U.S. GOVERNMENT ACCOUNTABILITY OFFICE

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Congressional Committees

Space Launch: Coordination Mechanisms Facilitate Interagency Information Sharing on Acquisitions

The Department of Defense (DOD)—including the Air Force and the National Reconnaissance Office (NRO)—and the National Aeronautics and Space Administration (NASA) spend over a billion dollars per year on space launch. These launches are for satellites, probes, and cargo capsules that are critical for carrying out government functions such as protected military communications, missile warning, navigation, intelligence collection, scientific discovery, and delivering supplies to the International Space Station. The Air Force acquires most launch services for the military services and for most NRO missions through its Evolved Expendable Launch Vehicle (EELV) program, and NASA acquires launch services for civil sector spacecraft missions through its NASA Launch Services Program. While DOD and NASA use some of the same providers for their launches, each agency has separate acquisition processes and launch requirements. We have noted in the past that interagency coordination in space launch acquisitions has the potential to help leverage the government's buying power and eliminate the potential for redundancy and duplication.[1] Such coordination can also help the government make more targeted investments in technology development, address industrial base issues or gaps, and ensure that programs undertaken by each agency are complementary to each another. While DOD and NASA have a history of working together in many areas of launch, studies we and others have conducted have pointed to opportunities for improved coordination.

The Joint Explanatory Statement to the Carl Levin and Howard P. "Buck" McKeon National Defense Authorization Act for Fiscal Year 2015 contained a provision for the Secretary of DOD, in consultation with the Administrator of NASA and the heads of other appropriate agencies of the federal government, to conduct a study to identify and assess opportunities for coordination among federal agencies in space launch acquisition efforts and provide a summary of lessons learned by DOD and NASA regarding their launch service programs to certain congressional committees.[2] The statement also includes a provision for us to assess DOD's study and update the related space launch findings and recommendations reported in the 2012 GAO report on

[1]Broadly speaking, agency collaboration or coordination can be defined as any joint activity that is intended to produce more public value than can be produced when organizations act alone.

[2]Joint Explanatory Statement to accompany the Carl Levin and Howard P. "Buck" McKeon National Defense Authorization Act for Fiscal Year 2015, Pub. L. No. 113-291 (2014).

duplication, overlap and fragmentation in the federal government.[3] This report examines the extent to which DOD's study addresses the congressional provision to identify and assess opportunities and lessons learned for space launch acquisition coordination, and the extent to which our prior findings and recommendations on space launch coordination have been addressed.

To assess DOD's study and the extent to which it addresses the joint explanatory statement's provision, we reviewed guidance documents, such as memorandums of agreement, national policy, and a joint strategy related to the coordination mechanisms described in the study. We also interviewed officials with space launch responsibilities from the Air Force, NRO, and NASA to understand how they coordinate on launch work. In addition, we interviewed officials from launch companies that work with the government to obtain their views on how government coordination impacts launch contractors, and interviewed launch industry experts to get additional views on interagency coordination.[4] We compared the activities of the coordination mechanisms and agreements described in DOD's study to selected key practices for effective interagency collaboration that we have identified. These selected key practices include, among others: defining and articulating a common outcome; identifying and addressing needs by leveraging resources; agreeing upon agency roles and responsibilities; and establishing compatible policies, procedures, and other means to operate across agency boundaries.[5] Some of the practices did not apply to this review, as they focus on agency internal practices to encourage coordination and DOD's study did not (nor was it required to) address such practices. We assessed how the agencies have structured the coordination bodies using our key collaboration practices, but did not conduct a comprehensive analysis of the effectiveness of the coordination bodies.

To determine the extent to which our prior findings and recommendations on space launch coordination have been addressed, we reviewed our past work related to space launch coordination and followed up on the status of relevant actions taken through interviews with the officials and stakeholders listed above and by reviewing applicable DOD and NASA documents including the 2015 Launch Broad Area Review and documents related to the new entrant certification process.[6]

We conducted this performance audit from November 2016 to August 2017 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

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[3]GAO, *2012 Annual Report: Opportunities to Reduce Duplication, Overlap and Fragmentation, Achieve Savings, and Enhance Revenue*, GAO-12-342SP (Washington, D.C.: Feb. 28, 2012).

[4]We selected the launch companies based on their current involvement with government launches. We selected the launch experts based on their experience with government launches from both government and contractor perspectives; their views are not generalizable.

[5]For more information on these key practices see: GAO, *Results-Oriented Government: Practices That Can Help Enhance and Sustain Collaboration among Federal Agencies*, GAO-06-15 (Washington, D.C.: Oct. 21, 2005).

[6]The new entrant certification process refers to Air Force or NASA reviews to certify new launch services companies as qualified to conduct government launches.

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.

Background

By statute, DOD, the intelligence community, NASA, and other government agencies rely on commercial domestic launch service providers to transport their satellites and other assets into space.[7] In the intermediate and heavy payload classes, DOD and NASA acquire launch services from two commercial companies: United Launch Alliance (ULA) and Space Exploration Technologies Corp. (SpaceX).[8] Each agency maintains separate acquisition offices and workforces in support of different beneficiaries, missions, and requirements. For DOD and NRO, the missions support the military and intelligence communities, satellites are placed in various Earth-centric orbits, and many have stringent security requirements. For NASA satellites and robotic payloads, the missions support civil sector needs and the science community. While some NASA satellites are placed in Earth orbit, many are sent to other planets, the Sun, or other locations in space. Additionally, some NASA payloads have nuclear power sources and NASA also has a human spaceflight program, both of which present additional considerations for launch.

Despite these differences, because each agency acquires similar types of commercial launch services on behalf of their agency, coordination and communication between DOD and NASA with regard to these acquisitions is important to ensure the government is working as efficiently as possible. For example, DOD is transitioning back to a competitive environment for space launch services, where contractors compete against one another to be awarded national security launch opportunities. This is a change from how DOD contracted for launch services in the last decade. Prior to 2006, there was competition between launch service providers for national security launches, but between 2006 and 2015, ULA was the only launch contractor available to conduct national security launches.[9] SpaceX became certified to compete for national security launches in 2015, changing national security launches from a sole-source to a competitive environment. According to NASA, NASA has used a competitive construct for acquiring launch services since 2000.

Past work by us and others has identified concerns in the way the government coordinates on launch issues. The joint explanatory statement's provision for DOD's launch coordination study focuses on acquisitions, which is one area that has been identified as a concern. For example,

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[7]Pub. L. No. 105-303 §§ 201(a).

[8]The launch work referred to in this report focuses on DOD and NASA's launches in the intermediate and heavy payload classes, which are the main areas of commonality between DOD and NASA launches, and thus provide the best opportunity to coordinate across agencies. Payloads are generally distinguished by their weight, called a payload mass class. Small payloads are those weighing approximately 1-2,600 lbs. Medium class payloads weigh between 2,600-5,500 lbs. Intermediate class payloads weigh between 5,500-9,300 lbs. Large payloads weigh between 9,300-12,000 lbs, and heavy payloads weigh over 12,000 lbs. The decision on what launch vehicle to use for a particular payload takes into account both the payload's weight and its destination in space.

[9]Launch services companies that desire to compete for DOD launches must become certified by DOD to do so through the new entrant certification process.

in September 2011, we highlighted coordination on launch acquisitions as an area for improvement for federal agencies. We noted that launch studies at the time had suggested that adding mechanisms to enhance coordination on launch could benefit the government, and that DOD and NASA had signed an agreement to formalize coordination, but that details on implementation of the agreement were still undecided.[10] Additionally, in February 2012, we discussed coordination between DOD and NASA on launch acquisitions, noting that their respective space launch acquisition processes duplicated one another and potentially were not fully leveraging the government's investment because the government was not acting as a single buyer.[11] The 2010 EELV Should Cost Review, conducted by a large team of launch and contracting experts to identify possible efficiencies and cost reductions to the EELV program, also noted that increased coordination and information sharing on launch acquisitions between the Air Force, NASA, and NRO—for example by implementing process efficiencies in launch activities—could be beneficial.[12]

In addition to acquisitions, there are other aspects of launch where coordination is equally important, including, but not limited to, operations and maintenance of launch ranges, scheduling launch missions, and government-wide strategic planning for launch. We and others have noted that opportunities exist for improving longer-term, government-wide planning for both launch programs and for space programs in general. For example, the 2010 Institute for Defense Analyses' Launch Broad Area Review looked at the overall health and effectiveness of the EELV program, including the program's management structure and ability to meet access to space requirements. This report recommended joint government oversight of launch industrial base issues and encouraged civil and national security space agency partnerships on launch technology developments.[13] More recently, the joint explanatory statement highlighted the need for an integrated plan on space launch activities of the federal government.[14] These issues, while not the topic of DOD's study or this review, remain important.

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[10] GAO, *Evolved Expendable Launch Vehicle: DOD Needs to Ensure New Acquisition Strategy Is Based on Sufficient Information*, GAO-11-641 (Washington, D.C.: Sept. 15, 2011). Since that time, regular launch coordination meetings have been formalized and held in support of this agreement by the senior designated leaders for the Air Force, NASA, and NRO. These meetings provide an opportunity for discussion and coordination on the entire spectrum of commercial launch services collaboration. For more information on events since this report see the enclosure.

[11] GAO-12-342SP. This report made two recommendations related to ensuring coordination of launch acquisitions processes between DOD and NASA, and reducing duplication in launch overhead costs. Subsequent work on this issue led GAO to close the recommendations in our 2012 report as addressed. For more information on these recommendations see the enclosure.

[12] Should-cost reviews are a specialized form of cost analysis. These reviews evaluate the economy and efficiency of the contractor's existing work force, methods, materials, equipment, real property, operating systems, and management. The objective of DOD's should-cost reviews is to promote both short and long-range improvements in the contractor's efficiency in order to reduce the cost of performance of DOD contracts.

[13] Institute for Defense Analyses, *Launch Broad Area Review 2010 (BAR-X)* (Alexandria, Va.: June 2010).

[14] Joint Explanatory Statement to accompany the Carl Levin and Howard P. "Buck" McKeon National Defense Authorization Act for Fiscal Year 2015, Pub. L. No. 113-291 (2014).

DOD's Study Generally Addresses the Elements of the Joint Explanatory Statement and Agencies Have Addressed Some of Our Past Recommendations on Launch Acquisition Coordination

DOD's study on coordination of space launch acquisition efforts generally addresses the elements set out in the Joint Explanatory Statement to the Carl Levin and Howard P. "Buck" McKeon National Defense Authorization Act for Fiscal Year 2015. As directed, the study describes ongoing interagency coordination mechanisms. We found that these mechanisms have been used to address some of our past findings and recommendations related to improving coordination of space launch. We also found that the space launch coordination activities described in the study align with our selected key practices for interagency collaboration. In addition, the study also highlights a number of lessons learned resulting from collaborative efforts. DOD's study did not identify opportunities to further enhance coordination, however, because the study's authors told us that they believe coordination and information sharing were sufficient and no further improvements or mechanisms were needed. Air Force, NRO, and NASA officials we spoke to who are involved in launch efforts concurred with this assessment. Launch industry representatives also acknowledged that the government agencies coordinate on launch issues, though they pointed out that the new entrant certification process could benefit from improved coordination.

DOD's Study Generally Addresses the Elements of the Joint Explanatory Statement by Describing Ongoing Coordination of Space Launch Acquisitions, and Coordination Mechanisms Have Been Used to Address Past GAO Recommendations

The Air Force's Launch Enterprise Systems Directorate, in coordination with the launch offices at NASA and the NRO, completed DOD's study in June 2016. The study addresses the elements of the joint explanatory statement by describing several formal interagency coordination bodies at varying hierarchical levels, from senior agency leadership to program officials. The study and agency officials note these coordination bodies between the agencies have existed in some form from as early 1998, evolving to their current forms as described below:

- Air Force, NASA, NRO Summit
    - Summit meeting attendees are senior agency officials including the Secretary of the Air Force, the Administrator of NASA, and the Director of the NRO. At Summit meetings, which typically occur twice a year, these officials discuss strategic space issues, including launch. Formal coordination between the Air Force, NASA, and NRO at this level began in 1998 when the group was known as the Partnership Council, and it was renamed the Air Force, NASA, NRO Summit in 2009.
- Government Expendable Launch Vehicle (ELV) Executive Board (GEEB)
    - Program directors for Air Force, NASA, and NRO launch programs are members of the GEEB, which focuses on interagency communication of acquisition and programmatic launch issues. The GEEB was formally established via a memorandum of understanding in March 2011. The GEEB meets at least twice

per year, and develops and assesses courses of action for near- and mid-term interagency launch issues at a programmatic level, such as new acquisition strategies and new entrant issues.

- Launch Collaboration Steering Group (LCSG)
    - Each agency's launch program division chiefs, such as chiefs of engineering, acquisitions, or operations, participate in the LCSG, which usually meets twice a year and facilitates the exchange of data and program status on a more operational level. The LCSG was established in September 2005, and topics of discussion include technical issues that impact all of the government launch offices such as launch anomalies, engineering studies, and mission assurance.

In addition to the formal coordination bodies described in the study, the study and launch officials also described additional methods of coordination. Officials explained to us that they have frequent, sometimes daily, interactions with their colleagues from other agencies on launch issues. For example, according to NRO officials, during the development of the Air Force's new strategy for acquiring launch services, the NRO had a representative embedded in the Air Force's launch acquisition office to provide information and ensure their needs would be met in the new strategy. In addition, an agency official told us that there is a weekly teleconference between the chief engineers of each launch agency to discuss current or emerging launch topics of interest. Launch officials noted that this informal collaboration and information sharing is a standard way of doing business across the government launch community, and while these frequent interactions are not formally defined, they are essential to successfully conducting their work due to the joint nature of launch and the relatively small number of government groups that conduct launches. In addition, collaboration across many groups involved in launch happens through the Joint Army-Navy-NASA-Air Force Interagency Propulsion Committee (JANNAF). This group, established in 1969, is intended to bring together experts from government and industry to discuss and exchange technical and programmatic information related to propulsion, including launch propulsion. Launch agency officials we spoke with noted that this body enables coordination on emerging launch technologies that may eventually benefit government launch programs.

The agencies have used these coordination mechanisms to address some of the issues that we have raised in previous reviews. For example,

- In February 2012, we noted problems with government coordination in some areas, such as contracting for launch vehicles, and recommended that the Office of Management and Budget determine whether or not the government was paying twice for overhead costs for launch between DOD and NASA contracts.[15] The next year, we found that DOD and NASA focused their formal and informal coordination efforts, in part, on the implementation of the EELV acquisition strategy and contract for launch services

[15]GAO-12-342SP.

procurement. According to agency officials, they collaboratively determined that actions taken through negotiating the launch contract verified that the charges were not duplicative.

- In September 2011, we recommended that DOD examine how launch issues, such as increased coordination among federal agencies, could influence future acquisitions to generate cost savings and efficiencies.[16] Two areas we highlighted were increased coordination of federal agency launch acquisitions and launch technology development. The issue of coordination on acquisitions was also highlighted by the 2010 EELV Should Cost Review, which noted that the government was paying pass-through fees to a launch contractor on commodities purchased from one government agency and sold to another, and suggested additional interagency coordination could alleviate problems such as this. Subsequently, DOD, NASA, and NRO paid particular attention to such acquisition issues through the coordination mechanisms mentioned above and started additional technical collaboration efforts. This added coordination work covered many areas of launch acquisitions, including increased joint work on new entrant certification and launch technology development, potentially yielding cost efficiencies and maximizing the government's launch investments.

See the enclosure for a more detailed description of our past work and updates on the current status of our findings and recommendations.

Our prior work has highlighted key practices that are necessary elements of effective interagency collaboration.[17] These practices relate to common outcomes, agency roles and responsibilities, and establishing mutually reinforcing or joint strategies for collaborative efforts. For example, our key practices include agencies defining and articulating the common outcome or purpose that they are seeking to achieve, as well as establishing strategies that work in concert with those of their partners, or are joint in nature, to achieve these outcomes. Another practice is that collaborating agencies should work together to define and agree on their respective roles and responsibilities, including how the collaborative effort will be led.

We found that the coordination activities and mechanisms described in DOD's study generally reflect our relevant key practices for effective interagency coordination. For example, the Air Force, NASA, and NRO have established formal documents outlining coordination practices. These documents lay out roles and responsibilities of each party, establish mutual goals, and describe activities and strategies to achieve them. Documenting these goals aligns with our key practices of defining a common outcome that agencies are seeking to achieve, and establishing joint strategies to achieve this outcome. In addition, agencies' roles and responsibilities for coordinated launch acquisition efforts are described in these documents, which aligns with our key practice relating to agreeing upon agency roles and responsibilities.

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[16]GAO-11-641.

[17]GAO, *Results-Oriented Government: Practices That Can Help Enhance and Sustain Collaboration among Federal Agencies*, GAO-06-15 (Washington, D.C.: Oct. 21, 2005).

DOD's Study Identified Lessons Learned through Coordination

DOD's study also describes some lessons learned through coordination of launch issues, and officials gave us additional information on ways the Air Force, NASA, and NRO launch offices have benefited from coordination. For example:

- Acquisition officials noted that they are using lessons learned from other agencies to shape future launch acquisition planning. In particular, the Air Force was able to benefit from NASA's experience with using other transaction agreements as well as firm fixed price contracts to help inform development of new Air Force launch agreements and contracts.[18]
- Current and former launch agency officials told us that discussing the status of certification efforts for launch vehicles in the certification process at formal and informal meetings between agencies benefitted all parties by keeping them informed of issues that were arising and allowing the agencies to share findings from program review boards.
- NASA and the NRO are collaborating on NASA's Venture Class Launch Services program, which is aimed at gaining experience with acquiring cubesat launches from new small launch service providers.[19] By combining resources and working together, the two agencies were able to select a third launch provider.
- Existing coordination mechanisms enabled the launch community to keep a failed launch from impacting another agency's launch schedule. In October 2014, a NASA launch experienced a failure on the Antares launch vehicle's main engine. The Air Force, which had a launch planned on an Atlas V vehicle for the day after the NASA launch, was concerned that the failure might impact its ability to launch as scheduled. According to Air Force officials, the existing relationships built through continuous coordination allowed them to quickly and easily communicate with NASA officials involved in the failure investigation to determine whether or not the failure would impact the Air Force launch—all without having to wait for NASA to complete its investigation and publish its findings.

DOD's Study Does Not Identify Further Opportunities to Enhance Coordination Because Study Officials Stated That Improvements Were Not Necessary

DOD's study discusses the status of space launch coordination and some lessons learned but does not present opportunities for further enhancements to coordination on acquisitions. DOD officials who conducted the study stated that further improvement opportunities were not

[18]Other transaction agreements are legally enforceable promises other than contracts, grants, or cooperative agreements between DOD and an agreement partner to accomplish stated joint objectives. NASA uses a similar tool known as a Space Act Agreement. These agreements have been used by NASA and DOD in the past on launch activities to provide flexibility in accommodating the unique needs of the EELV program for DOD and other programs and efforts for NASA. Firm-fixed-price contracts provide for a price that is not subject to any adjustment on the basis of the contractor's cost experience in performing the contract. FAR 16.202-1.

[19]Cubesats are a class of small satellites of single or several combined units of cubes, usually with 10-centimeter (roughly 4-inch) dimensions.

described because current launch coordination on acquisitions is sufficient to meet their needs. Officials from the Air Force, NRO, and NASA launch offices we spoke to concurred with this assessment. These officials affirmed that the current coordination structure, both formal and informal, provides effective collaboration and information sharing across the three entities, and Air Force officials noted that the formalization of the GEEB provided the benefit of regularity of meetings. Launch officials also reaffirmed that any topics and projects that may need coordination throughout the launch offices are discussed within the appropriate coordinating bodies. The scope of our review was limited to assessing DOD's study on coordination and was not a full assessment of the effectiveness of these coordination bodies. From this perspective, we did not identify any immediate need for changes to or additional formal launch coordination mechanisms focusing on acquisitions.

Launch company officials to whom we spoke generally agreed that, from their perspective, government agencies do coordinate to some extent on launch. They also noted that better coordination in the certification process could increase efficiencies for them as launch providers. For example, company officials noted that while the government agencies coordinate on many activities of the certification process, the new launch vehicles are still required to become certified by DOD and NASA, and this requires some duplicative work. In 2013, we reviewed the Air Force's guide to the process for new government launch services providers to become certified, and found that DOD and NASA were coordinating on sharing data and avoiding unnecessary duplication in the process. For more details on our past work and the current status of our findings on the certification process, see the enclosure.

Agency Comments

DOD and NASA reviewed a draft of this report. NASA provided technical comments, which we incorporated as appropriate.

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We are sending copies of this report to the appropriate congressional committees, the Secretary of Defense, the Administrator of NASA, and other interested parties. In addition, the report is available at no charge on the GAO website at http://www.gao.gov.

If you or your staff have any questions about 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. GAO staff who made key contributions to this report include Rich Horiuchi, Assistant Director; Laura Greifner; Laura Hook; and Matthew Metz.

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(101245)

Enclosure: Description and Current Status of Past GAO Recommendations on Space Launch Coordination

Table 1: Past GAO Recommendations and Findings on Space Launch Coordination, and Current Status

Report year/topic	Report Findings and Recommendations	Current Status[a]
2011[b] We reviewed the Department of Defense's (DOD) development of a new acquisition strategy for acquiring space launch services.	**Recommendation:** We recommended that the Secretary of Defense should examine how broader launch issues, such as greater coordination across federal agencies, can be factored into future launch acquisitions to increase efficiencies and cost savings.	In July 2013, we determined that significant formal and ad hoc coordination had taken place across DOD, the National Aeronautics and Space Administration (NASA) and the National Reconnaissance Office (NRO), in areas such as new launch provider certification and launch technology development. We noted that identifying these opportunities to coordinate launch acquisitions and technology development could yield launch cost efficiencies and maximize the government's overall investment in launch services. We consider this recommendation implemented.
	Recommendation: We recommended that the Secretary of Defense work closely with NASA to ensure DOD has sufficient knowledge of NASA heavy-lift program decisions to facilitate DOD's ability to negotiate Evolved Expendable Launch Vehicle (EELV) program launch contract prices that maximize the government's investment.	In July 2013, we determined that DOD had worked with NASA to keep apprised of Space Launch System heavy-lift decisions that could have bearing on EELV contract negotiations, leverage knowledge across agencies, and coordinate some limited technology development, all of which better positioned DOD to negotiate upcoming launch contracts in the government's best interests. We consider this recommendation implemented.
2012[c] We reviewed work that was underway to develop a new acquisition strategy for launch services.	**Recommendation:** The Office of Management and Budget (OMB) should assess and adopt mechanisms to ensure formal coordination of the DOD and NASA acquisition processes for awarding launch services.	In March 2015, we determined that the Air Force's contracting approach could have better leveraged the government's buying power. However, work on the contract was under way, and the Air Force was able to obtain decreased launch prices through negotiations on this contract. We consider this issue overcome by events and consider the recommendation addressed. In addition, as part of our review of DOD's June 2016 study, officials told us that the Air Force has involved NRO in the planning for the development of the acquisition strategy for the next phase of EELV contracts, and is sharing information and soliciting opinions from NASA on strategy options.
	Recommendation: OMB should	In March 2013, we determined that DOD and

Report year/topic	Report Findings and Recommendations	Current Status[a]
	determine whether the government is paying twice for any overhead costs, and if duplication is found, develop a way to ensure that the government does not pay more than once for overhead costs through separate acquisition processes.	NASA had taken steps to determine whether the government was incurring duplicative overhead costs for launch services. According to DOD and NASA, the contract awarded subsequent to our recommendation better defined the charges allocated to NASA when it uses a United Launch Alliance (ULA) launch vehicle and NASA has verified through various reviews that these costs are not duplicative of costs paid by DOD. We have not reviewed whether the measures taken by DOD and ULA have fully eliminated the possibility for duplicative charges for overhead costs. We consider this recommendation addressed.
2013[d] We reviewed the certification process for new government launch services providers.	**Finding:** We found that the Air Force, NRO and NASA were working to coordinate and share information to facilitate launch vehicle certification efforts. Air Force officials acknowledged significant overlap in the certification process, and indicated they were working with NASA and the NRO to share data and avoid unnecessary duplication of efforts for new entrants. We did not make a recommendation related to coordination in this report.	As part of our review of DOD's June 2016 study, officials from launch companies expressed concern that the certification process contains duplicative efforts and is not as well coordinated as it could be. Government launch officials noted that they coordinate when possible, and that differences in certification processes are due to differing agency needs. In particular, launch industry officials noted that streamlining the process and better coordination of some certification activities would be beneficial. Air Force officials noted that it has adopted some changes to the certification process that were a result of the 2015 Broad Area Review study on launch.
2014[e]We testified on how our best practices in acquisitions could help in the development of new launch engine and vehicle programs.	**Finding:** We stated that decisions on any new launch vehicle efforts are likely to have effects that reach beyond DOD and the EELV program and should be carefully considered in a long-term, government-wide context. We did not make recommendations in this report.	As part of our review of DOD's June 2016 study, we found that the Air Force has coordinated with NRO and NASA on the new launch engine development program and on the next phase of the competitive acquisition for launch services. In addition, the Air Force and NRO have coordinated on some strategic-level planning for launch, such as in the Space Enterprise Vision.

Source: GAO analysis of GAO, DOD, and NASA information I GAO-17-646R

[a]As part of its standard process, GAO follows up to determine if recommendations have been implemented.

[b]GAO, *Evolved Expendable Launch Vehicle: DOD Needs to Ensure New Acquisition Strategy Is Based on Sufficient Information*, GAO-11-641 (Washington, D.C.: Sept. 15, 2011)

[c]GAO, *2012 Annual Report: Opportunities to Reduce Duplication, Overlap and Fragmentation, Achieve Savings, and Enhance Revenue*, GAO-12-342SP (Washington, D.C.: Feb. 28, 2012)

[d]GAO, *Launch Services New Entrant Certification Guide,* GAO-13-317R (Washington, D.C.: Feb. 7, 2013)

[e]GAO, *U.S. Launch Enterprise: Acquisition Best Practices Can Benefit Future Efforts,* GAO-14-776T (Washington, D.C.: July 16, 2014)