Concurrent OpsTech/BIT Session

Unmanned Aircraft Systems at Airports

Moderator:
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Vice President, Management & Operations, Minneapolis-St. Paul Metropolitan Airports Commission

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SEPTEMBER 15 — 17, 2019

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UAS Issues at TPA: An Airport Operations Perspective

Presented by:
Adam Bouchard
Director of Operations
Tampa International Airport
September 14, 2019

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UAS at DFW

Presented by:
Jason Byers
Assistant Chief of Police
Dallas Fort Worth International Airport
September 14, 2019

History of UAS at DFW

- Laser / Drone Notification Network
  - Law enforcement / air traffic control / airport operations coordination and communication
- DFW UAS Work Group
  - Internal / external partnership to develop procedures in support of UAS operations stood up in 2017; initial impetus was to facilitate on-airport Department of Public Safety (DPS) flight program
  - DFW-ATCT Letter of Agreement codifying on-airport UAS flight procedures was signature piece of Work Group efforts

History of UAS at DFW

- FAA Pathfinder Initiative – drone detection testing
  - Testing of the Gryphon Sensor system at DFW in April 2017
- Hosted a Gatwick debrief and information session with the help of Adam Bouchard in May 2019
- FAA Certificate of Authorization
  - FAA DPS COA facilitates on-demand flights in the Central Terminal Area (CTA)
  - Six (6) Part 107 certified pilots on staff (Police, Fire and Design, Code and Construction)
  - DFW owns six UAS devices
  - SMS SRA in association with American Airlines for flights over non-movement ramp areas

DFW UAS Certificate of Authorization

One of the first airports in the country to receive FAA authorization to operate UAS in Class B airspace

- ✈ Operations in support of law enforcement activities
  - Training flights
  - Suspicious package investigations (inside and outside terminal buildings)
  - Building search; intruder detection, etc.
  - Aerial monitoring of public-area activities
  - Support protection for special events
  - Support of our Part 139 tri-annual emergency response exercise
  - Nighttime SWAT support of suspects in large marijuana grow


PUBLIC SAFETY
DFW

DFW Drone Detection and Mitigation

Vendor approached DFW in the spring of 2018 offering a demonstration of the Aeroscope Drone Detection System

- Demonstration discussions occurred before July 2018 FAA guidance on UAS detection system demonstration or procurement
- FAA Southwest Region officials and DFW Tower/TRACON aware of demonstration
- DFW made clear this was a system demonstration only and not a procurement

DFW Drone Detection and Mitigation

Aeroscope has tracked thousands of safe flights in the DFW Metroplex since August 1, 2018

Then at approximately 1545L on January 29, 2019, a UAS was detected immediately SW of the runway 13R approach at approximately 1,000' AGL (runway was active for arrivals)

- ✈ Initiated agreed-upon notifications; ATCT stopped 13R approaches (no go-arounds)
- ✈ Airfield Operations responded airside; DFW PD and adjacent PD responded landside
- ✈ Airfield Operations closed runway for Part 139 inspection
- ✈ UAS was not visually observed airside or landside; runway reopened
- ✈ Resumed normal operations with no impacts or delays to air traffic
- ✈ Suspect has not been identified to date

ACI-NA's Involvement with UAS

Presented by:
Chris Oswald
Senior Vice President, Safety & Regulatory Affairs
ACI-NA
September 14, 2019

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ACI World's perspective on RPAS/UAS operations

Presented by:
David Gamper
Director, Safety and Tech Affairs
ACI World
15 Sep 2019

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RPAS and UAS

Remotely piloted aircraft (RPA) - part of an RPAS (system)

- Integrated into airspace for international, IFR operations
- Will require full regulatory certification

Small UAS/drones

- Generally <25 kg, commonly referred to as drones

RPAS does NOT include

Fully autonomous unmanned aircraft and their operations

Very Low Level (VLL) airspace operations (e.g. below 500 ft AGL)

Very High Level (VHL) operations (e.g. above FL600)

Urban Air Mobility

Domestic operations

Model aircraft

State aircraft (Art 3 Chicago Convention)

ACI World – current work

- World Safety & Tech Committee's Drone WG is working with all ACI regions
- ACI paper on safeguarding airport operations presented at the ICAO Aerodrome Design and Operations Panel in July, requests:
  - a concept of operations for detection and countermeasures against unauthorized drones, based on advice from national authorities.
  - a risk-based approach to facilitate authorized drone operations at or in the vicinity of the airport, as per the type and requirements of such operations.
- ACI will present working paper at ICAO Assembly next week on *"The need for standards and guidance to mitigate the risks of, and to improve response to, unauthorized UAS operations".*
- ***A detailed survey on Drone disruption is being launched – request your participation***
- ICAO UAS Advisory Group
  - UAS Traffic Management – concept and implementations
- ICAO Remotely Piloted Aircraft Systems (RPAS) Panel.
  - RPAS can be accommodated at airports only if their operations can be conducted under existing airport design and operations standards.
  - A gap analysis was conducted from an aerodrome (Annex 14) perspective and airport issues

Output to ACI members

Classification: Public

AIRPORTS COUNCIL INTERNATIONAL

The voice of the world's airports

ACI ADVISORY BULLETIN

Airport Preparedness - Drone related disruption to aircraft operations

Montreal, 25 January 2019 – The recent drone related disruption to aircraft operations in Europe and their impact on airport safety and operations have raised significant questions for airport operators around the world on how to handle such situations.

ACI considers that the highest authority for enforcement activities and initiating anti-drone measures is the relevant national authority (for example, the Civil Aviation Authority) and local law enforcement agencies. However, it is incumbent on all industry stakeholders to be prepared to protect the safety and regularity of aircraft operations in coordination with their competent authorities and law enforcement agencies. All these parties, including drone operators, should be aware of national laws and regulations pertaining to drones with an understanding that these may reside outside of civil aviation.

A number of jurisdictions consider drones to be "aircraft", which may make any interference unlawful.

This Advisory Bulletin proposes that ACI members initiate dialogue with their national authorities and local law enforcement agencies on a risk-based approach taking into account the impact on aircraft operations and available mitigations including anti- drone measures. A concept of operations should be drawn up in advance, stating how a sighting or detection will be classified, what action will be taken, and by whom. For the purpose of this bulletin, anti-drone measures include:

a) Surveillance/detection systems and procedures, and
b) Suppression/neutralization systems and procedures.

Note, this bulletin enlarges on the Advisory Bulletin published in July 2016 and Policy Paper published in July 2018, which contained advice for airport operators.

They can be accessed at https://aci.aero/about-aci/priorities/safety/ .

The guidance below are largely drawn from section 4.3 (Drone enforcement), 4.5 (Drone operations at or in the vicinity of airports) and 5.0 (Drones – security Risks) of the Policy Paper.

AIRPORTS COUNCIL INTERNATIONAL

29WAGA-HKG19-15
29th ACI World Annual General Assembly
Hong Kong, China, 4 April 2019

Agenda item 15

Agenda item 15 – Approval of Resolution urging member airports to take measures to protect themselves from unwanted drones

The Resolution below has been approved by the Governing Board and is submitted to the General Assembly for approval.

Action by the General Assembly

The General Assembly is invited to approve the Resolution, as follows:

RESOLUTION No. 3

The Twenty-ninth ACI World Annual General Assembly:

Noting that the reported drone sightings at London Gatwick Airport in December 2018 and at London Heathrow Airport and Newark Liberty International Airport, resulting in temporary or partial cessation of operations, were only the most widely-publicised of a series of incidents which have created major and costly disruption;

Noting that avoidance of risks to the safety of aircraft is the top concern when a drone is sighted, but preparations can be made for such eventualities in coordination with national and local authorities;

Noting that the best approach to preparing for and dealing with drone-related issues is to create a plan and be ready to execute it;

Noting that National authorities and local law enforcement agencies should be the authority in addressing both preparation and enforcement of anti-drone measures;

Resolves to:

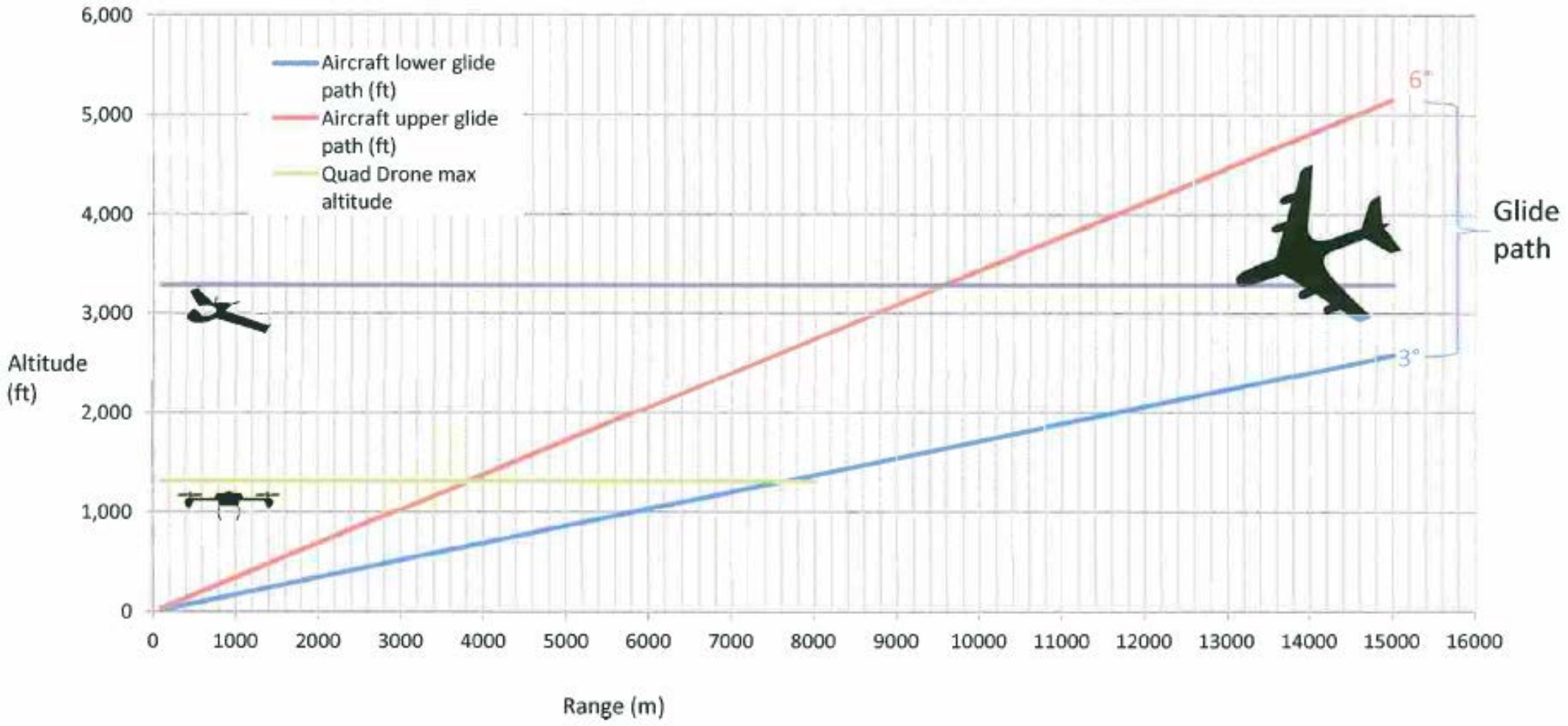
a) Requests all industry stakeholders to work with the relevant governmental agencies and authorities to act to protect the safety of aircraft operations;

b) Suggests that airport operators:
   - Coordinate with national authorities on the boundaries of "No Drone Zones" to be established on and in the vicinity of the airport, especially approach and take-off flight paths.
   - Coordinate with authorities on regulations governing the operation of drones in the vicinity of the airport.

[1] anti-drone measures include:
a) Surveillance/detection systems and procedures, and
b) Suppression/neutralization systems and procedures

Aircraft vulnerability – area at risk

Graph of aircraft height (ft) and range (m) related to typical drone intercept altitude



Key messages – unauthorized drones

- Meeting the growing threat of drone incursions into airspace around airports requires collaboration between aviation stakeholders and government to create procedures, set rules, and devise regulations that safeguard airports, passengers and the public.

- These regulations should facilitate a) detection of unauthorized UAS operations and b) development of effective UAS countermeasures, in the interest of aviation safety, and should be globally harmonized so that manufacturers can build in consistent capabilities

- We encourage airports to initiate dialogue with their national authorities and local law enforcement agencies, on a risk-based approach, and

- to draw up procedures for anti-drone measures at airports in advance, stating how action on a sighting or detection will be taken, and what action will be taken and by whom

ICAO Unmanned Aircraft Systems Advisory Group (UAS-AG)

- Develop guidance material to assist States in providing services for UAS operations, particularly in urban environments.
- A common agreement on the framework and core boundaries of UTM systems will facilitate harmonization between UTM systems globally.
- Enable industry, including manufacturers, service providers and end users, to grow safely and efficiently without disrupting the existing manned aviation system.
- Develop training and outreach material in order to educate regulators, industry stakeholders and civil operators.
- establish a balanced long-term approach towards the safe operation of UAS in national airspace systems.

✈ Draft UTM framework document:

✈ UTM – A Common Framework with Core Boundaries for Global Harmonization

UAS Traffic Management – Common Framework

- Common Framework for UTM
  - 1. Definitions
  - 2. Abbreviations
  - 3. Foreword
  - 4. Scope
  - 5. UTM Principles
  - 6. Enabling/Complimentary Activities
  - 7. List of Services
  - 8. Gaps/Issues/Challenges
  - 9. Summary of Conclusions
- Appendices - Key Technical Areas
  - A. Registration, Identification and Tracking
  - B. Communications Systems
  - C. Geofencing-like Systems
  - D. Potential UTM Framework Diagrams

ICAO UAS Advisory Group work

- Drone Enable/3, ICAO's UAS Industry Symposium to be held from 12 to 14 November 2019
- Industry inputs received through RFI for problem statements on:
  - Development of a UTM Safety Risk Assessment Model
  - Contingency Operations
  - Deconfliction and Separation Management
  - UTM Service Suppliers' (USS) organizational construct and approval processes
  - Selected RFI will be presented during Drone Enable/3

Airport Use Cases (outside ICAO scope)

Use Case	Regulatory Requirements	Operational Situation	Financial Considerations	Other/Remarks
Pavement inspections	Need to take account of ICAO and EASA requirements	Creates a geo-referenced image of runway with extremely high resolution Basis for detailed assessment of pavement conditions report and associated interactive maps contain all identified distress areas increase safety for operating aircraft	Preventive maintenance actions enable the airport to extend the lifetime of the pavement Reduce costs Quantified costs and savings, concluding that greater benefits achieved with Level 3 pavement inspections	Operational concept and safety case were developed to be validated by the local Air Navigation Service Provider and the drone service provider
ILS/PAPI Calibration	Instrument Landing Systems have to be calibrated every six months	Currently performed by means of calibration flights operated at various heights and angles by aircraft with specialized equipment	Drones employed to check the ILS - considerably reduced costs (50%) Reduce the impact on the environment (less emissions)	

Airport Use Cases (2)

Bird Control		Use of drone for bird prevention (Robird) Flight performance comparable and indistinguishable to a real peregrine falcon Geocage is a volume of airspace defined by GPS locations and height limitation		Only safety assessment and trials so far Regular maintenance intervals after a certain number of flight hours, number of flights, or time. Pilots never fly beyond visual line of sight. RoBird® has also been equipped with internal fail-safes that prevent the tool itself from becoming a hazard on the job.
Aircraft external inspection		Provide quality experts with high-precision photos of aircraft in less than 15 minutes. Experts are able to analyze the photos and generate quality reports using Airbus' software suite, which Airbus says helps to improve traceability, prevention and reduction of damage.		

Airport Use Cases (3)

Asset management		Perimeter fence inspections Building inspections Building site inspections	Replaces or complements manual inspection activities.	Building inspections would have required scaffolding.
Surveillance	Airport inspection includes many routine tasks such as frequent border surveillance of airport fences, wild animal detection	Streaming live video to personnel for supervision	Airport inspection is time and labour intensive. Reduces emissions from fossil fueled vehicles	
Emergency Services		Applications for airport fire department: Capturing images of different situations in the event of large-scale emergencies		

ICAO RPAS Panel

- **Remotely Piloted Aircraft Systems Panel (RPASP)**
  - Working since 2014 to produce standards
  - Manages the work program

ICAO RPAS Panel

- **Panel Leadership**
  - Chairman: **Randy Willis**
  - Vice-Chairman: **Mike Lissone**
- **Working Groups and Rapporteurs**
  - WG 1 – Airworthiness: **James D. Foltz & Ailton Jose de Oliveira Jr.**
  - WG 2 – C2 Link: **Dominique Colin & Michael Neale**
  - WG 3 – Detect and Avoid: **Hans Böhlin & Hette Hoekema**
  - WG 4 – Remote Pilot Licence: **Henri Rodenburg**
  - WG 5 – RPAS Operations: **Gerry Corbett & Ron van de Leijgraaf**
  - WG 6 – ATM Integration: **John Walker & Brian Guimond**
  - WG 7 – Human in the System: **Jay Shively & Fiona Cayzer**
  - RPASP/SMP Joint TF: **Andrew Ward & Raimund Kamp**

ICAO RPAS Panel

- **Develop**
  - Standards and Recommended Practices (SARPs)
  - Procedures and guidance material
  - Facilitate safe, secure and efficient integration of remotely piloted aircraft (RPA) into non-segregated airspace and aerodromes
- **Maintain**
  - Existing level of safety for international manned aviation
- **Priority**
  - Instrument flight rules (IFR) operation
  - In controlled airspace