

Agenda Item 3: Review of the matters related to RVSM Implementation in the CAR/SAM Regions

General

Analysis of the conclusions on RVSM adopted during GREPECAS 11 Meeting

3.1 This Agenda Item was reviewed by the plenary and by the ATC and OPS/AIR Working Groups. The results of the deliberations and conclusions are as follows.

3.2 The meeting took note of the activities carried out by GREPECAS/11 related to RVSM implementation in the CAR/SAM Regions. In this respect and after an in depth discussion on RVSM implementation in only one phase, GREPECAS/11 formulated Conclusion 11/23, where CAR/SAM States and COCESNA were requested to plan RVSM implementation in the flight information regions under their jurisdiction in only one phase, from FL 290 to FL 410 inclusive, in accordance with NAM Region. For ease of reference, **GREPECAS Conclusion 11/23** and other Conclusions and Decisions of GREPECAS/11 related to RVSM are presented in **Appendix A** to this part of the Report.

3.3 GREPECAS/11 also requested (**Decision GREPECAS 11/24**) that the ATM/CNS Subgroup, in order to reach a harmonious RVSM implementation, continue its activities and work programme to carry out the implementation in only one phase, from FL 290 to FL 410, develop an operational concept and establish the most appropriate procedures in order to facilitate the implementation in those States that might have difficulties to accomplish the RVSM implementation in only one phase and put under GREPECAS/12 consideration the results obtained for their evaluation and relevant actions.

3.4 When continuing the examination of this matter and reviewing the conclusions proposed by the ATM Committee as regards general considerations for RVSM implementation, GREPECAS/11 approved the following conclusions:

CONCLUSION 11/26	POINT OF CONTACT FOR THE ATS SERVICE PROVIDER
CONCLUSION 11/27	POINT OF CONTACT FOR THE AIRCRAFT AND OPERATOR APPROVING STATE
CONCLUSION 11/28	AIR TRAFFIC CONTROL AUTOMATED SYSTEMS
CONCLUSION 11/29	FLIGHT LEVEL OCCUPANCY ANALYSIS
CONCLUSION 11/30	HEIGHT-KEEPING PERFORMANCE MONITORING
CONCLUSION 11/31	HEIGHT KEEPING PERFORMANCE MONITORING SERVICE
CONCLUSION 11/32	PARTICIPATION IN THE RVSM TASK FORCE

Regional Monitoring Agency for the CAR/SAM Regions (RMA CARSAMMA)

3.5 Bearing in mind the work already accomplished by Brazil, its experience in RVSM matters, the investment made for the establishment of CARSAMMA as the regional monitoring agency, and the need to move ahead with the RVSM implementation programme, GREPECAS/11 Meeting considered that it would be more advisable that the RMA be assigned to Brazil, adopting Conclusions 11/33 and 11/34 on this matter.

3.6 Monitoring Agency for CAR/SAM Regions (CARSAMMA) was established to assume the duties and responsibilities of the Regional Monitoring Agency for the CAR/SAM Regions. The principal role of CARSAMMA is to assist the International Civil Aviation Organization (ICAO) in the process of safety assessment for the implementation of Reduced Vertical Separation Minimum (RVSM) and other monitoring requirements as determined by the CAR/SAM Planning and Implementation Regional Group (GREPECAS).

3.7 The meeting took note that the CARSAMMA signed Annex 2 to MOA NAT-I-0019, subject: Establishment of CAR/SAM Monitoring Agency, between the Federal Aviation Administration (FAA) and the Brazilian Airspace Control Department (DECEA). This Annex set forth the terms and conditions for the transfer of know-how from the Asia/Pacific Approvals Registry and Monitoring Organization (APARMO) located at the United States Federal Aviation Administration's William J. Hughes Technical Center, to Brazilian specialists in charge of the CAR/SAM Regional Monitoring Agency.

Training for CARSAMMA personnel

3.8 After the RVSM TF-3 meeting and the MOA between FAA and DECEA was completed, the training was conducted by FAA for a group of CARSAMMA specialists with mathematical and ATC backgrounds. The training program addresses five primary functions of CARSAMMA, which are to:

- Establish and maintain a database of State RVSM approvals;
- Monitor aircraft height-keeping performance and the occurrence of large height deviations against established requirements and report results appropriately;
- Conduct safety assessments and report results appropriately;
- Inspect operator compliance with State approval requirements after RVSM implementation;
- Initiate remedial actions if RVSM requirements are not met.

3.9 The training program consists of four phases, including:

- **Phase 1** – Provide initial guidance on the five primary functions of CARSAMMA;
- **Phase 2** – Conduct side-by-side apprenticeships to review and test the application of the specialized tasks for the safe conduct of CARSAMMA duties and responsibilities;
- **Phase 3** – Provide advanced guidance, and address issues as a result of the side-by-side apprenticeships; and
- **Phase 4** – FAA specialists perform a one week temporary duty assignment at CARSAMMA to finalize the transfer of know-how.

CARSAMMA Infrastructure

3.10 The meeting took note that the CARSAMMA has been preparing the infrastructure to support the duties and responsibilities of the Monitoring Agency for the RVSM implementation.

➤ **CARSAMMA points of contact:**

CARSAMMA contact person:	Luis Carlos Rocha
CARSAMMA phone number:	(55-12) 3913-3206
CARSAMMA fax number:	(55-12) 3913-1822
CARSAMMA address:	Av. Brig Faria Lima, 1941 Cep: 12227-000, São José dos Campos, São Paulo, Brazil

CARSAMMA email: carsamma@cgna.gov.br

CARSAMMA Web page:

- Text in Spanish: www.cgna.gov.br/carsam/español/index.htm
- Text in English: www.cgna.gov.br/carsam/english/index.htm

3.11 In order to enable CARSAMMA to accomplish the duties assigned by GREPECAS, the meeting found it appropriate to formulate the following conclusion:

Conclusion AP/ATM/4/15 Collection of data on height deviations

That CAR/SAM States and International Organizations initiate the data collection concerning:

- a) gross height deviation (more than 300ft) in support of the risk analysis and send it to CARSAMMA using the form presented in **Appendix B** to this part of the report; and
- b) the aircraft already RVSM approved and send such information to CARSAMMA to establish the database of approved aircraft and perform the readiness assessment.

Review of the Draft Guidance Material for RVSM implementation in the CAR/SAM Regions

3.12 The meeting recalled that during the Second Meeting of the RVSM Task Force of the ATM Committee of the GREPECAS ATM/CNS Subgroup, (Sao Jose dos Campos, Sao Paulo, Brazil, 8-10 July 2002), based on ICAO Doc. 9574, Manual on Reduced Vertical Separation Minima (RVSM), as well as the corresponding documentation of the North Atlantic (NAT) and Asia/Pacific (ASIA/PAC) Regions, it was decided to adopt a draft of the *Guidance Material on Implementation of 300 m (1 000 ft) Reduced Vertical Separation Minimum between FL 290 and FL 410 inclusive for application in the Caribbean and South American Regions Airspace*, for its analysis, development and updating by the RVSM Task Force. (The electronic version of this document can be find in the ICAO South American Office WEB page: <http://www.lima.icao.int>).

3.13 Considering that all the documentation related with RVSM Implementation in the CAR/SAM Regions must contain the same information, it is necessary that the corresponding Working Groups of the RVSM Task Force involved in such implementation process make a thorough review and verification so that the referred documentation, Doc. 7030 *Guidance Material on Implementation of 300 m (1 000 ft) Reduced Vertical Separation Minimum between FL 290 and FL 410 inclusive for application in the Caribbean and South American Regions Airspace* and the AIC contain precise, uniform and consistent information before its corresponding approval and publication.

Conclusión AP/ATM/4/16 Review of the Draft Guidance Manual for RVSM implementation in the CAR/SAM Regions

That, taking into account ICAO documentation related to RVSM, CAR/SAM States and International Organizations carry out a review of the Draft Guidance Manual for RVSM implementation in the CAR/SAM Regions and present the results of such review in the forthcoming AP/ATM/5 Meeting.

Preliminary FAA cost/benefit analysis

3.14 The Meeting had the opportunity to take note of the information of an initial cost/benefit analysis for the CAR/SAM Regions presented by the FAA. Such information is presented in **Appendix C** to this part of the report.

List of commercial aircraft registered in the CAR/SAM Regions

3.15 IATA presented to the meeting a detailed list of jet commercial aircraft registered in the CAR/SAM Regions. The listing includes operators and their contact points.

3.16 This list includes all commercial jet aircraft registered in the CAR/SAM Regions dedicated to any non-military activity such as: Passengers transportation, cargo, taxi, business, medical, photography etc. It does not include government or military aircraft used for general transportation, executive or VIP transportation. The list is based upon fleet status of aircraft registered in the year 2002.

3.17 The list states aircraft registration, type and model, aircraft activity, State of registry, operator, operator's base, operator's headquarters and operator's contacts.

3.18 Aircraft registered in States outside of the CAR/SAM Regions, but operated by a company based in a State of the CAR/SAM Regions, are also listed. The reason for this listing is that although the aircraft have to be RVSM approved by the State of register, the airline operating these types of aircraft have to be RVSM approved by the State where the airline is based.

3.19 The purpose of this list is to provide the States' RVSM focal points with preliminary information on the status of the fleet based in the State. Additionally, this information is useful for CARSAMA to obtain an idea of the number of aircraft to be certified, monitored and approved.

3.20 Since the information contained herein is changing constantly, the States' RVSM focal points should be responsible to update the list and inform CARSAMA and the RVSM Task Force's working groups.

3.21 Consequently and considering the usefulness of the information provided, the meeting adopted the following conclusion:

Conclusion AP/ATM/4/17 List of commercial aircraft registered in the CAR/SAM Regions

That the States and CARSAMMA use the aircraft list presented in **Appendix D** to this part of the report to carry out the follow up of RVSM progress of the operators based in the CAR/SAM Regions.

Aircraft Operation and Airworthiness Working Group (OPS/AIR/WG)

3.22 The OPS/AIR Working Group initiated the discussions and elected Mr. Jairo Sandoval, delegate from the Colombian administration, as Chairman. Afterwards, the Group's terms of reference and work programme were reviewed.

3.23 Subsequently, the participants took note of the contents of the reference documentation for RVSM implementation available at the FAA Web page, identifying the documents that should be used as guidance to make the Spanish version for the preparation of the documentation to be adopted by CAR/SAM States for aircraft approval and operation in RVSM airspace. In view of the above, the following conclusion was formulated:

Conclusion APATM4/18 Reference documentation for the approval and aircraft operation in an RVSM airspace

That the States/International Organizations of the CAR/SAM Region use the reference documentation provided through the OPS/AIR Working Group in Spanish adopting as guidance publication the Interim Guidance (IG) 91-RVSM published by the FAA.

3.24 Subsequently, the members of the OPS/AIR Working Group reviewed the contents of an operator's Check List for RVSM approval and took note of the organization and utilization of the requirements of Appendix 7 of the IG-91 RVSM document (Revision 1).

3.25 In order to finalize the issues considered in the meeting, the participants established the date 28 February 2003 so that the Civil Aviation Authorities of the CAR/SAM Regions assign the members of the Working Group and agreed that the working methodology to be applied would be the same as for RVSM implementation in other ICAO regions.

3.26 Additionally, the working programme was updated establishing new target dates for some of the tasks included in the working programme of the Group, which appears in **Appendix B** to this part of the Report, updating those tasks that would be jointly accomplished with the ATC Working Group.

3.27 The meeting took note of the importance that the aeronautical authorities remind their operators to accomplish the dispositions established in ICAO Annex 6 related to ACAS II installation, as on board equipment of their aircraft, which is foreseen for January 2003.

ATC Operations Working Group (ATC/WG)**RVSM Concept of Operations (CONOPS)**

3.28 The ATC Working Group (ATC/WG) of the RVSM Task Force met in order to analyze Version 1.1 of the RVSM Concept of Operations document (CONOPS).

3.29 After a fruitful discussion, where most of the States made significant contributions, important modifications were made, which are considered in Version 1.2 of the document.

3.30 The importance of including the following items in the document was highlighted:

- An index with ATS points of contact of each State/International Organization, RVSM Task Force Rapporteur, Presidents of the Working Groups, as well as the address of the RVSM WEB page and the CARSAMMA.
- Refer to the cost/benefit analysis for the CAR/SAM Regions in the introduction of the CONOPS document.
- Consider the separation procedures according to the SARPS.
- Definitions of some terms of the document.
- The need to identify the transition areas and the procedures through Letters of Agreement.
- Wait for a definition of the Safety Airspace and Separation Panel (SASP) regarding the development of global standards for lateral deviations applicability.
- Consider pre and post operational data collection.

3.31 The meeting took note of the Colombian proposal to study, when necessary, the modification of the Flight Level Chart of Annex 2, Appendix 3 in order to consider the north-south traffic flows.

3.32 The meeting recognized the need to use the Guidance for the development of a RVSM Implementation National Plan approved by Conclusion AP/ATM/3/25 of the AP/ATM/3 Meeting, as guidance material to plan RVSM implementation in each State and International Organizations.

3.33 In view of the above, the Group agreed to adopt the following Conclusion:

Conclusion AP/ATM/4/19 RVSM Concept of Operations for the CAR/SAM Regions (CONOPS)

That:

- a) version 1.2 of the Concept of Operations (CONOPS) for RVSM implementation in the CAR/SAM Regions presented in **Appendix E** of this part of the report is approved; and
- b) the CONOPS could be periodically amended whenever applicable.

Lateral deviations

3.34 The ATC/WG considered necessary to carry out coordinations with the OPS/AIR/WG in order to study the convenience of lateral deviations application (Lateral Offsets) in the CAR/SAM Regions and that the results will be informed in the next AP/ATM/5 meeting.

Traffic simulations in a RVSM scenario

3.35 The Group analyzed the convenience of developing traffic simulations to evaluate the RVSM implementation impact, identify the problems and evaluate possible solutions.

3.36 These simulations should accurately reflect the anticipated operational environment of each volume of airspace where RVSM will be implemented. States/International Organizations should take note of scenarios that can be experienced in RVSM operations, such as non compliant aircraft, suspension of RVSM operations due to weather or equipment failures and other contingency situations.

3.37 The meeting recalled that the simulations developed for the United States domestic airspace were available in the FAA Web page and could be used as guidance material.

Harmonization of RVSM Implementation date

3.38 The FAA informed that the target date for RVSM implementation in North America would be 20 January 2005 and, consequently, the meeting approved the adoption of this date in view of GREPECAS mandate in order to harmonize the implementation plans of the CAR/SAM Regions with the NAM Region.

3.39 In view of the above, the following Conclusion was approved:

Conclusion AP/ATM/4/20 Establishment of RVSM implementation date in the CAR/SAM Regions

That, CAR/SAM States/International Organizations establish RVSM implementation planning for 20 January 2005 consistently with the NAM Region.

Advance AIC/NOTAM Model

3.40 The meeting recognized the need for the earliest possible communication to the users of the intention to implement RVSM in the CAR/SAM Regions. To this end, the ATC Working Group developed an advance AIC to be used by the States as a template. The States agreed to publish their advance AIC no later than April 17, 2003. Likewise, some States expressed the convenience of issuing a NOTAM regarding this AIC ensuring in this way that this information is received by all the users.

3.41 In this sense the meeting agreed to make the following Conclusion:

Conclusion AP/ATM/4/21 Advance AIC/NOTAM Model

That the States use the RVSM Implementation Aeronautical Information Circular/NOTAM contained in **Appendix F** to this part of the Report, making the necessary changes to reflect

their individual situations, to notify operators and system users of their intent to implement Reduced Vertical Separation Minimum standards within their airspace on 20 January 2005, and that this information be published not later than 17 April 2003.

CAR/SAM RVSM ATS Status

3.42 **Appendix G** shows the results of a survey conducted to the States regarding their intentions in three areas:

- Intention to accommodate non approved aircraft in their domestic airspace
- Intention to publish an advance AIC by April 17, 2003
- Intention to conduct ATC simulations

3.43 In this respect, the IFALPA representative informed that this federation is actively supporting RVSM development and implementation in the different ICAO Regions and that during such process important issues have arisen, such as:

- Compatibility of RVSM with ACAS/TCAS;
- Turbulence (including wake turbulence); and
- Traffic monitoring (height keeping monitoring/real time identification of aberrant aircraft, compliance of individual airframes).

3.44 One of the issues considered particularly important for IFALPA is that the entry into RVSM airspace should be carefully controlled, so that only fully RVSM qualified aircraft are admitted (those identified by tail number, checked versus on-line database of certified aircraft) and that non-compliant aircraft should be excluded from RVSM airspace or provided with other means of separation, depending on ATS capability.