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**Fourth NAM/CAR Air Navigation Implementation Working Group Meeting (ANI/WG/4)**  
Miami, United States, 21 – 24 August 2018

- Agenda Item 3: Global and Regional Air Navigation Plans**  
**3.4 Other Global/Regional Air Navigation Developments**  
**3.4.1 Follow-up to the implementation of a regulatory framework for Unmanned Aircraft System(s) (UAS) Operations**

**INTEGRATION OF UNMANNED AIRCRAFT SYSTEMS**

(Presented by the United States)

**EXECUTIVE SUMMARY**

The United States is undertaking an incremental and multifaceted approach toward the integration of Unmanned Aircraft Systems (UAS). This paper provides an update on the Federal Aviation Administration's (FAA) activities to integrate UAS into the U.S. national airspace system (NAS).

<i>Strategic Objectives:</i>	<ul style="list-style-type: none"><li>• Safety</li></ul>
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**1. Introduction**

1.1 In the past three years, the FAA has pursued a number of actions to integrate UAS effectively into the U.S. NAS, including regulatory efforts such as the introduction of registration requirements and the small UAS rule (Part 107). This is the regulatory framework for routine, line-of-sight operations by small UAS weighing less than 55 lbs., and the FAA intends to build on this rule to further expand UAS access to the NAS.

1.2 The FAA also engages with the 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.

## 2. DISCUSSION

### 2.1 Regulatory Update

2.1.1 In December 2015, the FAA implemented a new rule for the registration and marking of certain UAS using a web-based registration system. Registration for recreational UAS opened on December 21, 2015, and for non-recreational UAS – including government and commercial UAS – on March 31, 2016. The FAA has processed over 1,162,000 registrations to date.

2.1.2 On August 29, 2016, the FAA's Part 107 of Title 14 of the United States Code of Federal Regulations took effect. Part 107 established rules to enable the routine operation of small UAS weighing less than 55 pounds/25 kilograms, including payload, at take-off. According to Part 107, certificated remote pilots may fly their registered UAS within visual line-of-sight in uncontrolled (Class G) airspace during daylight or civil twilight, at speeds under 100 miles per hour and at altitudes at or below 400 feet. The rule prohibits flight directly over people or from a moving vehicle, unless in a sparsely populated area.

2.1.3 Lessons learned from this incremental approach to regulatory efforts have enabled the FAA to be more efficient and responsive to real-world needs. For example, the final Part 107 included a provision allowing individuals to submit requests to the FAA to fly more complex operations. The FAA may issue waivers/authorizations to certain requirements of Part 107 if an applicant demonstrates they can fly safely under the waiver without endangering people or property on the ground or in the air. To date, the FAA has issued more than 1,700 waivers for non-airspace operations, primarily for operations at night and over people. The FAA has also streamlined a web-based application process for Part 107 waivers and airspace authorizations through the Drone Zone Portal. Issuing waivers not only affords increased flexibility for operations and fulfills the FAA's performance-based rulemaking approach, but also provides the FAA with useful input as it continues to develop the UAS regulatory framework. This approach will help shape future rulemaking efforts as more complex UAS technologies and operations continue to mature.

### 2.2 Partnering with Industry

#### *Drone Advisory Committee (DAC)*

2.2.1 The FAA's DAC is a broad-based, long-term Federal advisory committee that provides the FAA with advice on key UAS integration issues by helping to identify challenges and prioritize improvements. The DAC helps to create broad support for an overall integration strategy and vision. Membership is comprised of Chief Executive Officer/Chief Operating Officer-level executives from a cross-section of stakeholders representing the wide variety of UAS interests, including industry, research and academia, retail, and technology.

*Unmanned Aircraft Safety Team (UAST)*

2.2.2 On August 2, 2016, former FAA Administrator Huerta announced the creation of the UAST during a UAS workshop hosted by the White House's Office of Science and Technology Policy. Modelled on the highly successful Commercial Aviation Safety Team, the UAST is comprised of stakeholders from the UAS and aviation industries, whose mission is to analyse UAS data to identify emerging risks to aircraft, people, and property and create non-regulatory safety enhancements that will help ensure the safety of the NAS. The team, co-chaired by the Executive Director of the FAA UAS Integration Office and industry, has formed several groups to look at strategizing internal and external UAST communications; determine the data needed for the UAST to develop its recommendations; and to develop a safety culture. The UAST has also published a report concerning UAS Sighting Reports and provided recommendations to address the issue.

*UAS Integration Pilot Program (IPP)*

2.2.3 In October 2017, the White House Office of Science and Technology announced the establishment of the UAS IPP under the Department of Transportation and managed by the FAA. The IPP will help tackle the most significant challenges in integrating UAS into the U.S. NAS while reducing risks to public safety and security. In particular, the IPP is expected to foster a meaningful dialogue on the balance between local and national interests related to UAS integration. In May 2018, the Secretary of Transportation announced the IPP awardees. The FAA is currently working with each of the participants to refine their concepts of operations, and anticipates that they will begin operations under the program by mid-August of this year. The IPP projects will evaluate a variety of operational concepts, including night operations, flights over people, flights beyond the pilot's line of sight, package delivery, detect-and-avoid technologies, counter-UAS security operations, and the reliability and security of data links between pilot and aircraft. More information about the IPP awardees and their projects is available on the FAA's IPP website.

*Other Industry Collaborations*

2.2.4 The FAA UAS Data Exchange is a collaborative approach between government and private industry facilitating the sharing of airspace data. Under this program, the Agency will support multiple partnerships, the first of which is the Low Altitude Authorization and Notification Capability (LAANC). LAANC is an industry-developed application with the goal of providing drone operators near real-time processing of airspace notifications and automatic approval of requests for authorization to operate in controlled airspace. Airspace data is provided through UAS facility maps, which show the maximum altitude around airports where the FAA may authorize operations under Part 107. Through automated applications developed by FAA-approved UAS Service Suppliers, industry provides operators the ability to interact with the maps and provide automatic notification and authorization requests to the FAA. LAANC also provides FAA's air traffic controllers visibility into where and when planned UAS operations will take place. By September 2018, LAANC will be available at nearly 300 FAA air traffic facilities covering approximately 500 airports across the United States.

*Looking Ahead*

2.2.5 The FAA is now looking beyond Part 107, focusing on enabling increasingly complex UAS operations, including operations over non-participating people, beyond visual line-of-sight operations, and operations with UAS weighing more than 55 pounds/25 kilograms.

2.2.6 The FAA is prioritizing the development of remote identification requirements that will address the security concerns raised by other U.S. Government agencies associated with more advanced operations. Remote identification rules are an essential requirement to meet both security needs and to enable advanced UAS operations. In order for these regulations to be effective, they must apply to all UAS, including those flown under the Special Rule for Model Aircraft, a classification of operations that is largely exempt from FAA regulations. Nonetheless, the FAA is prioritizing remote identification regulations and anticipates releasing a draft rule in the near future.

2.2.7 In March 2017, the FAA approved a new project for rulemaking called Modernization of Special Airworthiness Certification (MOSAIC) to complete implementation of a three-tiered risk approach for integrating UAS into the NAS. Low risk, unmanned aircraft operations would continue under Part 107 and high risk via the current type/production certification provisions. Under MOSAIC, we are creating new provisions for unmanned aircraft and/or operations that exceed the provisions of part 107 yet whose risk does not merit the rigors of type/production certification. This new provision would apply to medium risk UAS that meet FAA accepted standards. This rulemaking will leverage the recently developed Joint Authorities for Rulemaking of Unmanned Systems, Specific Operations Risk Assessment to define the broad scope of this new rule and to help identify operating limitations for individual UAS. The intended outcomes include operations of larger aircraft, in controlled airspace, beyond line of sight, over people, and those involving limited carriage of cargo.

2.2.8 In June 2017, the FAA established the UAS in Controlled Airspace (UASCA) Aviation Rulemaking Committee (ARC). An ARC is a committee that provides information, advice and recommendations to the FAA. Membership in an ARC represents a diverse set of aviation stakeholders, including the UAS industry. ARCs may include, for example, manufacturers, researchers, and standards bodies who are involved in the promotion, production, and security issues surrounding the operation of UAS. FAA and other U.S. Government subject matter experts may participate and provide technical support to members, as needed. The UASCA ARC continues the work of a subgroup under the previous UAS ARC that concluded in 2016. The subgroup produced a mature set of specific recommendations focused on larger UAS operations in controlled airspace. The UASCA ARC will leverage that work, which was developed by industry, in producing recommendations due in fall 2018.

### **3. CONCLUSION**

3.1 The FAA's incremental approach to UAS integration, including continued collaboration between the U.S. Government and industry, will help shape future rulemaking efforts as more complex UAS technologies and operations continue to mature.

3.2 The meeting is invited to note the content of the paper and visit the FAA's UAS website for more detailed information.