Meeting Minutes

Time: 9:00 a.m. to 4:00 p.m. Eastern Time
Location: Hyatt Regency Crystal City (Regency E, Ballroom Level), 2799 Jefferson Davis Highway, Arlington, Virginia 22202

For additional information, please view the Meeting eBook.

Meeting Summary

Acting Drone Advisory Committee (DAC) Designated Federal Officer (DFO) Carl Burleson opened the meeting at 9 a.m. on June 6. In his opening remarks, Burleson, also the Acting Federal Aviation Administration (FAA) Deputy Administrator, discussed the status of the drone industry, then went on to introduce the new members of the DAC and the newly appointed DAC Chairman, Michael Chasen.

Newly appointed DAC Chairman, Michael Chasen, PrecisionHawk USA, Inc. Chief Executive Officer, was by introduced by Carl Burleson. Chasen stated that he is honored to serve as the DAC Chairman as the industry is fundamentally changing and stressed the ability of industry to support what the FAA is doing before rulemaking is complete. Chasen went on to discuss the status of the drone industry and shared his five priorities for the DAC.

The FAA's Jay Merkle, the Executive Director of the UAS Integration Office, presented a summary to DAC members on the FAA's planned activities to support the implementation of the FAA Reauthorization Act of 2018. Merkle went on to explain that the FAA's Reauthorization of 2018 prioritizes UAS, gives the FAA full authority over UAS operating in the National Airspace System (NAS), reaffirmed the UAS Integration Pilot Program (IPP), provides mention of counter-UAS (C-UAS), and directs the FAA to develop risk-based consensus standards. Merkle moved on to give an update on the FAA's current rulemaking activities.

Mr. Merkle then reviewed how the FAA plans to address key provisions in the FAA Reauthorization Act of 2018, and provided an update outlining the outlook on remote identification (ID). Merkle highlighted the importance of remote ID as the identification and discrimination of any threats caused by UAS, also stating that this technology is fundamental for complex operations and is central to safe and secure integration of UAS into the NAS. Merkle stated that this is an opportunity for the DAC to help with the voluntary adoption of remote ID standards and described the FAA's related tasking for the DAC on this subject.

Mr. Merkle then provided the DAC with an overview of National Drone Safety Awareness Week. Merkle explained the purpose and main idea of the weeklong event. This event would provide an opportunity to highlight the societal benefits of UAS, while also giving participants a platform to host or conduct drone safety-related events and engage in drone safety related discussions in their communities.

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The FAA's Angela Stubblefield updated DAC members on C-UAS technology and trends. Stubblefield discussed UAS security initiatives, current capabilities to counter UAS safety and security risks, and the need for industry development of technologies and capabilities that counter these risks without compromising the safety of the NAS. Stubblefield mentioned that the malicious use of UAS is increasing and that concern is growing within the manned and unmanned aviation environments.

Jay Merkle then discussed the FAA's plan to implement the knowledge test for recreational flyers as required in the FAA Reauthorization Act of 2018. Merkle explained that through the DAC meeting, members would have an opportunity to provide input on key aspects of the test. Merkle stated that the test should be practical and easy, and material should be provided in a user-friendly rather than prescriptive format.

DAC Chairman Michael Chasen then discussed industry led topics and future outlook. Chasen covered Part 107 waiver requirements, stating that the challenge of the waiver process is the uncertainty of how to obtain a waiver. Chasen went on to explain that the DAC may be used to increase the efficiency of the process. Secondly, Chasen covered the topic of beyond visual line-of-sight (BVLOS) and how the DAC can examine safety information companies are using to obtain this type of waiver.

The meeting concluded with Burleson reviewing the four new DAC taskings from the meeting and agenda topics for the next meeting.

The meeting resulted in the following new DAC taskings:

Tasking #1: Remote Identification (90 Days, beginning on June 6, 2019)
- The Final Rule for remote identification of UAS is likely up to 24 months away. In the absence of remote identification of UAS and in consideration of security partners' concerns regarding operations over people and other waivered operations under Part 107 in the intervening period, the FAA tasks the DAC to develop recommendations on:
    1) What voluntary equipage of remote identification technologies by UAS manufacturers or operators could occur in the short-term prior to a final rule for remote identification with the understanding that the requirements finalized in that rule may differ from short-term solutions based on the rulemaking proposal and any comments received during rulemaking.
    2) What types of incentives, if any, could be provided by the FAA for operators who voluntarily use UAS equipped in accordance with the recommendations in #1?
    3) Are there other drivers that could lead to widespread use of remote identification prior to the enactment of a Final Rule for remote identification and finalization of remote identification requirements?

- The standards referenced by the DAC are:
  - ASTM International:
    - Group F38 (WK27055) - New Practice for UAS Remote ID and Tracking
    - First workgroup meeting in June 2018, currently finalizing the title and scope for the standard
  - SAE International:
    - AIR6388 – Remote Identification and Interrogation of Unmanned Aerial Systems
    - Initiated: March 2017, possibly on hold, pending publication of an NPRM
  - ANSI Consumer Technology Association (CTA):
    - ANSI/CTA-2063 Small Unmanned Aerial Systems Serial Numbers
    - Published April 2017
    - ANSI/CTA-2067 Small Unmanned Aerial Systems – Remote Identification
    - Cancelled October 4, 2018

- TASK GROUP LEAD: Steve Ucci, Senior Deputy Majority Leader, Rhode Island State Assembly

Tasking #2: UAS Security Issues (90 Days, beginning on June 6, 2019)
- The FAA tasks the DAC to identify what currently existing or near term technical solutions at the aircraft or operational limitation/capability level could make it less likely that clueless and careless operators could operate UAS in ways that can be perceived as posing a safety or security threat?
- In 90 days, identify what is the universe of actions that IF relevant industry stakeholders agreed to take them, would substantially reduce the likelihood of unintentional threatening behavior.

- TASK GROUP LEAD: Jaz Banga, Co-Founder and Chief Executive Officer, Airspace Systems, Inc.

Tasking #3: 107 Waivers (90 Days after receipt of framework document from FAA)
- The FAA tasks the DAC to review the framework of the existing 107 waiver process provided by the FAA and develop recommendations on improving this process.

- TASK GROUP LEAD: Brian Wynne, President and Chief Executive Officer, Association for Unmanned Vehicle Systems International

Tasking #4: FAA UAS Comprehensive Plan (60 Days after receipt of Draft Plan)
- The FAA Reauthorization Act of 2018, Section 342, requires the FAA to update the comprehensive plan in consultation with representatives of the aviation industry, Federal agencies that employ unmanned aircraft systems technology in the national airspace system, and the unmanned aircraft systems industry.

- The FAA will send the draft UAS Comprehensive Plan to the DAC members and task the DAC to provide feedback.
- The FAA anticipates initiating this tasking within the next two months.

- TASK GROUP LEAD: None, full DAC membership participation will be requested

Detailed Minutes

Official Statement of the Designated Federal Officer
Burleson read the official statement at 9 a.m.

Approval of the Agenda and Previous Meeting Minutes
The DAC unanimously approved the agenda and meeting minutes from the last DAC meeting held on July 17, 2018.

DFO Opening Remarks
Acting Drone Advisory Committee (DAC) Designated Federal officer (DFO) and Acting Deputy Administrator Carl Burleson discussed the status of the drone industry. Burleson mentioned that Acting Federal Aviation Administrator, Dan Elwell apologized that he could not attend the meeting. A number of growing UAS metrics were provided to members as well as a recap of the FAA 2019 UAS Symposium. Burleson went on to mention that the FAA will seek advice from the DAC in a number of areas and that the he is looking forward to the discussions.

DAC Chair Opening Remarks
Newly appointed DAC Chairman, Michael Chasen, PrecisionHawk USA Inc. Chief Executive Officer, was introduced by Burleson. Chasen stated that he is honored to serve as the DAC Chairman as the industry is fundamentally changing and stressed the ability of industry to support what the FAA is doing before rulemaking is complete. Within his opening remarks, Chasen listed his top five priorities of the DAC which are remote identification, beyond visual line of sight (BVLOS), counter-UAS (C-UAS), the waiver process, and public-private partnerships. Members were urged to act as one single organization in an effort to move the UAS industry forward as he discussed the status of the drone industry.

Chasen stressed that we are no longer talking about drones in the future, we are talking about drones now. Covered in the discussion was the importance of the DAC and future rulemaking in order to prevent the industry from failing to keep up with the predicted growth of the emerging technology. Chasen provided a recap of UAS regulations and an operator timeline asserting that now is the time to discuss policy that promotes innovation and maintains safety.

The FAA's Plan to Address the FAA Reauthorization Act of 2018
Jay Merkle, Executive Director, FAA's UAS Integration Office

Mr. Merkle discussed FAA's plans and roadmap for implementing the FAA Reauthorization Act of 2018. Merkle did not touch on every provision in the Act, but did provide an overview of a number of provisions and stated that the key takeaway from the large number of provisions included in the Act is that Congress supports the safe integration of UAS into the National Airspace System (NAS). Also discussed was the prioritization of UAS provided by the Act as the FAA was given full authority of all UAS operating in the NAS through Sec. 349 which rescinded Sec. 336 of the FAA Modernization and Reform Act of 2012 (FMRA). Merkle continued to mention that the reauthorization reaffirmed the FAA's UAS Integration Pilot Program and mentioned that Congress has the ability to extend the program if needed. He also mentioned that in the 2018 Reauthorization included C-UAS provisions and directed the FAA to develop risk based standards to allow a wide range of UAS operations.

Furthering the discussion, Merkle provided an update to members of the DAC on the current rulemaking activities of the FAA. Merkle spoke about the advanced noticed of proposed rulemaking (ANPRM) for Safe and Secure Operations of small UAS (sUAS). It was described that the vision of the FAA is to use information from this ANPRM to inform the decision regarding the need to enhance or advise other rules. The second proposed rule discussed was the notice of proposed rulemaking (NPRM) for Operations of sUAS Over People. Merkle stated that many comments regarding the proposed rule have been received by the FAA and are being reviewed. Clarity was provided that the proposed rule will not be effective until remote identification is available. Lastly, the interim final rule for external markings was discussed and how operators will now need to mark the external surface of the UAS rather than within the battery compartment due to security concerns.

A review of the remote identification timeline was presented to the DAC. Merkle stated that the schedule for the rule has been moved to September 2019 and that the FAA is currently developing the draft NPRM. Closing the discussion for the Reauthorization Act of 2018, Merkle provided updates on the FAA UAS Integration Pilot Program (IPP), including the first part 135 type certification with Wing, as well as updates on the Unmanned Traffic Management (UTM) Pilot Program (UPP) and the FAA cross-agency team formed to track and coordinate multiple 2018 Reauthorization Act provisions.

Discussion on Mr. Merkle's Presentation

No discussion occurred.

FAA Update: Remote ID Outlook
Jay Merkle, Executive Director, FAA's UAS Integration Office
Michael Chasen, DAC Chair

Mr. Merkle provided an FAA update outlining the outlook on remote identification (remote ID). Merkle highlighted the importance of remote ID as the identification and discrimination of any threats caused by UAS, also stating that this technology is fundamental for complex operations and central to safe and secure integration of UAS into the National Airspace System (NAS). As remote ID is central to safe and secure integration, it is also the next major step towards a UTM system.

Merkle stated that the remote ID rule is very complex and has taken a lot of work and a lot of time. It will be the first rule that will define the public-private partnership required to make this work. Merkle also addressed the many changes presented by the 2018 Reauthorization Act and elaborated on how these changes have necessitated the FAA to go back and address changes needed for other rules that were already in progress when the legislation was enacted.

Merkle identified that this is an opportunity for the DAC to help with the voluntary adoption of remote ID. DAC Tasking number one involving voluntary early equipage of remote ID technology was then presented to the members. It was proposed to Chasen that a remote ID task group be established for the purpose of having industry drive early voluntary equipage of the technology. Merkle cited early adoption as a key element to enabling and unlocking expanded operations and business cases. He requested that the DAC form a task group and provide recommendations within 90 days.

Discussion on Mr. Merkle's Presentation

- Houston Mills (UPS): Can you please elaborate on the standards to be used by the DAC from ASTM International, SAE international, ANSI and Consumer Technology Association?
    - Following the summary of the standards, discussion then shifted to how the recommendations provided by the remote ID task group will be used by the FAA.
    - Merkle: The FAA envisions these recommendations from the DAC will be used to encourage voluntary early equipage of remote identification technology. If early equipage were to begin now, the FAA would be able to authorize operations using the technology when the infrastructure became available. Remote ID equipage may be required when applying for certain waivers, exemptions, or part 135 type certification.

- Lirio Liu (FAA): The importance of the DAC's role is providing recommendations to the FAA, specifically to assist the FAA with implementation of the remote identification rule.
    - Members of the DAC expressed concern regarding the input from the Department of Defense (DoD) and Department of Homeland Security (DHS) on the remote ID requirements needed to satisfy security concerns.

- o Merkle: The discussions regarding remote ID including interagency coordination has taken place with federal security partners through the FAA UAS Executive Committee (ExCom) and the ExCom's Senior Steering Group (SSG). Through these meetings, Federal security partners have been continuously briefed on the status of the remote ID rulemaking effort. Once the draft rule is complete, the security partners will have the opportunity to provide comments. The FAA will share DAC recommendations with the security partners to validate the ability to use the DAC's recommendations.
- o Stubblefield: The FAA reinforced this by stating that building a rule that meets the requirements of security partners is key.

- Mills: How does the FAA envision including subject matter experts in the task group?
  - o Merkle: The chair of the task group will provide guidance to its members on how to begin the tasking and what mechanisms will be used. Ensuring that the tasking and scope of recommendations is clearly understood by the group will allow industry to organize and provide recommendations to the FAA within 90 days that will meet the needs of security partners.

- James Burgess (Project Wing): Can the FAA provide a clear understanding of what is expected?
  - o Merkle: The ability to understand gaps in the technology is crucial as there is doubt that everything will be done right the first time. It is important for the FAA to understand how the technology will work as there are many components in play.

- Discussion continued regarding the relationship between remote identification and UTM, reflecting on the Low Altitude Authorization Notification Capability (LAANC) process, its success and the importance of public-private partnerships. Additional discussion surrounding remote identification included questions on if manned aircraft will need to equip with remote ID technology, if remote identification will enable flight in areas where UAS operations are prohibited or limited (i.e. national parks) and how the FAA plans to implement a remote identification rule. Liu expressed the importance of standards and early compliance in support of the rule.

- After a break, DAC members returned and Merkle continued the discussion on remote ID. Liu and leadership from the FAA's Chief Counsel's Office provided clarification to the regulatory aspect of the tasking for remote identification.
  - o Liu: Early equipage is beneficial and the intent of the task group is to work with industry to develop guidance on the technology in addition to supporting regulatory evaluation and analysis.

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DAC Tasking #1: Remote ID
- Proposed DAC Tasking #1: Remote ID
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TASK GROUP LEAD: Steve Ucci, Senior Deputy Majority Leader, Rhode Island State Assembly

Drone Safety Week
Jay Merkle, Executive Director, FAA's UAS Integration Office

Mr. Merkle began with an overview of National Drone Safety Awareness Week stating that the drone community is really starting to focus on safety. It's important that drone flyers are part of the National Airspace System (NAS) and as a result understand safety responsibilities and their tremendous societal benefits. Drone Safety Week (DSW) highlights the importance of public-private partnerships and will draw upon the collective resources of the drone community. The FAA envisions working with communities and stakeholders throughout the country for a week-long series of activities in November. Key partners to assist the FAA in executing the event would include the UAS Safety Team (UAST), the Know Before You Fly (KBYF) campaign partners - the Academy of Model Aeronautics (AMA) and the Association of Unmanned Vehicles International (AUVSI).

Merkle continued to explain the goal of DSW. The focus of the event and its activities is drone safety and education. Through this initiative, the FAA wants to begin the safety dialogue across the country. Consistent messaging will be key to reinforcing drone safety and education. We also want to welcome new members into the aviation community while starting and sustaining the safety conversation. Lastly, the FAA will engage the public to make sure that they are always informed of the latest safety requirements and best practices.

Discussion on Mr. Merkle's Presentation

- Chris Anderson (3DR): One problem faced when educating the public is people usually view drones as toys and may feel that regulations don't apply to them. Has the FAA thought of redefining drones to make it clear that they are not toys for children?
    - Merkle: A task such as this would have to be clarified through Congress in order to make it clear that drones are not toys. For example, Congress could say drones 50 grams and below are toys and not aircraft (for now they are considered aircraft).

- Mills: Please expand on the roll out process of National Drone Safety Week and if there are any tangible benefits to participants besides messaging.
    - Merkle: The FAA and DOT are developing a whitepaper describing the roll out. The plan is to put together a playbook for the weeklong event that participants can use. Post event, the FAA intends to capture data from activities that have taken place and repackage this information for future use. The FAA wants to build on material from year to year.

- Anderson: Why isn't the FAA emphasizing privacy messaging, a secondary message may cover the issue of privacy.
    - Bob Brock (KDOT): Privacy and security are related, and it is important that an ecosystem protecting all is created.

- o Merkle: The FAA's mandate is safety. Privacy is mainly a state and local issue and FAA welcomes them addressing that. However, the FAA will not set privacy policies.
- o Burleson: The priority of FAA is safety. Local authorities can provide better messaging regarding state privacy issues. The drone industry will have as much of a safety focus as manned aviation does and this focus is of personal interest to me when UAS are used as a tool for law enforcement officers as my son is a law enforcement officer. There are two messages that may be spread, the first being that there is no competition on safety and the second that this is an opportunity to make society safer.

- Brendan Schulman (DJI): I agree, DJI thinks safety is of utmost importance. With the pattern of airport happenings we are reaching a point where safety issues need to be solved. DJI has implemented safety technologies to alleviate these concerns and will continue to do so in the future.

- Discussion continued between the DAC members regarding automatic dependence surveillance broadcast (ADS-B) out, specifically if ADS-B out will saturate the network and, if so, if it will affect air traffic control (ATC).
    - o Merkle: The problem is multipath, many drones operating in populated areas would be received by FAA Surveillance Broadcast System. The FAA would have to filter out and identify against manned aircraft. This is a complex process.
    - o Discussion surrounded the meaning of wide area network and considering internet based transmission.

- This agenda item closed with many of the DAC expressing support for National Drone Safety Awareness Week, the need to include lead participants from other FAA programs (IPP, UPP), and how this event will highlight the importance of aviation safety.

Update on Counter-UAS Technology Trends
Technology & Tools for Countering UAS Security Risks
Angela Stubblefield, Deputy Associate Administrator, FAA's Office of Security & HAZMAT Safety

Ms. Stubblefield spoke about UAS security issues, mentioning that more security issues exist beyond the counter-UAS space. The malicious use of UAS are increasing and raising concerns in the manned and unmanned aviation environment. Comparing the security risk of manned aviation to that of unmanned, it was stressed that it takes regulators and industry to identify layers to a multifaceted strategy. It is important we address the careless, clueless, and criminal as appropriate and it is the responsibility of all to deal with malicious UAS. We need to work together to make it harder to use UAS for malicious purposes.

Stubblefield continued her presentation by describing the space where UAS operate, stating that currently there are many undocumented UAS operating in the NAS. These undocumented UAS operate in the same space as all other UAS. As UAS are able to be identified we can move them into a category of compliant UAS. Clearly compliant UAS are not of any worry, however it is the UAS that are not compliant or that we cannot identify that we must be concerned with. Through this point, the importance of remote identification was reinforced. Also highlighted was the need for recreational operators to comply with remote identification requirements, when available, in order to move them into an identified compliant category. Stubblefield did mention that in the end the clueless and careless (drone operators) will still need to be addressed.

The next part of the presentation focused on the limited C-UAS authority granted to other federal agencies through the 2018 Reauthorization Act. Stubblefield stated that the FAA is not the agency that will take an aircraft out of the sky and stressed that C-UAS technologies may have a negative unintended consequence associated with their use. It is clear that we do not want to create a safety hazard for other aircraft while addressing security risks that UAS may pose.

Next, Stubblefield provided "Proposed DAC Tasking #2: UAS Security Issues" to members. The FAA tasked the DAC to develop a recommendation on standards or protocols that will address the current and possible future UAS security concerns and allow for expanded UAS operations and help the industry grow. Discussion centered on the focus of the tasking while members asked for Stubblefield to clearly define what types of recommendations were needed from the task group.

Stubblefield then went on to discuss detection and C-UAS considerations, stating that coordination with users of C-UAS technology is important to the FAA and again restating that the Agency does not want to create any safety hazards while addressing UAS issues. The second DAC tasking was discussed while Stubblefield added that there is a focus on domestic support for using C-UAS. The DAC was asked what other technologies are available that can be used and how the future of the technology affects the C-UAS toolkit. Dan Dalton (Airspace Systems,

Inc.) was asked to provide an industry perspective on behalf of DAC Member Jaz Banga, CEO of Airspace Systems, who could not attend the meeting.

Dalton focused on expanding the discussion regarding UAS security issues, stating that we should start addressing the issue of drone security and not C-UAS. Dalton asked DAC members to start thinking of how security can be built into the drone, starting from when it is developed. Dalton highlighted that there is an abundance of data currently out now that can be used to identify what we can do to safely advance the industry. Needs such as automating existing security rules and leveraging new technology must be industry-led. The future of technology and policy of C-UAS is something we need to accelerate to accommodate the development of new types of drones although it may open up a new class of nefarious actors. Moving along the conversation, the DAC was asked to consider what metrics are important to send to the FAA for security purposes.

Discussion on Ms. Stubblefield's Presentation (continued after members returned from break)

- Houston Mills (UPS): The idea of security by design is fascinating and there is need to ensure that C-UAS technology is limited to its specific purpose.
    - Stubblefield: The FAA tries to use the terms errant or malicious while focusing on how to separate these types of actors from compliant operators. Remote identification is needed to remove compliant operators from the threat category and right now everyone looks like a threat.

- Mark Colborn (Dallas Police Department): If bad actors were located would operator information be handed over to the FAA? Having state or local laws that mimic those of the FAA is crucial in order to investigate these types of operations and operators. An example of the similarities of state and federal laser laws is that states have the ability to convict offenders using lasers to interfere with manned aircraft operations. If examples are made out of bad actors, results will follow.
    - Stubblefield: DHS used C-UAS technology to cover the Super Bowl, where three dozen violations of the temporary flight restriction (TFR) occurred alone. In these scenarios, operators cannot be located. Regarding the need for field education and how to provide assistance to law enforcement officers, the FAA's Law Enforcement Assistance Program may be able to be leveraged for this purpose.

- Greg Agvent (CNN): Please expand on the systems used to cover the Super Bowl, as these were detection efforts taking place and the next step is interdiction. How will we move forward?
    - Stubblefield: Detection and interdiction were available during the event, as well as mitigation. Mitigation does not have to be technology, it may also be an approach to a response. If violations were detected, the mitigation approach would be to identify and locate the operator, land the drone and then figure out the intentions of that

operation. There was mention of the technical elements of C-UAS but also the importance of using the technology as sparingly as possible.

- Joe DePete (ALPA): Was there an emphasis placed on detection rather than mitigation, with the understanding that mitigation may be more complex? Is there an interest in focusing on detection?
    - Stubblefield: The focus is drone security, we should address what would make the aircraft secure so that it cannot be used in a nefarious manner or taken control of remotely. At what level can this be done from an industry standpoint and what makes sense in protecting the integrity of an operation from a security perspective? What can be done to an aircraft to address security concerns?

- Marily Mora (Reno-Tahoe Airport Authority): In the last six months nefarious UAS operators have become a top concern. Part of the DAC tasking should focus on the protection of airports.
Comment from Deborah Flint, DAC Member (Los Angeles World Airports) who was unable to attend the meeting, was read aloud for the record by Mora:
    I am very sorry that I am unable to attend today's meeting personally, but I have sent key leadership from my team and look forward to engaging with all of you – our new Chair Michael Chasen and both new and continuing members – on the critically important work of this committee.

    The world today looks very different from when the DAC last met 11 months ago. We have seen majorly disruptive drone incidents at and around manor global airports – most notably and Gatwick, but also at Newark and other U.S. airports.

    We know that a Gatwick-type incident at LAX would be devastating for the local, regional and national economy. It also could grind the public appetite for integration of drones into the National Airspace System to a halt. Yet, even after Gatwick and other incidents, the fundamentals for preventing and responding to such incidents are not yet in place.

    This committee has the right people and mandate to tackle these issues and develop specific timeframes, outcomes and clearly defined roles and responsibilities to guarantee the safety and security of our airports.

    Thank you for treating this issue with the urgency it demands.

- Stubblefield then presented the DAC members with an updated tasking on UAS security issues and included "The FAA tasks the DAC to identify what currently existing or near term technical solutions at the aircraft or operational limitation/capability level could make it less likely that clueless and careless operators could operate UAS in ways that can be perceived as posing a safety or security threat?"

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- o Burgess: This is a complicated problem as the ease of building drones with operational limitations may present complications in the future. It is important to understand what other technologies are being developed for non-cooperative aircraft and to ensure that the industry doesn't develop overly broad constraints for drones.
- o Stubblefield: Bad actors will always be present and in the case when we do not know anything about an operator the hope is that secondary tools are in place such as low altitude authorization notification capability (LAANC) to derive operator information from. Detection and mitigation becomes hard as we are trying to identify the entire spectrum of UAS. UAS security will provide multiple layers of security.
- o Burgess: Is it possible that the DAC has more insight as to what is needed for non-cooperative detection? Currently tools are being developed for good actor identification, however these same tools may be used to help identify bad actors. There may be an interest in understanding the gaps or limits of non-cooperative detection technologies.
- o Robie Samanta Roy (Lockheed): This may be a classical architecture approach. Is this what is being sought through the DAC tasking? There are other analogies. This effort may be about risk management.
- o Burleson: The tasking is intended to provide knowledge to the FAA that we may not have. The request is that the DAC work through limitations and infrastructure.

- Mariah Scott (Skyward): What is the expected output of the DAC as the request of the reformatted tasking may be too broad?
  - o Stubblefield: The goal of the tasking is to identify where UAS technology is going and being sure that what has been identified has applicability.
  - o Brock: Will it be helpful for DAC members to provide feedback on what is an acceptable level of risk?
  - o Discussion continued around the details and clarification of the tasking.
  - o Burleson: The FAA is looking to industry to match what the Agency does for aviation safety.

- Brendan Schulman: We may be talking about security rather than safety. The UAS Safety Team (UAST) is already working on safety enhancements, including geofencing, security is about criminal actors and counter-UAS. DJI produced a paper with one principle being the need for local officials to be able to respond and identify drones that are not compliant. Part of the tasking for the DAC may be what we recommend in response to criminal actors and how to empower local responses.
  - o Lorne Cass (American Airlines): Members of the DAC need better defined roles and responsibilities for this tasking.
  - o Stubblefield: We may need to identify if this is the right venue to discuss detection and mitigation systems.
  - o Burleson: The intent of the tasking is to evaluate the data in these areas to better inform where we are trying to go.

- o   Scott: If the tasking focused on capabilities and limitations to inform what may be considered it may require a more defined and actionable approach.

- Stubblefield: Jay Merkle has described this tasking as "How can we make drones less scary?" The FAA is trying to express that there are a lot of security concerns surrounding nefarious actors. With this, what can the FAA do to address bad actors with what is already in place, and from an industry realm, what can be done within manufacturing or software to make drones less scary?
  - o   Schulman: If the approach is to see what can be done on board the drones voluntarily, bad actors may just be moved to purchase other products that do not have those features.
  - o   Chasen: This conversation will need to be continued within the DAC task group for Tasking #2.

Tasking #2: UAS Security Issues (90 Days, beginning on June 6, 2019)
- The FAA tasks the DAC to identify what currently existing or near term technical solutions at the aircraft or operational limitation/capability level could make it less likely that clueless and careless operators could operate UAS in ways that can be perceived as posing a safety or security threat?
- In 90 days, identify what is the universe of actions that IF relevant industry stakeholders agreed to do them, would substantially reduce the likelihood of unintentional threatening behavior.

- TASK GROUP LEAD: Jaz Banga, Co-Founder and Chief Executive Officer, Airspace Systems, Inc.

The FAA Knowledge Test for Recreational Flyers
Jay Merkle, Executive Director, FAA's UAS Integration Office

Mr. Merkle discussed the Knowledge Test for Recreational Flyers opening with the most frequent question of when people can provide feedback. Today's public meeting is the first of a likely four opportunities in which input can be provided on the test. Within the next month the FAA is going to be publishing a Request for Information (RFI) about creating public-private partnerships to provide the test. Per the legislation, besides FAA, there are two other types of entities that are able to provide the knowledge test for recreational flyers, Community Based Organizations (CBO) or other (FAA) designees. The FAA also intends to establish the definition of a CBO in the future, (for now all test providers besides the FAA will be considered designees).

Merkle continued the discussion with an outline of the RFI. We are proposing a narrative-style training and testing module. It is going to be for the community. We want it to be in a fun,

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enjoyable format instead of a restrictive, dull format. Merkle stated that the real goal of this test is to have the knowledge to operate safely. We want this test to be as approachable as possible. We want to take the test to gain the knowledge and build a safety culture.

Merkle proceeded to discuss the areas of input sought through stakeholders to include an effective model of the knowledge test, testing fees, testing age and data collection and availability. The last area discussed surrounded the new advisory circular (AC) that would provide guidance on the full implementation of the statute, to include the CBO recognition process and standards and limitations for UAS over 55 pounds. The draft AC will be posted for public comment.

Discussion on Mr. Merkle's Presentation

- Burgess: Technology in this industry is rapidly evolving. Can we build the test in a modular way so that it can be easily updated as needed? Is there any room to provide comments on the architecture of the test?
  - Merkle: We are having these discussion internally.

- Steve Ucci: Many states have safety courses and they are not limited about age because it's part of safety.
  - Merkle: The provision requires that these recreational flyers be personally identifiable. We are seeking public input regarding these issues. The RFI will be on the FAA's Contracting Opportunities (FACCO) site. We want to get this test up and running so we are enhancing safety.

- Agvent: What is the thought process on touch points?
  - Merkle: The thought process is that designees will open up availability of touch points to include others.

- Burleson: Can you please clarify what questions we are asking when seeking input from stakeholders as mentioned in the slide?
  - Merkle: The importance in seeking input from stakeholders is receiving public input as internal discussions are already taking place.

Industry-Led Technical Topics
Michael Chasen, DAC Chair

Mr. Chasen initiated the next section of the meeting with a discussion surrounding Part 107 waiver improvements. The challenge is uncertainty on how to obtain waivers and the DAC is able to provide more certainty to the process. It is important to use the DAC to obtain tangible results. Chasen continued to describe the waiver process and purpose, and discussed the demand for clarity in the wavier process providing that it will also influence more investments and increase effectiveness of the FAA.

Chasen then moved on to propose that a DAC task group be formed focusing on recommended improvements for the Part 107 waiver process. Mills brought mention of the accelerated waiver activity found in IPP operations. It was asked if the DAC envisions leveraging this and using this knowledge in the task group.

Chasen proceeded to mention key components of the tasking, including mapping the current FAA waiver process and identifying potential improvements to the waiver process. Schulman provided feedback to the described process stating that the DAC continues to go without small business owner or service provider representation. Schulman continued that he would like to see how the DAC can engage with this large part of the drone community as larger companies already have waivers while small businesses do not. Schulman concluded by proposing the ability of small business owners to provide comments to the DAC. Chasen agreed that the DAC should take into consideration the needs of smaller companies in order to ensure that they are not left out of the conversation. Thomas Karol (National Association of Mutual Insurance Companies) also expressed support, offering the idea of using information on granted waivers to create a standard template that others may use.

Chasen began to brief the members on BVLOS. Describing the previous involvement of his company, PrecisionHawk Inc., he expressed that he would like to continue examining how companies can operate BVLOS and addressing the needs for future rulemaking that are not being addressed today. Merkle responded with the mention of safety cases for BVLOS operations. Chasen asked the DAC to address one challenge of providing sub-definitions of levels of BVLOS as safety cases may need to be identified according to different levels of operation. It was suggested that a future task on BVLOS would be proposed at the next DAC meeting. Rich Hanson (AMA) supported the challenge by suggesting that a list be compiled of UAS safety cases for BVLOS operations.

Chasen gave a recap of items discussed throughout the DAC meeting and highlighted the importance of public-private partnerships. Chasen then began to address the need to form the task group that would address the Part 107 waiver process. Burleson provided comment and stated that DAC tasking is provided by the FAA. Burleson acknowledges that the waiver process has been discussed and the FAA is always looking to improve the process. The points of the

DAC members have been understood in full and the FAA agrees and will form a task group consisting of members of the DAC. Burleson and Merkle were to discuss the task group moving forward and then provide instruction on how to address the waiver process.

Discussion on Mr. Chasen's Presentation

Burleson: Taskings must be provided from the FAA to the DAC. Part 107 waiver discussions have taken place within the agency and the FAA is always looking to improve the process. The points of the DAC members have been understood in full and the FAA agrees and will form a task group consisting of members of the DAC. Jay and I will discuss the task group's approach to BVLOS waivers moving forward, then provide instruction on how to address the waiver process.

Tasking #3: 107 Waivers (90 Days after receipt of framework document from FAA)
- The FAA tasks the DAC to review the framework of the existing 107 waiver process provided by the FAA and develop recommendations on improving this process.

- TASK GROUP LEAD: Brian Wynne, President and Chief Executive Officer, Association for Unmanned Vehicle Systems International

New Business/Agenda Topics/Review Taskings
Jay Merkle, Executive Director, FAA's UAS Integration Office
Michael Chasen, DAC Chair

Acting DAC DFO Burleson opened the last agenda item by summarizing the DAC taskings discussed throughout the meeting. After the discussion regarding remote ID, Chasen appointed Steve Ucci as the task group chair. Stubblefield provide a summary of DAC Tasking #2 to the group. Following this, Chasen appointed Jaz Banga as the chair for the C-UAS task group. Chasen then selected Brian Wynne as the chair for the waiver task group. The final tasking is for the DAC to Review and Comment of the FAA's UAS Comprehensive Plan. This tasking will conclude 60 days after the draft plan is received by the DAC from the FAA. There is no task group chair for this final tasking, and all DAC members are asked to provide feedback.

Discussion

- Hanson: How will the task groups be populated?
  - Burleson: The chair of the task group will select members. It is important to note that task groups are not limited to DAC members.

- o Wynne: If possible we would like to survey smaller groups. AUVSI can provide this.

- Zuccaro: The focus of the DAC is to prioritize the safe integration of UAS into the NAS. Recent tasks were more business related. All of this has to be subservient to safety.
    - o Burleson: Thank you for your remarks. The purpose of the FAA is to integrate safely and we look to this committee because they do feed into the safety of the NAS. Remote ID provides safety in the NAS. Priorities of the DAC must have the same commitment to safety.
    - o Zuccaro: What is the problem with listing "safety" as a priority?
    - o Brock: Safety is an implied task and baseline recommendation when committees put forward recommendations. Stakeholders should not recommend anything that does not have a safe baseline.
    - o Zuccaro: Then what is the problem with listing safety as a priority in the document?
    - o Burleson: Record of this discussion will be captured in the minutes and safety is agreed upon within the group.
- Chasen: Thank you everyone for your participation. I think this is the right group of people to handle critical issues for the industry. These improvements will open up the industry across the board while promoting safety.

Tasking #4: FAA UAS Comprehensive Plan (60 Days after receipt of Draft Plan)
- The FAA Reauthorization Act of 2018, Section 342, requires the FAA to update the comprehensive plan in consultation with representatives of the aviation industry, Federal agencies that employ unmanned aircraft systems technology in the national airspace system, and the unmanned aircraft systems industry.
- The FAA will send the draft UAS Comprehensive Plan to the DAC members and task the DAC to provide feedback.
- The FAA anticipates initiating this tasking within the next two months.

- TASK GROUP LEAD: None, full DAC membership participation will be requested

Closing Remarks

Burleson: Safety is the priority when integrating this new user into the system.

Mills: I am very impressed by the focus to safety and security of everyone involved.

Burleson: Mark your calendars for our next DAC meeting. We are considering October 22, 23, & 24 as possible dates.

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Adjourn

The meeting ended at 4:00 p.m. Eastern Time.

Appendix A: Meeting Attendees

First Name	Last Name	Organization	Attendee Type
Michael	Chasen	Chief Executive Officer, PrecisionHawk USA, Inc.	DAC Chair
Greg	Agvent	Senior Director of National News Technology, CNN	DAC Member
Chris	Anderson	Chief Executive Officer, 3DR	DAC Member
Bob	Brock	Director of Aviation and UAS, Kansas Department of Transportation	DAC Member
James	Burgess	Chief Executive Officer, Wing (an Alphabet company)	DAC Member
Lorne	Cass	Vice President, Operations / Industry Affairs, American Airlines (AA)	DAC Member
Peter	Cleveland	Vice President of Law and Policy Group, Intel Corporation	DAC Member
Mark	Colborn	Senior Corporal, Dallas Police Department	DAC Member
Joe	DePete	President, Air Line Pilots Association	DAC Member
Trish	Gilbert	Executive VP, National Air Traffic Controllers Association	DAC Member
Todd	Graetz	Director, Technology Services, UAS Program, BNSF Railway	DAC Member
David	Greene	Bureau of Aeronautics Director, Wisconsin Department of Transportation	DAC Member
Rich	Hanson	President, Academy of Model Aeronautics	DAC Member
Thomas	Karol	General Counsel, National Association of Mutual Insurance Companies	DAC Member
George	Kirov	VP and General Manager, Commercial UAS Solutions, Harris Corporation	DAC Member
Michael	Leo	Captain, New York City Fire Department	DAC Member
Houston	Mills	Vice President, Flight Operations and Safety, United Parcel Service (UPS)	DAC Member
Marily	Mora	President and CEO, Reno-Tahoe Airport Authority	DAC Member
Robie	Samanta Roy	VP of Technology Strategy and Innovation, Lockheed Martin Corporation	DAC Member

Brendan	Schulman	Vice President of Policy and Legal Affairs, DJI Technology	DAC Member
Mariah	Scott	President, Skyward (a Verizon company)	DAC Member
David	Silver	Vice President for Civil Aviation, Aerospace Industries Association	DAC Member
Michael	Sinnett	Vice President Product Development and Strategy, Boeing Commercial Airplanes	DAC Member
Steve	Ucci	Senior Deputy Majority Leader, Rhode Island State Assembly	DAC Member
Brian	Wynne	President and CEO, Association for Unmanned Vehicle Systems International	DAC Member
Matthew	Zuccaro	President and Chief Executive Officer, Helicopter Association International	DAC Member
Carl	Burleson	FAA and Acting DAC Designated Federal Officer	Government
Bonnie	Ahumada	FAA	Government
Rahat	Ali	FAA	Government
Erik	Amend	FAA	Government
David	Astorga	FAA	Government
Danny	Blum	FAA	Government
Teri	Bristol	FAA	Government
Bill	Crozier	FAA	Government
Teresa	Denchfield	FAA	Government
John	Dermody	FAA	Government
Bailey	Edwards	FAA	Government
Arjun	Garg	FAA	Government
Chris	Hillers	DOT	Government
Kate	Howard	FAA	Government
Peter	Irvine	DOT	Government
Tammy	Jones	FAA	Government
Maureen	Keegan	FAA	Government
Lirio	Liu	FAA	Government
Claudio	Manno	FAA	Government
Ashleigh	Martin	FAA	Government
Jay	Merkle	FAA	Government
Joe	Morra	FAA	Government
Phil	Newman	FAA	Government
Mike	O'Shea	FAA	Government
Jessica	Orquina	FAA	Government

Lorelei	Peter	FAA	Government
Lauren	Remo	DOT	Government
Genevieve	Sapir	DOT	Government
Kirk	Shaffer	FAA	Government
Angela	Stubblefield	FAA	Government
Guy	Turner	DOT	Government
Damon	Walker	DOT	Government
Randy	Willis	FAA	Government
Karen	Chartrand	Transport Canada	Government Observer
Bill	English	National Transportation Safety Board	Government Observer
Alexandra	Jeszeck	Government Accountability Office	Government Observer
Daniel	Kozub	Embassy of Canada	Government Observer
Felix	Meunier	Transport Canada	Government Observer
Vladimir	Murashov	Center for Disease Control and Prevention	Government Observer
John	Sasse	USN NAVSEA	Government Observer
Basil	Yap	NC Department of Transportation	State, Local, and Tribal Government Observer
Mark	Aitken	DJI Technology Inc.	Observer
Jack	Allen	Airlines for America	Observer
Brandon	Allen	IAFC	Observer
Ben	Ambrose	Horizon Hobby	Observer
Vishal	Amin	Aertron, Inc.	Observer
Kenneth	Baker	Air Carrier and Ab Initio Training (Americas)	Observer
Michael	Baum	Aviators Code Initiative	Observer
Sara	Baxenberg	Wiley Rein LLP	Observer
Stacey	Bechdolt	The Moak Group	Observer
Darby	Becker	GE Aviation	Observer
Grant	Bishop		Observer
David	Bowen	Measure	Observer
Charles	Boyd	Akin Gump	Observer

Missye	Brickell	Intel	Observer
Chris	Brown	Consultant	Observer
Mike	Burnside	American Fuel & Petrochemical Manufacturers	Observer
Bill	Carey	Avionics and Air Traffic Management	Press
Sean	Cassidy	Amazon Prime Air	Observer
Andy	Cebula	Airlines for America	Observer
Drew	Colliate	AUVSI	Observer
Diana	Cooper	Precision Hawk	Observer
Daniel	Dalton	Airspace Systems	Observer
Jim	Davis	uAvionix Corporation	Observer
Mel	Davis	Cavan Solutions	Observer
John	Davisson	Electronic Privacy Information Center	Observer
Jeff	Dygert	AT&T	Observer
Robert J.	Ehrich	Slipstream Strategies	Observer
Josh	Elder	Bell Flight	Observer
Lisa	Ellman		Observer
Max	Fenkell	AIA	Observer
Richard	Fox	Ohio UAS Center	Observer
Jeff	Frank	FLIR Systems, Inc.	Observer
Brianne	Garciallo	Politico	Observer
Ben	Gielow	Amazon	Observer
Anna	Gomez	Wiley Rein LLP	Observer
Zachary	Gossett	National League of Cities	Observer
Tom	Gramaglia	Battle Road Advisors	Observer
Dean E.	Griffith	JONES DAY® - One Firm Worldwide℠	Observer
Jessica	Hale	The City of Los Angeles: Federal Affairs Office	Observer
Alexander	Harmsen	Iris Automation, Unlocking Your Drones	Observer
Cat	Hofacker	American Institute of Aeronautics and Astronautics	Press
Andrew	Howell	Monument Advocacy	Observer
Catherine	Jackson		Press
Doug	Johnson	Consumer Technology Association (CTA)	Observer
Chris	Julius	AA	Observer
Wilson	Kagabo	Locus Dynamics	Observer
Charles	Keegan	Aviation Management Associates, Inc.	Observer
Randy	Kenagy	ALPA	Observer
Philip	Kenul	ASTM F39	Observer
Rob	Knochenhauer	GreenSight	Observer

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Brittany	Kohler	National League of Cities	Observer
Tracy	Lamb	AUVSI	Observer
Adam	Lisberg	DJI Technology Inc.	Observer
David	Logsdon	CompTIA	Observer
Lisa	Malloy	Intel Corporation	Observer
Nicolas	Marcou	dGAC	Observer
Chris	Martino	Helicopter Association International	Observer
Terry	McVenes	RTCA	Observer
David	Messina	FPVFC	Observer
Samuel	Minifie	American Petroleum Institute	Observer
Chris	Mitton	Fortem Technologies	Observer
Kerry	Moker	DroneCourse.com	Observer
Jeff	Mort	Los Angeles World Airports	Observer
Vic	Moss	Moss Photography/Drone U	Observer
Margart	Nagle	Wing	Observer
Matthew	Navarrete	Union Pacific Corporation	Observer
Eric	Nottorf	Bell Flight	Observer
Alexis	Oberg		Observer
Chris	Oswald	ACKUNA	Observer
Christian	Ramsey	uAvionix	Observer
Mark	Reed	ALPA	Observer
Jeff	Richards	Narional Air Traffic Controllers Association, National UAS Representative	Observer
Michael	Robbins	The Moak Group	Observer
Melissa	Rudige	AOPA	Observer
Amanda	Rutherford	MTSNAC	Observer
Matthew	Satterly	AirMap	Observer
Michelle	Schwartz	Los Angeles World Airports	Observer
Al	Secen	RTCA, Inc.	Observer
Charles	Small	Washington Office of Los Angeles Mayor Eric Garc	Observer
Libby	Snyder	Uniform Law Commission	Observer
Annette	Taber	CompTIA	Observer
James	Taylor		Observer
Ryan	Terry	LMCO	Observer
Joshua	Turner	Wiley Rein LLP	Observer
George	Valcarcel	Ascension Global	Observer
Sally	Veith	Air Medical Operators Association	Observer
Stella	Weidner	The Boeing Company	Observer

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Steve	Weidner	Narional Air Traffic Controllers Association	Observer
Heidi	William	NBAA	Observer
Raymond	Young	NY UAS Test Site	Observer
Mark	Zimmerman	Simplex Manufacturing Company	Observer