



Agenda Item 2: Report of activities of the GESEA and Subgroups

b) ATM implementation. Progress of Subgroups

AIRSPACE OPTIMIZATION IN BRAZIL

(Prepared by Brazil)

SUMMARY

The objective of this Working Paper is to present the update of the implementation of Airspace Concepts projects, design of IFR Procedures and other actions adopted by DECEA for the optimization of Brazilian airspace.

References:

- SAM/IG meetings
- GREPECAS/18 meeting
- Doc 9613 – Performance-Based Navigation (PBN) Manual
- Doc 8168 – PANS-OPS/611, VOL I and II

1. Background

1.1 The conclusions obtained during GREPECAS/18 indicate the need for States to increase efforts for the publication and implementation of IFR routes and procedures for Terminal Control Area (TMA) based on the PBN concept to increase or maintain safety and efficiency of air navigation in the SAM Region.

1.2 This commitment assumed by the States is also a topic frequently addressed during the SAM/IG meetings, where it is also highlighted that such initiatives must be implemented in close coordination between the States, the ANSPs, the airlines and other airspace users.

1.3 In this sense, this working paper presents an update on the implementation of Airspace Concepts projects, design of IFR Procedures and other actions adopted by DECEA for the optimization of Brazilian airspace.

2. Airspace concepts projects and IFR procedures for Brazilian TMA

2.1 The Airspace Concepts projects and their respective dates for implementation in the TMAs of Brazil are mentioned in the following table.

2.2 The changes in relation to the last meeting were regarding the end of the TMA SP Neo Project, the start of two new projects (Cardel Nordeste Project for Recife FIR and Route Efficiency Project

for Brasília FIR) and the planning changes for the optimization of the other TMAs for the years 2021 to 2030.

Brazil	Brasília		NOV 2015 (finished)
	Belo Horizonte		NOV 2015 (finished)
	São Paulo (partials changes)		NOV 2015 (finished)
	Salvador		APR 2017 (finished)
	Manaus		AGO 2017 (finished)
	(PBN SUL)	Curitiba	OCT 2017 (finished)
		Florianópolis	
		Joinville	
		Navegantes	
		Porto Alegre	
		São Paulo (partials changes)	
	FIR CW routes		
	São Paulo (TMA-SP Neo)		MAY 2021 (finished)
	TMA Belém (CCO/CDO – RNP with RF LEG)		DEC 2021
	TMA Campo Grande (CCO/CDO)		DEC 2021
	FIR Recife (Cardeal Nordeste project)		OCT 2023
FIR Brasília (Eficiencia de Rutas project)		OCT 2023	
FIR Amazonica (routes and TMA)		APR 2025	
FIR Curitiba (routes and TMA)		MAY 2027	
FIR Atlantico (routes)		JUN 2030	

2.3 Airspace Concept project dates have been updated to meet new airspace optimization demands.

2.4 The TMA SP Neo project has been implemented with a small delay, due to the COVID-19 pandemic, which made it impossible to train air traffic controllers (ATCO) in the new operational scenario.

2.5 The Cardeal Nordeste and Route Efficiency projects have started and are being carried out in parallel, since they have areas with common boundaries.

2.6 Other important information: Brazil has 1,442 (was 1,524) IFR procedures (IAC, SID, STAR) published for 141 airports where IFR operations occur:

IAC		SID		STAR	
CONV	PBN	CONV	PBN	CONV	PBN
345	356	244	342	02	153
701		586		155	

2.7 Taking into account these IFR procedures (IFP), it is possible to carry out the pertinent analyzes of the implementation situation of the PBN concept and of the CDO and CCO techniques in Brazilian airports:

APV / LNAV			STAR	SID	CDO TMA	CCO TMA
IAP APV	LNAV	IAP RNP AR	STAR PBN	SID PBN		
100,00%	100,00%	9,3%	100,00%	100,00%	100,00%	100,00%

3. Production of IFR procedures in Brazil

3.1 The production of IFR procedures (IFP) in 2020 faced great difficulties, due to the procedures adopted in Brazil to deal with the pandemic caused by COVID-19.

3.2 Isolation measures, remote meetings and work, and cases of withdrawal of personnel due to contamination with COVID-19, imposed a great challenge to maintain the level of productivity to meet the needs of users by IFR procedures.

3.3 However, some measures were taken to keep the service active and take advantage of the decrease in flights to address old pending issues and other specific demands of new types of IFP in Brazil.

3.4 The largest investment was in providing means for remote access to workstations and thus allowing specialists to continue working from their homes.

3.5 Adjustments were also made in the processes, training of other specialists to help in production, re-prioritization of jobs and establishment of "task groups" to meet specific demands, such as reducing the number of permanent NOTAMs on IFR procedures.

3.6 The results were very positive and ended up surprising the initial expectation of having a 2020/2021 year with setbacks in IFP's productivity. The main achievements were the following:

- a) 80% decrease in permanent NOTAMs (including procedures):
 - ✓ from 1,101 (DEC 2019) to 225 (DEC 2021)
 - ✓ 1,149 charts published to incorporate NOTAM
 - ✓ Goal: NOTAM PERM no more than 90 days
- b) Increase in the number of procedures published by AMDT:
 - ✓ from 33 IFP / AMDT (DEC 2019) to 67 (AUG 2021)
- c) 93% reduction in charts older than 5 years:
 - ✓ from 773 (JAN 2020) to 56 (DEC 2021)
 - ✓ 407 charts expired (5 years) between JAN 2020 and DEC 2021
 - ✓ Goal: keep charts with no maximum 4 years
- d) New standard to treat obstacle penetrations in the VSS;
- e) New identification of RNP APCH procedures - from RNAV (GNSS) to RNP;
- f) Publication of new types of procedures:
 - ✓ SID RNP AR (SBRJ)
 - ✓ OMNIDIRECTIONAL SID: published for 79 AD (66 AD missing)
 - ✓ IAC RNP APCH with RF LEG
 - Posted for 2 AD (SBGO; SBJH)
 - Next AD: SBBE; SBFZ and SBBR.
 - ✓ IAC RNP APCH for VFR AD:

- 03 AD VFR (SBSV; SBIL; SBAG)
- Next AD: SWLC; SBCH; SBUG; SBUF; SBTG; SWPI; SNBR; SWGN.

4. **Suggested actions**

4.1 The Meeting is invited to:

- a) Take note and review the information provided in this Working Paper and evaluate if Brazilian standars could be implemented on your own States; and
- b) make comments and suggestions that may help in the development of airspace in Brazil to be in line with what is adopted by the SAM States and with the recommendations of the Lima Office.

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