



International Civil Aviation Organization

MIDANPIRG/19 & RASG-MID/9 Meetings

(Riyadh, Saudi Arabia, 14 – 17 February 2022)

Agenda Item 3.4: Safety Subjects of interest to MIDANPIRG

NEW EMERGING AVIATION TECHNOLOGIES AND SAFETY OVERSIGHT CHALLENGES

(Presented by Saudi Arabia)

SUMMARY

This paper provides an overview about the unmanned aviation technological developments and safety oversight concerns as the UAS aviation is currently moving at a much faster pace than for manned aviation. The growth in emerging aviation technologies such as drones, remotely piloted aircraft, and advanced air mobility vehicles are new safety challenges besides the opportunities. Whereas aviation authorities that govern safety and security are struggling to keep pace with novel innovation. This emerging transport system requires to adhere robust regulatory framework to meet the increasing demands of society, but without adding additional risks. As such SARPS related to UAS Airworthiness Certification, Operational Requirements, Safety Oversight and Safe Integration of UAS in the airspace system is highlighted.

1. INTRODUCTION

1.1 Rapid changes in drone technology hold enormous commitment for the future use of airspace and aviation at large as the digital transformation expands skywards.

1.2 Transforming infrastructure to support such operations will be critical to harnessing the potential of the sector, unlocking market growth and services to people. As such, there is need to develop an advanced aviation system that supports the traffic growth for both manned and unmanned aviation and meet the challenges of emerging aviation technologies.

1.3 The Kingdom of Saudi Arabia is looking forward to new emerging aviation technologies with a proactive strategy that will allow for improving safety performance. The General Authority of Civil Aviation (GACA) has taken significant initiatives to meet the current and future challenges of the national aviation sector, besides shaping the future of national air transport system by developing a flexible, safe, and efficient regulatory environment meeting the highest levels of safety standards. Therefore, in order to bring novel aircraft and other UAS in the scope of GACA regulatory framework, specific standards on novel aircraft are needed for compliance of effective safety oversight activities.

2. DISCUSSION

2.1 Rapid growth in use of drones has increased the demand for access to non-segregated airspace. For low-level operations, many procedural and technological areas require further development and there is a need to develop a new framework to enable safe and efficient operations of highly automated drone, especially at low altitudes in urban areas. There is a window of opportunity to take advantage of the latest developments such as artificial intelligence, 5G networks while considering the need to address appropriate cybersecurity requirements and specific procedures for emergency situations and management of failures.

2.2 Drones operating between 500ft and 60,000ft to be integrated into conventional air traffic management using instrument flight rules (IFR). Standards and Recommended Practices (SARPs) are under development phase for such type of operations. However, in supplementary report on activities of the organization in the first half of 2019 and review of action taken on resolution of the 39th session of the ICAO assembly on Emerging Aviation Issues, following points have been highlighted:

- 1) Increased use of unmanned aircraft systems (UAS) and remotely piloted aircraft systems (RPAS), use of small-unmanned aircraft is continuing to increase at a rapid rate across the globe, challenging regulators to appropriately design regulations that ensure safety and security while allowing the industry to thrive. Member States have requested ICAO assistance in developing a harmonized regulatory framework supporting domestic and international operations.
- 2) Proposed Standards and Recommended Practices (SARPS) on Airworthiness and the C2^{1*} Link are under the approval process while other topics continue to be developed. Hence, ICAO Doc 10019 AN/507 needs to elaborate airworthiness certification process for enhancement of safety oversight of UAS operation.

3. ACTION BY THE MEETING

- 3.1 The meeting is invited to the contents of this Paper.

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¹ **(Command and Control (C2), also referred to as Control and Non-Payload Communication (CNPC), refers to the communications link between a UAV (unmanned aerial vehicle) and its ground station that is responsible for the management and control of the aircraft.)*