International Civil Aviation Organization
North American, Central American and Caribbean Office

WORKING PAPER

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Tenth North American, Central American and Caribbean Working Group Meeting (NACC/WG/10)
Tulum, Mexico, from 8 to 12 September 2025

Agenda Item 5: NACC/WG Collaborative Task Forces Working Session

USE OF THE STATE OF THE ART TECHNOLOGIES FOR FLIGHT INSPECTION (DRONES)

(Presented by the Central American Corporation for Air Navigation Services/COCESNA)

EXECUTIVE SUMMARY

COCESNA, as the provider of Air Navigation Services in Central America by mandate of its Member States, seeks to take advantage of technological advances to optimise the provision of its services. In the specific case of In-Flight Inspection, considering that aerial verifications carried out in accordance with regulations (Doc 8071) require significant resources associated with flight hours, the aim is to take advantage of Drones/Unmanned Aircraft Systems (UAS) and Remotely Piloted Aircraft Systems (RPAS) to optimise these resources as permitted by regulations and as detailed in this Study Note.

Action:	Suggested actions under item
Strategic Objectives:	• Safety • Air Navigation Capacity and Efficiency • Economic Development of Air Transport
References:	• COCESNA Comprehensive legal framework. • Doc 8071, Annex 2, Annex 8, Annex 10, Annex 14 ICAO, Doc 9157.

1. Introduction

1.1 As summarised in Figure 1, in order to evaluate the use of drones/ Unmanned Aircraft Systems (UAS) and Remotely Piloted Aircraft Systems (RPAS) for aerial inspection, the applicable regulations and existing gaps are first examined, followed by a review of the systems subject to aerial verification and their trends. In addition, current costs and developments by manufacturers of both Flight Inspection Systems (FIS) and drones/UAS and RPAS are considered.

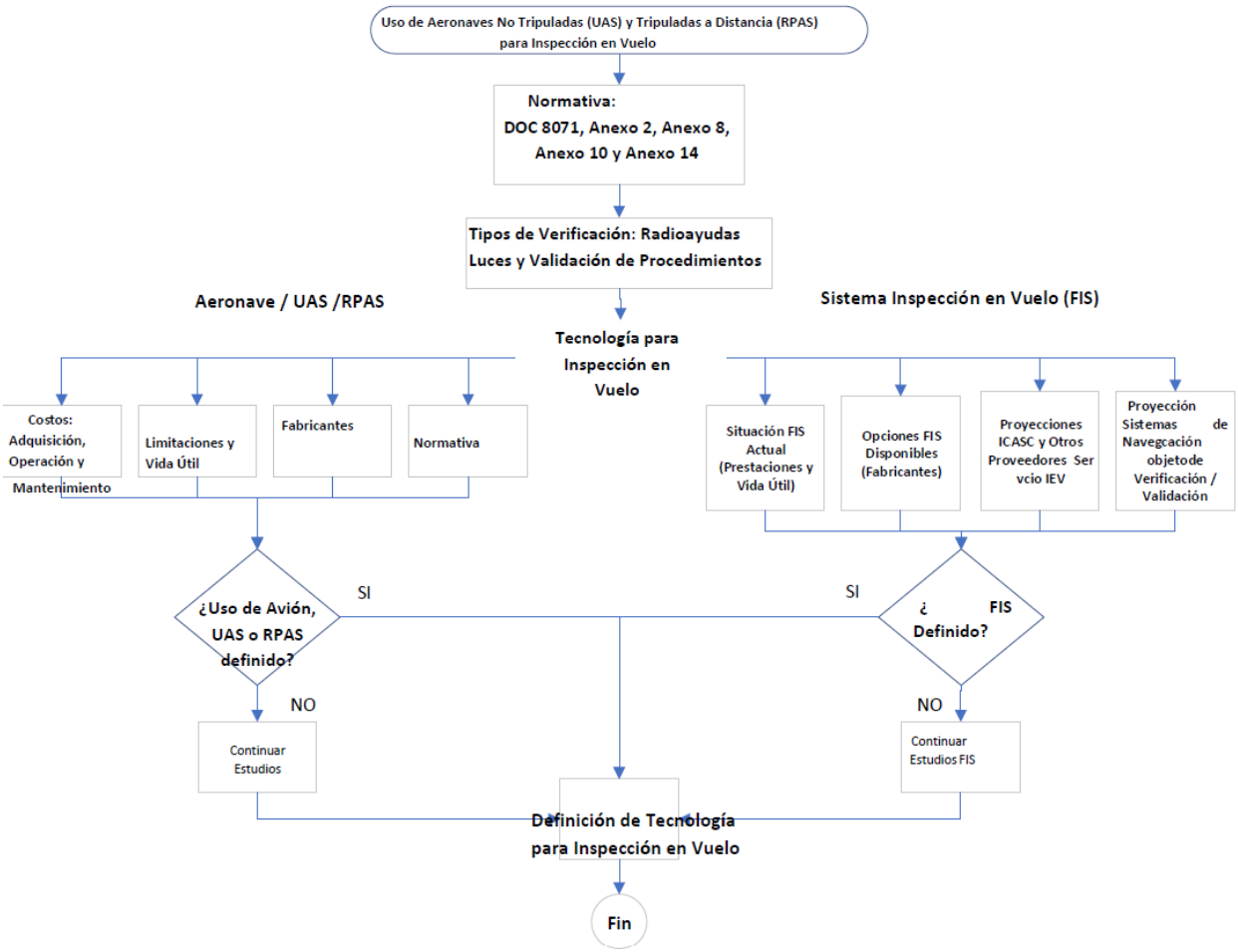

Figure 1

1.2 The above allows us to define actions to be taken and, finally, to draw conclusions and make recommendations, mainly aimed at defining the best technology to use for in-flight inspection and the next steps to take to take advantage of new technologies, comply with applicable regulations, and meet user demands.

2. Studies Conducted

2.1 There has been exponential growth in the use of UAS and RPAS worldwide and in applications such as courier services, natural disaster assessment, medicine delivery, infrastructure inspection, and humanitarian aid, among others, which has led to studies on their application in flight inspection activities.

2.2 Drones/UAS are used for light verification (DEFI | Airotec) and radio aid maintenance tasks, since, for the aerial verification of the latter, the use of aircraft is still necessary according to Doc 8071. In the case of radio aids, drones/UAS only collect data at specific points, provided that the environment and conditions of the specific location allow it, without developing the complete flight profile of an aerial verification.

2.3 ICAO Document 8071 (Point 1.18) provides guidance on evaluating the use of 'Remotely Piloted Aircraft Systems (RPAS) or Unmanned Aircraft Systems (UAS)' to: "determine whether they have the payload capacity, speed and range necessary to cost-effectively perform in-flight inspection of Radio Aids to Air Navigation".

2.4 No reference was found to the use of UAS or RPAS to develop the complete flight profile required by the tests suggested by Doc 8071 for the aerial verification of radio navigation aids, nor was any reference found for the validation of procedures.

2.5 In order to migrate to new technologies in compliance with current regulations, global trends and user demand, it has been identified that the following is currently required for the use of drones/UAS and RPAS:

- Global and harmonised regulations
- Risk analysis (Safety / Security)
- Unmanned Aircraft Traffic Management (UTM)
- Cost/benefit analysis

3. Actions Taken

3.1 In addition to the studies and research carried out, while the issues indicated in point 2.1 are being resolved and in order to move forward with the optimisation of resources by taking advantage of new technologies that enable compliance with current regulations, the Pilot Plan described in Figure 1 was developed in Guatemala, according to which the measurement equipment or payload could be associated with a drone/UAS-RPAS. It is installed in a high location to constantly monitor the parameters of a radio aid, then the data obtained is transferred and processed in a Management Centre, where, supported by maintenance management programmes based on Artificial Intelligence, results and trends are analysed so that in future verifications: 1) the verification aircraft spends flight hours only to confirm that the parameters are within tolerance and 2) correlated results are obtained without variation between each Aerial Verification. This, in addition to optimising flight hours for aerial verification, will make it possible to establish on a reliable basis the most appropriate frequency for aerial verification of radio aids, which will result in the optimisation of resources and allow for the projection of a scenario of what could be obtained through the use of drones/UAS used to obtain readings at specific points without developing the flight profile for all the tests suggested in Doc 8071.

3.2 Monitoring the development of technologies and regulations for radio aid flight testing, as well as regulations for the deployment of UAS and RPAS through participation in international events addressing the issue.

3.3 Organisation of the International Flight Inspection Symposium (IFIS 2026) from 4 to 6 May 2026 in El Salvador, where international experts and organisations will present the current situation and expectations for flight inspection in the future, taking advantage of state-of-the-art technologies as permitted by regulations and aimed at optimising resources.

Imagen 1

4. Conclusions

4.1 Promote discussions to update regulations on the use of drones – UAS, mainly in Doc 8071, according to studies by specialised bodies such as ICASC (International Committee for Space Standards and Calibration), suppliers of Flight Inspection Systems or others, specifically in relation to cases where it can support aerial verification and the impact on the frequency of aerial verifications by improving data correlation, even when it is only possible to support maintenance work with drones.

4.2 Within the framework of current regulations, it is considered that there is still no basis for suggesting the use of drones/UAS or RPAS aimed at optimising aerial verification resources (fewer flight hours) by completely replacing an aircraft.

4.3 Pilot tests such as the one described in point 3.1, Automation of Radio Aid Maintenance, allow the use of state-of-the-art technologies in line with applicable regulations (Doc 8071) and provide input to demonstrate the stability and correlation of radio aid readings, based on which the spacing of aerial checks can be analysed in order to optimise the costs associated with flight hours, while continuing with the analysis of the points highlighted in section 2.5 of this note.

4.4 Continue to monitor developments in global regulations and trends associated with the use of UAS and RPAS: Technical Panels, Study Groups led by ICAO, the development of Standards and Recommended Practices (SARPS), approval procedures and other related material.

4.5 Continue to study the most appropriate application for in-flight inspection, defining in the first instance the type of operation: visual line-of-sight (VLOS) and beyond visual line-of-sight (BVLOS).

5. Suggested actions

5.1 The Meeting is invited to:

a) Take note of the information presented.
b) Submit for consideration by the North American, Central American and Caribbean Working Group (NACC/WG/10) so that ICAO promotes and/or updates regulations on the use of drones – UAS, mainly in Doc 8071, specifically in relation to cases where it can support aerial verification and the impact on the frequency of aerial verifications by improving data correlation.
c) Other actions deemed appropriate.

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