Committee on Transportation and Infrastructure
U.S. House of Representatives
Washington, DC 20515

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June 22, 2018

SUMMARY OF SUBJECT MATTER

TO: Members, Subcommittee on Aviation
FROM: Staff, Subcommittee on Aviation
RE: Subcommittee Hearing on "Commercial Space Transportation Regulatory Reform: Stakeholder Perspectives"

PURPOSE

The Subcommittee on Aviation will meet on Tuesday, June 26, 2018, at 10:00 a.m. in 2167 Rayburn House Office Building to explore issues related to the commercial space transportation industry, focusing on stakeholders' perspectives on the Federal Aviation Administration's (FAA) ongoing regulatory reform efforts. The Subcommittee will receive testimony from representatives of the commercial space industry and commercial airline pilots.

BACKGROUND

The United States' space industry, including launch services, satellite services, and satellite manufacturing, accounted for $158 billion in economic activity in 2016.[1] The FAA's Office of Commercial Space Transportation (AST) is the office statutorily authorized to regulate the commercial space transportation industry. AST's regulatory regime consists primarily of the licensing or permitting of space launches, vehicle reentry, and launch sites. It also ensures that the space industry mitigates the risks posed to persons and property on the ground.

AST has an impressive record of meeting regulatory deadlines, but its processes can be streamlined and improved. AST has licensed or permitted every launch or reentry within the prescribed statutory deadlines.[2] Notwithstanding this demonstrated record of success, many in the commercial space transportation industry believe that a simpler, more agile regulatory regime

[1] "The Annual Compendium of Commercial Space Transportation: 2018," FAA, January 2018, available at https://www.faa.gov/about/office_org/headquarters_offices/ast/media/2018_AST_Compendium.pdf

[2] *Federal Aviation Administration Oversight of Commercial Space Transportation (114-46): Hearing Before the Subcommittee on Aviation of the Committee on Transportation and Infrastructure*. 114th Cong. (June 22, 2016) (Statement of Dr. George C. Nield).

will be needed in the years ahead in order to make commercial space flight as routine as other modes of transportation.

Office of Commercial Space Transportation

Under the 1984 *Commercial Space Launch Act* and subsequent amendments, the Secretary of Transportation has the responsibility and authority to facilitate, regulate, and promote the commercial space launch industry.[3] In 1984, this function was assigned to the newly established AST as part of the Office of the Secretary of Transportation (OST).[4] In November 1995, AST was transferred to the FAA. AST is led by the Associate Administrator for Commercial Space Transportation who reports directly to the FAA Administrator.[5]

According to the FAA, the AST's mission, "is to ensure protection of the public, property, and the national security and foreign policy interests of the United States during commercial launch or reentry activities, and to encourage, facilitate, and promote U.S. commercial space transportation."[6] AST issues launch and reentry licenses for commercial space launches and permits for experimental launches. Each process includes opportunities for pre-application consultation, which allow AST and industry to work collaboratively to ensure regulatory compliance and facilitate the timely approval of commercial space launch applications. Since 1989, FAA has licensed 290 commercial space launches, permitted 44 launches, and licensed 16 reentries.[7]

Since fiscal year 2009, AST's budget has grown from $14.1 million to $22.6 million while its staffing has increased from 71 full time positions (FTPs) to more than 110 FTPs.[8] AST began systematically measuring its workload metrics in August 2014. Between fiscal year 2009 and 2016, the number of companies seeking at least one new or modified authorization has increased from 14 to 44 while the total number of authorization projects in all phases prior to the issuance of a license or permit increased from 26 to 66.[9] FAA has requested a fiscal year 2019 budget of $21.6 million, although the request was submitted before final passage of the *Consolidated Appropriations Act, 2018*.[10] The House-passed *FAA Reauthorization Act of 2018* would authorize $33.0 million to be appropriated for AST in fiscal year 2019.

[3] *See* the 1984 *Commercial Space Launch Act* (P.L. 98-575), the *Commercial Space Launch Act Amendments of 1988* (P.L. 100-657), the *Commercial Space Act of 1998* (P.L. 105-303), the *Commercial Space Launch Amendments Act of 2004* (P.L. 108-492), and the 2015 *U.S. Commercial Space Launch Competitiveness Act* (P.L. 114-90).

[4] AST is the acronym assigned to the FAA's Office of Commercial Space Transportation and was not the office's designation when it was part of the Department of Transportation. It is used throughout this document to refer to the office, regardless of its administrative location, for clarity.

[5] FAA, "About the Office: Office of Commercial Space Transportation," available at https://www.faa.gov/about/office_org/headquarters_offices/ast/about/

[6] Ibid.

[7] Permitting statistics are measured from 2006, available at http://www.faa.gov/data_research/commercial_space_data/

[8] FAA Budget Estimates for Fiscal Year 2010 and 2019.

[9] FAA Briefing to Aviation Subcommittee Staff (May 16, 2016).

[10] FAA Budget Estimates for Fiscal Year 2019.

Launch Licensing Process

Federal law requires a license from the Secretary of Transportation (through AST) for a person to conduct either: (1) a commercial space transportation launch inside the United States or; (2) for a U.S. citizen to conduct a launch outside the United States.[11] AST does not typically license federal government launches, such as those conducted by the Department of Defense (DoD) or National Aeronautics and Space Administration (NASA).[12] In general, AST will issue a license if it determines that a launch proposal, "will not jeopardize public health and safety, property, U.S. national security or foreign policy interests, or international obligations of the United States."[13] AST has 180 days to issue a license determination after completion of a license application, a deadline which the office has never missed. However, AST requires that companies enter into pre-application consultation with AST to ensure application completeness and maximize the likelihood of approval.

Using an interagency process that can include DoD, NASA, the Federal Communications Commission, the Department of State, and the Department of Commerce, AST ensures that a proposed launch complies with all statutory and regulatory criteria. These reviews include a policy review, safety review, financial responsibility determination, and environmental review. License regulations differ for expendable and reusable launch vehicles. A launch-specific license enables a launch provider to conduct multiple launches using a single type of launch vehicle with the same operational parameters. AST also issues launch or reentry operator licenses, which authorizes a launch provider to conduct multiple launches with the same launch vehicle family within a range of operational parameters.

Safety

The human commercial space transportation industry continues to mature within a regulatory "learning period" first established under the *Commercial Space Launch Amendments Act of 2004*.[14] Under that law, Congress found that "the regulatory standards governing human space flight must evolve as the industry matures so that regulations neither stifle technology development nor expose crew… to avoidable risks."[15] Currently, the FAA may not implement regulations regarding spacecraft design or operation. The industry currently operates under an informed consent model, in which participants must acknowledge the inherent risks of spaceflight and the absence of government safety regulations such as those applicable to commercial air service. Notwithstanding this moratorium, the FAA may "issue requirements or regulations to protect the public health and safety, safety of property, national security interests, and foreign policy interests of the United States."[16]

The learning period was most recently extended by the 2015 U.S. Commercial Launch Competitiveness Act (CLCA) through fiscal year 2023. The CLCA also structured a process by which the commercial space transportation industry and the FAA would jointly create interim voluntary industry consensus standards that will ultimately form the basis of future regulations.

[11] 51 U.S.C. §50904.
[12] If DoD or NASA uses a commercial launch provider to conduct a mission, AST will typically license that launch.
[13] https://www.faa.gov/licenses_certificates/commercial_space_transportation.
[14] 51 U.S.C. § 50905(c)(9).
[15] 51 U.S.C. § 50901(a)(15).
[16] 51 U.S.C. § 50905(c)(10).

Furthermore, the law contains several reporting requirements that will serve as benchmarks for measuring industry maturity and anticipating the scope of any future regulations.

Integration into the National Airspace System

As commercial space transportation activities increase in volume and complexity, safer and more efficient methods of integrating their operations into the National Airspace System (NAS) are needed. Currently, commercial space transportation is accommodated within the NAS rather than integrated into it, requiring the temporary closure of large volumes of airspace for several hours and consequently disrupting commercial aviation traffic. Reusable launch vehicles that fly back to the launch pad or another location increase the complexity of launch operations. The process of blocking and releasing airspace is not automated and remains labor intensive. FAA personnel, including air traffic controllers, must speak by telephone to share spacecraft trajectories and manually input them into air traffic control systems. The FAA is currently working on the Space Data Integrator, which will feed commercial spacecraft data into FAA systems and enable more automated airspace releases.

The FAA is also seeking to harmonize AST and Air Traffic Organization (ATO) safety standards through a concept known as "acceptable level of risk (ALR)." ALR changes the scope and duration of temporary flight restrictions required to safely separate commercial space transportation launches from traditional air traffic. No aircraft has ever been struck by debris from a commercial space transportation launch, making the necessity of safety margin harmonization between two different industries unclear. However, as commercial space transportation traffic grows, greater harmonization of safety standards for airspace users may become more necessary to minimize disruption to air traffic. AST is currently soliciting feedback from industry on its ALR construct through the Commercial Space Transportation Advisory Committee.[17]

Spaceports

There are 22 active launch and reentry sites in the United States.[18] AST is responsible for licensing 10 commercial launch and reentry sites, also known as spaceports. However, AST does not license or oversee the eight federal launch sites or the non-profit launch site operated by the University of Alaska. There are three additional launch sites from which AST licensed and permitted launches occur, but because the three are owned, operated, and exclusively used by a single private company each, they do not require an AST spaceport license. Of the ten licensed spaceports, the most active is the Florida Spaceport, which had 14 AST-licensed or permitted launches in 2017. Seven of the ten spaceports had no AST-licensed or permitted launched in 2017.[19]

[17] Commercial Space Transportation Advisory Committee meeting, June 14, 2018.
[18] "The Annual Compendium of Commercial Space Transportation: 2018," FAA, January 2018, available at https://www.faa.gov/about/office_org/headquarters_offices/ast/media/2018_AST_Compendium.pdf; One of these 19 sites, the Ronald Reagan Ballistic Missile Defense Test Site, is located in the Marshall Islands, a sovereign country that has entered into a Compact of Free Association with the United States.
[19] Ibid.

Current Rulemaking

In 2017, President Trump revived the National Space Council to coordinate administrative policy on national space programs.[20] On May 24, 2018, President Trump signed Space Policy Directive-2, which instructed the Secretary of Transportation to review existing regulations and issue a notice of proposed rulemaking (NPRM) to revise FAA launch and reentry regulations by February 1, 2019. In particular, the directive requires the Secretary to consider requiring a single license for all types of commercial space transportation launch and reentry operations, as well as replacing prescriptive regulations with performance-based criteria.

In anticipation of the directive, the FAA chartered the Streamlined Launch and Reentry Licensing Requirements Aviation Rulemaking Committee (ARC) on March 8, 2018.[21] The FAA is looking to revise launch regulations, including regulations relating to expendable and reusable launch vehicles. While the ARC did produce recommendations for AST, the timeline for such recommendations was extremely compressed because of the ambitious rulemaking timeline set by the National Space Council. The ARC is chartered through March 2020, leaving open the possibility that the FAA may solicit further comments from the ARC later in the rulemaking process.

The FAA has two other ongoing ARCs relating to commercial space transportation: the Spaceport Categorization ARC and the Airspace Access Priorities ARC. The prospect of the commercial space transportation industry acting as an economic development tool has led several state and local governments to open purpose-built spaceports or co-locate spaceports at existing airports. While this enthusiasm can lead to a distributed and resilient national launch infrastructure, insufficient launch demand and airspace integration issues effectively limits the number of financially viable spaceports. To help set expectations for prospective spaceports and ensure that AST is not misallocating resources to license and inspect unused launch facilities, the Spaceport Categorization ARC was chartered to consider a new, simplified spaceport categorization scheme.[22] The Airspace Access Priorities ARC was chartered to plan for an increase in commercial space transportation activity and determine ways that scarce airspace resources can be allocated between commercial space transportation and other airspace users in ways that minimize disruptions to both.[23]

Current statute permits the FAA Administrator to exempt ARCs from the provisions of the Federal Advisory Committee Act, which can enable expedited or negotiated rulemakings.[24]

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[20] The National Space Council was formally established under the *National Aeronautics and Space Administration Authorization Act, Fiscal Year 1989* (P.L. 100-685) and Executive Order 12675 of April 20, 1989. The Council was never formally disestablished, but went dormant in 1993. Executive Order 13803 of June 30, 2017 directed that the Council resume operations.

[21] "Streamlined Launch and Reentry Licensing Requirements Aviation Rulemaking Committee Charter," FAA, March 8, 2018, available at: https://www.faa.gov/regulations_policies/rulemaking/committees/documents/media/FINAL%20Rulemaking%20ARC%20Charter%20(effective%203-8-18).pdf.

[22] "Spaceport Categorization Aviation Rulemaking Committee Charter," FAA, December 5, 2017, available at: https://www.faa.gov/regulations_policies/rulemaking/committees/documents/media/Spaceport%20Categorization%20ARC%20Charter%20(FINAL).pdf.

[23] "Airspace Access Priorities Aviation Rulemaking Committee Charter," FAA, February 12, 2018, available at: https://www.faa.gov/regulations_policies/rulemaking/committees/documents/index.cfm/document/information/documentID/3443.

[24] 49 U.S.C. §106(p)(5).

The House-passed *FAA Reauthorization Act of 2018* contains a provision clarifying that ARCs relating to commercial space transportation are eligible for the same exemption.[25]

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[25] §316, *FAA Reauthorization Act of 2018* (House engrossed), H.R. 4, 115th Congress.