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MIDANPIRG/19 and RASG-MID/9 Meetings

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Agenda Item 3.3: Air Navigation Subjects of interest to RASG-MID including RVSM Operations and Monitoring (Plenary)

UPDATE ON U.S. UAS INTEGRATION ACTIVITIES

(Presented by the United States)

SUMMARY

This paper presents an update on the U.S. Federal Aviation Administration's (FAA) activities to integrate Unmanned Aircraft Systems (UAS) into the U.S. National Airspace System (NAS). The paper will include updates on UAS-related rulemaking, the UAS Integration Pilot Program (IPP), the BEYOND program, UAS Traffic Management (UTM), the Drone Advisory Committee (DAC), Safety Risk Management (SRM) Policy, Night Operations and Operations Over People Rule Implementation, Optionally Piloted Aircraft (OPA), and Durability & Reliability (D&R).

1. INTRODUCTION

1.1 As UAS are fundamentally changing aviation, the FAA is committed to supporting this change and working with the UAS community to ensure that this dynamic shift is safely integrated. For the FAA, safety is always the most important factor for any operation, including UAS.

1.2 Over the past several years, the FAA has pursued a number of actions to safely integrate UAS effectively into the U.S. NAS, beginning with regulatory efforts such as the introduction of registration requirements and the small UAS rule (Title 14, U.S. Code of Federal Regulations (14 CFR) part 107). Now, the FAA is building on this foundation to expand on part 107 to incorporate remote identification (ID) and lessons learned from UAS IPP operational research tests.

1.3 Further, the FAA engages with the broader UAS community to promote a joint understanding of goals and constraints, and to develop specific requirements needed to support operations and approval processes. This engagement supports mutual education and facilitates common approaches and solutions. This Information Paper summarizes recent and forthcoming efforts by the FAA to address the safe integration of UAS into the national airspace.

2. DISCUSSION

<u>Rulemaking</u>

2.1 As of the beginning of 2021, the FAA has two new rules in place: Remote Identification of Unmanned Aircraft and Operation of Small Unmanned Aircraft Systems Over People. Each was published in January 2021 and became effective on April 21, 2021.

UAS IPP and BEYOND

2.2 Since it began in 2017, the UAS IPP brought state, local and tribal governments together with private sector entities, such as drone operators and manufacturers, to accelerate safe drone integration. The overarching goal of the IPP was to assist the U.S. Department of Transportation (DOT) and the FAA in crafting new rules, policy, and guidance that support more complex low-altitude operations. Through the IPP, the FAA worked with participating state, local and tribal governments to engage with their citizens to help the federal government understand how people view and interact with drones in their own local communities.

2.3 The IPP concluded in October 2020, per the presidential memorandum that established the program. During its three year existence, a significant amount of work was accomplished that supported UAS integration into the NAS. Participants in the program conducted more than 21,000 flight operations for a total of 7,300 flight hours across a variety of mission profiles, including package delivery, infrastructure inspection, and public safety operations. IPP operators Wing LLC and UPS Flight Forward were issued the first two air carrier certificates for UAS cargo delivery under 14 CFR part 135. The program also helped to inform current and future activities that support UAS integration into the NAS.

2.4 After IPP's conclusion, this work continues under the successor program, "BEYOND." The name emphasizes the program's focus on beyond visual line-of-sight (BVLOS) operations; the next step moving beyond IPP, and moving beyond part 107 operations to continue to advance complex drone operations. The BEYOND program is designed and implemented to take on those challenges and continue the IPP mission, focusing on enabling BVLOS operations without visual observers that are repeatable, scalable and economically viable. As under the IPP, there will be specific emphasis on infrastructure inspection, public aircraft operations and small package delivery. BEYOND will also focus on analyzing and quantifying the societal and economic benefits of UAS operations and ensuring robust community engagement efforts.

UAS Traffic Management

2.5 The FAA is pursuing several efforts in parallel that are related to the development and implementation of UTM services. For example, we continue to refine the UTM Concept of Operations and are collaborating with industry and the U.S. National Aeronautics and Space Administration to develop a third version that will include more details on performance authorizations and UAS volume reservations. Additionally, in March 2021, the FAA published a progress report for phase 2 of the UTM Pilot Program (UPP 2).

2.6 The FAA is also developing a UTM Implementation Plan that will address a number of technical and policy-related topics associated with the development and implementation of UAS and will include lessons learned from the final report for UPP 2. The plan is projected to be published in early 2022.

2.7 The FAA is collaborating with industry through our BEYOND program, partnerships for safety, and other venues to facilitate the deployment of third party services that can support more complex UAS operations. The FAA continues to support industry development of interoperability and performance standards for UTM services. An initial version of ASTM's Standard Specification for UAS Service Suppliers is projected to be published later this year.

2.8 The FAA is engaged in multiple bilateral efforts to harmonize on UTM concepts and technical implementation efforts and the agency is also working multilaterally with the Joint Authorities for Rulemaking on Unmanned Systems (JARUS) to harmonize safety services for UTM. We support continued refinement of the UTM framework document from the ICAO UAS Advisory Group and efforts in JARUS to define safety risk considerations for UTM services.

The Drone Advisory Committee Becomes the Advanced Aviation Advisory Committee

2.9 The Drone Advisory Committee is now the Advanced Aviation Advisory Committee (AAAC). The AAAC is a broad-based federal advisory committee that provides independent advice and recommendations to the FAA on key unmanned aircraft system (UAS) and advanced air mobility (AAM) integration issues, interests and policies. The AAAC's work relates to the efficiency and safety of integrating advance aviation technologies into the National Airspace System.

The charter amendment (PDF) modified the FAA's Drone Advisory Committee, renaming the committee and expanding membership from 35 to 41 members. The vacancies expand representation in current stakeholder groups to include members with an AAM background. Additionally, there is a new stakeholder group that includes a community advocate representative to provide insight and expertise on potential impacts of increased drone traffic on communities.

2.10 The AAAC charter and solicitation for new members were announced in the Federal Register. Watch Deputy Administrator Brad Mims at the October 27 DAC meeting. The next AAAC meeting will be February 23, 2022.

Safety Risk Management Policy for Drones

2.11 With almost 900,000 drone registrations within the United States and the industry measuring technology generations in months, not years, the regulatory system for aviation has struggled to keep up with the pace of UAS technology and the unique nature of hazards and mitigations in some unmanned aircraft (UA) operations. The need for speed is clear in setting up a Safety Risk Management process to ensure safety risks related with specific UAS operations associated with waivers and exemptions are carefully evaluated to identify, assess, and mitigate hazards to an acceptable level. The FAA developed and published Order 8040.6 – Unmanned Aircraft Systems Safety Risk Management (SRM) Policy (https://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.list?omni=OrdersNotices&rows=10&startAt=0&q=8040.6&documentTypeIDList=&display=all&parentTopicID=) on October 4, 2019. This policy defines the scope, roles and responsibilities, triage, governance, and triggers for SRM activities for specific UAS operations.

2.12 FAA Order 8040.6 can inform applicants on the FAA's methodology through which their application will be evaluated so they can align their safety cases and applications. The goal of the new SRM order is also to provide the FAA with more specific guidance with common hazards and mitigations from the JARUS Specific Operations Risk Assessment and previous air traffic SRM documents. The order is a template, and an example to more easily assess safety risks for specific UAS operations. It also drives early internal FAA coordination so stakeholders petitioning for exemptions or requesting waivers can work with "one FAA" rather than multiple offices. Google Wing, Amazon, UPS Flight Forward, BNSF, and Xcel Energy have already made waiver applications using the new Order 8040.6 – UAS SRM Policy.

Night Operations and Operations Over People Rule Implementation

2.13 Operation of Small Unmanned Aircraft Systems over People is the FAA's next step to safely integrate UAS in to the NAS. The final rule was published in January 2021, with an effective date of

April 21, 2021. The final rule allows for routine night operations, operations over people, and operations over moving vehicles under certain circumstances. As of January 10, 2022; 32,150 pilots have completed the new recurrent training that includes night operations and operations over people subject areas. As of the same date, 31,003 applicants have completed the updated initial Aeronautical Knowledge Test.

2.14 The final rule creates four categories of operations for small UA to conduct operations over people and moving vehicles. Each category of UAS must meet certain eligibility requirements as prescribed by the rule. Category 1 UAS operations over people are authorized to begin immediately upon the effective date of the rule, and do not require an FAA-Accepted Declaration of Compliance (DOC). Operators intending to conduct Category 2 and/or Category 3 operations over people or moving vehicles are required to make application for and receive an FAA-Accepted DOC prior to conducting these types of operations. An applicant for a DOC is anyone who designs, produces or modifies a small UA for operations over people. Typically these are manufacturers. Manufacturers of Categories 2 or 3 small UA must meet eligibility requirements as prescribed in part 107.120 and 107.130, respectively, using an FAA accepted Means of Compliance (MOC). Applicants must submit a DOC in accordance with the requirements of part 107.155 to the FAA at https://uasdoc.faa.gov/login for FAA review and acceptance. By submitting a DOC, the applicant attests that they have met the requirements of the rule using an FAA-accepted MOC. Upon the effective date of the rule, an applicant may submit an MOC in accordance with part 107.160 to the FAA's Aircraft Certification Office (AIR) for review and acceptance at https://uasdoc.faa.gov/login. Currently, AIR has received three MOCs from industry for review and possible acceptance.

2.15 Remote pilots who wish to conduct Category 2 or 3 operations over people and moving vehicles must use a small UA that is eligible for those operations. Eligible small unmanned aircraft are listed on an FAA accepted DOC and labeled for the category of operation. To inform remote pilots and small UA manufacturers, the FAA provides a list of FAA-accepted MOCs and DOCs at https://uasdoc.faa.gov/login. To date, AIR has not accepted any DOC for Category 2 and/or 3 small UAS.

2.16 To conduct Category 4 operations over people and/or moving vehicles, a remote pilot must use an eligible small UA. To be eligible, the small UA must have an airworthiness certificate issued under part 21 and be operated in accordance with the operating limitations specified in the approved Flight Manual or otherwise specified by the FAA.

2.17 Category 4 operations over people and/or moving vehicles may be conducted as long as the operating limitations do not prohibit such operations. AIR and the FAA Flight Standards Service are collaborating to finalize operating limitations for these Category 4 small UAS operations over people.

Optionally Piloted Aircraft

2.18 FAA Order 8130.34 – Airworthiness Certification of Unmanned Aircraft Systems and Optionally Piloted Aircraft (https://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.list?omni=OrdersNotices&rows=10&startAt=0&q=8130.34D%2C+Airworthiness+Certification+of+Unmanned+Aircraft+Systems+and+Optionally+Piloted+Aircraft&documentTypeIDList=&display=all&parentTopicID) establishes procedures for the issuance of special airworthiness certificates for experimental purposes to UAS, OPA, and aircraft intended to be flown as either a UAS or an OPA under the designation "OPA/UAS." The experimental purposes authorized in the order include research and development, showing compliance with regulations, crew training, exhibition, and market surveys. The order also establishes procedures for issuing special flight permits to UAS for the purpose of production flight testing. The procedures in the order are used by FAA aviation safety inspectors and by private persons delegated authority to issue special airworthiness certificates.

Durability and Reliability (D&R)

2.19 The FAA is working with several applicants on the type certification of UA under a special class (14 CFR §21.17(b)) that we are calling D&R. The D&R process, generally, allows for a streamlined certification process for low risk UA. D&R relies on accomplishment of a specific number of successful representative flight hours, along with failure testing and compliance with a design requirements checklist. Airworthiness criteria for D&R was posted for public comment in the Federal Register in November 2020.

Conclusion

2.20 The FAA will continue to collaborate closely with ICAO Member States and private industry to produce a comprehensive and collaborative approach to the safe integration of UAS into the national airspace.

2.21 The Conference is invited to note the content of this information paper and visit the FAA's UAS website (www.faa.gov/uas) for more detailed information.

3. ACTION BY THE MEETING

3.1 The meeting is invited to note the information provided in this information paper.

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