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WORKING PAPER

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Miami, United States, 28 to 31 July 2025

Agenda Item 5: ANS Planning and Innovation

INTEGRATION OF UNMANNED AIRCRAFT SYSTEMS (UAS) INTO AIR NAVIGATION OPERATIONS IN THE EASTERN CAR REGION

(Presented by Secretariat)

EXECUTIVE SUMMARY

This working paper presents the outcomes and recommendations stemming from the ICAO NAM/CAR/SAM Workshop on UAS/RPAS Operations, Challenges and Opportunities, held in Mexico City from 17 to 19 June 2025, and builds upon the discussion from the NACC/WG/8 Meeting. The paper outlines the current state of UAS/RPAS integration in the region, highlights the regulatory and operational challenges, and proposes strategic actions to facilitate safe, efficient, and harmonized unmanned aircraft operations across the Eastern Caribbean.

Action:	Suggested action under item 5.
Strategic Objectives:	• Safety • Air Navigation Capacity and Efficiency • Security & Facilitation • Economic Development of Air Transport • Environmental Protection
References:	• NAM/CAR/SAM Workshop on UAS/RPAS Operations, Challenges and Opportunities, Mexico City, Mexico. 17 to 19 June 2025

1. Introduction

1.1 The integration of Unmanned Aircraft Systems (UAS), including Remotely Piloted Aircraft Systems (RPAS), represents a significant evolution in civil aviation, offering innovative solutions for sectors such as agriculture, emergency response, surveillance, and infrastructure inspection. However, this evolution also presents regulatory, operational, and technical challenges that must be addressed to ensure safe and harmonized integration into existing air navigation systems.

1.2 Recognizing the rapid development and increased use of UAS in the North American, Central American and Caribbean (NAM/CAR) Regions, the ICAO NACC Regional Office hosted the Workshop on UAS/RPAS Operations, Challenges, and Opportunities from 17 to 19 June 2025. The workshop brought together 260 participants from 29 States/Territories and 5 international organizations, both in person and online, to analyze the current landscape of unmanned aviation and to propose coordinated regional actions.

1.3 This working paper consolidates key findings from the June 2025 Workshop and the previous discussions of the NACC/WG/8 Meeting. It highlights ICAO's Standards and Recommended Practices (SARPs), model regulations (Parts 101, 102, and 149), and outlines proposed strategies to support States in the systemic implementation of UAS frameworks. Special attention is given to the urgent need for updated regulations, traffic management systems (UTM), safety management systems (SMS), and cross-border coordination.

1.4 The paper also supports the formation of a multidisciplinary group to guide the CAR Region in aligning national UAS frameworks with ICAO's global guidance, ensuring regional harmonization and capacity-building efforts that enable the secure, efficient, and sustainable use of unmanned aircraft.

2. Analysis

2.1 The operations of Unmanned Aircraft Systems (UAS) and Remotely Piloted Aircraft Systems (RPAS) affect multiple dimensions of civil aviation, particularly air navigation services. The rapid growth of these technologies has outpaced existing regulatory frameworks in many States, exposing a range of systemic challenges in areas such as safety oversight, technical capacity, and airspace integration.

2.2 The Workshop on UAS/RPAS held in June 2025 confirmed that 95% of NACC States already have some form of drone regulation in place. However, many of these frameworks are outdated, lack harmonization, and fail to adequately address emerging use cases such as humanitarian operations, cross-border surveillance, and advanced air mobility (AAM).

2.3 ICAO has provided extensive support through SARPs applicable to RPAS operations under instrument flight rules (IFR), including provisions from Annexes 1, 2, 6 (Part IV), 7, 8, 10 (Vol. VI), 14, and 19. The organization has also developed model regulations — Parts 101, 102, and 149 — to guide national authorities in regulating UAS across open, specific, and certified categories of operation. Despite the availability of these tools, implementation across the region remains uneven.

2.4 The key challenges identified include:

- **Regulatory gaps and inconsistencies** between national frameworks, especially in risk classification and operational authorizations.
- **Limited UTM infrastructure** and digital tools to manage drone traffic safely and efficiently.
- **Insufficient technical and institutional capacity**, including lack of training for regulators and air navigation service providers (ANSPs).
- **Airspace integration complexities**, especially in controlled airspace and near aerodromes.
- **Funding constraints** and the absence of dedicated budgets for UAS oversight and infrastructure.

2.5 The NACC/WG/8 Working Paper 30 also proposed the creation of a **Multidisciplinary Group** to analyze Annex 10, Volume VI and related UAS materials, and to develop regional recommendations for harmonized UAS regulations. The Workshop echoed this need, recommending close collaboration among States, regional safety oversight organizations, and ICAO technical bodies.

2.6 ICAO emphasizes a **performance-based, risk-oriented** approach supported by regulatory sandboxes, public-private innovation, and international harmonization. Implementation strategies must also include adoption of Safety Management Systems (SMS) and remote pilot licensing requirements to ensure compliance with ICAO provisions.

3. Integration of UAS/RPAS in the Eastern Caribbean States

3.1 The Eastern Caribbean States, under the jurisdiction of the Eastern Caribbean Civil Aviation Authority (ECCAA), are in a unique position to implement a **regionalized framework** for UAS/RPAS integration. This would allow for shared resources, harmonized regulations, and efficient oversight mechanisms, supporting safe and efficient unmanned operations across multiple island territories.

3.2 Key Steps for Integration:

- **Regulatory Alignment**:
  Adopt or adapt ICAO Model UAS Regulations (Parts 101 – Open category, 102 – Specific category, and 149 – Operator certification) as a baseline. This ensures consistency with international standards and facilitates mutual recognition of UAS operators within the OECS.
- **Multistate Regulatory Framework**:
  ECCAA could develop and issue a **unified regulation** applicable to all OECS Member States, including provisions for remote pilot licensing, operator certification, UAS registration, operational limits, and data protection requirements.

- **UTM Development**:
  Invest in a basic **UAS Traffic Management (UTM)** infrastructure compatible with existing air traffic management systems. Priority should be given to geo-fencing capabilities, airspace authorization tools, and integration with public safety systems.
- **Capacity Building and Training**:
  Conduct regional workshops and online training for civil aviation authorities, law enforcement, and operators on risk-based authorization processes, SMS implementation, and airspace integration protocols.
- **Harmonized Oversight and Certification**:
  Establish a joint inspectorate or technical panel under ECCAA to review applications, conduct audits, and enforce compliance. This shared mechanism would address the shortage of technical personnel across the islands.
- **Pilot Projects**:
  Launch **regional demonstration projects** in priority areas such as:
  - Post-disaster aerial assessments
  - Maritime surveillance
  - Medical supply delivery to remote islands.

These use cases will help validate regulations, build stakeholder confidence, and refine operational procedures.

- Public Awareness and Community Engagement:
  Engage local communities through outreach campaigns to build public trust in the safe use of drones, address privacy concerns, and promote responsible use by commercial and recreational operators.

3.3 Strategic Considerations:

- Legal and Institutional Readiness:
- States must update national aviation laws to explicitly include UAS operations and empower ECCAA with the necessary enforcement authority.
- Cross-Border Operations:
- Develop procedures for cross-border drone operations between OECS islands, particularly for emergency response and regional logistics services.
- Funding and Support Mechanisms:
- Leverage ICAO assistance (e.g., iPacks), partnerships with industry, and donor funding (e.g., from the World Bank or EU) to support infrastructure and training investments.

4. Conclusions

4.1 The integration of UAS/RPAS into civil aviation systems represents a critical challenge and opportunity for the Eastern Caribbean States. While the region shows readiness through high-level engagement and initial regulatory efforts, there is an urgent need for harmonized implementation aligned with ICAO's global framework. The Eastern Caribbean has the advantage of a regional oversight structure under ECCAA, which can be leveraged to develop a unified approach to regulation, oversight, and capacity building.

4.1 The outcomes of the June 2025 UAS/RPAS Workshop and the analysis presented in NACC/WG/8-WP/30 reinforce the importance of addressing regulatory gaps, strengthening institutional capacities, and fostering regional coordination to support safe and efficient unmanned operations. ICAO SARPs, model regulations, and performance-based methodologies provide a strong foundation for this effort.

5. Suggested Actions

5.1 The Meeting is invited to:

a) Take note of the information presented in this working paper and the outcomes of the June 2025 NAM/CAR/SAM UAS/RPAS Workshop.

b) Endorse the adoption of ICAO’s Model UAS Regulations (Parts 101, 102, and 149) by Eastern Caribbean States through ECCAA coordination.

c) Approving the creation of a Multidisciplinary Regional Group under the Eastern Caribbean Civil Aviation Technical Group (E/CAR/CATG), supported by ICAO, to:
   - Analyze the applicability of ICAO SARPs and regional LAR UAS guidance.
   - Develop recommendations for a harmonized regional regulatory framework.
   - Coordinate training, oversight procedures, and implementation of UTM.

d) Recommend pilot projects and regional initiatives to validate regulations and operational procedures in real-world conditions.

e) Encourage States to update their national aviation laws to include UAS, and to allocate resources for implementation.

f) Invite ICAO to support the region through technical assistance programs (e.g., iPacks, MCAAP, or regional projects).

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