GTE/7
WP/02
17/02/09

International Civil Aviation Organization
South American Office

SEVENTH MEETING/WORKSHOP OF THE SCRUTINY WORKING GROUP (GTE/7)

(Lima, Peru, 16 to 19 March 2009)

Agenda Item 2: GTE Overview

ACTIONS ADOPTED BY GREPECAS/15 MEETING WITH REGARD TO SAFETY ASSESSMENT ON POST RVSM IMPLEMENTATION

(Presented by the Secretariat)

Summary

This working paper presents a report of the matters dealt with by GREPECAS/15 regarding CAR/SAM Regions airspace safety assessment after three years of RVSM application in the CAR/SAM Regions and GTE Task Force work programme and terms of reference.

References:

- GREPECAS/15 Report.

1 Background

1.1 The Fifteenth Meeting of GREPECAS, held in Rio de Janeiro, Brazil, 13 – 17 October 2008, took note of the activities carried out by the ATM Committee with regard to the RVSM operational use in the CAR/SAM Regions and that CARSAMMA carried out a safety assessment after three years of operation.

1.2 Also, after reviewing the works carried out by the auxiliary bodies, GREPECAS/15 proceeded to review their Terms of Reference and Work Programmes, including the Scrutiny Group (See **Appendix B** of this working paper).

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

2.1 GREPECAS/15 Meeting noted that total risk was 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 exceeded the acceptable target level of safety (TLS), which is 5 x 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}. In order to reduce risk values, corrective action is necessary to eliminate M and N type errors.

2.3 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.

2.4 GREPECAS/15 concluded that if M and N errors were not caused by RVSM operation but by common transferring ATC procedures from one ATC unit to another and by lack of coordination by the transferring ATC Unit, it would be convenient that the SASP analyze the methodology used for safety assessment. Accordingly, the Meeting formulated the following conclusion:

CONCLUSION 15/37 REVIEW OF THE METHODOLOGY USED FOR SAFETY ASSESSMENT

That ICAO review the methodology used for conducting post RVSM implementation safety assessments considering the fact that type M and N errors identified and used to perform this assessment may not be related to RVSM implementation.

2.5 GREPECAS/15 was informed that ICAO, in conjunction with CARSAMMA and the Scrutiny Group (GTE) has scheduled a new training course cycle on safety assessment, which will be held in the NACC Office from 1 to 5 December 2008 and in the SAM Office in March 2009.

Data on Technical Vertical Deviation

2.6 The Meeting considered that analysis of the methodology for the collection of data on technical vertical deviations to show that the Altimetry System Error (ASE) for RVSM-approved aircraft remained stable should be conducted. This task would only be achieved through the implementation of an aircraft altimetry system performance monitoring programme at least every two years, or at 1000-flight hour intervals for each aircraft, whichever occurs first.

2.7 A programme for the implementation of monitoring units to verify the aircraft altimetry system should consist of a system of independent monitoring units (AGHME) installed in strategic positions in regions of higher traffic flow density. The purpose would be to monitor the largest number of aircraft to verify the stability of the altimetry system error (ASE) and to check if the technical risk remained consistent with the agreed TLS of 2.5×10^{-9}.

2.8 It was noted that CARSAMMA and the GTE had planned a new series of courses/meetings in order to improve State participation in LHD analyses, which was expected to result in the enhancement of ATS safety levels in the CAR/SAM Regions.

3 Suggested action

3.1 The meeting is invited to:

a) Take note of the action taken by GREPECAS/15, and commented in this working paper, together with the information presented at **Appendix A**, adopt the actions deemed pertinent; and

b) Analyse the Terms of Reference of the Scrutiny Group shown in **Appendix B** to this working paper.

* * * * * *

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.

APPENDIX B

TERMS OF REFERENCE OF THE CAR/SAM RVSM SCRUTINY GROUP (RVSM/GTE)

a) To assemble subject matter experts, as needed, in air traffic control, aircraft operations and maintenance, regulation and certification, data analysis and risk modeling;

b) To analyze and evaluate large height deviations of 300 ft or greater as defined by ICAO Doc 9574;

c) To coordinate the assembly and review of large height deviation data with the Regional Monitoring Agency;

d) To produce an estimate of flight time away from the cleared flying level to be used a primary input in the preparation of an estimate of risk by the Regional Monitoring Agency;

e) To identify large height deviation trends and to recommend remedial actions in order to improve safety;

f) To report results to GREPECAS through the ATM/CNS subgroup;

g) To accomplish other tasks as directed by GREPECAS.

Composition: 1 State/Organization from the CAR Region, 1 State/from the SAM Region, United States, CARSAMMA, COCESNA, IATA, IFALPA, IFATCA.

*** * * * * ***