Regulation Trends for Unmanned Aircraft and a Summary Report of the 2020 FAA UAS Symposium (Part 1)

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1. Regulation Trends for Unmanned Aircraft in the U.S.

The Federal Aviation Administration (FAA), which is the aviation safety authority in the U.S., has been advancing the establishment and revision of safety rules for unmanned aircraft, such as drones, in order to expand its operations. In February 2019, they published a draft of rules for flying small unmanned aircraft over people and operating them at night.[1] (Refer to Yamada's report[2,3,4,5] on the general outlines of these drafted rules.)

Afterwards, the following proposed rule requiring Remote ID and a revised edition of concepts on traffic management for unmanned aircraft were also published.

1.1　Outline of the Proposed Rules Requiring Remote ID

In December 2019, the FAA published a proposed rule requiring the possession of Remote ID to operate unmanned aircraft.[6] Remote ID provides identification and location information of flying unmanned aircraft to people on the ground and other aircraft which are flying in shared airspace. The FAA identifies Remote ID as an important fundamental element for traffic management of unmanned aircraft. For example, it aims to provide additional situational awareness of a flying unmanned aircraft through the capabilities of other flying manned or unmanned aircraft to recognize and identify its location. Furthermore, this ability to identify location will provide critical information to civil servants who serve for public safety and law enforcement agencies. The FAA thinks this capability will be even more important as the number of operating unmanned aircraft increases from now on.

In this proposed rule, Remote ID is required for use of all unmanned aircraft, except for extremely limited cases, such as if its weight is under 0.55 pounds (approx. 250g). There are two types of Remote IDs: Standard Remote ID and Limited Remote ID. Standard Remote ID requires operators to send identification and location information of flying unmanned aircraft through the internet to Remote ID service providers that have been appointed by the FAA. It also requires the flying unmanned aircraft itself to transmit this information to its surroundings. For the Limited Remote ID, only the transmission of information through the internet is required. In the case of Limited Remote ID, an unmanned aircraft must be designed to only operate within 400 feet (approx. 120 meters) of a base station, and is not allowed to be flown beyond visual line-of-sight.

According to the proposed rule, manufacturing of unmanned aircraft that do not support Remote ID after two years from their issue date is forbidden. It also prohibits operations of unmanned aircraft which do not support Remote ID after three years from manufacturing, including ones that had been produced in the past.

The deadline for public comments on this proposed rule was at the beginning of March this year. The FAA received over 53,000 comments, as the rule heavily impacts producers and operators of unmanned aircraft. The FAA is currently completing a final review and taking these comments into consideration.

1.2 Outline of the Concept of Unmanned Aircraft Traffic Management Second Version

In March 2020, the FAA published "Unmanned Aircraft System Traffic Management Concept of Operations Version 2.0: UTM ConOps v2.0".[7]

UTM ConOps identifies necessary elements to manage unmanned aircraft traffic, while avoiding detailing specific implementations, in order for the diverse relevant parties to plan for solutions to their particular issues. The first version was published in May 2018. In this second version, the focus is still on unmanned aircraft traffic management flying below an altitude of 400 feet (approx. 120 meters) from the ground. A revision was also included for operators to cope with more complicated activities, such as operations within uncontrolled airspace (Class G) or certain controlled airspaces (Class B, C, D and E), and airspaces straddling these.

Firstly, the publication specifies that unmanned aircraft which are flown beyond visual line-of-sight must use Remote ID. Regarding Remote ID, it mentions the two type of ways to transmit information, directly and via a network transmission. It also discusses handling of general information accessible for public access and information only available to public safety officials. Furthermore, it added data security precautions, including Remote ID, in light of the International Civil Aviation Organization's (ICAO) latest study.

In addition to this, some inclusions and revisions were made for operation scenarios of traffic management, and an approval process was added for activities within controlled airspace.

NASA and the FAA have technology verification programs for traffic management of unmanned aircraft. UTM ConOps will be continuously revised to reflect the progress of these programs.

2. Summary Report on the 2020 FAA UAS Symposium (Part 1)

2.1 General Overview of the Symposium

The FAA UAS Symposium, an event on unmanned aircraft, has been co-hosted by FAA and Association for Unmanned Vehicle Systems International (AUVSI) annually since 2016. July 8th, 2020 marked the beginning of the 5th event of its kind.[8]

Although the previous symposium was held in Baltimore, Maryland in June 2019, this time it was done entirely online due to the spread of the novel coronavirus. They used services from Showcare as the platform for this virtual event.

This symposium was held in two parts. Part one was held from the July 8th to 9th, while part two was held from the August 18th to the 19th. The themes of part one were international approaches, traffic management and scientific and technological education of unmanned aircraft. Despite the shift to an online event, as of the last day of part one on July 9th, 1,223 people had attended, which was almost same number of participants as the previous year. The following paragraphs summarize the main points of each keynote speech.

2.2 Opening Keynote Speeches

The opening keynote speeches were given by Jay Merkle, Executive Director of the FAA's Office of UAS Integration and Brian Wynne, President of AUVSI.

AUVSI reported that analysis of applications under the current Federal Aviation Regulations (FAR) Part 107 show that many of them are related to night flights and for use by relatively small businesses.

The speakers introduced that last year AUVSI and the Airports Council International-North America (ACI-NA) co-established the blue ribbon task force to write a proposal on the threat of unmanned aircraft at airports, which they published last October.

They also explained about the developing capacity of unmanned aircraft for delivery, including the possibility of delivery to more customers, and cutting costs in the future. The FAA revealed the status of a study on the proposed rule for Remote ID, and they expounded upon the use of drones for delivery of medical goods due to the novel coronavirus, as well as the development of drones being used for unsafe and dirty work.

On the other hand, they mentioned that incidents related

to unmanned aircraft are reported every day. They emphasized that it is necessary to keep working hard to further develop a safety culture for unmanned aircraft.

2.3 Keynote Speech by the FAA Administrator

Steve Dickson, FAA Administrator, mentioned that the FAA has 6,000 web meetings per day under current conditions due to the novel coronavirus.

Evidently, use of unmanned aircraft is expanding, with permission for commercial transportation by drone first granted in 2019 based on the FAR Part 135.

Furthermore, Dickson relayed that they will be cooperating with NASA to integrate unmanned aircraft into airspace management, expect to make a final decision on a regulation to require Remote ID this December, and that it takes within one hour for the FAA to give special permission for use of unmanned aircraft for novel coronavirus related tasks.

2.4 Keynote Speech by Swiss Federal Office for Civil Aviation

Director General Christian Hegner and Lorenzo Murzilli, Leader of the Innovation and Digitalization Team, of the Swiss Federal Office for Civil Aviation, explained that they've come to an agreement with the FAA for research on unmanned aircraft coincidentally with the timing of this symposium.

They introduced basic policies of unmanned aircraft, referring to the case of Solar Impulse, which achieved a trip around the world without fuel in 2016.

They explained that they newly established an organization related to innovation and digitalization to correspond to paradigm shifts, such as that seen from Solar Impulse.

As traditional approaches cannot correlate to paradigm shifts, they emphasized the importance of leadership and cooperative structures so that they are not immediately concluded to be impossible.

Regarding their activities with unmanned aircraft, they related that they've been leading discussions on "Specific Operations Risk Assessment (SORA)," and are making revisions daily. They are also going to implement a

regulation requiring Remote ID in Switzerland within this year.

Furthermore, they perform verification tests with about 30 global companies for transit management of unmanned aircraft. They introduced that Skyguide, a Swiss flight control service provider, will launch the first traffic management services of unmanned aircraft in the world in Fall 2020.

2.5 Keynote Speech on Integration into Airspace Management

Teri Bristol, Chief Operating Officer of the FAA's Air Traffic Control, introduced the latest status on the integration of unmanned aircraft into Airspace Management.

First, the FAA aims to shorten the time of permitting unmanned aircraft flights in low-altitude airspace from a few days to a few seconds by using flight maps. Furthermore, they are going to segmentalize each grid square within flight maps in order to utilize airspace more efficiently.

Regarding traffic management, Bristol emphasized that while the FAA provides safety structures, such as operation requirements, the involvement and cooperation of relevant parties is essential.

In addition, they have started creating a national policy with airlines and airport administrators for flights of unmanned aircraft near airports.

2.6 Keynote Speech by the Associate Administrator for Aviation Safety for the FAA

Ali Bahrami, the FAA's Associate Administrator for Aviation Safety, first talked about the expansion of unmanned aircraft being used during the novel coronavirus. He gave the deliveries of medical equipment by UPS Flight Forward and Zipline as a real-world example.

Additionally, he explained that through pilot programs, they are considering reviewing the certification process for unmanned aircraft safety and operation permission procedures.

Furthermore, he mentioned that they've been considering rules from the viewpoint of aircraft, operations and facilities of Advanced Air Mobility, such as flying cars, to adapt their

practical use in the near future. They'll also be cooperating with development companies of these commodities.

2.7 Keynote Speech on UAS Safety Team

Sean Cassidy, Director of Amazon's Safety and Regulatory Affairs and Co-Chair of UAS Safety Team (UAST), gave an introduction on the current status of the UAST's activities. The UAST consists of over 70 members, including commercial operators, recreational users, and government authorities. They perform activities for securing safe operations of unmanned aircraft.

Firstly, Cassidy explained that there are 1.65 million unmanned aircraft registered (18% increase compare to the last year) in the U.S. Out of these, 470,000 are used commercially and 1.17 million are for recreational use. 180,000 people are certified as operators of unmanned aircraft (a 12% increase from last year), and this number is expected to increase to 350,000 by 2024.

Regarding activities in 2020, the UAST is focusing on the following enterprises: establishing an Aviation Safety Reporting System (ASRS) specialized in unmanned aircraft, making a guideline for safety management systems, creating a built-in feature to prevent unmanned aircraft from entering highly dangerous areas, hosting a week of national drone safety promotion (November 16th to 22nd), and revising the entire website.

2.8 Keynote Speech on Advanced Air Mobility（AAM）

Anna Dietrich, Co-Executive Director of Community of Air Mobility Initiative (CAMI) and Seleta Reynolds, General Manager of the Los Angeles Department of Transportation (LADOT), talked about advantages and disadvantages of Advanced Air Mobility, such as flying cars.

LADOT has high expectations for AAM transportation to utilize 3-dimensional space as opposed to simply using road infrastructure on the ground. On the other hand, Dietrich and Reynolds emphasized that in order for AAM to be widely produced, it is important that there is universal understanding for its advantages, and it must also resolve issues of noise and its impact on birds.

Moreover, they explained that LADOT considers it imperative to study how to match up AAM with regional ground transportation systems.

2.9 Closing Remarks

The Closing Remarks were given by Kirk Shaffer, the FAA's Associate Administrator for Airports.

Firstly, regarding the use of unmanned aircraft at airports, he introduced various pilot programs, including those by FedEx at the Memphis International Airport, the Kansas Department of Transportation (KDOT) at the state's airports, and Oklahoma's Choctaw. At the same time, the FAA's William J. Hughes Technical Center, located at the Atlantic City International Airport, performs research on utilizing unmanned aircraft to investigate obstacles on takeoff and landing routes, as well as for monitoring of controlled-access areas.

Furthermore, Shaffer explained that they are studying AAM, such as flying cars, to discover needed equipment, with the expectation that there will be autonomous piloting in the future.

In addition, regarding the tracking of unmanned aircraft around airports, he disclosed that many airports have detection systems and response plans. The FAA also issues guidelines and conducts preliminary examinations of detection systems. For new detection systems, they use four more airports to conduct additional evaluations once the initial evaluation at Atlantic City International Airport is completed.

Finally, Shaffer announced that the FAA will soon recruit detection system development companies and airport administrators for participation in investigation and research for the next two years.

2.10 Impressions from the Symposium

Despite the fact that the FAA's remarks were prepared for this symposium, I felt their strong determination for the "integration" of unmanned aircraft as a new player in the shared airspace, rather than for there to be "segregation."

Regarding the other discussions on unmanned aircraft operations, there were claims that existing manned aircraft operations are vested interests. However, I also got the impression that there is improved recognition of the importance of unmanned aircraft as a player through their

utilization on novel coronavirus-related tasks.

Part two of the 2020 FAA UAS Symposium was held during August 18th to 19th with the themes of unmanned aircraft pilot programs and public safety operations. I will review this part in a separate report.

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