-wide recruiting challenges. According to program officials, this shortage of staff has hampered the program office's ability to complete the current workload. Currently, the program office has approximately 211 military and civilian personnel, as well as over 290 contractor staff.[17] However, given the change to the acquisition strategy, the program office has found it challenging to complete all tasks requiring a greater degree of specialized skills.

[17] The EELV program office was unable to provide us with the total number of personnel from all contractors providing assistance to the program office; therefore, we were only able to analyze numbers of Aerospace Corporation personnel. Military and civilian personnel figures are as of March 2008 and Aerospace personnel figures are as of May 2008.

According to program officials, personnel shortages have occurred particularly in highly specialized areas such as avionics and launch vehicle groups. For example, program officials stated that 7 of 12 positions in the engineering branch for the Atlas group are now vacant. These engineers work on issues such as reviewing components responsible for navigation and control of the rocket. As table 6 shows, only half the government jobs in some key areas were projected to be filled.

**Table 6: Summer 2008 Projected Staffing Levels within the EELV Program Office (as of March 2008)**

| Launch & Range Systems Wing staffing profile (as of March 2008) | | | |
|---|---|---|---|
| **Program office group** | **Authorized** | **Vacant** | **% Staffed** |
| **Program Management** | 86 | 28 | 67.4% |
| Commander Wing | 5 | 2 | 60.0 |
| Management Operations | 4 | 1 | 75.0 |
| Program Control | 39 | 16 | 59.0 |
| Contracting | 38 | 9 | 76.3 |
| | | | |
| **Engineering** | 26 | 13 | 50.0% |
| | | | |
| **Atlas Group** | 32 | 16 | 50.0% |
| Engineering | 12 | 7 | 41.7 |
| Integration | 11 | 7 | 36.4 |
| Mission Support | 7 | 2 | 71.4 |
| Management | 2 | 0 | 100.0 |
| | | | |
| **Delta Group** | 37 | 17 | 54.1% |
| Delta IV | 12 | 4 | 66.7 |
| Delta II | 11 | 6 | 45.5 |
| Delta Program Integration | 13 | 7 | 46.2 |
| Management | 1 | 0 | 100.0 |
| | | | |
| **Space Lift Range Groups** | 129 | 26 | 79.8% |
| Spacelift Range Group (Los Angeles, AFB) | 31 | 14 | 54.8 |
| Spacelift Range Group-Eastern Range (Patrick AFB, FL) | 31 | 2 | 93.5 |

| Launch & Range Systems Wing staffing profile (as of March 2008) | | | |
|---|---|---|---|
| **Program office group** | **Authorized** | **Vacant** | **% Staffed** |
| Spacelift Range Group- Western Range (Vandenberg AFB, CA) | 27 | 7 | 74.1 |
| Range Sustainment (Peterson AFB, CO) | 40 | 3 | 92.5 |
| **Total** | **310** | **100** | **67.7%** |

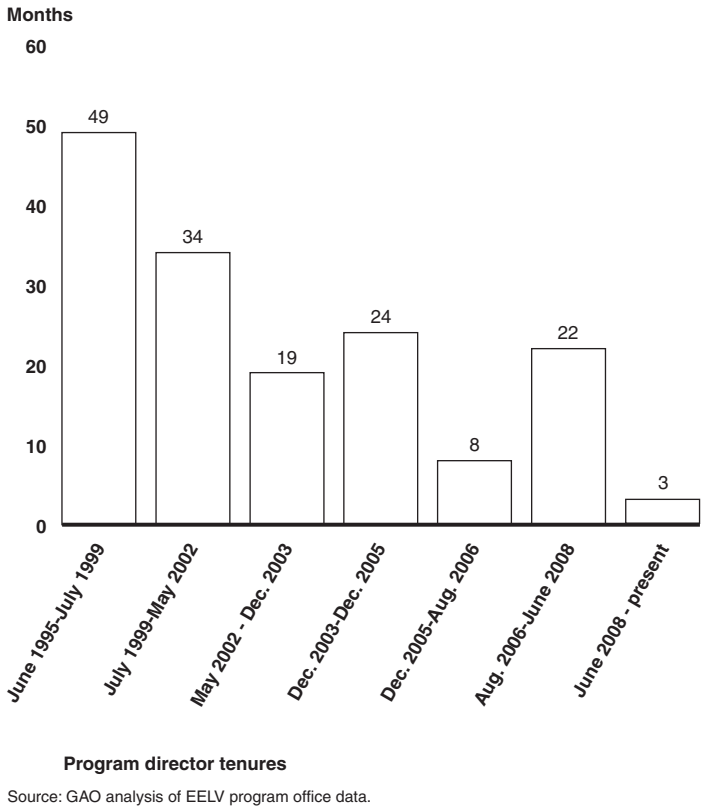
Source: GAO analysis of EELV program office data.

In addition to the perceived shortage of skilled personnel, turnover in leadership could also hamper the program office's ability to effectively manage the program. As GAO recently reported in congressional testimony on accountability issues in the acquisition environment, lack of program management tenure makes it difficult to hold program officials accountable for the business cases they are entrusted to manage and deliver.[18] According to the program office, the EELV program has recently experienced a loss in leadership, including the Wing Commander, or program director, responsible for the program office; the Delta Group Commander; the ULA Formation Program Manager; and the ULA Formation Contract Manager. While the Wing Commander has been replaced and the previously vacant Vice Commander position has been filled, there remains the loss of some of the most experienced personnel familiar with program execution and critical issues such as the ULA transition and current contract negotiations, according to the program office. Since the inception of the EELV program, the tenure for an EELV program director has ranged from 8 months to 49 months (the current program director has been with the program since June 2008), as shown in figure 3. With the exception of the first program director, this tenure falls short of DOD's workforce policy, which provides that the tenure period for program managers of major defense acquisition programs is the program milestone closest to 4 years or as tailored by the acquisition executive based on unique program requirements.[19]

[18]GAO, *Defense Acquisitions: Better Weapon Program Outcomes Require Discipline, Accountability, and Fundamental Changes in the Acquisition Environment*, GAO-08-782T (Washington, D.C.: June 3, 2008).

[19]Department of Defense Instruction No. 5000.66, *Operation of the Defense Acquisition, Technology and Logistics Workforce Education, Training, and Career Development Program* (Dec. 21, 2005), p.21.

**Figure 3: Tenures of EELV Program Directors from June 1995 to the Present**




Source: GAO analysis of EELV program office data.

While program officials could not specifically quantify the amount of work not being performed, they stated that the staffing shortage has affected the program's ability to complete programmatic and administrative tasks on time. According to program officials, the EELV program is also experiencing an increase in unplanned engineering work, which is considered critical to launch success and therefore prioritized over other tasks. These officials stated a portion of unplanned work has increased as a result of the lack of DOD's involvement in design engineering reviews early in the EELV program (during the design phase of the program under the previous acquisition strategy when DOD had limited oversight). For example, the program office became aware that the design assumptions for a Centaur inter-stage adapter[20] were flawed because they were based

[20] The inter-stage adapter connects the Atlas booster stage to the Centaur upper stage.

on old assumptions and no longer valid. As a result, the program office had to redesign the adapter, which currently does not meet load-carrying requirements. This redesign could have been averted had the Air Force been involved sooner, according to Air Force officials. In essence, the program has been trying to "catch up" by conducting engineering analyses or reviews that would have typically been conducted much earlier during the EELV design phase, which began in 1998 and ended in 2003. Additionally, program officials stated that an increase in the number of first-time integrations of new generations of satellites to EELVs adds to the number of design issues the program needs to address. Usually, the EELV program has been able to avoid delaying launches in order to complete unplanned work because the schedules for the programs developing the launch vehicle payloads have been delayed as a result of development difficulties. However, a launch delay resulting from the need to complete unplanned work has recently occurred. Specifically, an anomaly experienced during a June 2007 Atlas V launch resulted in a 2-month delay to the subsequent launch of another DOD satellite. Without enough personnel to complete the work, program officials are concerned that the EELV program may soon face additional launch delays.

## Air Force Initiatives Have Not Alleviated the EELV Program's Staffing Shortages

Air Force officials reported that recent Air Force personnel reductions had a disproportionate impact on the EELV program and its acquisition center. Beginning in 2006, the Air Force cut over 40,000 positions across the board in an effort to save money under Program Budget Decision (PBD) 720.[21] In addition, PBD 720 directed reductions to staffing levels of contractors that provide assistance to acquisition programs, particularly federally funded research and development centers (FFRDC) and systems engineering and technical assistance (SETA) contractors. Senior officials at the Manpower and Personnel Directorate at the Air Force Space and Missile Systems Center (SMC)—where EELV is managed—told us that PBD 720 affected SMC disproportionately because it relied heavily on FFRDC and SETA contractors to provide an array of services. According to SMC officials,

[21] Program Budget Decisions (PBD) reflect the decisions of the Office of the Secretary of Defense as to appropriate program and funding to be included in the annual defense budget request which, in turn, may be included in the President's Budget. PBD 720 outlines how manpower reductions will be accomplished to ensure the Air Force meets the force reduction mandated by PBD 720 and maintain mission capability. With PBD 720, the Air Force planned to eliminate 40,000 Active Duty, National Guard, and Reserve full-time equivalent (FTE) positions in order to self-finance the recapitalization and modernization of their aircraft, missile, and space inventories. PBD-720 also accelerated the retirement of a portion of the Air Force's aircraft inventory (F-117s, some B-52s, C-21s, and U-2s).

PBD 720 may have further disproportionately affected the EELV program because it relied more heavily on uniformed personnel and assistance contractors than other space programs at SMC. EELV program officials told us they are in the process of awarding an engineering contract for technical assistance, but PBD 720 now limits the amount of contractor technical assistance the program can obtain due to funding limitations. Figure 4 shows how the program had increasingly relied on the Aerospace Corporation—its largest support contractor—for EELV engineering work over the past 10 years. This increase is largely due to efforts to prevent launch failures of legacy vehicles which occurred shortly after the EELV program was initiated. As figure 4 indicates, Aerospace Corporation's assistance to EELV, as shown by the number of personnel, increased slightly after 2006 but leveled off by 2008 as funding became more limited.[22]

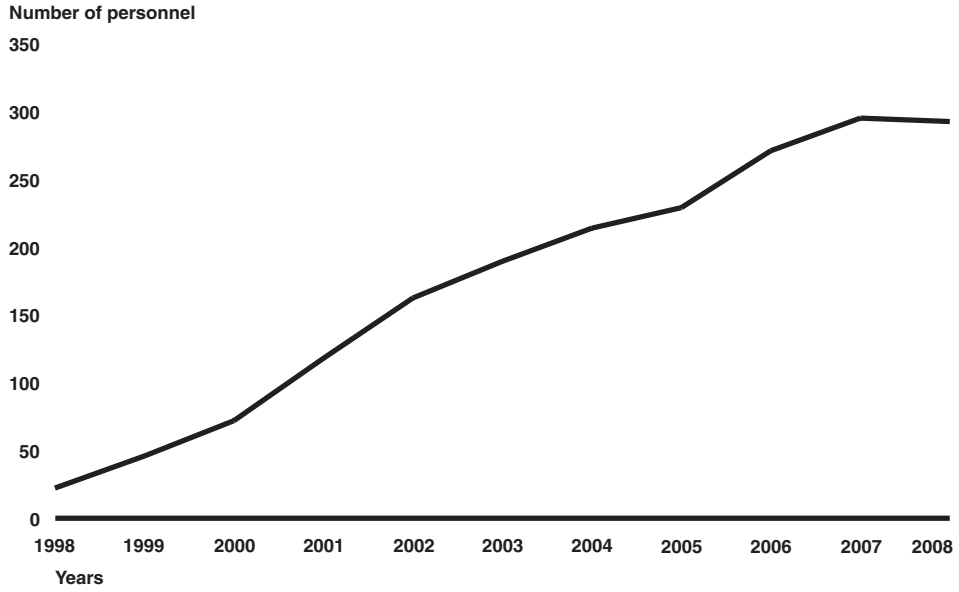
Program officials cautioned that although Aerospace Corporation personnel have assisted with technical tasks the program office can not complete due to the staff shortage, the program can not rely on contractors to perform inherently governmental functions.[23] As we reported in September 2007, an increasing reliance on contractors to perform services for core government activities challenges the capacity of federal officials to supervise and evaluate the performance of these

[22] In the late 1990s, the United States experienced a series of major, and costly, heritage launch vehicle failures. As a result, DOD commissioned a Space Launch Vehicles Broad Area Review to examine the causes of the launch vehicle failures and make recommendations to help ensure success for the remaining launches of heritage vehicles and for the transition to EELVs. Among the recommendations made by the review was for the Air Force to formulate a formal EELV launch risk management program, including an increased focus on launch success by identifying opportunities and resources needed for value-added government independent reviews of launch vehicle development and production. As a result of this recommendation, the EELV program office and Aerospace Corporation developed a rigorous launch mission assurance process, and Air Force investment in independent assessments increased substantially. For example, Aerospace Corporation involvement in the EELV program has increased from 25 personnel at EELV program initiation to the current level of about 290.

[23] The FAR provides that contracts must not be used for the performance of inherently governmental functions. FAR 7.503(a). Inherently governmental functions are so intimately related to the public interest that they should only be performed by government personnel. These functions include those activities which require either the exercise of discretion in applying Government authority or making value judgments in making decisions for the government, and should not be performed by contractors.

activities.[24] As one program official noted, mission assurance is an inherently governmental function, accountability for which should fall solely on the government.

**Figure 4: Aerospace Corporation Assistance Provided to the EELV Program Office**




Source: GAO analysis of program office data.

Program officials stated that Air Force-wide efforts to address staffing shortages have not alleviated the EELV program's staffing shortages. Among these efforts was an attempt to counter the impacts of PBD 720 by converting some military positions to civilian positions—a move that would allow some of the military personnel who accepted the Air Force buy-out and left the service to return to the program as civilians. For example, when the Air Force initiated voluntary reductions by offering buy-outs to officers, 142 officers at SMC accepted. When SMC attempted to refill these positions as civilian positions, only 15 percent of the officers accepted the option to be rehired as civilians. In addition, the hiring process often takes too long to process such conversions, according to the

[24] GAO, *Defense Management: DOD Needs to Reexamine Its Extensive Reliance on Contractors and Continue to Improve Management and Oversight*, GAO-08-572T (Washington, D.C.: Mar. 11, 2008).

program office. For example, when the EELV program was given eight military positions to convert to civilian positions, the program office lost all the candidates for these positions. In the time it took the program to create the new civilian positions, the candidates had found jobs elsewhere. (In a recent testimony, the Under Secretary of Defense for Acquisition, Technology and Logistics acknowledged that the hiring process takes too long and has contributed to the problem of retaining competent people in the acquisition field.) In addition, program officials said it was difficult to recruit and retain civilians in the Los Angeles, California, area given its high cost of living and its many opportunities for government contractor work for greater pay. Moreover, although manpower studies conducted by various DOD organizations have shown Air Force-wide staffing shortfalls, EELV program officials contend that these studies have not led to actions directed towards alleviating these shortfalls.

## Conclusions

Early in the EELV program, DOD was faced with two primary challenges: (1) reducing technical, design, and production risk to a point where it could avoid problems that caused previous, costly launch failures and (2) adopting an appropriate acquisition and supplier strategy that would help contain costs. By adding technical staff—primarily FFRDC—and strengthening quality assurance practices, DOD largely met the first challenge and has subsequently enjoyed a long string of successful launches though more experience is needed to fully prove reliability. At the same time, however, costs have increased significantly because assumptions supporting the first acquisition strategy never materialized and because DOD never pared down to one supplier as originally envisioned.

With the transition to ULA and the new acquisition strategy, it is hoped that cost savings can be achieved and the government can have more insight into cost drivers as well as technical risks. DOD has recognized that the transition itself presents enormous challenges and adds risk to the program by coordinating oversight efforts and expanding the program office's role in oversight. At the same time, however, OSD has limited these positive steps by designating EELV as being in sustainment, which effectively stops the formal transmittal of research and development and procurement data on program costs and vulnerabilities to entities involved in overseeing the program, including Congress. The Air Force may have also limited these steps by constraining program office staff. Given the broad span of changes affecting the program, the high cost of launching military and other government spacecraft, and assumptions that have been

made about cost savings that will result from the consolidation of suppliers, DOD cannot afford to pare back acquisition and supplier oversight on any front.

## Recommendations for Executive Action

To improve DOD's ability to effectively oversee and manage the EELV program, we recommend that the Secretary of Defense direct the Under Secretary of Defense for Acquisition, Technology and Logistics to

- require the program to continue to provide OSD, and Congress as appropriate, with updates of program cost and status information using criteria that apply to major research and development and procurement programs; and
- direct the Director of the Cost Analysis Improvement Group to conduct an independent life-cycle cost estimate of the EELV program once the ULA joint venture transition is completed, and periodically update the estimate to account for significant program changes.

Additionally, we recommend that the Secretary of Defense direct the Secretary of the Air Force to assess the EELV program's staffing needs, including those that are inherently governmental, to confirm whether shortages exist, and if they do, develop a plan for addressing them.

## Agency Comments

We provided a draft of this report to DOD for review and comments. DOD concurred with our findings and recommendations. DOD's response can be found in appendix I.

## Scope and Methodology

To determine what uncertainties the Department of Defense (DOD) faces in the Evolved Expendable Launch Vehicle (EELV) program and United Launch Alliance (ULA) transition and to assess how DOD is positioned to manage and oversee the EELV program, we reviewed and analyzed documents from and interviewed officials in Washington, D.C., at the Office of the Undersecretary of Defense for Acquisition, Technology and Logistics; Office of the Director, Program Analysis and Evaluation; Office of the Secretary of Defense, Cost Analysis Improvement Group; Congressional Budget Office; and Federal Trade Commission. We also reviewed and analyzed documents from and interviewed officials in Virginia at the Office of the Assistant Secretary of Defense for Networks and Information Integration; Office of the Under Secretary of the Air Force for Space Acquisitions; Office of the Joint Chiefs of Staff; Office of the Director, Operational Test and Evaluation; and Orbital Sciences

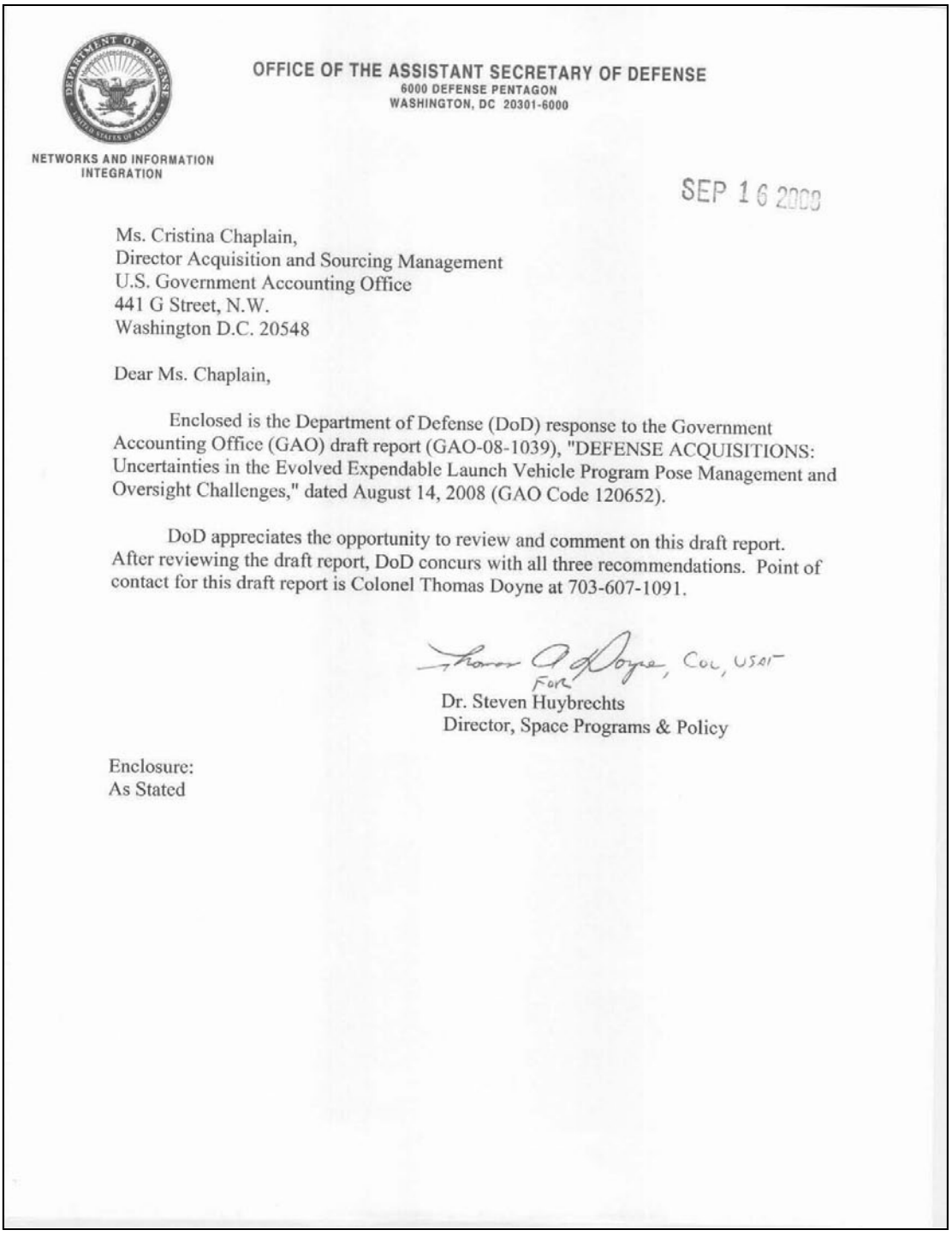
Corporation. In addition, we reviewed and analyzed documents from and interviewed officials at Air Force Space Command and Booz Allen Hamilton, Peterson Air Force Base, Colorado; the Launch and Range Systems Wing, Air Force Space and Missile Systems Center, Los Angeles Air Force Base, California; Defense Contract Audit Agency, Fort Belvoir, Virginia, Huntington Beach, California, and Littleton, Colorado; Defense Contract Management Agency, Springfield, Virginia, Lakewood and Littleton, Colorado, and Decatur, Alabama; National Aeronautics and Space Administration, Washington, D.C. and Cape Canaveral Air Force Station, Florida; National Reconnaissance Office, Aerospace Corporation, and Space Exploration Technologies, El Segundo, California; National Security Space Office, Washington, D.C. and El Segundo, California; U.S. Strategic Command, Offutt Air Force Base, Nebraska; Microcosm, Inc., Hawthorne, California; and United Launch Alliance, Littleton, Colorado and Decatur, Alabama.

We will send copies of the letter to the Department of Defense and other interested congressional committees. We will also make copies available to others upon request. In addition, the report will be available at no charge on the GAO Web site at http://www.gao.gov.

Should you or your staff have any questions on matters discussed in this report, please contact me at (202) 512-4841 or chaplainc@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Principal contributors to this report were Art Gallegos, Assistant Director, Greg Campbell, Jeremy Cockrum, Claire Cyrnak, Tim DiNapoli, Gayle Fischer, Laura Hook, Rich Horiuchi, Ken Patton, Sylvia Schatz, Josie Sigl, and Hai Tran.

Cristina Chaplain
Director
Acquisition and Sourcing Management

# Appendix I: Comments from the Department of Defense



OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
6000 DEFENSE PENTAGON
WASHINGTON, DC 20301-6000

NETWORKS AND INFORMATION INTEGRATION

SEP 16 2008

Ms. Cristina Chaplain,
Director Acquisition and Sourcing Management
U.S. Government Accounting Office
441 G Street, N.W.
Washington D.C. 20548

Dear Ms. Chaplain,

Enclosed is the Department of Defense (DoD) response to the Government Accounting Office (GAO) draft report (GAO-08-1039), "DEFENSE ACQUISITIONS: Uncertainties in the Evolved Expendable Launch Vehicle Program Pose Management and Oversight Challenges," dated August 14, 2008 (GAO Code 120652).

DoD appreciates the opportunity to review and comment on this draft report. After reviewing the draft report, DoD concurs with all three recommendations. Point of contact for this draft report is Colonel Thomas Doyne at 703-607-1091.

Thomas A. Doyne, Col, USAF
FOR

Dr. Steven Huybrechts
Director, Space Programs & Policy

Enclosure:
As Stated

GOVERNMENT ACCOUNTING OFFICE (GAO) DRAFT REPORT
DATED AUGUST 14, 2008
GAO-08-1039 (GAO CODE 120652)

"DEFENSE ACQUISITIONS: UNCERTAINTIES IN THE EVOLVED EXPENDABLE LAUNCH VEHICLE (EELV) PROGRAM POSE MANAGEMENT AND OVERSIGHT CHALLENGES"

DEPARTMENT OF DEFENSE (DoD) COMMENTS
TO THE GAO RECOMMENDATION

RECOMMENDATION 1: The GAO recommended that the Secretary of Defense direct the Under Secretary of Defense for Acquisition, Technology and Logistics to require the EELV program to continue to provide the Office of the Secretary of Defense and Congress, as appropriate, with updates of program cost and status information using criteria that apply to major research and development and procurement programs.

DOD RESPONSE: Concur.

RECOMMENDATION 2: The GAO recommended that the Secretary of Defense direct the Under Secretary of Defense for Acquisition, Technology and Logistics to direct the Director of the Cost Analysis Improvement Group to conduct an independent lifecycle cost estimate of the EELV program once the United Launch Alliance joint venture transition is completed and periodically update the estimate to account for significant program changes.

DOD RESPONSE: Concur.

RECOMMENDATION 3: The GAO recommended that the Secretary of Defense direct the Under Secretary of the Air Force to assess the EELV program's staffing needs, to include those that are inherently governmental, to confirm whether shortages exist, and if they do, develop a plan for addressing them.

DOD RESPONSE: Concur.

Attachment

# Appendix II: Program Cost, Schedule, and Performance Status Information Included in Defense Acquisition Executive Summary

The Defense Acquisition Executive Summary (DAES) is a detailed, multipart document which reports program information and assessments and serves as an early-warning report to the Office of the Secretary of Defense by describing actual program problems, or warning of potential program problems, and describing mitigating actions taken or planned. According to Department of Defense guidance, the DAES report contains the minimum necessary information for oversight purposes. The DAES consists of eight sections. Table 7 contains a description of each of the sections.

**Table 7: Oversight Information Contained in Defense Acquisition Executive Summary Reports**

| Section | Description |
|---|---|
| Executive summary | Provides a summary-level assessment of and key information on the status of the program, including a synthesis of the issues that follow in the report (e.g., design problems exist that affect cost, schedule, and test and evaluation). This section also provides information on general program status (e.g., acquisition category and date and type of next major program oversight review) and the program's cost, schedule, and performance baseline history. |

| Section | Description |
|---|---|
| Assessments | Represents the program manager's best independent judgment on program performance and serves an early indication of the risk in various aspects of the program. Using a color-coded rating system, the program manager applies performance ratings against the following indicators:<br>• Performance characteristics: assesses the status of a broad range of mission performance criteria, including, but not limited to, essential physical, technical, operating, software, reliability, availability, maintainability, durability, manpower, training system effectiveness, and other similar characteristics needed to meet field or fleet needs.<br>• Test and evaluation: assesses the status of system test planning, system testing, test article availability, test support, test center and range availability and funding, test success, and achievement of test schedules.<br>• Logistics requirements and readiness objectives: assesses initiatives to achieve or maintain logistics management and support requirements (e.g., manpower, support equipment, training) and the ability of a system to undertake a specified set of missions or capabilities at planned peacetime and wartime utilization rates (e.g., for a missile system, established time to launch; for aircraft, previously agreed upon number of planes ready for take-off or time for take-off).<br>• Cost performance: assesses the program's cost performance status based on performance to date, including the executability of the program within approved resources (based on cost and schedule performance status of the program's major contracts and the probable effects of those contracts on cost estimates for future effort on the program); and considers potential unit cost reporting threshold breaches and status of cost reduction or cost/performance tradeoff initiatives.<br>• Funding: assesses the overall adequacy and availability of programmed and budgeted funds by fiscal year, including effect of potential funding shortfalls, reductions or nonavailability due to congressional, Office of the Secretary of Defense, component, and/or cooperative allied country actions; program areas not funded to the approved acquisition program baseline; and whether the program is executable to the baseline, or if actual obligation rates are as planned.<br>• Schedule performance: compares program's overall schedule performance and deliveries to date with program schedule milestones and annual delivery schedules; and considers the effect of schedule variations on major decision points, operational capability dates, and whether any major component of the system being developed or procured is not meeting the planned schedule.<br>• Contracts: reviews all aspects of contract performance including technical and schedule achievement, cost performance, deliveries, contract change proposals and negotiations, and quality; identifies potential contract adjustments and their impact on ability to properly execute the contract; assesses all significant aspects of the contract award schedule, including definitization dates; and considers the effect of delays that threaten to extend major contract award dates that are on the critical path of program master schedule activities or that threaten to expose the government to unnecessary cost risk.<br>• Production: assesses the overall status of the planning and execution of production and continuous process improvement activities, including all hardware and software aspects of the program; and considers key production requirements such as configuration management, technical data package availability, contractor capital investment, material availability, surge and mobilization planning, and capacity to meet delivery requirements.<br>• Management structure: assesses areas that do not fit the above assessment areas, such as the status of documentation, effect of problems from interrelated programs on this program, dependence of and problems for this program on government- or contractor-furnished equipment that are not managed or controlled by the program manager, adequacy of program office manpower to accomplish current or planned future requirements, relevant national security issues, or other areas of significance to the program office. |

| Section | Description |
|---|---|
| Program manager comments | Summarizes and explains observations, advisory comments, and potential or significant program problem areas for the categories shown in Defense Acquisition Executive Summary (DAES) Section 2, with emphasis on changes since the previous reporting period. At a minimum, this section is to include a description of problems and their significance relative to major program objectives; discussion of actions to be taken to accomplish program objectives and whether and how the program objectives need to be changed; an assessment of the status of corrective actions since the last DAES report; an assessment of any pending or proposed acquisition program baseline parameter changes, reasons for the changes, and associated risk assessments; and an assessment of changes made to any data parameters contained in approved program data (see DAES Section 5) that are not part of the acquisition program baseline. |
| Program executive officer/component acquisition executive[a] comments | Provides program executive office and component acquisition executive assessments and perspectives on the program, including changes in the relative level of risk associated with the program, the significance of problems reported by the program manager, the program manager's proposed corrective actions, the level of risk associated with these actions and other significant changes to the program; and comments on any pending or proposed acquisition program baseline parameter changes or changes to additional data elements that are not part of the acquisition program baseline but are contained in official program documentation and are integral to achieving the program objectives. |
| Approved program data | Displays, in tabular form, key program parameters (including initial and current acquisition program baseline parameters as well as any additional data contained in other official program documents such as the acquisition plan or acquisition decision memoranda) in the following categories: performance characteristics, schedule milestones, and program acquisition cost. Data also include the program manager's current estimates for performance, schedule, and cost. This section is a key starting point for the program manager's evaluation of the program status in section 2.<br><br>Performance characteristics: mission performance criteria needed to meet the significant objectives required by the end users (such as physical, technical, operational, software, survivability, reliability, and durability characteristics); initial and current acquisition performance baselines; results of demonstrated performance through testing; the program manager's current estimates relating to performance; and differences between the current estimates from major program objectives are to be explained in the appropriate part of Section 3.<br><br>Schedule milestones: include initial and current approved schedule milestones as well as the program manager's current estimate for achieving schedule milestones. When the current estimates differ from the approved schedule milestones, the differences are explained in the appropriate part of Section 3.<br><br>Program acquisition cost: displays total program costs for the entire acquisition process—from concept exploration and definition through production and deployment—as well as the program manager's current estimates of program costs. Costs include those related to research, development, test, and evaluation; procurement; program-specific military construction; and program acquisition-related operation and maintenance. This section also includes information on quantities of end items as well as unit costs. |
| Program background data | Provides descriptive program-related information on total costs and total quantities for all years through the end of the acquisition phase for all DOD components, including information on and assessment of (as appropriate), program elements and procurement lines by appropriation, unit cost reporting data, procurement deliveries, contractor costs, international cooperative programs, other participating DOD components, and vulnerability assessments. |
| Supplemental contract cost information | Displays, in tabular form, summary-level contract identification, schedule, and performance information.<br><br>Contract identification data: include contract name, number, and type; contractor name and location; program acquisition phase for which work is being done; negotiated contract cost or not-to-exceed value; target price; and ceiling price.<br><br>Contract schedule data: include contract definitization date; work start date; dates of critical contract schedule milestones; and program manager's estimate of contract completion date.<br><br>Contract performance data: include earned value management data for the most recent reporting period; the contractor's and program manager's current estimates of costs at completion; program manager comments on contract performance; and assessment of any changes to unit costs. |

| Section | Description |
|---|---|
| Funding summary | This section enables program offices to provide the approved funding profile and is intended to be used as the basis for identifying funding changes that could result in acquisition program baseline breaches, Nunn-McCurdy unit cost breaches, or other changes. |

Source: GAO presentation of guidance on preparing Defense Acquisition Executive Summaries located on the Defense Acquisition University Web site.

[a]A program executive officer (PEO) is a military or civilian official who has responsibility for directing several major defense acquisition programs and for assigned major system and nonmajor system acquisition programs. A PEO has no other command or staff responsibilities within the component, and only reports to and receives guidance and direction from the DOD component acquisition executive (CAE). The CAE is a secretary of a military department or head of a military agency with the power of redelegation. In the Air Force, the delegated CAE is the Assistant Secretary of the Air Force (Acquisition). CAEs are responsible for all acquisition functions within their components.

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