International Civil Aviation Organization

MIDANPIRG/19 and RASG-MID/9 Meetings

(Riyadh, Saudi Arabia, 14-17 February 2022)

Agenda Item 3.3: Air Navigation Subjects of interest to RASG-MID including RVSM Operations and Monitoring

UASs

(Presented by the Secretariat)

SUMMARY

This paper presents a progress report related to the RPAS/UTM Action Group, and highlights the potential impact of RPAS operation on ICAO-compliant aeronautical surveillance equipment in dense airspaces. In addition the paper presents the benefits of the UASs integration in Aerodromes Operations and Airspace.

Action by the meeting is at paragraph 3.

REFERENCES

- MIDANPIRG/17 & RASG-MID/7 Meeting Report (Cairo, 15 – 18 April 2019);
- MIDANPIRG/18 and RASG-MID/8 Meetings Report (virtual, 15 - 22 February 2021).
- ICAO ADS-B Webinar (16-17 November 2021)
- ICAO DOC 9924 - Aeronautical Surveillance Manual

1. INTRODUCTION

1.1 The meeting may wish to recall that the MIDANPIRG/17 & RASG-MID/7 encouraged States to consider the developments related to RPAS, and take necessary measures for the establishment of the required legislative and regulatory framework to ensure safe integration of the RPA into the non-segregated (shared) Airspaces. The meeting urged States to report any safety occurrence related to RPA operations to the ICAO MID Regional Office on regular basis; and encouraged States to use the guidance material related to RPAS provided in the ICAO Doc 10019 and the information available on the ICAO RPAS Toolkit under the secure portal: https://www4.icao.int/rpas.

1.2 The meeting may wish to recall the discussion during MIDANPIRG/18 & RASG-MID/8 Meeting, in particular the PPT/5, WP/43 and IP/6 presented by the Secretariat, UAE and United State, respectively. The meeting recognized that the emergence of Remotely-Piloted Aircraft System (RPAS) with new applications and new aircraft operations is changing the way airspace is configured and managed; and

States are facing an increasing challenge to ensure safe integration of the RPAS into the non-segregated (shared) Airspace.

1.3 The meeting agreed that overall, the available guidance material for UTM implementation offers a basic starting point, while the rapid growth of RPAS creates an urgency for the States to plan and start the implementation of their UTM systems.

1.4 Based on the above, the meeting agreed to the establish an Action Group to strengthen the collaboration between States and stakeholders for an orderly growth of unmanned air traffic; and to provide necessary guidance to States related to Unmanned Traffic Management (UTM) and agreed to the following Decision:

PIRG/RASG MID DECISION 1: RPAS/UTM ACTION GROUP

That, the RPAS/UTM Action Group be:

a) established to support the development of UTM Capabilities in the MID Region, harmonize the integration of RPAS/UAS operation and provide feedback to the ATM SG, ASRG and SEIG; and

b) composed of the Chairpersons of the ATM SG, ASRG and SEIG; and
- *Mr. Mohamed Zainal from Bahrain*
- *Mr. Ahmed Saeid and Ehab Raslan from Egypt*
- *Mr. Ali Aezami from Iran*
- *Mr. Nedal Raboey, and Mr. Alwaleed Alenezi from Saudi Arabia*
- *Mr. Mohammed Khamis Al Baloushi from UAE*
- *Ms. Elisabeth Walker and Mr. Chris Swider from FAA*
- *Mr. Benjamin Ivers from Boeing*
- *Ms. Sharron Caunt, Mr. Jihad Faqir and Ms. Zainab Khudhair from IATA*
- *Mr. Shayne Campbell from CANSO*
- *ICAO MID*

1.5 The meeting agreed that the above Decision would be revisited by MIDANPIRG/19 to assess the need for the establishment of an RPAS/UTM Task Force based on the progress made and the latest developments.

2. DISCUSSION

2.1 The meeting may wish to note the increased need to safely integrate the operations of UAS in the civil aviation framework, by introducing relevant regulations and operational requirements of the different UAS applications. New types of flight profiles and performance criteria is assumed by the UAS operations is not accommodated by the current airspace modelling and Air Traffic Management principles.

2.2 The meeting may wish to note, that there was no progress related to the activities of the RPAS/UTM Action Group established by MIDANPIRG/18, due to other higher priorities and COVID-19 related issues.

2.3 The meeting may wish to recall the operational benefits of the different applications of UAS; benefiting from the advantages of the operational costs of the remotely operated or autonomous system. And the different services that UAS provides including, but not limited to, aerial inspection and

surveillance, Search and Rescue operations and NAVAIDs calibration. And other non-aviation related operations including remote sensing, civil infrastructure inspection, delivery services, security and surveillance, precision agriculture, etc.

2.4 However, the increased demand is leading to an increase in airspace infringements, by the unauthorised RPAS operations which are introducing an increased safety and security hazard noticeable across the Region and worldwide, impacting the civilian airspaces, aerodromes and the related infrastructure.

2.5 The meeting may wish to note that ICAO MID has included on its Work Programme for the year 2022:

a) The Civil-Military Cooperation Webinar (13 – 16 Jun 2022) which includes in its tentative agenda the Drones - Airspace Management Applications; and

b) Drone Symposium (Casablanca, 7 – 9 Dec 2022).

2.6 Failure to address the need for UTM will result in uncontrolled UAV traffic growth with associated uncoordinated operational management and splintered system implementation

2.7 The meeting may wish to note the increased number of un-peaceful operations related to drones report in the Region, which been frequently reported during the recent period.

RPAS Operation impact on Aaeronautical Surveillance Equipment

2.8 The ADS-B Webinar addressed the issue of 1090 MHz congestion, the increasing density of ground-based and on-board surveillance systems using the 1030/1090 MHz frequencies is currently raising concerns on congestion of 1090 MHz and shortage of 24-bit aircraft addresses. The rapid growth in the number of unmanned aircraft (UA) is making those concerns more severe. Ultimately it may result in a reduction to the overall performance of ACAS as well as the SSR/MLAT and ADS-B systems.

2.9 The meeting may wish to note that even low power transmission from large number of UAs can reduce ADS-B coverage range. Several studies indicated that key parameters are RPAS ADS-B transmission power and RPAS traffic density, so widespread ADS-B equipage by RPAS does not appear to be a feasible alternative.

2.10 The 24-bit aircraft address scheme was not designed for a very large number of aircraft, based on projected growth of UAs numbers, it will be impossible to accommodate all UA in the current scheme.

2.11 In some situations UA may require a 24-bit aircraft address, for instance if the UA fly in controlled airspace or in proximity to traditional manned aircraft. States will need to evaluate such situations on a case-by-case basis when receiving a new aircraft address application from the UA community. in cases where UA are not required to equip with ICAO-compliant aeronautical surveillance equipment, States should not allocate 24-bit aircraft addresses.

UASs Integration in Aerodrome Operations

2.12 The meeting may wish to note that Unmanned Aircraft Systems are viable tools for commercial or non-recreational purposes as UASs can enhance the efficiency of the Aerodrome operations, with minimal impact on them. The meeting may wish to highlight that public and private authorities are

now seeing the numerous benefits of this technology and using UAS to conduct unmanned aerial missions for law enforcement, search and rescue, and Aerodrome inspections.

2.13 The meeting may wish to recognize that Airport Operators are seeking to use UASs to benefit from the UASs services from airfield inspections and emergency response to applications in wildlife mitigation.

2.14 The meeting may wish to note that pertinent data that can be collected using UASs, which could completely transform the way airport operators perform work in their facilities as UASs can:

- provide accurate and efficient mapping in hours rather than days;
- examine graded Runway Strips;
- monitor pavement slopes and condition;
- survey Aerodrome layout and infrastructure;
- assess Movement Area Makings;
- control Works Areas; and
- check landing/take off areas vs. potential obstacles (hazard identification).

2.15 The meeting may wish to highlight that the integration of UASs in day-to-day Aerodromes Operations is a challenge, which needs an appropriate regulatory framework scaled to integrate properly and safely UASs into the Aerodrome Airspace.

3. Action by The Meeting

3.1 The meeting is invited to:

a) agree that the RPAS/UTM Action Group continue its works in 2022 and presented its initial outcomes to MIDANPIRG/20;

b) encourage States and ORGs to actively participate in the Drone Symposium and CMC/FUA Workshop planned in 2022;

c) urge States with dense airspace to perform radio frequency spectrum analysis to:

i) analyse the degree of congestion of 1090 MHz and to consider how 1090 MHz ADS-B UA operations might impact the performance of the ANSP-operated surveillance; and

ii) define procedures to determine the potential requirement for ADS-B equipage on UA in order to allow or prohibit such equipage as appropriate;

d) encourage States to proactively assess and evaluate their future needs on UASs integration in Aerodromes Operations and Airspace, as deemed necessary.

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