Agenda Item 5: Other Business

RUNWAY SYSTEM CAPACITY AND ATC SECTOR COURSE

(Prepared by Brazil)

SUMMARY

This information paper presents the capacity course offered by Brazil to states to develop the calculations of Runway System Capacity at airports and ATC Sectors, as well as to understand its application in the context of the Air Traffic Flow Management Service (ATFM).

References:
- Guide for implementation of the ATFM Service in the SAM Region 2021 - 2025;
- Operations Plan for the SAM Region (OPSAM) 2021;
- Runway and ATC Sector Capacity Calculation Manual ATC 2022; and
- Doc 9750 - Global Air Navigation Plan (GANP).

1. Background

1.1 With the increase in the volume of air traffic, various studies were carried out to define the real rates of growth and whether the aeronautical infrastructure then available would be able to absorb the future need of aviation.

1.2 The Air Traffic Flow Management (ATFM) service seeks to balance these two factors: infrastructure capacity and demand, in favor of a safe, orderly and efficient air traffic flow, ensuring that the capacity of the system is used to its maximum extent and that the transit volume is compatible with the capacities declared by the competent authority.

1.3 Thus, the balance between capacity and demand is the basis for the ATFM; knowledge and determination of such parameters are of fundamental importance for the provision of that service. The search for the balance between these two elements has not only been an end to be achieved, but also has been promoting the development of various studies of capacity calculation, in order for the system to be operationalized in an optimized and secure manner, according to the needs of the users.

1.4 The capacity of the airport (which includes the capacity of the runway, parking and passenger terminal) and the capacity of the airspace (or the ATC Sector) are components that require their own methodology with or potential to establish the appropriate capacities to the regulated elements, in addition to pointing out possible solutions for the efficient use of the available infrastructure.

1.5 Runway and ATC Sector capabilities are affected by many factors such as, for example, the configuration or geometry of the airport, the organization of airspace, operational procedures adopted at the airport (such as the pattern of runway use); technology and human factors (ATCO and users). Thus, it is of fundamental importance that the capacity of the ATC sector is harmonized with

the runway capacity, as well as the capacity of the passenger terminals is sufficient to meet the planned demand. Otherwise, system saturation will occur and, consequently, an increase in delay rates.

1.6 Air traffic control and airport infrastructure must have sufficient capacity to serve air traffic, including at peak intervals. However, it is noted that, in many cases, the accelerated growth of air traffic is not followed, in the same proportions, by the installed infrastructure. This scenario can cause an imbalance between installed capacity and expected demand, reflecting in the volume of ATC workload, in addition to resulting in restrictions on air movement.

1.7 Traffic growth indicators should be constantly monitored and compared with the capabilities of the runway system and ATC sectors. The analysis of this data will allow to identify possible imbalances between the programmed demand and the available ATC capacities.

1.8 In this context, air traffic flow management will promote flow optimization, reducing waits both in flight and on the ground, as well as preventing overload in the system and its consequent implications for the safety of operations, that is, balancing demand and capacity.

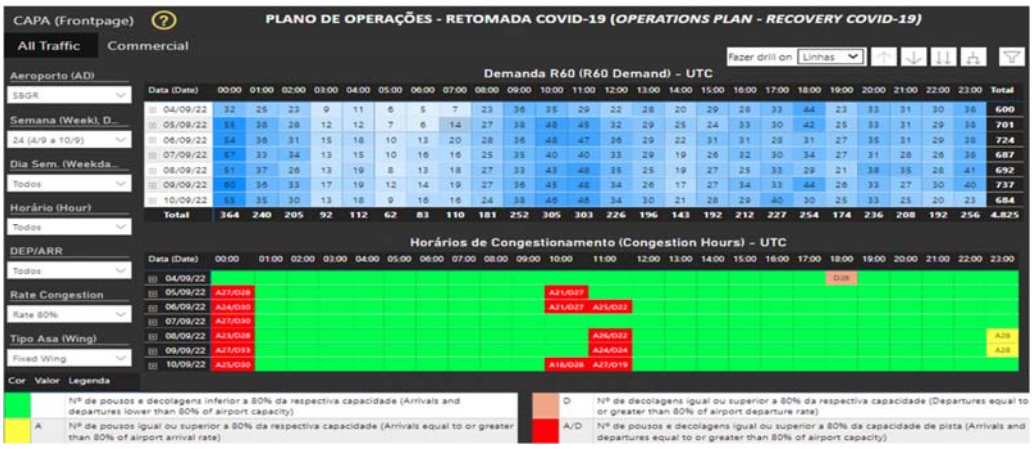
2. Analysis

2.1 The definition of the capacities of the ATC and runway system sectors is of fundamental importance for the management of the ATFM service. Thus, it is essential that the variables are collected and analyzed according to the appropriate methodologies for ATC capacity calculations.

2.2 Demand and capacity monitoring is based on the performance of the ATC and airport sectors with the aim of identifying possible saturations (imbalances) so that ATFM service providers can adopt actions to optimize ATC capacities.

2.3 The proposal of this work is to offer the States of the SAM Region the capacity courses of the runway system and ATC sectors, so that, in the short term, the States can develop monitoring tables based on the capabilities of the runway and airspace system and obtain the strategic diagnosis of possible imbalances in airports and airspace, as presented in Figures 1 and 2.

Figure 1 – Strategic monitoring of demand for SBGR/Brazil airport (S22).



Source: Operational Portal of the CGNA (http://portal.cgna.decea.mil.br/).

2.4 Strategic airspace and runway analyses for the States of the SAM Region will be essential for the application of adjusted ATFM measures, to provide the operational efficiency of the system, increasing ATC capacity, reducing flight distance/time, the number of waits in flight, providing more fluidity in airspace and at airports.

Figure 2 – Strategic monitoring of demand for ATC sectors of Brazilian air space

Source: Operational Portal of the CGNA (http://portal.cgna.decea.mil.br/).

2.5 In order to support States in complying with the provisions for the ATFM PHASE I (Capacity/Demand) of the Guide for the Implementation of the ATFM Service in the SAM Region, Brazil will provide a course on runway system capacity and ATC sector (20 places) in two phases; the first, theoretical, to be carried out remotely in the period from April 3 to 14, 2023; the second phase, practical, will be carried out *face to face*, from April 17 to 28, 2023, at Rio de Janeiro International Airport (Galeão), Brazil.

3. Suggested actions

3.1 Take note of the information presented in this information paper;

3.2 Contact ICAO SAM Office in case of interest in attending the course offered by DECEA.

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