57th CONFERENCE OF DIRECTORS GENERAL OF CIVIL AVIATION ASIA AND PACIFIC REGIONS

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AGENDA ITEM 3: AVIATION SAFETY

TECHNICAL REQUIREMENTS FOR ELECTRIC MULTI-ROTOR DRONE ON URBAN LOGISTICS

Presented by the People's Republic of China

SUMMARY

This paper presents challenges posed by safety supervision of multi-rotor electric unmanned aircraft for urban logistics. Based on experience accumulated in the multi-rotor electric unmanned aircraft for urban logistics，this paper puts forward the suggestions of safety supervision on the implementation of the aircraft, thus promoting the sound development of the electric unmanned aircraft industry and satisfying the regulatory demands of the unmanned aircraft for better socio-economic development and broader cargo connectivity.

TECHNICAL REQUIREMENTS FOR ELECTRIC MULTI-ROTOR DRONE ON URBAN LOGISTICS

1. INTRODUCTION

1.1 With the rapid development of online shopping and e-commerce, logistics, represented by the courier services, is booming. As the multi-rotor electric unmanned aircraft for urban logistics is featured by high speed relative to ground transportation, delivery in high efficiency and in bulk, technology enterprises including S.F. Express, JD, Amazon and Antwork Technology have conducted trials about utilizing unmanned aircrafts to implement delivery for urban logistics. Especially since the outbreak of COVID-19 pandemic, the aircrafts have played a critical role in pandemic prevention and response to emergency affairs. It is believed that in the future, unmanned aircrafts for urban logistics will be used more extensively in cross-border air logistics transportation business.

1.2 In order to cope with the development of emerging UA industry and incorporate the industry into the man-machine aviation safely and orderly, ICAO, supported by governments around the world and international organizations, is developing instructive standards or guidelines that ensure each country develop its UA industry orderly and safely. However, It primarily concerned with the operation of Remotely Piloted Aircraft Systems (RPAS) of Instrument Flight Rules (IFR) in controlled airspaces, and with the best practices and education approaches that each country adopts under the guidance of "the Unmanned Aircraft System Advisory Group" (UAS-AG) and "the Task Force on UAS for Humanitarian and Development" (TF-UHAD). Although these efforts are needed urgently, we believes that more efforts need doing to ensure a more effective and consistent approach globally to the safety supervision on multi-rotor electric unmanned aircraft for urban logistics.

1.3 In an attempt to carry out risks evaluation and flight certification of the specific type of multi-rotor electric unmanned aircraft for urban logistics, the Civil Aviation Administration of China (CAAC) issues *the Approval Letter for the Trial Operation of Specific Types of UAS* and *the Operating License for UAS Logistics Distribution* to companies that are able to operate UAS safely and reliably in complex urban environment; CAAC attempts to assess the safety of UAS in the operational qualification validation to supervise the operation of UAS. Guided by that guideline, CAAC has drawn up *Technical requirements of multi-rotor electric unmanned aircraft system (small and light) for urban logistics* to provide specific technical requirements for the design of such UAS.

2. DISCUSSION

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2.1 However, the content of multi-rotor electric unmanned aircraft for urban logistics is not covered in the 108th revision of annex 8.The feasible for UAS without IFR is an important component of air transportation system, to carry out cross-border aviation operations in some geographically close countries and island countries

Although laws concerning small UAS(drone) have been traditionally legislated by each other itself, ICAO's leadership is still critical to ensure that standards and best practices are uniform and enforceable. Besides, the participation of ICAO will ensure that stakeholders not only are aware of the issues, but clearly formulate policies and best practices, including how they are managed and what standards are adopted.

From the perspective of the safety, due to the increasing use of multi-rotor electric unmanned aircraft for urban logistics in fields such as parcel delivery, pandemic prevention and medical emergency response, the effective measures of safety supervision are needed. Provide necessary standards and guidelines to start and implement safe regulatory measures, thus supporting countries and industries worldwide.

On the basis of existing standards and the group work of ICAO's UAS-AG, collaborating with the UA industry, formulate the standards and guidance of multi-rotor electric unmanned aircraft for urban logistics. In doing so, a coordinate process is established to initiate and implement the safe supervision of UAS for urban logistics. The Conference is invited to endorse the policy actions identified in the executive summary.

3. ACTION BY THE CONFERENCE

3.1 The Conference is invited to:

Supporting the CAAC's proposals for ICAO to establish a safety supervision mechanism which enables the unmanned aircraft industry to provide inputs to carry out safety supervision on multi-rotor electric unmanned aircrafts for urban logistics, thus mitigating safe regulatory risks arising from such operations.

Including but not limited to:

(1) Incorporate multi-rotor electric unmanned aircrafts for urban logistics into the regulatory scope of Annex 8；

(2) Develop technical standards and encourage manufacturers of multi-rotor electric unmanned aircrafts for urban logistics to execute the standards to ensure the UAS are safe, thus mitigating safe regulatory risks arising from such operations.

(3) Develop common guidance materials including the concept of operation and the security evaluation of operation for all countries to establish procedures in order to determine the role of all counties and relevant shareholders in the implementation of procedures and of best practices, thus the operation being more widely applied in cross-border logistics transport business of the aviation industry.

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