



ICAO

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WORKING PAPER

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NAM/CAR Air Navigation Implementation Working Group (ANI/WG) Performance-Based Navigation (PBN) Implementation Task Force Meeting (ANI/WG/PBN/TF)
Mexico City, Mexico, 22 – 25 April 2019

Agenda Item 5: Implementation of Performance-Based Navigation (PBN) Routes

SAM ATS ROUTES NETWORK OPTIMIZATION PROPOSAL VERSION 5 (SAM ATSRO VERSION 5)

(Presented by COCESNA)

EXECUTIVE SUMMARY	
This Working Paper presents the proposal to analyse the interface with the CAR Region of the SAM Region ATS Route Optimization version 5 developed by the ICAO SAM Regional Office (SAM RO V5)	
Action:	The required actions can be found in section 4.
<i>Strategic Objectives:</i>	<ul style="list-style-type: none">• Safety• Air Navigation Capacity and Efficiency• Economic Development of Air Transport• Environmental Protection
<i>References:</i>	<ul style="list-style-type: none">• Final Report – Ninth South American Meeting on ATS Routes Network Optimization (SAM ATSRO/9), Lima, Peru, 16 – 20 July 2018• SAM ATSRO/9 excel table• SAM Region CONOPS Draft 2018-2020• Final Report – Third ICAO/IATA/CANSO Performance-Based Navigation (PBN) Harmonization, Modernization and Implementation Meeting for the North American, Caribbean and South American (NAM/CAR/SAM) Regions, Mexico City, Mexico, 2 – 6 July 2018

1. Introduction

1.1 According to the approved actions by the Twelfth Meeting of the Coordination Committee of the Regional Project RLA/06/901 (RCC/12) for the year 2019 in respect to the Performance-Based Navigation (PBN) implementation project in the SAM Region, it was requested that an Air Traffic Management (ATM) expert from the CAR Region takes part of the ATM team to develop the SAM Route Optimization (RO) version 5 according to the following Terms of Reference:

- Elaborate a technical document and planning templates for the implementation of the route optimization version 5 of the SAM region according to the SAM PBN CONOPS, analysing the main traffic flows in the area to identify opportunities of improvements for the routes, realignment, replacement or eliminations of conventional routes, modifications of the PBN navigation specifications and the application of parallel routes, among others advanced concepts.
- Analyze and identify improvements in the interface of Air Traffic Services (ATS) routes in the SAM and CAR Flight Information Region (FIR) limits.
- Propose the corresponding implementation dates.

1.2 COCESNA agreed to support this project, providing an ATM Expert, to support the initial coordination of the proposal of the SAM/CAR routes interface routes.

2. Methodology

2.1 The methodology used for this project is to gather ATM specialists from different States (3 or 4) of the SAM Region under the RLA/06/901 Project to analyse the SAM airspace and routes; each version of the routes is prepared in a two-year period, this one is the version 5 (2019-2020) to complete a ten-year period.

2.2 COCESNA's participation on the version 5 project was taken as an opportunity to develop a proposal to continue the routes with an interface up to the Caribbean Region, so the routes will not finish in the SAM Region.

2.3 In the first 2 weeks of work of the SAM regional team, some analysis and proposal of routes for the CAR interface were done; most of them were from the version 4, which could not be coordinated accordingly in 2017.

2.4 The SAM RO Version 5 will be distributed through the SAM and NACC regional offices and to the users through IATA, this distribution should be made with enough time to be analysed and to make suggestions or propose changes or counterproposals before the RLA/06/901 - Tenth South American Meeting on ATS Routes Network Optimization (SAM ATSRO/10) that will take place in Bogota, Colombia, from 17 to 21 June 2019.

3. Development

3.1 **The activities involved face to face work in the SAM Regional Office in Lima, Peru. The SAM Team (2 specialists from Peru and 1 specialist from Venezuela) met from 11 February to 1 March 2019. COCESNA joined the meeting from 25 February to 1 March 2019.**

3.2 During the development of the route optimization version 5, the following aspects were taken in consideration in the interregional CAR/SAM segments:

- Replace the conventional regional routes by regional Area Navigation (RNAV) 5 routes, taking into consideration an excluding RNAV 5 airspace by 2020.

- The most direct routes must be considered to the Initial Approach Fix (IAF) or to the Terminal Control Area (TMA) entry or exit points instead to the airport VHF omnidirectional radio range (VOR).
- Parallel RNAV routes must be implemented when an operational benefit exists (heavy traffic movements, flows separation for airports in the same TMA) evaluate Required Navigation Performance 2 (RNP2) and RNP4 specifications implementation.
- Allow the integration of domestic routes in the States.
- Eliminate or reduce the HOTSPOTS wherever is possible.
- Keep the conventional ATS routes at the least possible avoiding redundant ATS routes but taking into consideration the traffic demand related with the ATC capacity and the possibility of use of direct routes.
- Consider those routes that were planned in ATS RO version 4 that were not coordinated accordingly for some reasons.

3.3 As optimization types, we consider the following:

CREATE: creation of a new RNAV route.

MODIFY: realigning, extension or cut of RNAV route

ELIMINATE: elimination of an ATS route.

3.4 During the analysis of the routes and preparation of the document some phone coordination was made with specialists from Brazil, Chile, Colombia, Ecuador and Panama.

3.5 Also a proposal from IATA was received which contained 7 new RNAV routes, 2 of them for the SAM Region and 5 for the CAR Region.

4. Results.

4.1 The SAM ATS RO version 5 contains 51 routes proposal which includes:

- Eliminate 37 conventional regional routes.
- Eliminate 2 RNAV regional routes for optimization and harmonization.
- Create 27 new RNAV routes.
- Modify 15 RNV routes (realigning, extend or cut)
- 21 of the proposed routes involve reduction of nautical miles flown, in case that all of them are implemented, 178 NM reductions will be obtained.

4.2 Of the 51 routes proposals, 32 correspond to the **CAR/SAM interface**, and 19 are for the **SAM** region.

4.3 As a result of the work made during the 3 weeks, the route proposal of version 5 was duly analysed, and is available for your review and approval in the following link: <https://www.icao.int/NACC/Pages/regional-group-PBN.aspx>.

4.4 For a better distribution, and simplicity in identifying the proposal according to the States involved in version 5, the following nomenclature was used:

STATES	NOMENCLATURE
Ecuador Panama Colombia Venezuela Guyana Surinam French Guyana Curaçao Trinidad and Tabago Puerto Rico Netherlands Antilles Jamaica Dominican Republic Cuba Central America (COCESNA)	CS-5-01 to CS-5-32
Ecuador Peru Chile Bolivia	PA-5-01 to PA-5-12
Brazil Uruguay Argentina Paraguay	AT-5-01 to AT-5-07

Note:

CS: CAR/SAM Regions limits States

PA: SAM Pacific Sector States

AT: SAM Atlantic Sector States.

4.4 Timeline for version 5 implementation:

	CAR REGION	SAM REGION
States discussions and Approval meeting	TBD in the ANI/WG/PBN/TF Meeting to be held from 22 to 25 April 2019 (Sent to the States before the meeting)	ATSRO 10 meeting 17 – 21 June 2019
CAR SAM 1st follow up TELCON with states	May 2019	July 2019
CAR SAM 2nd follow up TELCON. confirm publication date with states	June/July 2019	August 2019
All States publication date.	12 September 2019	12 September 2019
Effective date	5 December 2019	5 December 2019

5. **Required actions**

5.1 The Meeting is invited to consider:

- a) the States involved in the routes proposal should study and analyse the proposed and concerned routes according to each State needs;
- b) have a response on agreement of routes by 17 June 2019;
- c) adjust to the timeline for implementation or propose a new one; and
- d) the ICAO NACC Regional Office should study the possibility of implementing a similar procedure for the NAM/CAR region with a CAR/SAM interface.