



**Twenty-first Meeting of the CAR/SAM Regional Planning and Implementation Group  
 (GREPECAS/21)**

Santo Domingo, Dominican Republic, 15 to 17 November 2023

**Agenda Item 3: Global and Regional Developments**  
**3.3 CAR/SAM Air Navigation Services (ANS) Implementation Level**

**FLIGHT PROCEDURE PROGRAMME (FPP) IN CENTRAL AMERICA**

(Presented by Belize, Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua)

<b>EXECUTIVE SUMMARY</b>	
This working paper presents the implementation of the Flight Procedures Program in Central America as a collaborative regional initiative with the purpose of facilitating efficient, profitable, and sustainable management in the field of Procedure Design, Performance-Based Navigation (PBN), and disciplines. similar in the region.	
<b>Action:</b>	Suggested actions is presented in Section 7.
<i>Strategic Objectives:</i>	<ul style="list-style-type: none"> <li>• Strategic Objective 1 – Safety</li> <li>• Strategic Objective 2 – Air Navigation Capacity and Efficiency</li> <li>• Strategic Objective 3 – Environmental Protection</li> </ul>
<i>References:</i>	<ul style="list-style-type: none"> <li>• MOU FPP Central American Subregion</li> <li>• Doc- 9613 - Performance Based Navigation (PBN) Manual</li> <li>• Proyecto CA FPP</li> </ul>

**1. Introduction**

1.1 The International Civil Aviation Organization (ICAO) developed harmonized navigation specifications for all existing areas and phases of operations and published them in the Performance Based Navigation (PBN) Manual (Doc. 9613).

1.2 The implementation of Performance Based Navigation (PBN) remains a high priority for ICAO due to its benefits in Safety, Capacity and Efficiency, access to airspace and environmental protection. PBN is an important element in the ICAO Aviation System Block Upgrades (ASBU) framework to realize the operational benefits provided for in the Global Air Navigation Plan (GANP).

1.3 There are various challenges and deficiencies in the region that prevent the establishment of an adequate and sustainable instrument flight procedure (IFP) design capacity and by extension the implementation of PBN by States, such as limited technological resources, lack of trained and competent personnel at the national and regional level, the imbalance between demand and capacity in the field of IFP design, the high cost of the procedure design service by third parties, among others.

## 2. Status

2.1 The ICAO NACC Regional Office has promoted regional collaboration to facilitate the implementation of PBN in the region in a cost-effective and sustainable manner (see **Appendix**), through the initiative of a regional Flight Procedures Program, CA FPP. Under this initiative, the ICAO NACC Regional Office, in coordination with the Central American States and COCESNA, has been working to establish and formalize the Project.

2.2 The States, through the Directors of Civil Aviation of Central America, have expressed their commitment to support the FPP initiative through the signing of a Memorandum of understanding (MoU) and specific conclusions of the meetings of Directors of Civil Aviation of North America, Central America and Caribbean (NACC/DCA) and the North American, Central American and Caribbean Working Group (NACC/WG).

2.3 The deficiencies and gaps that have been identified at the regional level that are expected to be addressed within the scope of the project are:

- a. lack of capacity – Insufficient number of flight procedure designers;
- b. insufficient volume of procedure design in some States to maintain competencies in the domain;
- c. lack of training in airspace design, instrument flight procedures, PBN as well as on-the-job training (OJT) and/or recurrent;
- d. lack of operational knowledge and Procedures for air navigation services - Aircraft operation (PANS OPS-Doc. 8168 Vol. I, II and III), geodesy (GIS systems) and quality (QMS) and data validation and monitoring to integrate IFP design efficiently into airspace design;
- e. lack of depth in the organization of the design of IFR procedures to perform Quality Assurance (QA) in relation to the 6 Volumes of Doc. 9906;
- f. insufficient experience in organizing the design of IFR procedures to provide adequate quality control of such procedures;
- g. lack of automation of the storage of obstacle data (World Geodetic System - 1984- WGS-84) and terrain data (Electronic Terrain and Obstacle Data - eTOD) in States (Geographic Information Systems-GIS) as well as their respective analysis;
- h. lack of experience in obtaining appropriate operational approval and in supervising operators of PBN operations;
- i. lack of regulatory experience and regulation on the part of the Aeronautical Authority to supervise the process for the publication of the procedure (ICAO Doc. 10068);
- j. lack of training to train inspection personnel to monitor the procedure design process adequately;

### **3. Automation solutions and quality assurance processes discussion**

3.1 COCESNA currently provides procedure design services and technical assistance to the Central American States through the Procedure Design unit that is part of the Operations Centre - regional AIM. This unit is well established, with trained, qualified, and experienced personnel, and has the specialized automation solutions and QA processes to generate and verify high-quality designs that comply with established regulations and with the requirements and needs of the States.

3.2 In this regard, COCESNA has committed to supporting the CA FPP initiative and serving primarily to support the Central American Member States and in later phases of the project the rest of the CAR States, promoting the implementation of instrument flight procedures developed with appropriate quality systems, focusing mainly on the PBN concept.

3.3 The FPP will assist program participants in developing sustainable capabilities in the IFP domain in accordance with the objective of Assembly Resolution A36-23 to ensure the safe and efficient performance of the Flight System. Global Air Navigation and to meet its commitments under Assembly Resolution A37-11 encourage the implementation of instrument flight procedures, developed with the requirements of appropriate quality systems, focusing on the PBN concept.

### **4. Implementation strategy**

4.2 To meet the objectives and goals of the project, the CA FPP contemplates the coordination and execution of basic, intermediate, and advanced OJT/training courses in the domain of Instrument Procedure Design and PBN for designers in an implementation approach by stages.

4.3 ICAO will support the development of the work plan, technical assistance, and coordination of program financing through sponsors.

### **5. Expected results**

5.1 With the establishment of the CA FPP, the Central American States with the support of COCESNA should be able to sustainably and profitably:

- a. Increase the number of national PBN implementation plans;
- b. Increase the number of PBN IFP in accordance with ICAO Assembly A37-11;
- c. Improve the approval rate of PBN operations;
- d. Significantly improve competencies in procedure design, airspace, and regulatory approval (PBN operational approval, IFP design approval);
- e. Increase in the number of PBN procedures implemented and Aeronautical Information Publications (AIP) of the States;
- f. Increase in the number of local operators approved for PBN operations;
- g. Demonstrate evidence of improved safety and efficiency of IFR flight operations.

### **6. Conclusions**

6.1 The Central American Member States have expressed their commitment and support to the CA FPP initiative through the signing of a MoU during the Eleventh North American, Central American and Caribbean Directors of Civil Aviation Meeting (NACC/DCA/11), Varadero, Cuba, 28 to 30 June 2023.

6.2 COCESNA will support the CA FPP initiative by providing, where possible, the experience, training, and knowledge of its trained personnel, its software and hardware tools, and its infrastructure in the field of Instrument Procedure Design to ensure that the objectives and requirements are met. CA FPP goals.

**7. Suggested actions**

7.1 The Meeting is invited to:

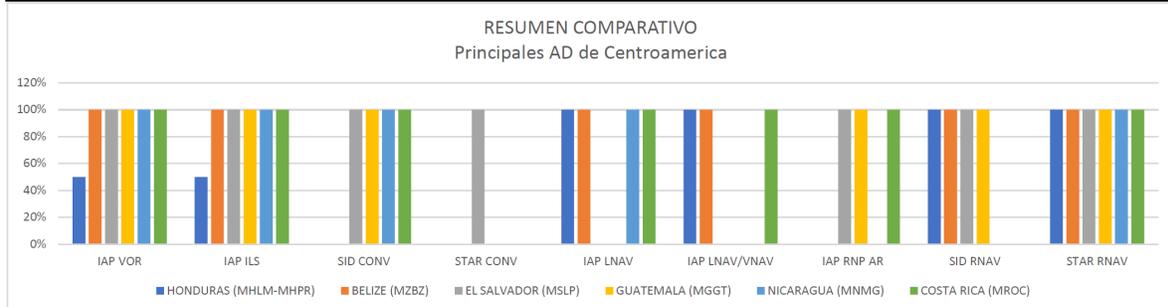
- a) take note of the information presented including the Appendix; and
- b) support the CA FPP initiative in accordance with the signed MoU in order to improve competencies in the region in airspace/procedure design and the scope of maintaining operational safety and to support the objectives of Assembly Resolution A37-11 .

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**APENDIX**  
**PBN IMPLEMENTATION STATUS IN CENTRAL AMERICA**  
 (Available in Spanish only)

**RESUMEN COMPARATIVO**  
 Principales AD de Centroamerica

AERÓDROMO	IAP VOR	IAP ILS	SID CONV	STAR CONV	IAP LNAV	IAP LNAV/VNA	IAP RNP AR	SID RNAV	STAR RNAV
HONDURAS (MHLM-MHPR)	50%	50%	0%	0%	100%	100%	0%	100%	100%
BELIZE (MZBZ)	100%	100%	0%	0%	100%	100%	0%	100%	100%
EL SALVADOR (MSLP)	100%	100%	100%	100%	0%	0%	100%	100%	100%
GUATEMALA (MGGT)	100%	100%	100%	0%	0%	0%	100%	100%	100%
NICARAGUA (MNMG)	100%	100%	100%	0%	100%	0%	0%	0%	100%
COSTA RICA (MROC)	100%	100%	100%	0%	100%	100%	100%	0%	100%



MHLM	1	2	0	0	1	1	0	4	8
MHPR	0	0	0	0	2	2	0	7	7
MZBZ	4	3	0	0	2	2	0	0	8
MSLP	6	3	40	15	0	0	8	21	9
MGGT	4	2	19	0	0	0	7	21	13
MNMG	3	3	10	0	2	0	0	0	12
MROC	1	2	20	0	1	1	3	0	14

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