International Civil Aviation Organization
CAR/SAM Regional Planning and Implementation Group (GREPECAS)

WORKING PAPER

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Twenty-first Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS/21)
Santo Domingo, Dominican Republic, 15 to 17 November 2023

Agenda Item 3: Global and Regional Developments
3.3 CAR/SAM Air Navigation Services (ANS) Implementation Level

PROPOSED TRANSITION FROM RNAV 5 TO RNAV 2 OF THE NORTH AMERICAN AND CARIBBEAN REGION UPPER ATS ROUTE NAVIGATION SPECIFICATION.

(Presented by Dominican Republic)

EXECUTIVE SUMMARY	
This working paper presents a proposal to change the navigation specification of the NACC Region's upper ATS routes from RNAV 5 to RNAV 2.	
Action:	Under Section 3.
Strategic Objectives:	• Safety • Air Navigation Capacity and Efficiency • Environmental Protection
References:	• ICAO Doc 9613 Performance Based Navigation (PBN) Manual. • - ICAO Doc 8168 Procedures for Air Navigation Services Aircraft Operation Volume II - Construction of Visual and Instrument Flight Procedures.

1. Introduction

1.1 The Performance Based Navigation Manual, Doc 9613, defines several navigation specifications to be applied in continental en route airspace; two of the most common are RNAV 5 and RNAV 2. The RNAV 5 navigation specification is based on B-RNAV (Basic RNAV) implemented by the European Civil Aviation Conference (ECAC) on 23 April 1998.

1.2 The RNAV 5 navigation specification is based on technology more than 20 years old, being less efficient than the RNAV 2 specification, which arises from precision area navigation (P-RNAV) and is the result of the harmonization of European and United States RNAV criteria.

1.3 Since the emergence of the PBN concept in 2008, most countries in the region have applied the RNAV 5 navigation specification to their upper and lower ATS route structure until today, so its revision is desirable.

2. Development

2.1 The RNAV 2 navigation specification, in addition to being applied in continental route, can be applied in SID, STAR and even in instrument approach procedures (IAP) up to the final approach fix (FAF), which does not apply to RNAV 5.

2.2 Most of the States in the NACC region have implemented PBN-based STAR and SID procedures, with RNAV 1 being the most common navigation specification. This indicates that most operators performing PBN standard arrivals and departures procedures are able to obtain operational approval for RNAV 2 with no major difficulty.

2.3 NAVAID infrastructure requirements for RNAV 2 include GNSS, DME/DME and DME/DME/IRU, providing a variety of navigation aids in an upper ATS routing environment.

2.4 Even though RNAV 2 has been developed primarily for RNAV operations in a radar environment, the ICAO Performance Based Navigation Manual states that RNAV 2 may be used in a non-radar environment if the state of implementation ensures adequate system safety and responds to the lack of on-board performance monitoring and alerting.

2.5 For airspace designers, the spacing between ATS routes can be significantly reduced by moving from RNAV 5 to RNAV 2, increasing airspace capacity. It is recognized that the NAM/CAR Regions are testing for a transition to route-free airspace (FRA) in the medium to long term, even so, the ATS route structure should provide adequate airspace capacity for those States where FRA cannot be implemented.

2.6 RNAV 2 routes are intended for DCPC. This is also a requirement for RNAV 5, so this element should not be considered as a constraint for the transition from RNAV 5 to RNAV 2.

3. Required Action

3.1 The meeting is invited to:

a. evaluate the proposed transition from RNAV 5 to RNAV 2 of the ATS route navigation specification in upper airspace.

b. address, through the region's AO/TF airspace optimization task group, the evaluation process of this transition, as well as support for any comments or suggestions in this regard.

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