

INTERNATIONAL CIVIL AVIATION ORGANIZATION
EIGHTH MEETING OF CIVIL AVIATION AUTHORITIES OF THE SAM REGION
(RAAC/8)

(Buenos Aires, Argentina, 23-25 April 2003)

Agenda Item 4: Regional Air Navigation Plan – Transition to the CNS/ATM Systems

IMPLEMENTATION OF RNAV ROUTES, RNP10 AND RVSM

(Presented by the Secretariat)

Summary

This working paper submits to the consideration of the meeting a summary of the action taken since the RAAC/7 meeting regarding the implementation of RNAV routes, RNP and RVSM.

References

- Report of the RAAC/6 meeting;
- Report of the RAAC/7 meeting;
- Report of the Third Meeting/Workshop of Air Traffic Management Authorities and Planners (AP/ATM/3) (Lima, Peru, 20-24 May 2002);
- Report of the Fourth Meeting/Workshop of Air Traffic Management Authorities and Planners (AP/ATM/4) (Santa Cruz, ,Bolivia, 27-31 January 2003);
- Report of the Tenth Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS/10);
- Report of the Eleventh Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS/11);
- Report of the Fifth Meeting of the CAR/SAM Traffic Forecasting Task Force (CAR/SAM TFG).

1. Introduction

1.1 The Seventh Meeting of Civil Aviation Authorities (RAAC/7, Bahia, Brazil, July 2002), as a follow-up to the action recommended in Conclusion 6/6 of the RAAC/6 meeting, took note of all the plans developed by the GREPECAS mechanism for the implementation of RNAV routes, which are the first step towards the introduction of applications within the concept of ICAO CNS/ATM systems, which are providing significant flight time, fuel and safety benefits to operators.

1.2 Regional project RLA/98/003 “Transition to the CNS/ATM systems in the CAR/SAM Regions” became a tool for implementation and assistance to States/international organizations, and the meetings of air traffic management authorities and planners take place within its framework. These meetings allow ATM experts from the States in the region to get together to discuss RVSM and RNP implementation plans and to undertake the implementation of RNAV routes, treating them as an overall origin-to-destination system.

2. Analysis

Implementation of RNAV routes

2.1 The RAAC/7 meeting agreed that efforts made through the aforementioned mechanisms should go hand in hand with a high level of commitment by SAM States and all those involved in ATS improvement, to coordinate work as much as possible for the effective and efficient attainment of objectives. In this sense, it formulated CONCLUSION 7/4 – SUPPORT TO THE IMPLEMENTATION OF RNAV ROUTES, urging civil aviation authorities of the South American Region to give as much support as possible to the commitments assumed in the RNAV route implementation plans established by the GREPECAS mechanism and to the corresponding tasks scheduled by regional project RLA/98/003 for the successful completion of RNAV route implementation plans.

2.2 Within the framework of project RLA/98/003, the Third Meeting of Air Traffic Management Authorities and Planners (AP/ATM/3) was held in Lima-Peru, on 20-24 May 2002. The meeting, among other things, agreed to the implementation of the following RNAV routes: UL 417 (Buenos Aires/Miami); UL 655 (Sao Paulo/Los Angeles); UL 776 (Sao Paulo/New York); UL 793 (Buenos Aires/New York); UL 674 (Caracas/Houston); UL 337 (Port of Spain/Miami); UL 423 (Bogota/San José/Mexico); UL 471 (San Salvador/Miami) and the Cabo Codera (CBC) VOR/DME-Great Inagua (ZIN) segment of route UL 304.

2.3 Subsequently, and following the steps taken by the NACC and SAM Regional offices, the ICAO Council approved on 24 November 2002 the incorporation of these routes into the Air Navigation Plan – Basic Volume.

2.4 Likewise, the AP/ATM/4 meeting held in Santa Cruz, Bolivia, on 27-31 January 2003, began studies and coordination for the implementation of the following RNAV routes: Santiago de Chile/Madrid; Asunción/Campo Grande; Sao Paulo/Lima; Sao Paulo/Santiago de Chile; Asunción/Sao Paulo and Panama/San Juan of Puerto Rico.

2.5 The results of the implementation of RNAV routes in the CAR and SAM Regions are quite significant. Major benefits include:

- a) Reduction of flight distances and times.
- b) Significant fuel and, thus, money savings. As an example, and according to IATA reports in this regard, estimated annual savings up until May 2002 were: UT 655 Sao Paulo-Los Angeles: (60 NM) U\$ 2.800.000; UT 410 Buenos Aires-Miami: (40 NM) U\$ 2.800.000.
- c) More possibilities of obtaining optimum flight levels.
- d) Flexible use of airspace, by allowing overflights on restricted areas and special-use airspaces.

- e) Uniform application of longitudinal separation.
- f) Improvements in ATS and ground/air voice communication deficiencies.
- g) Great experience in planning and implementation gained by ATS service provider personnel.
- h) Use of the Mach Number Technique (MNT).
- i) Significant improvements in coordination among all parties involved.

Pre-operational implementation of RNP10 in routes UL780 and UL302 (Santiago de Chile/Lima)

2.6 The AP/ATM/3 meeting held a thorough discussion on this subject, and considered that routes UL 780 and UL 302, which run parallel along the Santiago-Lima segment, would have no problems in applying for a pre-operational implementation in that segment. Consequently, the meeting approved Conclusion AP/ATM/3/13 – Implementation of the RNAV RNP 10 Trial and Demonstration Programme in the Santiago de Chile/Lima segment of parallel routes UL 780 and UL 302.

2.7 At the AP/ATM/4 meeting, Chile and Peru ratified their commitment to proceed with the pre-operational implementation of RNP 10 and, together with the CAR/SAM Regional Monitoring Agency (CARSAMMA), represented by Brazil, established data collection mechanisms in order to perform the safety assessment, as well as the updating of the Action Plan for the implementation of RNP 10 in the cited segment, foreseen for 20 January 2004.

Implementation of RNP in the CAR/SAM Regions

2.8 The AP/ATM/4 meeting agreed that matters related to RNP planning and implementation in the CAR/SAM Regions should also be examined by the meetings of ATM authorities and planners. It also set the foundations for beginning preliminary studies on a strategy for RNP application in the CAR/SAM Regions. The results of those studies will be submitted to and analysed by the AP/ATM/5 meeting, scheduled for June of this year.

Implementation of RVSM in the CAR/SAM Regions

2.9 The GREPECAS/11 meeting held in Manaus, Brazil, on 3-7 December 2002, analysed the work on RVSM carried out by the AP/ATM/3 meeting, the ATM/CNS Subgroup, and the RVSM Task Force. The meeting considered it advisable for the Regional Monitoring Agency to be definitively entrusted to Brazil on the basis of its experience with RVSM matters, the investment made in the establishment of the CAR/SAM Regional Monitoring Agency (CARSAMMA), and the need to move forward with the regional RVSM implementation programme.

2.10 Furthermore, taking into account Conclusion 11/23 of the GREPECAS/11 meeting, the AP/ATM/4 meeting approved Conclusion AP/ATM/4/20, requesting States/international organisations to adjust RVSM implementation plans to 20 January 2005, consistent with the NAM Region.

2.11 The most significant achievements related to RVSM implementation prior to the AP/ATM/4 meeting include the following:

- Establishment of the CARSAMMA infrastructure;

- Training of CARSAMMA personnel at the FAA William J. Hughes Technical Center, through the extension of a pre-existing bilateral agreement between Brazil and the United States;
- Development and review of the Guidance Material for the Implementation of RVSM in the CAR/SAM Regions (this document is expected to be completed at the AP/ATM/5 meeting);
- Preliminary cost-benefit analysis of RVSM implementation in the CAR/SAM Regions, submitted by the FAA (see the report on Item 3, par. 3.8 and Appendix C to Item 3 of the AP/ATM/4 meeting);
- Development and review of the RVSM Operational Concept (CONOPS);
- Review and adoption of the guidance material for the development of a National RVSM Implementation Programme (Conclusion AP/ATM/3/25 of the AP/ATM/3 meeting).

3. **Conclusion**

3.1 Reports available at the ICAO South American Office indicate that, at present, several SAM States, using the guidance material adopted at the AP/ATM/3 meeting, are actively working to develop, as soon as possible, a national RVSM implementation programme that is consistent with the regional implementation programme, and that they are also working on RNAV and RNP.

3.2 Based on the foregoing, it may be noted that regional implementation of RNAV routes, RNP and RVSM is achieving, one by one, the goals set forth in the respective implementation programmes, thanks to the committed participation of all the States and international organisations involved. This participation is possible thanks to the efforts and support provided by top management authorities of the various aeronautical administrations of the SAM Region.

4. **Suggested action**

4.1 The meeting is invited to:

- a) take note of the information supplied in this working paper;
- b) continue its efforts aimed at achieving a broad and committed participation of high-level authorities and experts of each work area in all of the activities required for the implementation of RNAV routes, RNP and RVSM in the CAR and SAM Regions.
- c) urge all SAM States that have not yet done so, to adopt the corresponding measures in order to comply with Conclusion 7/8 of the RAAC/7 meeting, regarding the development of a national RVSM implementation programme.