Meeting Minutes

Federal Aviation Administration

Commercial Space Transportation Advisory Committee (COMSTAC)
Monday, May 15, 2023
Zoom & YouTube Meeting
10:00 am – 4:10 pm

List of Committee Members Present at the Meeting

Major General Edward Bolton, USAF (Ret), SGE, former FAA Associate Administrator
Capt. Joseph DePete, former President, Air Line Pilots Association
Ms. Karina Drees, COMSTAC Chair, President, Commercial Spaceflight Federation
Mr. Mat Dunn, Senior Director of Global Government Affairs, Space Exploration Technologies
Mr. John Elbon, Chief Operating Officer, United Launch Alliance
Mr. Mike French, **COMSTAC Vice-Chair**, Vice President of Space Systems, Aerospace Industries Association
Mr. Tony Frego, Vice President of Mission Management, Spaceflight, Inc
Dr. Moriba Jah, Associate Professor, Aerospace Engineering and Engineering Mechanics, University of Texas at Austin
Ms. Therese Jones, Senior Director of Policy, Satellite Industry Association Holdings, LLC
Mr. Dale Ketcham, Vice President 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
Mr. Mike Moses, President of Space Missions and Safety, Virgin Galactic
Dr. George Nield, President, Commercial Space Technologies
Ms. Melanie Preisser, Vice President of National Systems, York Space Systems
Ms. Caryn Schenewerk, Vice President of Regulatory and Government Affairs, Relativity Space
Ms. Amanda Simpson, Vice President for Research and Technology, Airbus
Mr. Ganesh Sitaraman, New York Alumni Chancellor's Chair in Law, Vanderbilt University
Mr. Jay Skylus, Chief Executive Officer of Aevum, Inc
Ms. Janice Starzyk, Adjunct Professor, George Washington University
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, Commercial Civil Space, Lockheed Martin

Committee Staff:

Mr. James Hatt
DFO of COMSTAC
Manager Space Policy Division
Office of Commercial Space Transportation, FAA

Agency Employees:

Mr. Billy Nolen
FAA Administrator (Acting)

Mr. Kelvin Coleman
Associate Administrator
Office of Commercial Space Transportation, FAA

Other Attendees:

Michael Lopez-Alegria
Chief Astronaut, Axiom Space

Benjamin M. Miller
Economist, RAND Corporation

Major General Stephen Purdy
United States Space Force

Description of each matter discussed and conclusions reached:

Designated Federal Officer (DFO) Mr. James Hatt called the meeting to order at 10:00 AM, gave a brief welcome, and invited attention to the Federal Register COMSTAC notice before turning the meeting over to the COMSTAC Chair, Karina Drees. She welcomed everyone to the Spring meeting, highlighted the increase in launches, and indicated that space-based technology was important to the United States. Vice Chair Mike French thanked the Office of Commercial Space Transportation (AST) for all their work, despite limited resources, and added that he was looking forward to an update on the federal rulemaking enterprise.

Ms. Drees introduced Acting Administrator Billy Nolen. He opined that as human space flight grows it becomes more imperative to make sure the participants are safe. After calling attention to the moratorium on human space flight regulation that it is set to expire on October 1, Mr. Nolen stated nobody knows if Congress will issue another extension but in any case, FAA needs to prepare for the regulation. He called upon COMSTAC to provide honest feedback and let FAA know what is working and what is not working. The Acting Administrator noted that interagency colleagues, National Space Council's staff, and the transportation secretary's office are working on how to efficiently and safely enable these kind of missions in a sustainable manner. Mr. Nolen disclosed that space operations will continue to increase and observed how crowded and complex US airspace will get. Mr. Nolen revealed that this will be his last COMSTAC as he is leaving the FAA during the summer.
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Ms. Drees introduced Associate Administrator Kelvin Coleman from AST. Mr. Coleman remarked on the breadth and exceptional talent of the committee. After praising Acting Administrator Nolen's leadership, he disclosed that he recently selected Mr. Michael O'Donnell to be the Deputy Associate Administrator for AST. Observing that 31 launches and two reentries occurred through April, the Associate Administrator underscored that the pace of launch and reentries this year has already doubled from the previous year. Mr. Coleman observed that some test missions ended in mishaps but most importantly none of these missions encountered serious injuries or casualties to the public, which is AST's goal. He noted that it's not unusual to see a mishap occur from time to time and new vehicle operations have a mishap of some sort during their first one or two operations. Currently there are six mishap investigations on the way right now. AST is working to bring aboard more personnel to reach 155 employees as quickly as possible.

Mr. Coleman also highlighted that AST continues to work on a licensing evaluation application portal, which will make things much easier for applicants. This procurement now is in its final stages and AST hopes to have a contract in place by September of this year. To get that moving forward in a very positive manner, AST revamped the complete enough policy. In years past, complete enough has been a bit of an ambiguous pursuit but AST tried to take some of the ambiguity out of that by making the complete enough determination more of a quantitative determination versus qualitative determination. Revealing that the Part 440 Aerospace Rulemaking Committee (SpARC) kicked off the previous week, he shared that the plan for the new SpARC is to run it for a few years and probably wrap up sometime in calendar year 2024. This will provide consensus recommendations on how to improve our maximum probable loss determinations. Mr. Coleman revealed that a Part 460 SpARC on commercial human space flight was just chartered but it's not quite underway. When it does kick off, this SpaRC will focus on a new safety framework on how best to move human space flight occupant safety from an informed consent regime. He concluded by introducing the new streamlined AST mission statement: "to enable safe commercial space transportation".

- Mr. French asked if there is any more to tell on status of mission authorization activity? Mr. Coleman said the interagency hard at work figuring this out and he can't disclose much but work is continuing with NASA and DOC, and he wants to avoid a duplicative regime.

- Ms. Schenewerk asked if there were any updates on orbital debris rule? Mr. Coleman said orbital debris rule going to OMB soon, then it goes to interagency review, and he expected NPRM by the Fall.

- Mr. Jah asked if is there an appetite for AST to revive Center of Excellence (CoE) for commercial space transportation to address new issues? Mr. Coleman indicated he didn't expect to resurrect CoE in its past form, but AST is working on a research alliance to do basic and applied research, and AST won't abandon principles moving forward and is continuing to work on what comes next.

Next, Mr. Dan Murray, Executive Director for AST's Office of Operational Safety, stated that the licensing process remains in high demand across all phases from pre-application to operations. Back in February, Mr. Murray reported that AST had a steady workload of about seven applications that were in evaluation, another 10 or so in pre-application consultation, and another 30 or so in early pre-app or initial discussions. He outlined a few of the steps AST has taken lately to keep the process moving and to minimize the time an applicant waits to get their application material reviewed. The licensing process begins with initial discussions to provide AST with a high-level overview of the applicant's plans and for AST to provide the applicant with a high-level overview of the process.

Expanding on the website, Mr. Murray encouraged companies to contact AST directly through the website where one can fill out a form that provides some basic details to facilitate a productive first meeting. He recommended that companies provide the concept of operations (CONOPS) of what they intend to do by using AST's project overview planning tool. AST urges all applicants to use the website to find guidance checklists and other assistance in developing an application. Mr. Murray indicated that advisory circulars, workshop materials, checklists and other materials are available for industry's benefit and they are all available on AST's website. Since AST plans to update Part 450, he wants feedback on all the rules and guidance.

- Ms. Drees asked if he still expected the quarterly meetings to continue? Mr. Murray said they will continue, and the SME interaction is good use of time.

- Ms. Mitchell asked do you have metrics that you're going to be watching to see if these are making an impact and they're benefiting the industry? Mr. Murray stated we have some basic metrics that we've identified in terms of capturing our throughput into uh the different types of authorizations that we're working through.

- Ms. Shenewerk asked what does staffing/resources look like to effectively address the increase in applications? Mr. Murray said flight safety analysis is where AST struggles the most, and we are looking to double staffing there. There are not a lot of places to find that experience, and we working to lure from other partners, also doing extensive training for junior staff. Automation will also help through licensing/evaluation portal, and is looked at as a game-changer.

After an introduction by the DFO, Mr. Duane Freer, Manager of Air Traffic Organization (ATO)'s Space Operations, offered a "level set" on what ATO is doing currently. He disclosed that ATO is at 41 missions for the calendar year and said the rapid increase in cadence is no surprise. Focusing on Florida, Mr. Freer observed there was a very discernible shift in the aviation market with the aviation community shifting the travel patterns and accelerated the volume in Florida and the Caribbean. This shift is one that ATO will be tracking over the coming years, and it further accentuated the need to focus on Florida in the airspace integration efforts there. ATO is only activating part of the Temporary Flight Restrictions (TFR) for missions that have southeasterly trajectories and this leaves the airway just to the north AR 6 and 15 open. That's a really critical part of the aviation system in a really critical airway. Thousands

of passengers are not being impacted now for those missions and 84 percent of the missions since November have been southeasterly or easterly trajectories that have allowed that airway to stay open.

- Mr. Dunn offered congratulations on the positive work, at what point can this information be distributed directly to controllers? Mr. Freer said he is looking at FY28, but will get back to the group with better answer.

The DFO introduced Michael Lopez Alegria, who is the Chief astronaut at Axiom Space and also the chair of ASTM F47 committee for industry consensus standards. Sharing a historical perspective, he disclosed that, during 2012 – 13, there was a lack of enthusiasm to produce voluntary consensus standards since companies were concerned about others seeing their "secret sauce". There was also cliquishness within the Commercial Spaceflight Foundation (CSF) and not wanting to share too much. In 2016, however, CSF decided to "charge the hill" one more time and teamed up with ASTM, and they have been up and operating ever since. Mr. Lopez-Alegria lamented that it was a very slow start, but the committee has hit its stride and now has eight subcommittees. They have seven standards and that's about one a year, which is about normal for ASTM committees. Meeting face-to-face twice a year, the committee tries to convene around other events such as the Space Symposium in Colorado last month. The executive subcommittee meets monthly, and the task groups meets anywhere from bi-weekly to monthly.

Mr. Lopez Alegria revealed the F47 goal is to promote safety within the industry and share best practices. He underscored the importance of these standards being industry consensus standards. He emphasized that there is broad representation on F47 to include vehicle operators and parts manufacturers, regulators, other USG users & advisory groups, national Air Space (NAS) users, spaceport operators, medical professionals, and other interested stakeholders.

Next, Ms. Pam Underwood, Director of AST's Office of Spaceports, presented an update on the National Spaceport Interagency Working Group (NSIWG). Consisting of FAA, NASA, Space Force, Department of Commerce (DOC), Department of Defense (DOD), and the Department of State (DOS), the NSIWG aims to maintain the US lead in space transportation, develop a strategy for a resilient and interoperable spaceport network, collaborate on policies, and advocate for resources. Founded in February 2022, the NSIWG also analyzes the relationship between Federal spaceports, state/local spaceports, and private spaceports, analyzes best practices and lessons learned in spaceport operation and integration, identifies and pursues opportunities associated with technologies, and studies the best economic approach to increase launch cost effectiveness. Ms. Underwood shared five current challenges that the NSIWG action plan needs to address: aging infrastructure, congestion, lack of vertical launch capacity, lack of proper authorities at federal ranges, and international leadership. She also underscored NSIWG engagement with industry to include a September 2022 three-day, Industry Summit with spaceport directors, staff and launch service providers. She also indicated that a follow-up summit is planned for June 2023.

- Dr George Neild George asked for the status of spaceport infrastructure grants? Ms. Underwood indicated that she made a benchmarking effort to talk with highways railroads and MARAD to find out what worked and what didn't work for theirs and through that we've got a lot of lessons learned. She added it really depends on when we could see funding available for that and she is not sure of the status that at this point.

The DFO introduced Mr. Benjamin Miller, who is an economist at the RAND Corporation and is also one of the primary people who wrote the Independent Assessment Report for Congress. Citing section 111 of 2015 US Commercial Space Law Competitiveness Act (USCSLCA), Mr. Miller shared that the report examined three broad categories including progress on adoption of voluntary consensus standards, progress in meeting key industry metrics, and whether areas identified in previously issued reports are appropriate for regulatory action or for further development of voluntary industry consensus standards. He described some key takeaways. First, Mr. Miller assessed the impact on permitting the moratorium to end on Oct 1, 2023, and allowing rulemaking to proceed alongside standard development. He noted safety practices exist but often are treated as proprietary. Despite Standards Development Organizations (SDO) having developed voluntary standards, there is no evidence that extending the moratorium would speed creation of standards. Second, current metrics cannot be used to assess industry progress toward standards since it is unclear on how data can be collected. and there is no agreement on target metrics. Third, he shared findings on the readiness of industry for regulation. Mr. Miller opined that, FAA would be sensitive to costs of regulations by budget and staffing constraints.

- Mr. French asked will there be another report to address what RAND did not? Mr. Coleman said there are no plans to request another independent report.

Mr. Sitaraman asked would FAA begin regulatory work as soon as learning period ended? Mr. Miller emphasized that nothing changes if moratorium expires and said rulemaking is a years-long process. He added that it will take a lot of time to move into next phase of no longer being entirely hypothetical and the report does not suggest that regulations should exist as soon as learning period ends.

Major General (MG) Stephen Purdy, who wears several hats, including Program Executive Officer (PEO) for Assured Access to Space (AATS), Director of Launch and Range Operations Space Systems Command (SSC/S3), Commander of Space Launch Delta 45 (SLD 45), and Director of the Eastern Range, shared an update on National Security Space Launch (NSSL) plans. He noted that when he started his position two years ago, USSF conducted 31 space launches that year, did 57-ish last year, and are planning on 90 this year. That is “insane” for those familiar with the launch community. He shared that the National Defense Authorization Act required USSF to support commercial space and also observed that, as the DOD moves and changes its architecture to a hybrid architecture, the US is going to depend more and more on commercial industry commercial satellites, and commercial data. That said, however, there are three big limitations for ranges: infrastructure, people, and payload processing facilities. MG Purdy opined that if plans are not set in motion, the US will run out of payload processing capabilities for DOD launches alone. Lack of personnel remains the greatest issue, and the US is running out of DoD personnel and time to support launches on Eastern and Western ranges. MG

Purdy said the military aims to achieve something similar to air or seaport authority, and without the ability to run ranges in business-like manner, he warned the US will run out of resources.

- Mr. Skylus asked what are causes of people issues? MG Purdy stated it goes back to how a military base operates as a reminder these two launch bases the Cape and Vandenberg are on military bases and their DOD test ranges so they operate for normal DOD test range rules. He added that USSF are funded to essentially do DOD launch and the DOD launch is about 10 launches a year. USSF were not prepared nor manned to support launch rates of 90.

After MG Purdy's remarks, the committee took a lunch break until 1:05.

DFO Mr. James Hatt welcomed everyone back for the afternoon session and introduced Mr. Brian Rushforth, who is the Manager of AST's Innovation Division. He presented an update on research examining the explosive effects of liquid oxygen/methane (LOX/CH4, LOX Methane) fuel. He revealed there are several vehicles currently under development that will use LOX/Methane; however, the modeling for net explosive weight (NEW) does not exist. Mr. Rushforth discussed the advantages of using Methane as a propellant including higher Specific Impulse, and LOX/methane can remain as liquids at similar temperatures while burning cleaner than some other liquid propellants. This allows for reduced time and cost when processing a reusable launch engine. FAA is working closely with NASA and DoD on explosive yield data and fragmentation debris for FAA. This will help improve calculations for maximum probable loss (MPL). Located in Utah, the testing rig is undergoing calibration testing and the first test planned is for June 2023. The next phase of the testing is planned for FY 2024 and will use a constant mass with varying impact velocity. Data will be shared with other US government agencies and LOX/methane developers.

- General Mercer asked who has the lead for this work. Mr. Rushforth replied that NASA has the lead for coordination. FAA has been planning for these tests for a few years. As a result, FAA is a further ahead in testing. General Mercer followed up by asking once testing is complete, how does that interface with the NASA and DoD work. Mr. Rushforth replied that it compliments the work since the FAA is looking at hazard areas outside federal ranges. He did not believe it becomes universally accepts since there is other ongoing research by other organizations. General Mercer then clarified that no one seems to have the clear lead in this research. Everyone has their own piece and, as a customer, whatever is determined from the research will be passed on to the customer.

- General Mercer then asked for a time frame before results are seen from the testing. Mr. Rushforth replied that the CSWG coordinates the standards for LOX/methane for the US Government. Phase 1 results are expected by the end of 2023. Phase 2 are expected by the end of 2024. Results from NASA's testing could be another two years after that. General Mercer added that companies want to start using methane in the next year and half to two years. How will those standards be levied? Mr. Rushforth stated that an FAA license has some conservatism built into it and once the testing is completed, that conservatism will either be lessened, or testing will confirm the existing standards.

The DFO introduced FAA Senior Technical Specialist Dr. Paul Wilde who provided an overview of the Common Standards Working Group (CSWG) and the Senior Steering Group (SSG). Summarizing the roles of senior leadership and other CSWG members, Dr. Wilde revealed that the CSWG membership is not limited to government members only, but industry is invited participate as well. The purpose of the CSWG to is promote a framework of common safety standards and recommended practices that would be beneficial to industry. It is an advisory body and any authority is with the individual agencies.

- General Mercer asked how any standards that come from the CSWG, specifically for LOX/methane, would be enforced if the CSWG is an advisory body only? Dr. Wilde replied that it is similar to the Range Commander's Council in that they published standards and ranges are free to use them are not. The thinking is if the standards are good, then they will be used. Dr. Wilde then gave an overview of the sub-working groups and examples of the capabilities demonstrated by the CSWG.

- Mr. John Elbon comments that the urgency to develop standards that are safe but not overly conservative is there. He also asked if industry participation should be more common in the CSWG? Dr. Wilde agreed that collaboration with industry should be to the largest extent possible.

The last AST update was presented by Ms. Sabrina Jawed, who is AST's Manager of the Space Regulations and Standards Branch. Ms. Jawed shared the purpose of the Aerospace Rulemaking Committees (SpARCs) and stated they do not necessarily result in rulemaking. The FAA will receive the report from the SpARC but may conclude that a rulemaking is not needed. Summarizing the SpARCs for Part 440 and Part 460, she observed the orbital debris rule is currently with the Office of Information and Regulatory Affairs and the FAA is still working on the Commercial Space Law Competitiveness Act. Mrs. Jawed gave an update about Advisory Circulars (AC) and invited the members to comment or request new ACs.

- Mr. French asked about the rulemakings and if they would come out as NPRMs? Mrs. Jawed replied yes, they would.

Mr. Hatt then turned the meeting over to Mrs. Karina Drees.

Mrs. Drees gave some instruction to the COMSTAC about voting on the tasks. She then introduced the Working Group tasks.

The first task was to review the FAA's HSF Safety Framework and the RAND report. Ms. Drees explained the moratorium on HSF and the responsibilities of different parties including the Secretary. She also summarized the requirement from Congress for the report. The observations in Mrs. Dress presentation stated that commercial HSF mission are still infrequent and vehicle designs are few and dissimilar. The report stated that the FAA and industry are ready to implement a new safety framework and that new framework involves a transition away from informed consent.

- Dr. George Nield did not agree with the third bullet in that he did not see that in the report. Mr. DePete agreed with Dr. Nield. Mr. Moses read from page 11 of the report and that it implies informed consent will be replaced with a new safety framework. He also added that it does not say that informed consent could not be part of that new framework.

Mrs. Drees then moved on to the Findings of the presentation. COMSTAC does not agree with the FAA's report as written. Commercial HSF unanimously agreed that a continued learning period is needed. COMSTAC supports the continued development of industry consensus standards. Mrs. Drees emphasized that creating regulation is very hard to do so it needs to be correct when it is done. COMSTAC also believes that the metric and methodologies used by the FAA to determine the readiness of the industry and FAA to implement a new framework are unclear.

- Mr. DePete asked about the order of the points in the Findings and if there was a reasoning to the order. Mr. Moses added that he agreed that the report to Congress had too much of a tone on industry being ready for regulation.

Finally, Mrs. Drees presented the Recommendations. Those recommendations included the FAA should detail how it analyzes the readiness indicators in the report and validate the agency's findings regarding the industry's readiness to implement. The FAA should continue efforts to develop industry consensus standards. FAA should update the 2014 Recommended Practices for HSF Occupant Safety document. Lastly, the FAA should coordinate with COMSTAC and industry partners to determine the scope, participants, and pace of any HSF SpARC.

- MG Mercer asked to expand the recommendation to update the 2014 Recommended Practices document. Mrs. Drees said it would be very helpful to the Safety Working Group and how to discuss HSF Safety tasks. A current document would be helpful in developing standards and an update is expected by the summer.

- Mr. DePete asked why is the document outdated? Mrs. Drees said the recommended practices are not substantive and don't allow for standards development. Mr. Moses and Mrs. Schenewerk added that the document was written in 2014 when there were only a few participants in industry.

- Mrs. Ann Zulkosky asked how the document would be amended? Mrs. Drees stated that the Recommendations will be added to the document as well.

- Mr. DePete asked about the development of standard and what "incentives" meant. Mrs. Drees stated that it really means encouragement. She gave an example of AST being involved in standards development and how that encourages industry to be involved.

- Mr. Elbon asked if the COMSTAC members will be able to review the white paper developed from the recommendations. Mrs. Drees answered yes.

- Mr. French wanted to include a statement in the recommendation to cover FAA resources.

- Dr. Sitaraman pointed out that the recommendation about SpARCs can be changed to delete, "If an HSF SpARC is chartered…"

Mr. Hatt presented two questions from the public:

- Any input from non-American space agencies? Ms. Drees and Mr. Moses have not seen anything from non-American agencies. Mr. Moses emphasized the efforts from AST to coordinate American companies launching from other countries.

- Does anyone know how many human space flights are planned for 2024 and 2025 and does that influence when the learning period should end? Ms. Dress answered not enough to know what regulations should look like. Ten launches or a 100 launches still might not be enough data.

[Agreed changes to recommendations were made real-time.]

COMSTAC then moved to vote on the recommendations.
23 - yes, 0 – no, Newman, Parker, Jah, Sonty not present.

Mrs. Drees then moved on to the STEM task. Ms. Starzyk presented for the Regulatory Working Group on how can the FAA partner with industry to increase and encourage greater diversity and participation in STEM education supporting the growing need in the commercial space workforce? Provide a white paper or other report with recommendations, findings, and/or observations.

The group's recommendations included to work closely with the National Space Council and its member agencies to speak with a unified voice and minimize duplication - ensure harmonization between DOT STEM workforce efforts and White House-led space industry skilled workforce coalition, create a space workforce messaging portal and newsletter to notify STEM workforce partners of opportunities, facilitate participation from historically excluded academic communities at space conferences and workshops.

Work with industry to: establish mechanism for industry inputs into the DOT-related tasks of the interagency to support space-related STEM education and workforce, establish exec-level workforce dev officers to build strong local and regional STEM workforce pipelines, including developing regional postsecondary STEM internship programs (white paper proposes several options), utilize spaceports as regional education hubs to support programs and promote space industry activities for students early in their education.

- General Mercer suggested to designate and use spaceports as regional education hubs.

- Ms. Jones asked if this was a change to the FAA's authority to designate hubs? Ms. Starzyk, MG Mercer, and Ms. Jones agreed to change the wording to allow the FAA to designate spaceports as hubs.

Work with high schools, universities, and student organizations to: highlight space industry jobs available and identify academic and extracurricular points of engagement within FAA AST, extend the DOL'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, like the U.S. Space Force University Partnership. This pipeline should emphasize the employment of historically excluded communities in commercial space transportation.

- Mr. DePete stated that he had previously worked with middle school students. (Change was added to recommendation #3)

- General Mercer stated he through NASA's HUNCH program should be part of this recommendation.

- Ms. Jones added that the DoL program was added specifically because it focuses on job skill building as opposed to fostering general interest.

- Ms. Starzyk suggested adding the HUNCH program to the appendix of the paper. She added the FAA should communicate existence of programs and not create new ones. Going back to General Mercer's comments about NASA's HUNCH program, it could be added to recommendation #1.

Mr. French conducted a roll call vote.
22 – yes, 0 – no, Newman, Parker, Pressier, Jah, and Sonty not present

Ms. Drees introduced Mr. Moses and the Safety Working Group. Mr. Moses introduced the SWG and thanked them for their work.

The SWG had two tasks: How the FAA can measure the implementation of voluntary consensus standards developed within Standards Development Orgs in the US commercial space industry; and how can the FAA encourage the development of industry consensus standards as a means of compliance for performance-based safety requirements?

In the first task, several factors continue to impact standards development: Limited crew flight data, finding commonalities with various industry vehicles and operations demands on company resources and priorities, contractual requirements for NASA Commercial Crew mission.

The recommendations included that the FAA should conduct a voluntary, non-attributable survey with industry to assess the implementation of developed standards. The survey should he conducted after an initial set of high-priority HSF standards have been developed with industry. Should the FAA conduct survey prior to the completion of a more complete set of standards, the survey should assess the implementation of contractually required government standards or other practices being used by a company in addition to published consensus standards.

- MG Mercer suggest using sentiment analysis since feedback is quicker and more accurate.

- Ms. Mitchell provided an interpretation of "implementation." The value to AST is the how, why, not just is it being done.

Mr. Moses then moved on to the 2nd SWG Task.

The FAA and COMSTAC have recognized the importance of developing voluntary consensus standards. ASTM F47 is the lead SDO responsible for the development of HSF standards. FAA has a history of using voluntary consensus standards as a means of compliance. The first recommendation is the FAA should focus and increase its participation in the ASTM F47 Committee to guide, develop, and assess standards development efforts. The second recommendation is to seek their feedback on the updated Recommended Practice for HSF Occupant Safety document. The recommendations also included that means of compliance for future performance-based requirements should include government standards and other unique means of compliance developed by an individual applicant.

Mr. French conducted a roll call vote.
22 - yes, 0 - no, Newman, Parker, Pressier, Jah, and Sonty not present

Ms. Drees introduced the Innovation and Infrastructure WG with MG Bolton. He reviewed the tasks: How can the current approach to flight authorization and the decision process to adjudicate access to government-provided range services be modified to better facilitate launch operations & launch range operations? How does this impact the transition to spaceports? Are these issues also negatively impacting timely launch operations, reentry licensing, and economic development? If so, please discuss the impacts and implications. What specific recommendations can the working group provide the FAA to address concerns and mitigate risks associated with the current oversight approaches, and the issues the team identified?

The IIWG recommended the following: FAA provide an update on efforts to streamline licensing, range safety approvals, and other processes; FAA brief results from the National Spaceport Interagency WG and solicit state and private spaceport's participation and feedback. USSF brief NSpC on launch infrastructure and facility construction delays, commodity shortages, and proposed initiatives to address space-related infrastructure shortfalls.

- Dr. Nield comments that AST resources are an issue in getting licenses approved.
- General Bolton commented that the NSpC stated that if infrastructure is a need, then to work with OMB.

- General Mercer added that the nation's vertical lift spaceports should be included as critical infrastructure.

- Mr. Moses cautioned about unintended consequences for private spaceports being identified and critical infrastructure.

Mr. French changed recommendation #3 to FAA to facilitate a briefing from USSF and conducted a roll call vote.

19 - yes, 0 - no, with Jah, Kronmiller, Newman, Parker, Sitaraman, Sonty, Zoller, and Zulkosky not present

Ms. Drees suggested delaying the part 450 conversation.
Mr. Hatt agreed.

There were no public comments.

Mr. Hatt presented a task for a Lessons Learned Database and shared information about a Compliance and Enforcement Workshop in July.

Ms. Drees thanked to all for hard work, will get back to members on when to hold interim meeting.

Mr. Hatt adjourned the meeting at 1610.