

**Testimony of
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Chairman LoBiondo, Ranking Member Larsen, Chairman Shuster, Ranking Member DeFazio and Members of the Subcommittee, thank you for the opportunity to appear before you today on behalf of United Launch Alliance (ULA) to discuss space launch regulatory reform. ULA is the world's most successful commercial launch company. Since ULA was formed in 2006, we have launched 128 missions to space with 100% mission success. No other launch company matches that record. ULA also remains the only launch provider certified to meet all national security space requirements. For more than a decade, we have launched nearly every major national security asset and NASA science mission to orbit. GPS, secure communications, weather forecasting, tracking and data relays, and missile warning satellites are among the many payloads ULA has delivered to space.

ULA builds and launches the Atlas and Delta families of rockets, which trace their heritage back to the dawn of the space age. These vehicles have served government and commercial customers successfully for decades. John Glenn made his historic trip into orbit aboard an Atlas in 1962, and astronauts will be flying on Atlas V aboard Boeing's Starliner to the International Space Station (ISS) as part of NASA's Commercial Crew program. These missions to the ISS will mark our nation's return to launching U.S. astronauts from U.S. soil. NASA has also counted on Atlas V to carry cargo to the ISS reliably and rapidly in difficult circumstances as part of its Commercial Cargo program.

The Atlas and Delta family of rockets have enabled science missions to every planet in the Solar System and beyond. When NASA needs to go to the Moon, the

Sun, Mars, Pluto, or anywhere else in the Solar System, our civil space agency relies on a ULA rocket.

We are working to take commercial companies to distant destinations as well. Astrobotic, a commercial lunar logistics company in Pittsburgh, Pennsylvania, recently selected ULA to launch its Peregrine lander to the surface of the Moon. This will mark the first launch of a commercial vehicle to the lunar surface from the United States.

Eighteen of our 128 missions to-date have been commercially licensed. These customers cannot afford launch mishaps or significant delays. Every day a spacecraft is waiting for a launch vehicle that is behind schedule, the satellite operator is losing money. That is why our customers fly with ULA; they know they are getting the most reliable, on-time service in the industry. Even though commercial launches represent a relatively small percentage of our business, we expect this number to rise in the future. ULA remains committed to supporting all NASA and national security requirements in the years to come and performing more commercially licensed launches. Thus, the effectiveness of the Federal Aviation Administration's (FAA) Office of Commercial Space Transportation's (AST) launch licensing regime is critical to ULA's future success of important civil and commercial missions to space.

ULA enjoys a good working relationship with the FAA and addresses licensing issues with the agency in real-time. Earlier this year, ULA assumed marketing and sales responsibilities for commercial sales of our rockets. Previously, Lockheed Martin Commercial Launch Services held that responsibility for the Atlas V. As a result, ULA submitted an application for an operator's license to support our Atlas V commercial missions from Cape Canaveral, Florida. On May 31, 2018, the FAA granted ULA an operator's license that will cover commercial sales of Atlas V for the next five years. This allows ULA to fly commercial missions under one license, assuming we fly flight profiles and rocket configurations specified in the license.

One of ULA's key differentiators in the launch market is our ability to launch quickly and on time. In 2016, we unveiled RapidLaunch, which allows customers to go from contract to launch in as little as three months. This offering would not be possible without help from the FAA, and we have successfully worked with the FAA in the past on accelerated timelines. For example, when Orbital ATK came to ULA

to launch the OA-7 cargo mission to the ISS, the requested launch date was within the FAA's allotted 180 days for review of a new license application. Thanks to our relationship with the FAA, and their familiarity with Atlas V via previous licenses, they were able to expedite their review, and we were able to launch that mission less than six months after going on contract.

Another customer that has benefited from the FAA's expertise, responsiveness, and professionalism is Astrobotic. As previously stated, a commercial lunar lander has never been launched from the United States. Payloads such as this require certification that the mission does not violate the United States' obligations under international law. Astrobotic has already kicked off that process with the FAA and is pleased with the experience.

In the past, the FAA AST has lacked adequate resources to meet the demands of the launch market, but Congress has acted to rectify that. I would like to thank this committee in particular for its work on the recent *FAA Reauthorization Act of 2018*, which increases the FAA AST's authorized budget to more than \$33 million in 2019 and continues increases in future years.

Safety Must Remain the Top Priority

The President, Vice President, National Space Council, Congress, Department of Commerce and the Department of Transportation should be applauded for their efforts to empower America's space industry. As reform efforts move forward, we must take great care to not sacrifice safety for convenience.

In the launch business, when something goes wrong, it impacts everyone. A worst-case scenario would be damage inflicted on a third party or even loss of life resulting from a commercial space launch. The FAA is doing an excellent job ensuring public safety in today's regulatory environment, and we urge all parties to remain focused on safety rather than sidestepping oversight for convenience. Space launch is not the same as driving a car or flying a plane. A launch accident that damages a launch facility could significantly delay or even halt the government's ability to get critical, life-saving assets into space.

The Atlas and Delta vehicles have been safely launching commercial missions for decades, yet during the regulation streamlining process, it has often seemed that the

stakeholders being given the reins by government to drive the conversation include companies that are very new to the launch market or have yet to fly anything to space. These companies may not understand how challenging it is to reliably and safely launch to space, and in some instances have experienced repeated, damaging and dangerous launch failures.

The recent Aviation Rulemaking Committees (ARC) have proven to be a good forum for key industry stakeholders to engage and provide guidance to the FAA on how best to shape future regulations. However, due to time restrictions, we have concerns about the process and worry the final regulations may not reflect the views of the ARC. The Streamlined Launch and Reentry Licensing ARC was conducted on an incredibly short timeline of just a few weeks and is no longer able to interface formally with the FAA to provide comments and feedback as the FAA develops proposed rules. ULA strongly encourages the FAA to reengage with the ARC in this process.

The FAA is working under a tight deadline to propose new regulations by early next year, and we fear that in this rush to produce a product, the FAA will forgo the inputs of the rushed ARC and rely heavily on inputs provided by a select group of new and aspiring launch companies that the FAA has been meeting with in private regarding new launch regulations for more than a year. ULA was not included in these conversations. Because ULA has not been a squeaky wheel and has instead focused on working effectively within the current launch regulation paradigm, we are concerned the FAA will pay less heed to our decades of experience and instead cater to start ups that have little real experience with the licensing process and with meeting stringent safety requirements. It is my observation that many actors portray the FAA as a barrier to success to explain program delays. ULA does not view the agency that way because we understand why their mission is important to the promotion of commercial space.

We treat the FAA as a partner, and we depend on them for our success to ensure that we remain the world's safest, most reliable launch company. It is critical that any new regulations do not trade safety for convenience. A catastrophic launch failure traced to lax regulations would predictably result in a costly swing of the administrative pendulum toward a return to excessive government intervention.

Regulatory Reform Efforts

While our experience with the FAA has been positive, there is room for regulatory streamlining. ULA commends the efforts of the President, Vice President, National Space Council, Congress, Department of Commerce and the Department of Transportation to empower industry by streamlining regulatory requirements of commercial space companies. In response to direction from the National Space Council, the FAA stood up several ARCs. ULA is participating in multiple ARCs and continues to engage Congress and the Administration on safe, common sense regulatory reform. The following are recommendations that, if implemented properly, ULA believes will improve efficiency to the licensing process without introducing unacceptable risk.

From an administrative perspective, reduced launch license processing times would be helpful, especially if a launch service provider already has other licenses for similar vehicle configurations and launch trajectories. This would help a launch provider respond to requests for quick-turnaround launches when a spacecraft customer wishes to swap launch vehicles because another provider is unable to satisfy technical concerns or meet the required launch date. The FAA deserves credit for voluntarily reducing their review times to support these situations.

From a technical perspective, ULA also has recommendations. First, a general reduction in the number of requirements, especially for specific mission compliance after a license is issued. The FAA is addressing this issue in response to direction from the National Space Council to provide new language on licensing requirements for review in early 2019.

The FAA is investigating a move away from prescriptive requirements to performance-based requirements. A performance-based approach means that the FAA would define requirements at the most fundamental level, the number of requirements would be minimized, and launch service providers would have the opportunity to demonstrate compliance without the need to incorporate specific components or processes into their systems.

The pros of a performance-based approach include maximum flexibility for launch service providers and the ability to deal with widely differing launch system designs and operational procedures. Additionally, this option has the least financial impact

on providers in an increasingly competitive environment. This approach could also result in the simplest regulations and, potentially, a less complicated compliance and enforcement regime.

The following is an example of a current issue that a performance-based approach could address:

FAA launch regulations were developed based on United States Air Force (USAF) Range Safety documents that address requirements applicable to specific system configurations. ULA often launches configurations that are close to, but not the same, as the configuration the rule originally addressed. When this happens on a NASA or USAF launch, we work with the 30th and 45th Space Wings to develop a solution that meets the intent of the rule. Because the FAA regulations are law, there is no easy way to deviate when we collectively agree we meet intent. The FAA needs a process that can deal with system configurations not specifically addressed by the original Range Safety documents, and that will continue to evolve.

The cons of a performance-based approach include the risk of over-simplification that could incentivize launch service providers to cut corners to the point that public safety is compromised. Enforcement and compliance monitoring on the government side could also be complicated by different providers using significantly different methods.

ULA favors a performance-based approach that addresses the cons described above and that continues to recognize public safety as paramount.

The second improvement would be to coordinate and consolidate requirements between different government agencies involved in launch site regulation, something Congress is taking important steps to address. NASA, USAF, the FAA, and other agencies have overlapping requirements that are redundant in many, and conflict in some areas. Ideally, one government agency (or one joint-agency group) would act as a single point of contact with a single set of rules for overseeing safety regulations and enforcing compliance for all space launches. There is no material difference when a provider launches for NASA, USAF, or under a FAA license, but the regulatory requirements are different. Even more burdensome than the multiple sets of requirements is the need to interface with each individual agency separately.

For a FAA-licensed launch, ULA has to demonstrate compliance to similar requirements to three or four government agencies. This entails identification of the requirements, notifying, scheduling, and paying travel cost for inspections. One agency will not accept the results of another agency's inspection. Consequently, there is tremendous opportunity for consolidation, simplification, and increased efficiency in this area. A single safety document that covers requirements from initial manufacturing through launch, developed by a government-led working group with direct industry participation, is one option for making progress in this area.

The following example illustrates one issue launch providers currently face as a result of agency differences at the launch site:

During a commercial launch campaign, the FAA treats major operations at nearby facilities (e.g. a static test firing at a different launch provider's facility) differently than the USAF does for one of its missions. One difference relates to the Flight Hazard Area /Flight Caution Area. Specifically, the 45th Space Wing is more accommodating when it comes to allowing ULA Mission Essential Personnel to remain at Space Launch Complex 41 (SLC-41) during major operations at SLC-40 for non-FAA licensed missions. This enables ULA to keep personnel working and not delay operations for the next Atlas V launch. However, the FAA is less accommodating in allowing ULA personnel to remain at SLC-41 during FAA licensed operations at SLC-40, which can cause monumental delays and schedule perturbations. There can be several FAA licensed missions per year at each launch site, and the resulting deleterious effect on the other party's launch operations are significant. Launch providers and the USAF Range spend much time and significant resources de-conflicting SLC-40 and SLC-41 operations due to the FAA-unique requirements that other agencies do not impose.

Airspace Integration

Through the ARC process, the FAA is also seeking to address airspace integration issues. When we prepare to launch a rocket, safety requirements dictate that a certain amount of airspace around the flight range be temporarily shut down to protect third parties from any flight mishaps. ULA is sensitive to the aviation community's concern about airspace closures as launch rates and the number of launch sites increase. Minimizing airspace impacts from launch events is in our

common interest. The search for optimal solutions that integrate the needs of the space and aviation communities begins with an understanding of the constraints and challenges faced by each community.

Earlier this month, an ARC met near our launch facilities in Cape Canaveral, Florida. Aviation representatives provided valuable insight to the space community on the operational challenges faced by airlines on a daily basis, and on how temporary airspace closures impact airlines and the Air Traffic Control system. ULA is preparing a similar briefing for the July meeting that will summarize constraints and challenges associated with launch. Emerging analysis and communication capabilities have the potential to significantly reduce the size and duration of airspace closures in the future. Specifically, analysis tools will reduce the size and duration of stay-out zones through better predictive capability, and improved communication will allow launch status to be disseminated more quickly, allowing airspace to be reopened at the earliest possible moment.

It should be noted that this ARC was formed without ULA inclusion or notification. As the most experienced launch provider in the nation, this is an oversight that could have severely hindered the effectiveness of the ARC. We believe the ARC felt the commercial space industry was represented by trade organization participation, but no single organization represents the views of the entire commercial space industry.

The discussion is just beginning, but it is clear that there is education needed on both sides. We are pleased with the aviation industry's willingness to share and receive information, and hope this leads to a mutually beneficial path forward.

Looking Ahead

Looking ahead, ULA is undergoing a transformation. While Atlas and Delta will continue to operate into the next decade, we are working to retire those vehicles and phase in our new Vulcan Centaur rocket. Vulcan Centaur will contain the same DNA as Atlas and Delta; it will be a launch vehicle built to fulfill all national security requirements with maximum reliability. Like Atlas and Delta, the majority of Vulcan Centaur is commercially funded, with two thirds of Vulcan Centaur development being paid for by industry.

Vulcan Centaur will one day be ULA's sole product line, as opposed to the three product lines ULA maintains today. This, along with advancements in technology and new, innovative manufacturing techniques will allow us to significantly reduce the cost of launch.

We look forward to aiding in the continued success of the FAA. ULA has enjoyed a good working relationship with the FAA AST under the leadership of Dr. George Nield. Kelvin Coleman has recently taken over as the Acting Associate Administrator for Commercial Space Transportation and has continued the open communications and industry focused approach of Dr. Nield. We look forward to continuing our work with him to ensure commercial space launch continues to be a safe and efficient process.

I want to thank the committee for taking an interest in this topic. Launch licensing and regulatory reform are some of the most mundane topics in space, and all of us would much rather be talking about Pluto, Mars, and other galaxies, but making sure this is done properly is critical to ensuring the United States remains the world leader in space.

Again, thank you for inviting me to appear today, and I look forward to answering your questions.