



Agenda Item 1: Analysis of the results obtained at the GTE/9 Meeting at the Piarco and Maiquetía FIRs boundaries

ACTIONS ADOPTED BY GREPECAS/15 MEETING WITH RESPECT TO RVSM POST-IMPLEMENTATION SAFETY ASSESSMENT

(Presented by the Secretariat)

Summary

This working paper presents information on the matters dealt with during GREPECAS/15 Meeting as regards CAR/SAM Regions airspace safety assessment, after three years of RVSM application in the CAR/SAM Regions.

References:

- GREPECAS/15 Meeting Report
- GTE/9 Meeting Report

ICAO Strategic objectives:

Strategic Objective A *Safety*
Strategic Objective C *Environmental Protection*
Strategic Objective D *Efficiency*

1 Background

1.1 GREPECAS/15 Meeting, held in Rio de Janeiro, Brazil, from 13 to 17 October 2008, took note of the activities carried out by the ATM Committee with regard to the operational use of RVSM in the CAR/SAM Regions and that CARSAMMA carried out a RVSM post-implementation safety assessment.

2 Analysis

Safety assessment of the CAR/SAM airspace after three years of RVSM application

2.1 GREPECAS/15 Meeting noted that total risk reached in the Region is due to the fact that approximately 93% of large height deviations (LHDs) were caused by errors in ACC unit-to-unit transfer message (M errors) and lack of coordination by transferring ATC units (N errors). It was recognized that these errors and not RVSM operations caused LHD events regardless of the vertical separation applied.

2.2 The vertical collision risk due to a combination of technical height-keeping errors and operational errors estimated in terms of number of fatal accidents per flight hour by 2008 exceeded the acceptable target level of safety (TLS), which is 5×10^{-9} . For the CAR Region the level was 12.3×10^{-9} , for the SAM Region 34.9×10^{-9} , and for the CAR/SAM Regions combined the level was 28.9×10^{-9} . GREPECAS concluded that in order to reduce risk values, corrective action is necessary to eliminate M and N type errors.

2.3 As additional reference, it may be mentioned that during the CNS/ATM/1 Meeting, carried out in Lima, Peru, from 15 to 19 March 2010, CARSAMMA presented a new RVSM airspace safety assessment of the CAR/SAM Regions for 2009, where it was noted that the assessment shows that the collision risk for any of the regions is greater than the reference TLS 5.0×10^{-9} of fatal accidents flight hour. The operational risk for the CAR Region is higher than the reference value, approximately 16 times the TLS. For the SAM Region, it was approximately 7 times the TLS. The CAR/SAM system presents a total operational risk of approximately 10 times the TLS.

Note: This information has not been assessed yet by GREPECAS.

2.4 In continuing with the analysis, GREPECAS/15 agreed on the need to replace GREPECAS Conclusion 13/61 - *Measures to reduce operational errors in the ATC coordination loop between adjacent ACCs* in order to update it, keeping the programme for the prevention of ATC coordination loop errors between adjacent ATS units and additional measures associated with this prevention programme. Accordingly, the Meeting adopted the following conclusion:

CONCLUSION 15/36 MEASURES TO REDUCE OPERATIONAL ERRORS IN THE ATC COORDINATION LOOP BETWEEN ADJACENT ACCs

That taking into account the impact of operational errors in the ATC coordination loop between adjacent ACCs on air operations safety:

- a) *CAR/SAM States/Territories/International Organizations apply, on an urgent basis among other measures, the programme for the prevention of errors in the coordination loop between adjacent ACCs described in **Appendix F** to this part of the Report (See **Appendix A** of this working paper), in order to reduce LHDs caused by errors in traffic coordination messages between ATC units to achieve an acceptable target level of safety;*
- b) *CAR/SAM States/Territories/International Organizations gradually implement the interface for data exchange among ATC units (AIDC); and*
- c) *ICAO coordinate, provides assistance, and conduct follow-up on the implementation of these corrective measures.*

2.5 In view of the above, the Meeting will be able to revise the coordination error prevention programme in the coordination cycle between adjacent ACC, and assess, if not assessed yet, the application of such programme in the control centres involved. The programme comprises actions that must be adopted by the State as a regulatory body, the ATS authority or ATS provider, the ATC personnel, and additional measures at short and midterm.

3 **Suggested action**

3.1 The meeting is invited to:

- a) Take note of the action taken by GREPECAS/15;
- b) Analyse the error prevention programme in the coordination cycle between adjacent ACCs as shown in **Appendix A**; and
- c) Adopt the additional actions deemed pertinent.

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APPENDIX A

ERROR PREVENTION PROGRAMME IN THE COMMUNICATIONS BETWEEN ADJACENT ACCs

There are many initiatives that can be pursued to prevent operational errors from occurring. However, there are five primary areas, which can directly contribute to its prevention: **communications, phraseology, supervision, teamwork, and ATC proficiency**. In an effort to accomplish the goal of reducing communication errors between adjacent Area Control Centres and thus reduce or minimize the occurrence of large-height deviations, the following objectives should be included in the prevention programme:

The ATS authority shall:

- a) identify individual, procedural, and/or equipment deficiencies used in air traffic services;
- b) promptly correct individual, procedural, and/or equipment deficiencies which affect coordinations with adjacent and ATS units. This can be achieved through:
 - guidance on procedures to be followed;
 - implementation of read-back/hear-back programmes;
 - training in the filling of LHD forms;
 - increase and/or closer monitoring of ATCOs performance;
 - immediate coordination programme after a re-authorization or change in flight level;
 - changes in procedures and/or corrections/amendments of equipment.
- c) communicate performance expectations to ATS supervisors and controllers;
- d) ensure the ATS unit maintains a summary of and have information letters on operational errors, causal factors and trends, and incorporate them into training;
- e) monitor and evaluate voice recordings (all ATS operational personnel);
- f) take initiatives to improve communications among all ATS personnel to create an atmosphere conducive to sharing information;
- g) exercise strict monitoring in ATC units;
- h) ATS supervisors should:
 - communicate performance expectations to controllers, stressing the importance of operational control position discipline, awareness, teamwork, the use of proper phraseology, proper coordination procedures, control position relief briefings and utilization of a position relief checklist;
 - take prompt follow-up actions when controller performance does not meet with expectations;

- inform on individual and team accountability, and the consequences for not meeting expectations;
 - provide efficient and consistent oversight of the ATS unit operation, and use effective resource management to ensure proper and timely assignment of personnel to promote the safe, orderly, and expeditious handling of air traffic;
 - ensure that distractions and noise levels in the ATS unit are kept at a minimum;
 - require all personnel to maintain a high degree of professionalism, teamwork, control position discipline, and awareness at all times in the ATS unit environment; and require that each controller knows, applies, and adheres to the appropriate requirements in the performance of his/her operational duties and responsibilities;
 - promote an open flow of communications with all ATS personnel, allowing them to provide input to programme;
 - place emphasis on hear-back/read-back errors during team meetings.
- i) ATC personnel should:
- apply read-back/hear-back procedures when carrying out ATC coordinations;
 - keep ATS supervisors advised of traffic problems and equipment limitations;
 - make suggestions for ATS unit improvements and/or prevention of operational errors;
 - maintain situational awareness;
 - extend the extra effort to assist busier control position(s);
 - continuously review their own operating techniques and ATS unit procedures to effect the highest quality of performance;
 - promptly report all ATS incidents to the operational supervisor or other appropriate ATS authority for proper follow-up investigation;
 - utilize memory aids.

VOICE RECORDING EVALUATIONS

Voice recording reviews should be conducted to ensure proper phraseology, good operating practices, and adherence to the standards set forth in ICAO provisions, and national/local directives and practices. Voice recording reviews should be conducted as follows:

- a) the ATS unit should ensure that voice recording reviews are conducted at least semi-annually on all ATS operational personnel;
- b) the ATS supervisor should review the voice recording, document comments and develop an action plan for documenting performance deficiencies; and
- c) the ATS supervisor and the controller should review and discuss the voice recording.

Actions suggested as short term solution

- a) That States, authorities and International Organizations continue their excellent compliance with the LHD requirements to report CARSAMMA on a monthly basis, and
- b) That States, authorities and International Organizations distribute a copy of category “M”, Error messages in ATC unit to ATC unit in transference messages and category “N”, messages (“No ATC unit transference message was received”), received from transitioning ATC-unit LHD reports only to the adjacent ACC involved in addition to CARSAMMA.
- c) When a trend is identified from shared reports, the States, Territories, and International Organizations shall share information and shall meet on a bilateral basis to develop a solution to the cause of the identified LHD.
- d) Since some ACCs adjoin international oceanic airspace, ICAO NACC and SAM Regional Offices are requested to advise the corresponding adjacent ICAO regional Offices (EUR/NAT, WACAF) that said LHD report will be forthcoming from the adjacent ACC and urge positive interaction with reporting CAR/SAM unit.

Supported suggested actions as a medium term solution:

- a) In an effort to eliminate the largest contributing LHD error category “M”, the solution is to implement a quality management programme based upon safety management concepts outlined in Annex 11 amendment 44.
- b) The “*Progressive implementation of ATS interfacility data communications (AIDC)*” will enhance the safety of the airspace and would reduce category “M” error. However, it is a medium term project incurring a large expense and hereby encourages that the CAR/SAM Regions States begin arrangements to submit to the World Bank an application for sufficient monies to enhance such implementation systems. The Meeting recalled that the AIDC is seen within the Automation Task Force Program and therefore is not required another action at this point.