



**AIRPORTS COUNCIL
INTERNATIONAL**

Drones | Policy Paper

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Acronyms and Definitions

Note: The definitions contained herein are unofficial and used in the context of this document only.

Aerodrome no-fly area (for unauthorized drones): An area from the perimeter fence of an aerodrome to a defined distance and height/altitude identified through a risk assessment process as presenting a risk to airport operations from drone operations.

Aerodrome reference point: The designated geographical location of an aerodrome.

Air traffic management (ATM) – The dynamic, integrated management of air traffic and airspace including air traffic services, airspace management and air traffic flow management – safely, economically and efficiently – through the provision of facilities and seamless services in collaboration with all parties and involving airborne and ground-based functions.

Air Navigation Service Provider (ANSP) - Any entity providing services which includes Air Traffic Management (ATM), Communications, Navigation and Surveillance systems (CNS), meteorological services for air navigation (MET), Search and Rescue (SAR) and Aeronautical Information Services/Aeronautical Information Management (AIS/AIM). These services are provided to air traffic during all phases of operations (approach, aerodrome and en route).

Controlled airspace - An airspace of defined dimensions within which air traffic control service is provided in accordance with the airspace classification.

Drones – Overarching class terminology for all unmanned remotely piloted or autonomously piloted aircraft

Vicinity– The area or region near an airport defined by geographic coordinates referenced to the perimeter of the airport or aerodrome reference point and height above ground level or sea level wherein a risk assessment process has determined there is a risk to airport operations from drone operations. Since all airports are unique in terms of the combination of their geographic size and shape and the nature of their operations the vicinity area will also be unique for the purposes of drone operations.

Recreational Drone- A drone used for personal purposes only.

Commercial Drone - A drone used for work or research.

Qualified Individual - A person who has successfully completed training and meets defined skill, experience, education or other requirements.

Unmanned Aircraft Systems (UAS) - An aircraft and its associated elements which are operated with no pilot on board.

UAS traffic management (UTM) – A specific aspect of air traffic management which manages UAS operations safely, economically and efficiently through the provision of facilities and seamless services in collaboration with all parties and involving airborne and ground-based functions.

1. Purpose

To establish policies to guide ACI and its members and establish a global airport position with industry and regulatory bodies in the development and application of regulations and standards for the safe operation of drones at or in the vicinity of its member's airports. The term drone is used in a very wide sense covering all unmanned remotely piloted or autonomously piloted aircraft.

2. Applicability

The policies provided in this document are subordinate to national or local regulations and in no way oblige ACI's members to take specific actions.

3. Background

3.1 The drone industry is growing rapidly as drones become more capable and new uses are identified at an accelerating rate - making the operation of drones of all sizes increasingly common. There are four types of drones which are of concern to airport operators:

- (a) Recreational drones operating in the vicinity of airports.
- (b) Drones used by the airport operator for operational and maintenance requirements.
- (c) Large drones also known as Remotely piloted aircraft systems which may operate at airports along with manned aircraft.
- (d) Drones used with intent to commit acts of unlawful interference with civil aviation or used for surveillance with intent to commit a crime, and drones used as a weapon.

3.2 Drone operations are expected to surpass the number of manned aircraft operations in the near future. The growing numbers and uses of drones are an increasing risk to aviation as evidenced by reports of near-misses and collisions between drones and manned aircraft around the world.

3.3 Keeping airspace safe points to the development and implementation of globally harmonized regulations and standards for the operation of drones in a framework that promotes the safety of all aircraft sharing the skies. Although such harmonized regulations do not exist at present, Airports have a vested interest, and need to be included, in the planning and development of national regulations and standards that determine how drones will be integrated into the aviation system without negatively impacting the safety, security and efficiency of airport operations.

4 Key Policy Statements and Recommendations

Drone operations should be facilitated, provided they do not have a negative impact to safety, security, efficiency or capacity of airport operations.

4.1 ATM and/or UTM interface with Airport Operations on Drones

Air Navigation Service Providers should consult and collaborate with airport operators to facilitate drone operations and avoid negative impact on airport operations.

Recommendations

4.1.1 Drone operations at an airport should be authorized by the airport operator, and where appropriate, coordinated with the ANSP.

4.1.2 Drones should be integrated into controlled and uncontrolled airspace without negatively impacting the safety, efficiency or capacity of the air traffic management system.

4.1.3 Drones should be integrated and accommodated into the air navigation system without increasing net operating costs for airport operators, ANSP or other aviation system users. Airport Operators should, where applicable, be able to recover any costs associated with accommodating drone operations at their airport.

4.1.4 Drones operating in and out of slot coordinated or restricted airports should be subject to existing provisions controlling manned aircraft for access to that airport.

4.1.5 ANSPs and other state authorities should collaborate with the airport operator while designing airspace for UTM in the airport vicinity.

4.1.6 Recreational Drones should only be operated at or in the vicinity of an aerodrome, (or seaplane base or area where aircraft take-off and land) with the authorization of the aerodrome operator and the ANSP.

4.1.7 State authorities and ANSPs may implement additional measures such as:

- (a) Requiring Drones operated at or in the vicinity of an airport to have direct communication/datalink (e.g. application programming interfaces) with the ANSP. Furthermore, the communication/datalink links should be secure and protected from interference.
- (b) Requiring Drones operating in controlled airspace to be transponder equipped.
- (c) Requiring Drones to use a common internationally recognized positioning standard (e.g. WGS-84). States should establish performance requirements (precision and reliability) of positioning data for the use of drones, including appropriate horizontal and vertical reference sources compatible with the accuracy and tolerances needed for safe drone operations.
- (d) Requiring Drones to be equipped with anti-collision lights.

- (e) Prohibiting Recreational Drones from operating in controlled or restricted airspace.

4.2 Drone regulations – Airport related requirements

Drones should be regulated to meet an equivalent level of safety and be written, communicated and enforced using the same processes and channels as manned aircraft.

Recommendations

4.2.1 Drones should be required to adhere to the same standards applicable to manned aircraft in each class of airspace they operate.

4.2.2 Drones should be subject to the same noise and emissions standards applied to manned aircraft at an airport.

4.2.3 Drones should be operated in compliance with published airport noise abatement procedures.

4.2.4 Commercial Drone Operators should be required to obtain an Air Operators Certificate issued by the State¹.

4.2.5 Commercial drones should be subject to maintenance standards to ensure safe operation.

4.2.6 Recreational Drone operators should obtain an operator's license as required by the state, which may demonstrate their knowledge of:

- (a) Safe operating practices, including line-of-sight requirements
- (b) Airspace classification and structure in their intended operating region;
- (c) Local laws governing the operation of drones including the locations of airports and requirements/restrictions related to operating at or in the vicinity of an airport.

¹ An *Air Operators Certificate* issued by a State for commercial drone operators shows that the operator has:

- (i) *Sufficient personnel with the required experience for the type of operations requested*
- (ii) *Airworthy aircraft, suitable for the type of operations requested*
- (iii) *Acceptable systems for the training of crew and the operation of the aircraft (Operations Manual)*
- (iv) *A quality system to ensure that all applicable regulations are followed*
- (v) *The appointment of key accountable staff, who are responsible for specific safety critical functions such as training, maintenance and operations*
- (vi) *Carriers Liability Insurance - Operators are to have sufficient insurance to cover risks associated with the type of operations conducted*
- (vii) *Proof that the operator has sufficient finances to fund the operation.*
- (viii) *The operator has sufficient ground infrastructure, or arrangements for the supply of sufficient infrastructure, to support its operations into the ports requested*
- (ix) *The certificate is held by a legal person who resides in the country of application*

4.3 Drone enforcement

ANSPs and state authorities should consult with Airport Operators before initiating enforcement activities on Drone operations at or in the vicinity of the airport.

Recommendations

4.3.1 Enforcement agencies should be permitted to neutralize a drone if it poses a risk to aviation.

4.3.2 Airports should be protected from the presence of unauthorized drones that negatively impact safety, efficiency or capacity at the airport.²

4.3.3 Airport Operators should consider the implementation of, and be authorized to use, means to safeguard operations from the presence of unauthorized drones within the airport boundary and its vicinity.

4.3.4 Airport operators should promptly inform their regulator and ANSP of all drone activity at or in the vicinity of the airport that, poses a risk to airport operations. This is particularly important in jurisdictions where there is little if any regulation of drone operations.

4.3.5 Anti-Drone measures should not create unintended safety hazards and unmitigated risks to other manned aircraft, authorized drones and aviation infrastructures.

4.3.6 State regulators should provide clear guidance to aerodrome operators as to what counter-drone technology and actions can be put in place.

4.4 Drone identification and tracking

The Airport Operator should be able to rely on state authorities to establish means to identify and track drones operating at or in the vicinity of the airport.

Recommendations

4.4.1 Airport Operators should be able to identify the owner and operator of any drone operating within the airport boundary and its vicinity.

4.4.2 Commercial Drones should be marked with a unique state issued registration number so that they can be identified and traced to their owners and operators.

4.4.3 Recreational Drones should be marked with a registration number issued by the state, if not, it should be marked with an identification such as the name, address and telephone number of the owner and operator.

² Where geo-fencing is deployed it should consist of an outer, intermediate and inner layer to progressively alert drone operators, the ANSP and the airport operator and provide a buffer against incursions.

4.5 Drone operations at or in the vicinity of airports

A risk-based approach as per the type and requirements of drone operations should be followed while facilitating them at or in the vicinity of the airport.

Recommendations

4.5.1 Drones operated within the airport boundary and its vicinity should be operated by a qualified individual.

4.5.2 States should determine the criteria for permitting safe drone operations, which vary from state to state³. The Airport operator may publish information on safe drone operating practices and a link to national regulations. A communications programme may also be established to inform drone operators of the locations of where drones are permitted, and not permitted, to operate on or in the vicinity of the airport.

4.5.3 Drone operations at or in the vicinity of an airport for airport related usage that are not a concern to the ANSP should be addressed through an agreement with the airport operator, the ANSP and the Drone Operator.

4.5.4 Airport Operators should establish policies and procedures through risk assessment methodologies and performance based requirements for Recreational Drones to be operated at or in the vicinity of the airport in addition to any state regulations⁴.

4.5.5 Drones and Drone Operators operating at or in the vicinity of an airport should be required to possess appropriate insurance for the risks associated with their operation.

4.5.6 Airport Operators should collaborate with their regulator, ANSP and aircraft operators to develop and publish a procedure to be implemented in the event there is unauthorized drone activity at or in the vicinity of the airport. Such a procedure should establish the conditions under which aircraft operations may continue while there is unauthorized drone activity at or in the vicinity of the airport.

³ As an example one state requires that: Recreational Drones should be operated: below 90m above ground; at least 30 m away from vehicles, vessels and the public (if the drone weighs over 250 g and up to 1 kg); at least 75 m away from vehicles, vessels and the public (if the drone weighs over 1 kg and up to 35 kg); at least 1.8 km away from heliports or aerodromes used by helicopters only; at least 9 km away from a natural hazard or disaster area; and, away from areas where its use could interfere with police or first responders.

⁴ Additional state regulations may include;

- Permitting Recreational Drones to operate only within line-of-sight of the Drone Operator.
- Prohibiting Recreational Drones from operating at night or in clouds.
- Restricting Recreational Drones be operated within 500m from the operator.
- Registering, licensing, and training of Recreational Drone users
- Drones should be identifiable and traceable to their owner/operator (use of SIM Card technology has been suggested)

4.6 Training for airport staff

Airport staff should be aware of and/or trained on requirements for drone operations at or in the vicinity of their airport(s).

Recommendations

4.6.1 Airport operational personnel should receive initial and regular refresher training on applicable airport policies and procedures to the operation of authorized and unauthorized drones. Training should include but not limited to:

- (a) National regulations on drone operations in and around airports.
- (b) Types of drones authorized to operate at/or in the vicinity of the airport.
- (c) Technology used for Drone operations, and, tracking and identification procedures.
- (d) Coordination procedures with ATC & other state authorities on Drone operations.
- (e) Risk assessments methodologies on drone operations.
- (f) Any specific operating restrictions related to the operation of the drone such as:
 - (i) Permissible time of the day for drone operations and its duration.
 - (ii) Areas around the airport where drone operations are permitted (including understanding on the vicinity of the airport).
 - (iii) Allowable proximity (separation) and altitude/height to be maintained by the drones to other manned aircraft, buildings, people, etc.
 - (iv) Any pre-requisite NOTAM requirements.
 - (v) Contact information of the drone operator, including emergency contact information for both drone and aerodrome operator.

4.6.2 For authorized use of drones at airport, airport specific training should be provided to drone operators operating for airport related requirements such as security surveillance, wildlife hazard management, calibration of navigational aids, etc. This should be in addition to the operator's license obtained from regulatory authorities.

5. Drones – Security Risks

Airport operators should be made aware of the security risks that drones of all kinds could pose to their operations.

Recommendations

5.1 States should conduct risk assessments from time to time to assess the threat level posed by drones and have a process for informing airport operators, ANSP's and aircraft operators of

the assessed threat level and both required and recommended actions or mitigations by all stake holders.

Note:

(a) Security risks associated with drones fall into two broad categories, use of drones to attack an aircraft in flight, and use of drones as weapons to attack targets in the ground, which may include aviation related targets (aircraft, airports) or non-aviation targets (crowds, events). Attacks on aviation targets whether on the ground or airborne are considered “acts of unlawful interference” to civil aviation by ICAO and are covered by the provisions of Annex 17. Sections 4.3 – 4.6 of this document are applicable to countering an act of unlawful interference using a drone.

(b) Aircraft on either arrival or departure phase are the most vulnerable to attack using a drone. The two most notable scenarios associated with small drones flown deliberately into critical aircraft components (engine, windshield) are:

- (i) Use of drone’s mass to cause damage.
- (ii) Use of a drone with an explosive device attached.

(c) Other scenarios aimed at attacking aviation using drones could include:

- (i) Delivery of a chemical, radiological or biological agent into a public area.
- (ii) Direct attack on an aircraft on the ground or airport with an explosive device.

(d) Deliberate acts which may not be considered acts of terrorism, or acts of unlawful interference might include:

- (i) Deliberate disturbance to airport operations (protest, approach/departure path interference)
- (ii) Transportation of dangerous items into restricted areas
- (iii) Espionage and surveillance of sensitive operations

(e) When an attack is likely (based on intelligence provided by the state, notification of an increased threat level or receipt of a credible threat), additional measures to facilitate early detection could include:

- (i) Increased surveillance and patrolling
- (ii) Airspace closure
- (iii) Armed response
