



International Civil Aviation Organization

**MIDANPIRG/21 & RASG-MID/11 Meetings**

*(Abu Dhabi, UAE, 4 – 8 March 2024)*

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**Agenda Item 5.3: ANS (AIM, PBN, AGA-AOP, ATM-SAR, CNS and MET**

**SEPARATION OF UNKNOWN TRAFFIC WITHIN CIVILIAN AIRSPACE**

*(Presented by United Arab Emirates)*

**SUMMARY**

This paper presents the increased integration of unmanned aerial systems (UAS) and potential unidentified aerial vehicles poses a safety concern in civil airspace. The absence of specific guidelines. Related to minimum separation from unknown traffic creates ambiguity for states. Addressing this gap is crucial to ensure air traffic safety and regulatory clarity, making it an essential subject for exploration and potential guidance development.

Action by the meeting is at paragraph 4

**REFERENCE**

- ANNEX 11
- DOC 4444 PANS-ATM

**1. INTRODUCTION**

1.1 The integration of unmanned aerial systems (UAS) into civilian airspace, along with the potential presence of unidentified aerial vehicles, necessitates a comprehensive exploration of guidelines for ensuring air traffic safety and regulatory clarity. This working paper addresses the challenges associated with the absence of specific guidelines related to the minimum separation from unknown traffic. The objective is to initiate discussions and propose potential solutions to address this critical gap, emphasizing the need for international collaboration.

1.2 As unmanned aerial systems (UAS) become increasingly integrated into civilian airspace, concerns about encountering unidentified aerial vehicles pose safety challenges. The lack of explicit guidelines for minimum separation from unknown traffic creates ambiguity and raises the urgency to develop clear and standardized procedures. This working paper aims to explore the need for guidelines and potential solutions to enhance air traffic safety and regulatory clarity.

## 2. DISCUSSION

2.1 The emergence of unidentified unmanned aerial vehicles (UAVs) in civilian airspace presents unique and unprecedented challenges for air traffic control (ATC) systems. These UAVs, whose operations, intentions, and trajectories are unknown to ATC, create potential risks and disrupt the established order of airspace management. Unlike traditional aircraft, these UAVs are not under ATC guidance, making it nearly impossible to apply standard separation norms. This section delves into the multi-faceted challenges posed by these unidentified UAVs and explores potential strategies to mitigate their impact on airspace safety and efficiency.

2.1.1 Lack of Standard Separation Protocols: The absence of established separation standards for unidentified UAVs poses a significant safety hazard. Standard ATC procedures rely on known flight plans and controlled trajectories, which are not applicable in the case of these UAVs.

2.1.2 Detection and Identification Challenges: The difficulty in detecting and accurately identifying these UAVs exacerbates the problem. Current radar systems and air traffic management technologies may not always be capable of tracking these small or low-flying objects.

2.1.3 Risk Assessment and Mitigation: Assessing the risk posed by unidentified UAVs is challenging due to their unpredictable nature. This necessitates the development of new risk assessment models that take into account the unique characteristics of these UAVs.

2.1.4 Regulatory and Policy Implications: The presence of unidentified UAVs in airspace also raises questions about regulatory gaps. There's a need for international consensus on how to handle these situations, which currently fall outside the scope of most existing aviation regulations.

2.1.5 Technological Solutions: Advancements in technology may offer solutions, such as enhanced surveillance systems capable of detecting and tracking UAVs, and AI-driven algorithms for dynamic airspace management.

2.1.6 International Collaboration for Harmonized Response: Given the global nature of air travel, international collaboration is crucial in developing a unified approach to manage the risks associated with unidentified UAVs. This includes sharing data, research, and best practices.

2.1.7 The lack of clear guidelines for minimum separation from unidentified UAVs in civilian airspace presents significant challenges for state aviation authorities. This uncertainty poses risks to airspace safety and efficiency and complicates the decision-making processes for air traffic controllers. Without standardized approaches, controllers face difficulties in managing potentially disruptive UAVs, leading to inconsistent and potentially unsafe responses.

2.1.8 Legal and liability concerns also arise due to the absence of defined standards, complicating the management of incidents involving unknown traffic. This situation can impact insurance and responsibility determinations, adding another layer of complexity.

2.1.9 Technological innovation plays a crucial role in addressing these challenges. Advanced detection and monitoring systems capable of identifying and tracking unknown traffic are essential. These systems could equip air traffic controllers with the tools necessary for more effective management of these unpredictable situations, and could significantly improve airspace safety.

2.2 The importance of regulatory clarity in managing civilian airspace is paramount for ensuring consistent and safe operations. Clear regulations instill confidence among airspace users and regulatory authorities alike. This is especially crucial in the context of managing unidentified UAVs, where ambiguity can lead to safety risks and operational inefficiencies. Establishing clear, universally accepted guidelines and standards is essential for the safe coexistence of different types of airspace users. It fosters a more predictable and secure environment, enhancing overall airspace safety and efficiency.

2.3 Exploring the implementation of risk-based approaches to separation in airspace

management is crucial, especially when dealing with unidentified UAVs. Such approaches should consider various factors, including airspace density, the type of mission being conducted, and the equipment used by the aircraft.

2.4 In situations where air traffic control (ATC) cannot control or determine the intentions of one aircraft, such as with unknown UAVs, it is unreasonable to hold them responsible for separation. This disadvantage highlights the need for improved technological solutions. Enhanced detect-and-avoid systems and advanced surveillance technologies are more appropriate for ensuring safety in these scenarios. By relying on such technologies, the burden on ATC can be alleviated, and a more effective and safer management of airspace can be achieved.

2.5 In the interim, there is a strong need to encourage international collaboration for establishing common standards and procedures for separation from unknown traffic. This collaboration is crucial for fostering harmonized approaches globally. Such unified standards would ensure a consistent response to unknown UAVs, enhancing safety and predictability in international airspace. This collective effort would greatly contribute to the development of effective and universally accepted protocols for managing the risks associated with unidentified aerial systems.

### **3. CONCLUSION**

3.1 In conclusion, the integration of unmanned aerial systems and the potential presence of unidentified aerial vehicles in civilian airspace demand urgent attention to ensure air traffic safety and regulatory clarity. The absence of specific guidelines related to the minimum separation from unknown traffic creates challenges for states, necessitating proactive exploration, and potential guidance development.

3.2 There is an urgent need for advocacy at the international level to establish clear, universally accepted separation standards for unknown traffic. This would create a consistent framework for managing such situations globally, enhancing the safety of all airspace users.

3.3 This working paper aims to initiate discussions and collaboration toward addressing this critical gap, emphasizing the importance of international cooperation in developing standardized approaches for the separation of unknown traffic within civilian airspace

### **4. ACTION BY THE MEETING**

4.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) agree to establish a dedicated working group tasked with conducting a thorough review of the existing ICAO SARPs pertaining to the separation of unknown traffic within civilian airspace. The working group will collaborate on drafting comprehensive proposed separations to be endorsed in key aviation documents, including:
  - o Annex 2
  - o Annex 10, Vol. II
  - o Annex 11
  - o ICAO Doc 4444 (PANS-ATM)