



ASSEMBLY — 40TH SESSION

TECHNICAL COMMISSION

Agenda Item 30: Other Issues to be considered by the Technical Commission

THE NEED FOR STANDARDS AND GUIDANCE TO MITIGATE THE RISKS OF, AND TO IMPROVE RESPONSE TO UNAUTHORIZED UAS OPERATIONS

(Presented by Airports Council International (ACI),
Civil Air Navigation Services Organisation (CANSO),
International Federation of Air Traffic Controllers' Association (IFATCA),
International Federation of Air Line Pilots' Associations (IFALPA) and
International Air Transport Association (IATA))

EXECUTIVE SUMMARY

With the increasing use of unmanned aircraft systems (UAS) for personal and recreational use, there has been an increase in the number of sightings of unauthorised UAS in close vicinity to commercial aircraft and airports. Some of these sightings have resulted in extensive disruption to airline and airport operations, with a large impact on the travelling public.

This paper focuses on the need for harmonized regulatory provisions to facilitate a) detection of such unauthorized UAS operations and b) development of effective UAS countermeasures, in the interest of aviation safety.

The paper concludes that it is necessary for ICAO to support States and the industry by adopting high level Standards and guidance. The industry offers to support the development of the necessary provisions, building on existing Standards and deliver them to ICAO. This would include harmonized processes for initiating detection of, and counter measures against, unauthorized UAS.

Action: The Assembly is invited to request ICAO to establish a mechanism by which the industry can provide input to mitigate the risks of, and improve response to unauthorized UAS operations, such as:

- a) developing guidance material that;
 - i) supports States in better understanding the capabilities of existing detection and counter UAS technologies;
 - ii) covers generic requirements for no-fly zones for unauthorized UAS operations in and around the vicinity of airports and aircraft operational areas;
 - iii) encourages the sharing of best practices regarding measures which may be imposed on UAS manufacturers, to ensure greater consistency and compliance across States;
- b) developing a generic concept of operation that could be used by States to establish procedures to detect and initiate counter measures against unauthorized UAS;
- c) defining taxonomy related to safety incidents and accidents related to UAS incidents and accidents.
So far, the safety reports available are related to sightings of UAS at airports and near aircraft

¹ English, Arabic, Chinese, French, Russian and Spanish versions provided by IATA.

	without input from UAS manufacturers and operators; and d) identifying the role of States and aviation stakeholders in implementing the developed procedures and best practices, in order to detect and counter the operation of unauthorized UAS operations.
<i>Strategic Objectives:</i>	This working paper relates to the Safety and Security Strategic Objectives.
<i>Financial implications:</i>	The cost of processing the new Standards and guidance materials that would be delivered by industry to ICAO.
<i>References:</i>	Doc 10115, <i>Report of the Thirteenth Air Navigation Conference (AN-Conf/13), Corrigenda Nos. 1 and 2, and Supplement No. 1</i> , Recommendation 5.2/1

1. INTRODUCTION

1.1 For the purpose of this paper, the priority focus is on the unauthorized or reckless operation of UAS in close vicinity of aircraft and/or airport that pose a threat to aviation safety and security.

1.2 As the expanded use of UAS is providing many benefits for civil applications such as aircraft and aerodrome inspections, disaster response, security, law enforcement, and parcel delivery, ICAO has initiated work focusing on remotely piloted aircraft systems (RPAS) operations with instrument flight rules (IFR) in controlled airspace, and best practices and education for States under the Unmanned Aircraft Systems Advisory Group (UAS-AG) and the Task Force on Unmanned Aircraft Systems for Humanitarian Aid and Development (TF-UHAD). While ICAO's efforts have been much needed, we recognize that additional work is needed to ensure a more effective and globally harmonized approach to managing operational disruptions caused by unauthorized operation of UAS.

1.3 Recent disruptions to aircraft operations caused by unauthorized use of UAS near airports, have raised significant questions for regulators and aviation stakeholders on how to manage such incidents. These incidents resulted in disruptions to airline networks and airport operations, loss of credibility of the industry in ensuring a safe flying environment, extreme inconvenience for passengers and significant financial losses, to list only the more obvious consequences. In the most extreme example so far, in late December 2018 operations at a major airport were badly disrupted by rogue drone sightings. Over a couple of days, 140 000 passengers and 1 000 flights were affected, the biggest interruption in services since the Icelandic volcano incident in 2010.

2. DISCUSSION

2.1 While it is recognized that ICAO focuses on international operations, Article 44 of the Chicago Convention provides justification for increasing the scope of ICAO's work to include operations that may inadvertently impact international aviation. In this regard, there have been numerous safety reports containing evidence of collisions and near-collisions between UAS and aircraft in international commercial service. The International Air Transport Association (IATA), Airports Council International (ACI) and other organizations are coming together, in an attempt to consolidate these reports, and to establish a harmonized method for reporting these events. These types of events are no longer rare and are only increasing.

2.2 The industry partners presenting this working paper understand that the technology to support detection and counter UAS measures is still in a development stage and has significant limitations. Although such technology cannot provide a comprehensive defence for the aviation system, it

will establish tools that can be used by national regulators and law enforcement to mitigate the effect of UAS encounters.

2.3 The partners also understand that although the laws governing the detection and use of counter UAS measures are traditionally national, States will base their criteria on SARPs developed by ICAO. Subsequently, and because of the potential safety and security risks associated with these type of Standards, ICAO's leadership is paramount to ensure that Standards and best practices are both harmonized and enforceable. ICAO's involvement will also ensure that stakeholders are not only aware of these issues, but also that policies and best practices are set out clearly, including when and by whom certain steps should be taken.

2.4 It is also noted that any detection or counter-UAS measures should not create unintended safety hazards and unmitigated risks to air transport aircraft, authorized UAS operators, and aviation infrastructures and personnel. Therefore a comprehensive risk assessment needs to be conducted prior to adopting a strategy for counter-UAS measures or technologies.

2.5 Commercial UAS operations will over time become integrated with the air transport system. However, the unauthorized operation of UAS by individuals in the vicinity of aerodromes is not an integration problem. It is in fact similar to an unauthorized manned aircraft in the vicinity of an airport, and in neither case has the aircraft been approved for the operation. Unfortunately, the identification of a UAS in this situation is demonstrably far more difficult. Unauthorized users of UAS cannot easily be identified, tracked, and excluded from the airspace where they pose the greatest safety and security threat to civil aviation.

2.6 Some States are also introducing safety related measures to ensure elements such as registration, lighting requirements, and other more administrative measures for UAS. Measures such as this may provide some assistance to airports and national authorities, differentiating between cooperative and non-cooperative UAS while allowing for faster response and better targeting of resources. These are only early steps and further work must be done, in particular to harmonize these types of requirements.

2.7 It is essential that ICAO provide high-level guidance to support harmonization of such safety requirements, without which measures initiated by states and industry may diverge and potentially negatively impact the UAS industry, making user awareness and education activities more difficult.

2.8 Critically, many States and their stakeholders have been forced to temporarily cease aircraft movements when encountering even a minor unauthorized UAS incident. Lacking the proper preparation in terms of roles and responsibilities to counteract a UAS incident and implementation of agreed protocols has hampered aviation stakeholders in limiting the operational impact of these incidents. Therefore, there need to be clearly defined processes for responding to and handling unauthorized or reckless use of UAS in close vicinity of aircraft and airports.

2.9 Even though the basic principles adopted by States in establishing best practices, guidelines and limited regulations for counter UAS measures may be similar, the differences from one State to another can limit the overall ability of the UAS manufacturing industry to educate their customers effectively on safe and legal operations, and to promote a safe environment for all aviation.

3. CONCLUSION

3.1 The increasing disruptions to the air transport system due to unauthorized and reckless use of UAS requires effective detection and counter measures, from a safety perspective. It is necessary

for ICAO to support states and the industry by providing the necessary Standards and guidance for initiating and implementing such detection and counter measures.

3.2 We recommend that ICAO works with the industry to develop the necessary high level Standards and guidance, building on existing Standards and the work of ICAO groups, in order to establish a harmonized process for initiating and implementing detection and counter measures for UAS and we invite the Assembly to consider the actions recommended in the Executive Summary.

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