



International Civil Aviation Organization

MIDANPIRG Air Traffic Management Sub-Group

Third Meeting (ATM SG/3)
(Cairo, Egypt, 22 – 25 May 2017)

Agenda Item 6: ATM Safety Matters

REMOTELY PILOTED AIRCRAFT SYSTEMS (RPAS)

(Presented by the Civil Air Navigation Services Organization (CANSO))

SUMMARY

Remotely Piloted Aircraft System (RPAS) operations are spreading beyond the original military applications, towards other State non-military activities (e.g. police, coast guard and similar), but also into civil aviation.

CANSO's RPAS and Emerging Technologies Workgroup (RPAS/ET WG), developed and published an AS information document.

CANSO information document is designed to promote awareness, to provide examples and to raise some the issues that ANSPs need to consider when integrating RPAS into their airspace.

Action by the meeting is at paragraph 6.

REFERENCES

- CANSO ANSP Considerations for RPAS Operations, information document
- ICAO Annexes 2, 7 and 13
- ICAO Circular 328, Unmanned Aircraft Systems (UAS)

1. INTRODUCTION

1.1 Remotely Piloted Aircraft Systems (RPAS) have been increasing operations, hence, requiring greater access to airspace and interacting with the ATM system. RPAS have a variety of shapes, sizes, equipage, and performance capabilities. They range in weight from a few grams to several tons and can operate at altitudes from near the surface to the edge of space.

1.2 Accepting a large number of RPAS into the ATM system poses many challenges and, from an ANSP point of view, integration of RPAS in non-segregated airspace is of particular interest.

1.3 One of the key issues that the ATM industry is currently undertaking is how best to incorporate Remotely Piloted Aircraft Systems (RPAS) seamlessly, efficiently and safely, into global air traffic management.

1.4 International regulations and standards require that any new system, procedure or operation that has an impact on the safety of ATM operations shall be subject to a risk assessment and mitigation process to support its safe introduction and operation. The goal of safely integrating RPAS seamlessly into the ATM system with other airspace users is subject to standard Safety Management System (SMS) principles.

1.5 ANC during its 196th Session in May 2014 established the RPAS Panel to replace the Unmanned Aircraft Systems Study Group (UASSG). The main objective of the RPAS Panel is to develop SARPs, procedures and guidance to facilitate safe, secure an efficient integration of Remotely Piloted Aircraft (RPA) into non-segregated airspace and aerodromes, maintaining the existing level of safety for manned aviation, with priority to Instrument Flight Rules (IFR) operations in controlled airspace. CANSO are among the 34 panel members and are actively contributing to the work programme and its deliverables.

2. DISCUSSION

2.1 An RPA is an aircraft piloted by a licensed 'Remote Pilot' situated at a 'Remote Pilot Station' (RPS) located external to the aircraft (i.e. ground, ship, another aircraft, space) who monitors the aircraft at all times and can respond to instructions issued by Air Traffic Control (ATC), communicates via voice or data link as appropriate to the airspace or operation, and has direct responsibility for the safe conduct of the aircraft throughout its flight.

2.2 Air traffic management (ATM) integration of RPAS will be safely achieved when routine access by RPAS operations into non-segregated airspace, is transparent to ATS providers. Therefore, the remote pilot will be required to respond to ATS guidance or requests for information, and comply with any ATC instruction (e.g., fly headings, altitudes, Nav aids and Waypoints and comply with standard IFR approach and departure procedures), in the same way and within the same timeframe as the pilot of a manned aircraft.

2.3 The development of unique procedures for RPAS should be kept to a minimum, however experience shows that due to RPAS' unique attributes, such as the communications link and lack of an approved Detect and Avoid (DAA) system, at least some new or contingency procedures may be required.

2.4 Ideally, RPAS would require no special handling from ATC and, therefore, would not require any additional ATC phraseology. However, the standards for certification of RPAS has not matured enough to be considered as normal ATC operations, especially for contingency operations because of the unique nature of individual RPAS. There is currently no approved, standard RPAS-related ATC phraseology, and this will have to be developed and agreed prior to operations.

2.5 RPAS emergency procedures should mirror those for manned aircraft as far as practicable. However, because of their unique attributes (mainly, although not exclusively, because the pilot is not on-board), in some cases new procedures will have to be developed by ANSPs to accommodate RPAS. Importantly, ICAO recognizes that ANSPs will need to review contingency and emergency procedures to take account of unique RPAS failure modes such as loss of the command and control (C2) link.

2.6 CANSO's RPAS and Emerging Technologies Workgroup (RPAS/ET WG) members from the ANSP and the Industry worked together and developed the CANSO Document "the ANSP Considerations for RPAS Operations". And completed the training module to provide ANSPs with a high-level overview of RPAS operations from an ANSP perspective .the training module includes information on the operation of RPAS, unique terminology, contingency operations, and much more

2.7 The CANSO ANSP Considerations for RPAS Operations information document can be downloaded via the CANSO public link: <https://www.canso.org/ansp-considerations-rpas-operations>

3. *MEAUSE Annual Workshop Forum 2016*

3.1 At the MEAUSE Annual Workshop Forum took place in Cairo, Egypt on 3-4 April 2016 and was attended by 64 participants (three airlines, seven ANSPs, three airports, four international organisation (IATA, ICAO, CANSO, IFATCA), and seven suppliers). RPAS and drones was the first interactive multi-stakeholder session to take place at the regional level to address the challenges and the opportunities accompanied UAV /Drones operations.

3.2 The session concluded with the following results:

- The global commercial unmanned aerial vehicle (UAV) market is expected to reach US\$ 2.07 billion by 2022.
- RPAS are coming, therefore, they cannot be ignored or banned, and their safe integration into airspace requires legislative and regulatory frameworks as well as education and awareness.
- The ATM industry needs to understand the unique opportunities and challenges that these users of rapidly developing new technology will bring.
- All stakeholders (States, organizations, ANSPs, regulators, airlines, military, industry, etc.) should continue to work together collaboratively for the safe and efficient integration of RPAS, taking into consideration the complexity and capacity of the airspaces.
- Full report of the event can be found at : <https://www.canso.org/sites/default/files/MEAUSE%20Annual%20Workshop%20Forum%202016%20Post-Event%20Report.pdf>

4. *Safe and Efficient Integration of RPAS into ATM Operations*

4.1 October 2016, the CANSO ATM safety conference held in Budapest, declared its commitment to the development of seamless, safe and efficient airspace and is dedicated to ensuring ANSPs are equipped with the tools to safely and seamlessly integrate RPAS into global ATM. From the perspective of an ANSP, integrating RPAS into non-segregated airspace is of special interest. CANSO took the responsibility to lead the way towards a safe integration of RPAS in the global airspace by focusing on training materials and standardising contingency/emergency procedures while ensuring the safety and efficiency of aviation operations, which poses a unique challenge.

5. *Future Global And Regional RPAS Activities*

5.1 Following the success of the first RPAS (Remotely Piloted Aircraft Systems) symposium in 2015, ICAO will be hosting the second RPAS Symposium in Montreal on September 12-14, 2017 where CANSO will be actively participating in the Symposium and providing a briefing on progress being made toward RPAS integration, in addition to its support to the First MID RPAS Workshop, planned to be organized in the region from 11 to 13 December 2017.

6. **ACTION BY THE MEETING**

6.1 The meeting is invited to:

- a) raise awareness of RPAS Operations to ANSPs;
- b) encourage ANSPs to accommodate RPAS safely into ATM Operations;
- c) identify issues to be addressed to achieve RPAS integration; and
- d) encourage CAAs and ANSPs to look into the CANSOs RPAS document.