



**Agenda Item 4: Follow up to the implementation of safety and air navigation regional priorities:**

**b) Implementation priorities of air navigation improvements**

**c) PBIP new version**

### **PBN IMPLEMENTATION IN SAM REGION**

(Presented by IATA)

#### **SUMMARY**

This working paper aims to encourage the SAM States and the SAM Regional Office to continue the PBN implementation process, with the highest possible priority, with a view to foster an even safer and more efficient airspace in the SAM States. In addition, this working paper urges all stakeholders to implement Key Performance Indicators, taking into account the need for identifying real PBN implementation gains for airspace users and for Air Navigation Service Providers. .

#### **REFERENCES**

- SAMIG Meetings Report
- Doc. 9613 –PBN Manual
- Doc. 9883 - Manual on Global Performance of the Air Navigation System

**ICAO Strategic Objectives:**

*A - Safety*

*B - Capacity and Efficiency*

*C - Environmental Protection*

## **1. Introduction**

1.1 In accordance with the Global Air Navigation Plan (GANP), Doc 9750, ICAO will focus its efforts over the triennium 2016-2019, on the development and implementation of performance based navigation (PBN), continuous descent operations (CDO), continuous climb operations (CCO) and air traffic flow management (ATFM).

1.2 However, the GANP establishes the continued focus on PBN as the highest priority for Air Navigation. ICAO's PBN Programme is working to further improve and develop the PBN concept, whilst also striving to assist States with successful implementation of PBN routes and procedures.

## 2. Discussion

2.1 As indicated in the GANP, the SAM Regional Office has established the highest priority for PBN implementation, with numerous workshops and meetings to train state experts, as well as to plan the implementation of PBN for enroute, TMA and Approach.

2.2 En-route implementation of PBN is discussed at ATS/RO meetings, based on gradual improvement of route network versions. The use of route network versions reflects the need for an integrated periodic review to ensure that the best possible airspace structure is always in place, within an integrated development concept. Phase 1 of the route optimization programme was completed on 20 October 2011 with the implementation of RNAV 5, while RNP10 was maintained in some upper airspace oceanic routes, as in the EUR/SAM Corridor, the Lima-Santiago routes, and the Atlantic Ocean Random Routing Area (AORRA). At present, taking advantage of PBN-based airspaces, version 4 of the ATS route network is under development and being integrated with TMA SIDs and STARs. Likewise, flexible use of airspace has been implemented in some selected airspaces for their optimization.

2.3 Training and follow-up of redesign processes using PBN at the main South American TMAs were conducted through PBN workshops sponsored by Regional Project RLA/06/901. Four training/follow-up workshops were conducted on the planning, design, validation, and implementation phases, respectively. Likewise, two implementation workshops were conducted for those terminal areas that had action plans for implementation in 2016-2017 and two PANS-OPS workshops to examine with procedure designers the amendments made to ICAO Doc 8168 and circular letter 336 concerning RNAV and RNP approaches.

2.4 In the SAMIG/20 meeting, the implementation of the airspace selected by the SAM States was discussed and the summary of the PBN implementation status can be seen in the table below.

Redesign of selected TMA airspaces based on PBN planning			
State		Implementation	
Argentina	BAIRES	Phase 1.- October 2017. Optimisation of available resources. Phase 2.- 2017-2020. Introduction of the PBN concept. (See SAM/IG/20-NI/04)	
Bolivia	Cochabamba	Phase 1.- July 2018. PBN design but also considering conventional procedures. Phase 2.- August 2019. Definitive PBN design, considering airspace with ATS surveillance.	
	La Paz		
	Santa Cruz		
Brazil	Brasilia	12 Nov 2015 (implemented)	
	Belo Horizonte	12 Nov 2015 (implemented)	
	Sao Paulo (partial modifications)	12 Nov 2015 (implemented)	
	Salvador	27 Apr 2017 (implemented)	
	Manaus	17 Aug 2017 (implemented)	
	(PBN SUR)	Curitiba	12 Oct 2017 (implemented)
		Florianopolis	
		Joinville	
		Navegantes	
		Porto Alegre	
		São Paulo (modifications)	
		Red de ruta FIR CW	
	Fortaleza, Natal and Maceió	September 2019	
	Vitória	October 2018	
Belém, Campo Grande and Sao Luis	October 2021		
Cuiabá, Boa Vista, Porto Velho and Rio Branco	October 2023		
Sao Paulo	TBD		
Chile	Santiago (South)	08 Dec 2016 (implemented)	
	Santiago FIR route network		
Colombia	Bogota	12 Oct 2017 (implemented)	
Ecuador	Guayaquil	21 Jul 2016 (implemented)	
Panama	Panamá	Project start-up in 2018. (See SAM/IG/20-IP/10)	
Paraguay	Asunción	17 Aug 2017 (implemented)	
Peru	Arequipa	December 2018	
	Cusco	December 2018	
	Juliaca	December 2018	
	Puerto Maldonado	December 2018	

Redesign of selected TMA airspaces based on PBN planning		
State		Implementation
Uruguay	Carrasco and Laguna del Sauce	First semester of 2018  * The Carrasco TMA will be optimised in accordance with Phase 2 of the Baires TMA.
Venezuela	Maiquetía	December 2017
	Isla Margarita	Second semester of 2018

2.5 In order to provide a conceptual reference framework for the SAM Performance-based Air Navigation Implementation Plan (SAM-PBIP) (SAM-PBIP), the RLA 06/901 project has developed the PBN Concept of Operations for SAM Airspace (CONOPS) period 2018-2020, which should be approved in RAAC/15.

2.6 With a view to progress more efficiently in PBN implementation in the SAM Region, it would be highly recommended to use a set of Key Performance Indicators, which should provide the means to identify the objective gains of PBN implementation for airspace users and Air Navigation Service Providers.

### 3. Suggested action

3.1 The Meeting is invited to:

- a) Urge the SAM States and the SAM Regional Office to continue to giving priority to the PBN implementation, in accordance with the GANP and the PBN Concept of Operations for SAM Airspace (CONOPS), with a view to obtaining an even safer and more efficient airspace in the SAM Region; and
- b) Urge the SAM Regional Office, with the support of the States and IATA, to develop Key Performance Indicators, with the objective of concretely measuring of the gains obtained with the PBN implementation in the SAM Region.

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