



ICAO

International Civil Aviation Organization

**Third Meeting of the Asia/Pacific Unmanned Aircraft
Systems Task Force (APUAS/TF/3)**

Bangkok, Thailand, 04 – 07 March 2019

Agenda Item 5: Asia/Pacific UAS Regional Guidance Material

**NEED FOR GUIDANCE MATERIALS FOR
IMPLEMENTATION OF UAS DETECTION AND INTERCEPTION TECHNOLOGIES**

(Presented by Hong Kong, China)

SUMMARY

While Unmanned Aircraft System (UAS) is increasingly popular for deployment for various purposes, its operations pose serious hazards to flight safety when UAS is operated without authorization in the vicinity of aerodromes. Apart from legislative and regulatory regimes, a wide variety of detection and interception technologies is available to mitigate such hazards. It is essential for a harmonized approach supported by the development of guidance materials be adopted for implementation of UAS detection and interception technologies.

1. INTRODUCTION

1.1 Nowadays the low acquisition and operating cost of UAS attracts many people to make use of it for various purposes. It is not uncommon for UAS enthusiasts, either intentionally or unintentionally, operate UAS within the restricted areas of critical infrastructure, such as in the vicinity of aerodromes. There has been an increasing trend in reported sightings of UAS in the vicinity of aerodromes worldwide that have caused serious disruption to aerodrome operations affecting millions of passengers.

2. DISCUSSION

2.1 Apart from enactment of legislation and regulations by the aeronautical authorities, a wide variety of UAS detection and interception technologies is available in the market and ready for deployment to mitigate hazards caused by unexpected UAS activities in the vicinity of aerodromes. Such technologies, when used effectively and reliably, can assist the law enforcement agency (LEA) and/or aerodrome operators in the prompt detection or even interception of UAS imposing hazards to flight safety.

2.2 For detection of UAS in the vicinity of aerodromes, some aerodrome operators have deployed tracker systems for UAS manufactured by certain specific brands of suppliers. However, this is often ineffective for the case of intended intrusion. On the contrary, electronic scanning radar and/or radio frequencies (RF) scanning looks more effective which can complement each other in detecting UAS operating beyond line of sight of the UAS operator. Electro-optic or infrared cameras could enhance detection accuracy and reduce number of false detection.

2.3 For interception of UAS in the vicinity of aerodromes, kinetics such as destroying or entangling UAS might result in injury to staff/passengers or damage to properties. GNSS jamming is unsuitable as civil aviation / aerodrome operations rely heavily on GNSS. RF jamming that disrupts frequencies used for control and communication with UAS could be considered but would be ineffective for UAS programmed to operate autonomously without RF links. Spoofing or protocol manipulation, which sends commands to UAS to take control of it, would be subject to reliability issue and might be circumvented by manufacturers adopting a newer version of protocol.

2.4 There is also a common legality issue for UAS interception. In most countries, signal jamming or spoofing action could constitute a violation of telecommunication or security legislation. A person willfully damaging or destroying UAS that might be regarded as an aircraft might be subjected to a penalty. The LEA and/or aerodrome operators might not necessarily be exempted from the legislation.

2.5 Currently, there are neither standards nor guidance materials governing the proper design and use of UAS detection and interception technologies, probably due to the wide variation in the performance of UAS detection and interception technologies. Deployment of technologies with unproven performance might pose threats to flight safety. As such, a harmonized approach with guidance materials for system interoperability is important to ensure that system implementation will meet baseline requirements. Otherwise, safety or service levels of such technologies might be compromised.

2.6 It is considered beneficial for stakeholders, including the ICAO, LEA, regulators, aerodrome operators and systems suppliers etc. to work together and expedite the development of guidance materials that are required to govern the rapid development of UAS detection and interception technologies to cope with an increasing trend of UAS operating without authorization in the vicinity of aerodromes worldwide.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) recognize that a wide variety of UAS detection and interception technologies is available in the market and ready for deployment to safeguard aerodrome operations;
- b) note that a harmonized approach with support of guidance materials to address legality and performance issues associated with UAS detection and interception technologies is essential to cope with the increasing trend of UAS operating without authorization in the vicinity of aerodromes; and
- c) discuss the need for development of the regional guidance materials under this task force.

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