



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

b) ATM implementation. Progress of the Subgroups.

REGIONAL GUIDE ON AIRSPACE PLANNING TECHNIQUES

(Presented by Brazil)

SUMMARY

This paper aims to present the development of the Regional Guide on Airspace Planning Techniques.

References:

- SAM/IG meetings
- GREPECAS/18 meeting
- Doc 9613 – Performance-Based Navigation (PBN) Manual.
- Doc 8168 – PANS-OPS/611, Volume I y II de la OACI.
- Doc 9992 - Manual on the Use of Performance Based Navigation (PBN) in Airspace Design.
- ERNIP - European Route Network Improvement Plan. Part 1 – Airspace Design Methodology Guidelines.
- MCA 100-19 (BRASIL) - Conceito de Espaço Aéreo.

1. Background

1.1 Airspace Planning requires several competencies and skills for the new operational scenario and the new circulation in a TMA to meet the strategic objectives established for a given project of implementation of Airspace Concepts: collection and analysis of air traffic data; understanding of the geographical distribution of flows, air traffic mix and aircraft performance; definition of new flows of arrivals and departures for an aerodrome, definition of the structure of routes and air navigation procedures, among other aspects.

1.2 Airspace Concept Implementation Projects are directly affected by airspace organization techniques and by the action of the specialist responsible for airspace planning, since the development of operational scenarios, which describe the organization of airspace and air circulation, are directly related to the Airspace Planning activity. This is the main task to be developed for the implementation of new Airspace Concepts and requires great specialization and competence of the professionals who perform it.

1.3 However, there is still no Regional standard (or guide) on Airspace Planning, nor adequate training or training for specialists who carry out this activity, which have generated obstacles to the efficient implementation of Airspace Concepts in South America:

- ✓ Lack of alignment with international best practices;
- ✓ Different TMA/CTR structured with different airspace organization techniques;
- ✓ Dependence on the individual talent of the specialist;

- ✓ Lack of standardization in the application of airspace organization techniques;
- ✓ Delays, re-works and difficulties in the implementation of Airspace Concepts;
- ✓ Dissatisfaction and disbelief of users in general (ATCO, pilots, airlines, etc.).

1.4 During the SAM/IG/25 meeting, in November 2020, the proposal for the formulation of Regional Standards and Guidelines on Airspace Planning was approved, as well as courses and training for specialists for the development of this activity, in order to solve this important gap that currently exists with respect to Airspace Planning in South America.

2. Development of Regional guidance on planning

2.1 As part of the actions carried out through project RLA/06/901, with respect to the optimization of the process of implementation of Airspace Concepts in the SAM Region, the ICAO SAM Regional Office requested the mission of an ATM specialist to develop the tasks of the Job Card "Airspace Planning" of the activity SG1/PANSOPS/01/2020 of the GESEA Work Plan 2022 (Airspace Study Group):

Develop a SAM Region Airspace Planning Manual containing the harmonized techniques of organization of the airspace structure (trajectories, airspaces, FUA, PBN concept, etc.)

2.2 The work was carried out between August 8 and 19, 2022, at the SAM ICAO Regional Office, based in Lima, Peru, which provided all the facilities of environments, equipment and documentation necessary for the development of this task. It had the collaboration of the PANS OPS specialist, Mr. Eloy Tafur of the DGAC PERU.

2.3 The deliverable produced is the "SAM Region Airspace Planning Guide Manual, Part I: Planning Techniques". This text is a first version and is expected to be analysed and enriched by the relevant bodies of the project, the Member States and the working groups concerned.<<

3. Activities deployed

3.1 Planning and preparation stage

3.2 The work plan was elaborated, the objectives, the scope of the project and the deliverable were set: Guide on Airspace Planning Techniques for the SAM Region.

3.3 In order to obtain this Guide, the following documentation was consulted:

- ✓ International Civil Aviation Organization. Manual on the Use of Performance Based Navigation (PBN) in Airspace Design. DOC 9992 AN/424. First Edition. 2013.
- ✓ International Civil Aviation Organization. Performance-Based Navigation (PBN) Manual. DOC 9613 AN/937. Fourth Edition. 2013.
- ✓ International Civil Aviation Organization. Continuous Climb Operations (CCO) Manual. DOC 9993 AN/495. First Edition. 2013.
- ✓ International Civil Aviation Organization. Continuous Descent Operations (CDO) Manual. DOC 9931 AN/476. First Edition. 2010.
- ✓ International Civil Aviation Organization. Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS). DOC 8168 OPS/611. First Edition. 2006.
- ✓ EUROPEAN COMMISSION. EUROCONTROL. European Route Network Improvement Plan (ERNIP). Part 1 – Airspace Design Methodology Guidelines. Edition 2.6. 2022.

- ✓ U.S. Department of Transportation. Federal Aviation Administration. Terminal Instrument Procedures (TERPS). ORDER 8260.3C. 2016.
- ✓ U.S. Department of Transportation. Federal Aviation Administration. Airspace Management Handbook. Version 2.1. 2004.
- ✓ BRASIL. Comando da Aeronáutica. Departamento de Controle do Espaço Aéreo. Conceito de Espaço Aéreo: MCA 100-19. [Rio de Janeiro], 2021.

3.4 **Development of the Manual**

3.4.1 The contents developed for the Guide were the following:

- ✓ Trajectories: Arrivals, Departures and Routes;
- ✓ Separation between trajectories;
- ✓ Holdings;
- ✓ Conditioned Airspaces; Airspace Organization (FIR, TMA and CTR);
- ✓ Sectorization – limits of the ATC service;
- ✓ Operational Scenarios.

4. **Achievements**

4.1 At the end of the work period, draft 0.0 "SAM Region Airspace Planning Guide Manual, Part I: Planning Techniques" was developed, including all the topics listed in the previous item. In the following GESEA channel link you will find a pdf version of the document;

<https://oaci.sharepoint.com/:f:/r/sites/SAM-CAR-ANS-GESEA/Shared%20Documents/GESEA/SG1%20PLAN%20EA/MANUAL%20GUIA%20PLANIF%20ESP%20AEREO?csf=1&web=1&e=3Cchzh>

4.2 The Guide Manual developed was delivered to the ATM/SAR Officer of the Lima Office, Mr. Fernando Hermoza, and will also be sent to the General Coordination of GESEA as one of the deliverables of the activity SG1/PANSOPS/01/2020 of the Work Plan 2022 of that group.

4.3 It is noted that the Guide developed has the character of a first version. Contributions are expected from other specialists, working groups concerned and sam states to enrich the material so that it can be used for the optimization of the process of implementing Airspace Concepts in the SAM Region.

4.4 The Airspace Planning Guide will be the basis for the realization of a Workshop on the same topic (Task 2 of the Job Card "Airspace Planning"), which is scheduled for **November 7 to 11, 2022, in Lima, Peru**. It is expected that, in addition to the training of specialists from the SAM Region, suggestions can also be received and improvements made in the material developed, so that it remains in accordance with international practices and more appropriate to the standards considered in the SAM States.

5. **Suggested actions**

5.1 The meeting is invited to analyze the information provided in this study note and to make comments and suggestions that may assist in the process of developing the Regional Guide on Airspace Planning Techniques.