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Agenda Item 31: Aviation Safety and Air Navigation Standardization

UPDATE ON THE WORK BY ASIA-PACIFIC (APAC) UNMANNED AIRCRAFT CERTIFICATION WORKING GROUP (UCWG)

(Presented by Singapore and the United States[1], supported by Australia, China, India, Indonesia, Japan, New Zealand and the Republic of Korea[2])

EXECUTIVE SUMMARY	
This paper provides an update of the work done by the APAC UCWG and brings to the Assembly's attention on UCWG's recommendation on the reduction of redundant certification work, and considerations by States when using unmanned aircraft systems (UAS) for cross-border operations.	
Strategic Objectives:	This working paper relates to the Safety Strategic Objective.
Financial implications:	N/A
References:	Annex 8 — *Airworthiness of Aircraft*

[1] APAC UCWG Co-Chairs
[2] Other UCWG Member States

1. INTRODUCTION

1.1 Unmanned aircraft systems (UAS) have proven to be dependable during the COVID-19 pandemic where States employed UAS domestically to carry out a range of use cases from monitoring crowds in cities to vaccine distribution. While this is predominantly due to the urgent need and unique COVID-19 circumstances, it is also in part due to the maturity of the UAS platforms where States have confidence to allow the deployment of UAS in more areas, including within cities. In some States, the maturity of UAS platforms has led to the issuance of type certificates for UAS, a process that is traditionally more complex and has been used predominantly for pilot on board passenger carrying aircraft.

1.2 The Unmanned Aircraft Certification Working Group (UCWG) [3] has previously worked on defining the appropriate level of certification rigor and authority oversight commensurate to associated risk that is based on the safety continuum and submitted it as an information paper at the 40th ICAO Assembly. In that paper, the UCWG described the zones (i.e. zone A, B & C) where operational mitigations, industry compliance processes and airworthiness certification could be considered.

1.3 Since then, the United States has developed the Durability and Reliability type certification methodology that provides a framework for the type certification of unmanned aircraft (UA) and the operational approval of the Associated Elements. Associated Elements are the elements required for an operator to operate a UA safety and efficiently and include communication links and the components that control the UA. Other UCWG members including Australia & Japan also recently have been adopting the Durability and Reliability based certification methodology for the UA. This paper will share some insights and introduce the importing and exporting approach that is proposed by UCWG member states to address differences in certification polices between States when transferring certified UAS products. This paper also provides the challenges encountered on the use of UAS for cross-border operations.

2. DISCUSSION

2.1 In developing the risk-based principles for UAS design and airworthiness certification, the UCWG noted that there are two main areas to bring to the Assembly's attention: (1) reduction of duplicative certification work, and (2) use of UAS for cross-border operations.

2.2 Reduction of redundant certification work

2.2.1 The successful implementation of UAS during COVID-19 has gained international interest. Many of the use cases (such as delivery of medical supplies), have been replicated in multiple States. In reviewing the deployment of these UAS platforms that have received prior State's approval, many importing States start evaluating the platform without considering similar work accomplished by other States as they do not have information to determine that the UAS is able to meet the unique operating requirements of the State of deployment.

[3] The mission of UCWG is to promote a common understanding of risk-based principles for UAS design and airworthiness certification, harmonizing certification approaches across civil aviation authorities (CAAs), and ensuring a seamless exchange and integration of UAS design and airworthiness concepts similar to manned aviation.

2.2.2 While this process is well-meaning, it can lead to duplication of work and effort, and this duplication is attenuated for UAS platform that had already been type certificated. The UCWG recognises the desire and need to reduce the duplication of certification work. While each importing State has its unique operating and environmental challenges, this could require specific additional certification work to be carried out when reviewing an imported UAS platform.

2.2.3 The UCWG recommends State of Registry, when validating or accepting the UA type certificate made by the State of Design, could consider the certification work carried out by the State of Design to the extent practicable.

2.3 Use of UAS for cross-border operations

2.3.1 The ICAO RPAS panel has completed significant work on the amendment of the necessary SARPs (covering Annex 1 to 19) and associated documents for international operations of remotely piloted aircraft (RPA) under instrument flight rules. These SARPs (majority to become applicable from 2026 onwards) are adapted from the existing ICAO Annexes, which addresses the needs of large RPA for operations over thousands of miles but might be too stringent and not as appropriate for less capable UAS that are not as well equipped and would only be able to operate less than a hundred miles.

2.3.2 Although the range is limited, the technology of these UAS have matured and have the ability to carry payloads across borders. As compared to other means of transport, the lower infrastructure setup cost makes the use of UAS for such operations favourable for certain terrain or operating environment. The use of less capable payload- carrying UAS for cross-border operations will likely be dependent on the geographical locations, environment and arrangements between the States involved in the cross-border operation. UCWG noted that States that would like to allow such cross-border operations would find themselves in a situation where, although they would like to comply with ICAO SARPs relating to RPA, they will not be able to do so as the UAS is less capable. This is an area that UCWG could look into, as part of its future work, to determine the airworthiness aspect of the UAS for cross-border operations. When opportune, UCWG will also reach out to the applicable ICAO panels to provide UCWG’s views for the panel’s consideration....

3. CONCLUSION

3.1 The Assembly is invited to note the two areas that are brought up by the Asia-Pacific Unmanned Aircraft Certification Working Group, and UCWG will continue to further its work and provide updates to ICAO when appropriate.

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