MANAGEMENT OF DRONE OPERATIONS IN ATM

A PRESENTATION BY ATM TO DRONE STAKEHOLDERS AWARENESS WORKSHOP

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Definitions cont'd

Drone- Is a generic term meaning an unmanned aircraft.

Unmanned Aircraft (UA) - An aircraft which is intended to operate with no human pilot on board, as part of an Unmanned Aircraft System. Moreover a UA:

- is capable of sustained flight by aerodynamic means;
- is remotely piloted and/or capable of degrees of automated or autonomous operation;
- is reusable; and
- is not classified as a guided weapon or similar one-shot device designed for the delivery of munitions.

Note: RPA is considered a subset of UA.

Definitions

Unmanned Aircraft System (UAS) - An Unmanned Aircraft System comprises individual 'System Elements' consisting of the Unmanned Aircraft (UA) and any other System Elements necessary to enable flight, such as a Remote Pilot Station, Communication Link and Launch and Recovery Element. There may be multiple UAs, RPS or Launch and Recovery Elements within a UAS.

Remotely Piloted Aircraft Systems (RPAS)- A remotely piloted aircraft, its associated remote pilot station(s), the required command and control links and any other material relevant to the operation of the remotely piloted aircraft system.

Definitions cont'd

Air Traffic Management (ATM)- Is an aviation term encompassing all systems that assist aircraft to depart from an aerodrome, transit airspace, and land at a destination aerodrome, including Air Traffic Services (ATS), Airspace Management (ASM), and Air Traffic Flow and Capacity Management (ATFCM).

Visual Line of Sight (VLoS)- An operation in which the remote pilot or RPA observer maintains direct unaided visual contact with the remotely-piloted aircraft. (refer to BVLOS)

Unmanned Aircraft Systems Traffic Management (UTM) – Is a developing concept to provide traffic management to UAS.

Operational process

Regulatory/DSSER requirements:

a) Conditions attached include contacting ATM

b) Operator provides information regarding the intended operations

- Altitudes
- Maps
- time/hours of work and duration

c) ATM coordinates with Military authorities to verify Operator information

d) ATM to issue NOTAM for any operations that could affect civil air (manned) operations.

e) Updates the Airspace Management System (AMS) to update all controllers by plotting area and activating safety nets

Operational process

In uncontrolled airspaces;

a) Notification
b) Segregated airspace
c) Transponder
d) Open communication channel between pilot and ATM

In controlled airspaces;

a) Notification by NOTAM
b) Operator/Pilot training
c) Transponder
d) Two way communication channel with ATM

Examples of recent operations

Mineral Exploration – Great Rift Geosciences SMC Ltd (western UG) 2019

Tea farmer mapping – Geo Information Communication Ltd (Western UG) 2019

Nile River Festival –m BBC Natural History Unit 2017

Land survey BIDCO Uganda Ltd (Kalangala Islands) 2017

Military exercises

Challenges faced by ATM

a) Harmonization of regulatory requirements and operation as Industry is ahead of oversight agencies
b) Operators do not have continuous contact ATM
c) Operator data provided not standard
d) Clearance from government not complete -to be completed after coordination with Military and ATM
e) Lack of streamlined coordination with security agencies: - coordinate with UPDF, MoDVA, SFC, JSC….
f) Short notices between dissemination of clearance and start of operations
g) Lack of appropriate transponders by drone operators (DAA in controlled airspaces)

Industry Best practices

a) Classification of drones based on VLOS, purpose, payload and weight
b) Delineation and publication of UAV airspace
c) Pilot training and certification
d) Flight planning of all operations
e) Maintain two way communication with ATM
f) Apply standard Radio telephony
g) Conduct cost benefit analysis regarding investment in the industry
h) Customer based oversight of operations (website; one stop center)
i) SMART regulations (Modern, in touch with consumers, simplified and with stakeholder inputs)

Some ATM considerations for regulation

a) Publish Airspace restrictions to be clear of aircraft flight paths and aerodromes

b) Streamlining of coordination and approval process

c) Enforcement of regulations/coordinated enforcement

d) UAVs to be classified and restrictions put according to class

e) UAV pilot should undergo same certification criteria as normal pilots if to operate in controlled airspaces

f) UAV equipment to meet minimal requirements of communication and surveillance especially Mode ‘C’ transponders

References

Doc 10019 – Manual on Remotely Piloted Aircraft Systems

CAP 1763 – Air Navigation Order 2018 & 2019 Amendment: Guidance for small unmanned aircraft users

TP 15395 – Flight Reviewer's guide of Pilots of RPAS 250 grams – 25 KG operating with VLOS

CAP 722 - Unmanned Aircraft System Operation in UK airspace guidance

Part 102 – Unmanned Aircraft operator certification New Zealand CAA

Part 107 – FAA Drone Regulation 2019

Thank you