Commercial Space Transportation Advisory Committee (COMSTAC) Meeting Minutes for Tuesday, November 8, 2023

Time and Location

The meeting was held November 8, 2023, at 12:00 – 4:00 p.m. Eastern Time. It was a virtual meeting conducted via Zoom for Government and the FAA YouTube channel.

Participants

Department of Transportation

Ms. Polly Trottenberg, *Deputy Secretary of Transportation*

Federal Aviation Administration (FAA)

Mr. Brian Verna, *Designated Federal Officer (DFO)*
Mr. Michael Price, Airports Compliance Division, Office of Airports
Mr. Brian Rushforth, *Innovation Division Manager*, Commercial Space Transportation (AST)
Mr. James Hatt, *Space Policy Division Manager*, AST
Mr. Randy Repcheck, *Deputy Director, Office of Strategic Management*, AST
Mr. Michael O'Donnell, *Deputy Associate Administrator*, AST

Committee Members

Ms. Karina Drees, COMSTAC Chair, *President*, Commercial Spaceflight Federation
Mr. Mike French, COMSTAC Vice-Chair, *Vice President of Space Systems*, Aerospace Industries Association
Mr. Mat Dunn, *Senior Director of Global Government Affairs*, Space Exploration Technologies
Mr. Dale Ketcham, *Vice President of Government and External Relations*, Space Florida
Ms. Kate Kronmiller, *Vice President of Government Relations*, Jacobs
Major General Ted Mercer, USAF (Ret), *CEO and Executive Director*, Virginia Commercial Space Flight Authority
Ms. Megan Mitchell, *Vice President of Government Relations*, Blue Origin
Dr. George Nield, *President*, Commercial Space Technologies
Ms. Michelle Parker, *Vice President and Chief Engineer for Space and Launch Engineering*, Boeing
Ms. Melanie Preisser, *Vice President of National Systems*, York Space Systems
Ms. Caryn Schenewerk, *Adjunct Professor*, Georgetown University Law Center
Ms. Amanda Simpson, *Vice President for Research and Technology*, Airbus
Mr. Jay Skylus, *Chief Executive Officer and Chief Engineer of the Aether Transport System*, Aevum
Ms. S. Sita Sonty, *Chief Executive Officer*, Space Tango
Ms. Melanie Stricklan, *Co-Founder and Chief Executive Officer*, Slingshot Aerospace
Ms. Jolie Zoller, *Head of Global Regulatory Affairs*, Project Kuiper, Amazon
Ms. Ann Zulkosky, *Vice President of Commercial Civil Space*, Lockheed Martin

Welcome and Introductory Remarks

The DFO, Mr. Brian Verna, called the meeting to order at 12:00 p.m. Eastern Time and welcomed participants to the 77th COMSTAC meeting. After calling attention to the Federal Register Notice that announced the meeting, the DFO then introduced the COMSTAC Chair, Ms. Karina Drees. Ms. Drees welcomed Mr. Verna as the new DFO and announced that proposed tasks for the spring COMSTAC meeting would be discussed at the end. The Chair introduced Mr. Michael O'Donnell, the Deputy Associate Administrator for the FAA's Office of Commercial Space Transportation (AST).

Mr. O'Donnell started by highlighting AST's accomplishments in 2023. So far in 2023, AST has licensed 104 operations, projecting a total of 120 for the calendar year. This compares to 84 operations in CY2022. AST is on track for over 700 inspections for 2023. Current work includes 20 license modifications, four new applications, and 35 new projects in consultation, 17 of these are in the pre-application phase. AST has hired 31 people in 2023 and has another 13 in various stages of the hiring process.

Mr. O'Donnell also noted two recently posted notices of proposed rulemaking (NPRMs) – one on orbital debris, and one on incorporating the Commercial Space Launch Competitiveness Act. Other 2023 accomplishments include Lox/Methane explosive yield tests, spaceport security reviews, and multiple bilateral meetings (Saudi Arabia, South Korea, the UAE, Japan, Sweden, the UK, South Africa, Australia, the African Union, etc.) The deputy associate administrator also mentioned the importance of mishap investigations for future safety. Closing remarks covered the time and complexity of Part 450 applications. Four companies have completed applications completed under the new rule: Astra, ABL, Relativity, and SpaceX. All of these applications went through substantial iterations and all of the vehicles were new designs, which added to time to completion. Advisory Circulars (ACs) and the License Electronic Applications Portal **(**LEAP), a new online application portal, will be coming soon to assist with applications. O'Donnell acknowledged that the move to performance-based regulations is a learning curve for both FAA and industry.

The Deputy Secretary of Transportation, Polly Trottenberg, gave remarks following Mr. O'Donnell. The Deputy Secretary noted that COMSTAC is one of DOT's oldest and most impactful advisory committees. The time of the members is appreciated. Ms. Trottenberg stated that there have been some changes at FAA since the last meeting. Michael Whitaker has been recently confirmed as the new FAA administrator. His Deputy is Katie Thompson. Ed Bolton is the new FAA Chief of Staff. Bolton has deep knowledge of commercial space and was, until taking his new position, a COMSTAC member.

Ms. Trottenberg remarked further that aerospace touches everything, including defense. The FAA operates the most complex 24/7 operation in the Federal government. The FAA workforce is very impressive, with dedicated experts. The agency is facing budget and turnover challenges, and public scrutiny. The Deputy Secretary noted that there were only 30 launches in 2018. With this increase in launch, the FAA is still maintaining the safety record. Trottenberg closed in saying that COMSTAC has been around for almost four decades and DOT treasures the contribution.

Members were then invited to ask questions. The Chair asked about the FAA's role moving forward to promote industry and regulate for safety. Trottenberg noted there must be clear roles in how federal agencies work together. The FAA is promoting industry, but safety always comes first. "Move fast and fix things" versus the industry approach to "Move fast and break things". Mr. O'Donnell remarked that the FAA promotes industry by promoting safety. Regulations are applied reasonably so innovation can be done. Space has higher tolerance for mishaps and some in aviation do not understand this. Promotion and safety go hand in hand. The United States provides an example to the world by showing how to regulate commercial space launch safely.

The discussion then turned to resources for AST. Mr. George Nield noted that there has been order of magnitude growth in space launch, but the increase in AST staffing has not been commensurate. At recent Congressional hearings, it has been said that AST needs double resources. Mr. Nield asked if that increase would be possible going forward. Ms. Trottenberg said there were big investments with bipartisan infrastructure law (BIL), but this did not include enough for the 'bread and butter' at the FAA, such as staffing. The FAA is working through the FY25 budget process to increase funding for staffing.

General Ted Mercer stated that nobody argues that FAA does not have role in safety, but the focus should be on 'how' safety is achieved. Doing it the way it has been done for the past decades because it worked in the past may not work, because technology has changed. Not all failures have an impact on public safety. General Mercer pointed to a recent second stage failure during a Rocket Lab launch. This was a mishap, but the failure occurred in space and so was not a concern when it comes to public safety.

The Deputy Secretary noted that Mercer's point gets to the heart of the matter: how to maintain safety and evolve with industry. Failure is tolerated in the private sector, but in the public sector it is punished. The FAA needs to find ways to move faster where possible, but not necessarily at the pace of industry. Mr. O'Donnell stated that the agency and industry need to come together on the safety data to build a process around determining risk levels. Data sharing is important because it can help to determine the severity in different scenarios. Then resources can be devoted to higher risk areas.

Ms. Kate Kronmiller noted that there is a difference between managing airplanes and managing rockets and suggested that AST be set up under the Secretary, as it was when first formed, instead of within the FAA, as it is now. It may be helpful if AST had an independent voice on the Hill instead of speaking through the FAA. Ms. Trottenberg remarked that no part of government is independent. Even if AST came under DOT, AST would not be independent to say whatever they want. But the question of where AST should live is an important one that has been discussed. It is a worthy question. DOT is exploring how to get the balance better. AST is a unique entity within the FAA and the department wants to make sure AST gets the support they need.

Mr. O'Donnell noted that AST's access to the Secretary and Deputy Secretary has been very good, adding that being under the FAA is helpful when working to integrate launch into airspace system. But there may be ways to streamline communication between AST and DOT.

Vice Chair Mike French stated that budget percentage increases don't amount to much, since AST's budget is not that big, relatively speaking. Mr. French suggested that one option to address this may be a block increase. He then asked if there are specific issues that the Deputy Secretary's office will be paying particular attention to. Ms. Trottenberg responded by asking if there was a way for DOT to generate revenue through launch, as is done with air travel. DOT is trying to balance needs between aviation and space, such as with airspace integration. Aviation safety also requires investing and all of the spending needs add up. The Deputy Secretary closed in stating that every part of the FAA needs more resources to carry out the mission and maintain the U.S. global leadership position in aerospace safety.

Briefing on Update to "Aeronautical Activity" Definition

Mr. Michael Price, from the FAA's Office of Airports (ARP), gave a presentation on the updated definition of "Aeronautical Activity" in the Airport Compliance program. The update is not a rulemaking, but a policy update to FAA order 5190.6B, *Airport Compliance Manual*. The update only applies to federally obligated airport sponsors. The presentation included a background on the definition. The Civil Aeronautics Act of 1938 of prohibited 'exclusive rights' for access to an airport to perform 'aeronautical activity'. 'Aeronautical activity' must be defined in order to determine whether an airport sponsor is providing reasonable access to a federally-obligated airport. Federal obligations include ensuring safe and reasonable access to the airport and maintaining an airport layout plan (ALP), approved by FAA. Language to include 'Launch or reentry vehicles' has been added to the definition of 'aeronautical activity'. One limitation of the policy is that standalone items are not part of 'final assembly of aircraft of commercial space vehicle'. The benefits of the policy are that it provides reasonable access and prevents discrimination of users. Lease rates for aeronautical activities must be below fair market value. Aeronautical users have a regulatory path to file formal or informal complaints to be investigated by the FAA Office of Airports. Disadvantages of the policy are that there is no obligation for non-aeronautical activity to be provided unjust, non- discriminatory access to the airport and can be charged lease rates at fair market value. Mr. Price closed by stating that a Federal Register notice is currently being drafted to announce the policy update and the notice will be open for public comment for 30 days from its release.

Mr. Price then took questions from COMSTAC members. Ms. Drees asked if airports have discretion to choose what property is in the Airport Layout Plan (ALP). Mr. Price responded that all airport property must be included. Mr. Dale Ketcham then asked about the rationale for not including manufacturing in the definition of 'aeronautical activity'. Some larger rockets can't be manufactured and then moved to the airport/spaceport. Mr. Price responded that if final assembly is not required at the airport, it is not considered aeronautical for the purposes of the Airport Compliance program. Final assembly is not prohibited, but not protected. Ms. Amanda Simpson asked if there was a definition for 'final assembly'. Mr. Price replied that 'final assembly' is not a new concept, but it is new in being applied to launch/reentry vehicles. In the traditional sense, however, final assembly is parts in on one side, and parts out in one aircraft or vehicle on the other. The idea is to preserve land use at airports for uses that directly serve aeronautical purposes. Spaceports go through a part 420 licensing process, so a federally obligated airport that is going through the launch license process would be considered applicable. There is no

contradiction under the definition. Spaceports not collocated on airport property do not apply in the definition.

Ms. Drees asked if there was any chance of this policy applying eventually to sites that do not receive federal funding. Mr. Price responded there is no sign of moving beyond non-federal funded sites. This is only meant to apply to sites that are in the NPIAS (National Plan of Integrated Airports). Mr. O'Donnell added that AST and ARP will work together in the implementation of this policy update.

Task #1 Discussion: Lessons Learned Information System

Mr. James Hatt, from FAA Office of Commercial Space Transportation (AST), gave a presentation on COMSTAC's feedback to AST's proposed Lessons Learned Information System (LLIS). The purpose of the LLIS is for government and industry to provide lessons learned during any aspect of licensing, investigation, or other regulatory activity that does not allow identification of individual companies. This is not a voluntary safety reporting system, but a 'best practices' information system. Most data will initially come from AST. Some drawbacks are the low number of operators/vehicles, and the uniqueness of vehicle designs. This may make information attributable to a specific operator. But increased launch/reentry will create more data points. There are also lessons learned from submitting applications through part 450. LLIS is AST's response to an NTSB recommendation in August 2015. LLIS was started then, but put on hold until 2018 because COMSTAC expressed identification concerns. LLIS was brought back in 2023 for COMSTAC to review and will potentially be implemented in summer 2024.

COMSTAC owes more in-depth feedback, but initial reactions are that it LLIS would have limited value to the FAA for data collection purposes since the number of operators remains small. COMSTAC is concerned that these requests for LLIS are coming from other organizations with an aviation perspective. How valuable is LLIS if every design is different from company to company? What value do operators get from submitting data? What are the risks to operators? How likely is it that proprietary information could be made public? Several members voiced their concerns regarding proprietary information. The FAA made clear that participating in the LLIS database would be strictly voluntary and that any submitted data would be confirmed to be generic. The FAA would also be open to a process that lays the foundation for an open database, but is more closely held in the beginning.

AST Responses to COMSTAC Recommendations

Mr. Randy Repcheck and Mr. Brian Rushforth from FAA presented the following responses to COMSTAC recommendations:

Recommendation #1: The FAA should prioritize updating the 2014 Recommended Practices for Human Space Flight Occupant Safety document and seek additional resources if additional work is proposed for human spaceflight occupant safety.

FAA/AST Response: The 2023 appropriations bill provided funding and authorization for 10 additional people as well as contract funding to support all efforts regarding HSF occupant safety. FAA/AST is hiring against these positions.

Recommendation #2: In a limited resource environment, the FAA should ensure that activities in this area should not negatively impact the FAA's ability to manage the current and expected increase in launch and reentry licensing activity and other current statutory duties of the office.

FAA/AST Response: The additional resources provided by Congress in the 2023 appropriations bill for FAA/AST does not impact the current safety activities and other statutory duties of the office.

Recommendation #3: Ensure harmonization between DOT STEM workforce efforts and the White House-led Space Industry Skilled Workforce Coalition.

FAA/AST Response: FAA/AST is working closely with the FAA STEM AVSED office, the FAA Employee Associations, and other offices across the DOT to collaborate with the Department and the White House on this effort. AST has two members on the Interagency Committee on STEM Education and Workforce.

Recommendation #4: Create a space workforce messaging portal and newsletter to notify STEM workforce partners of opportunities.

FAA/AST Response: FAA/AST is working with the entire FAA to do outreach to these communities, including engaging the Employee Associations as well as STEM AVSED and recruiting efforts.

Recommendation #5: Establish a mechanism for industry inputs into the DOT-related tasks of the Interagency Roadmap to Support Space-Related STEM Education and Workforce. Establish workforce development officers to build STEM workforce pipelines including regional postsecondary STEM internship programs.

FAA/AST Response: FAA/AST will work through COMSTAC and direct industry outreach to get input into DOT-related tasks of the Interagency roadmap to Support Space-Related STEM work. AST's Space Policy Division will establish more options to support tasks as they are established.

FAA/AST leverages the FAA's STEM Aviation and Space Education program including involvement of multiple outreach representatives from AST to provide strong local and regional STEM outreach activities. AST is currently hosting multiple interns through the OPM Pathways program.

Recommendation #6: Highlight space industry jobs available and identify academic and extracurricular points of engagement within FAA AST.

FAA/AST Response: FAA/AST participates in many STEM activities every year at middle and high schools and universities to raise awareness of the various career opportunities in the aerospace industry.

Recommendation #7: Extend the Department of Labor's Space-focused Apprenticeship Accelerator model to not only promote areas of research interest to FAA/AST, but to also support the space industry's workforce pipeline directly, emphasizing the employment of historically excluded communities in commercial space transportation.

FAA/AST Response: Due to limited personnel resources, FAA/AST has not implemented this recommendation. AST will work with the STEM AVSED office to determine how to implement this program.

Recommendation #8: FAA should conduct a voluntary, non-attributable survey to assess the implementation of developed voluntary consensus standards.

FAA/AST Response: FAA/AST will evaluate conducting this type of survey after additional standards are developed and published by Standards Development Organizations.

Recommendation #9: The FAA should continue to encourage current efforts to develop industry consensus standards and increase participation in the ASTM F47 Committee to guide, develop, and assess standards development efforts. The FAA should also continue to provide technical feedback on standards that have been developed or are currently under development and participate in the balloting.

FAA/AST Response: FAA/AST is working closely with ASTM F47 and NFPA as they develop standards. AST has briefed ASTM F47 that we will provide feedback if requested, on a draft scope for a standard, on the development of standards (including AST employee work with the workgroups as time permits) and review the final standard. AST also has a member who participates on the ASTM F47 Executive Committee.

Recommendation #10: The FAA should assess the completeness of standards to serve as a means of compliance and provide guidance on how it will review and accept standards as a means of compliance.

FAA/AST Response: FAA/AST has established a process to review standards as requested to determine if they can be used as a means of FAA/AST has a website that lists acceptable mean of compliance.

Recommendation #11: In addition to industry standards, means of compliance for future performance-based requirements should include government standards and other unique means of compliance developed by an individual applicant.

FAA/AST Response: Approved unique means of compliance (unless a unique means of compliance contains proprietary information) are posted on ASTs Means of Compliance website. Most unique means of compliance that are submitted are marked as proprietary.

Recommendation #12: FAA/AST provide an update on efforts to streamline licensing, range safety approvals, and other processes.

FAA/AST Response: FAA/AST is reviewing rulemaking to include how to most effectively and efficiently update/revise sections of part 450. FAA/AST is working with the ranges to clarify procedures and processes.

Recommendation #13: FAA/AST brief results from National Spaceport Interagency Working Group and solicit state and private spaceports' participation and feedback.

FAA/AST Response: The Office of Spaceports (OOS) is finalizing these recommendations and is obtaining executive review of the outcomes. OOS is working with the National Space Council (NSpC) on the recommendations being put forward.

Recommendation #14: FAA/AST brief NSpC on launch infrastructure and facility construction delays and commodity shortages and proposed initiatives to address space-related infrastructure shortfalls.

FAA/AST Response: OOS will brief the NSpC as delays and shortages are identified.

Recommendation #15: Ensure that Advisory Circulars are accurate and accommodate variations in vehicle complexity and prevent regulatory burdens with no public safety benefit.

FAA/AST Response: Advisory Circulars (AC) are put through a very rigorous review process to include interagency review and multiple levels of FAA review to ensure accuracy. FAA/AST accepts and reviews all feedback received on ACs and is currently revising several published ACs based on feedback.

Recommendation #16: ACs should make distinctions between launch and reentry when differences exist. ACs should distinguish between launch vs. reentry license requirements or at least include distinct sections discussing the difference in applicability of many of the regulations.

FAA/AST Response: FAA/AST will ensure the ACs more clearly delineate between launch and reentry requirements.

Recommendation #17: The FAA should provide more transparency into the software and analysis tools that have been accepted for use.

FAA/AST Response: FAA/AST is reviewing the how best to provide this support to the industry.

Recommendation #18: The FAA should clarify and as needed amend part 450 to address challenges with requirements that are distinct to launch or reentry. The FAA should prioritize part 450 clarification through guidance and policy balanced with reforms.

> FAA/AST Response: FAA/AST is reviewing options for revising and updating part 450 including a potential rulemaking committee to garner detailed industry feedback on changes and updates that are needed to provide a better streamlined licensing process while maintaining the focus on public safety. As of 30 October, there are a total of 18 ACs published on the FAA/AST website with two more in the final review process before publication. ASZ-200 has established an AC Tiger Team to prioritize development of ACs and published them in a timely manner.

Following the presentation, the Chair asked if AST had any response to COMSTAC's recommendations relating to the recent Report to Congress on Commercial Human Spaceflight (HSF) Activities, and if COMSTAC's response to the report will be shared with Congress. AST replied that some recommendations were included with the report. COMSTAC's response was not submitted, but it is available on the FAA/AST COMSTAC website and appropriate Congressional staffers are aware of where to access it.

Future Rulemaking and Advisory Circulars

Mr. Randy Repcheck from FAA provided a brief update on rulemaking and advisory circulars. Mr. Mat Dunn asked if there is a process for integrating industry feedback into the development of ACs. Mr. James Hatt replied that AC feedback is currently only solicited once an AC is published through the AC Feedback form, but FAA will consider including industry during AC development and will also consider industry feedback during revisions of ACs.

Mr. Dunn also asked if AST had any thoughts on reducing the timeline for producing ACs, such as prioritizing. Mr. James Hatt responded that they do have a prioritization plan for ACs. Most people needed to produce ACs are the same people needed to work on licenses, and AST is doing the best they can to balance these needs. The licensing process will go smoother with a full docket of ACs, but ACs need to be produced first. FAA is also working with MITRE on a pilot project to utilize AI and machine learning to modernize ACs, making them more accessible and quickening their development.

Ms. Caryn Schenewerk asked if there was a plan to solicit industry input on part 450 apart from COMSTAC. AST could do an Advanced NPRM (ANPRM), a public meeting, a SpARC, or work with companies individually. Ms. Schenewerk noted that even a SpARC has limited membership and a limited scope, which must be determined by FAA, which still leaves a burden on the FAA. An ANPRM reduces burden on the FAA, because it is open to all for public comment. Some tools normally used for rulemaking were not used for part 450, given its expedited release.

FAA AST was also asked to clarify FY23 budget numbers and appropriations. Mr. Repcheck stated Congress provided AST with additional funding for AST to hire 10 additional staff. The appropriation was specifically for additional staff to work in HSF. Mr. Repcheck said FAA did

not have discretion to hire otherwise, even where need is most. Mr. Repcheck reiterated that the HSF staffing increase did not negate the need for additional licensing staff. Mr. French proposed a discussion for another meeting: COMSTAC advice to Congress.

Ms. Schenewerk expressed concern that difficulties with the part 450 licensing process are creating a higher burden for new operators than those operators who are already licensed under part 417. Data available on the amount of time being spent on licensing in the new regime compared to the old regime would be helpful. Mr. Repcheck welcomed input on this. Mr. Repcheck stated Part 450 was completed very quickly and stated that there are always growing pains on FAA and the industry with new regulations, whether done fast or slow.

Task #2 Discussion: Challenges and Priorities

COMSTAC was tasked to provide the FAA with a list of challenges and priorities. The biggest challenge according to the members was licensing. Mr. French noted that nuclear space systems is another priority.

Spring Taskers

The Chair introduced the proposed taskers for the spring 2024 meeting:

Proposed Task #1 (Regulatory Working Group): Space nuclear power and propulsion is critical to maintaining a future space presence. FAA/AST will license vehicles carrying payloads with nuclear material. What recommendations can the COMSTAC provide to the FAA to ensure FAA/AST is able to contribute to Space Policy Directive-6 (SPD-6)? Additionally, given the AC on nuclear payload approvals, provide any observations, findings, and recommendations.

Proposed Task #2 (Safety Working Group): Review the 2023 Recommended Practices for Space Flight Participant Occupant Safety and provide any observations, findings, or recommendations to this document. Research possible frameworks that use industry consensus standards as a means of compliance for performance-based safety requirements and provide recommendations on how the commercial space industry might use similar frameworks.

Proposed Task #3 (Research & Development Working Group): Research options on Commercial Space Transportation standing up a Research Alliance made up of government, industry, and academia, to foster R&D. This would be a follow-up to the Commercial Space Transportation Center of Excellence and provide a recommended path to implement that includes potential funding, structure, and governance.

Proposed Task #4 (Innovation & Infrastructure Working Group): Evaluate space transportation infrastructure funding options and assist in the implementation of the most promising approach. Background: in its report to Congress in December 2020 (GAO-21-154), the GAO encouraged the FAA to examine a range of potential options to support space transportation infrastructure, noting that the FAA had focused on only two existing programs, rather than a range of options, because of limited time and resources.

COMSTAC approved all four proposed tasks. Point-to-point transportation will also be considered as a second task for the Innovation & Infrastructure Working Group.

Closing

Ms. Drees opened up the meeting to the public comment portion of the agenda. Mr. Verna stated that he did not receive any requests to make a public comment. Ms. Drees and Mr. French thanked the members and FAA AST for their work. The Mr. French added that he would like to make FAA AST briefings on recommendations regular practice in future meetings.

Mr. Verna adjourned the meeting at 2:44 p.m. Eastern Time.