



AP/ATM/5
WP/04
15/05/03

**International Civil Aviation Organization
UNDP/ICAO Regional Project RLA/98/003
Transition to the CNS/ATM Systems in the CAR and SAM Regions**

**Fifth Meeting/workshop of Air Traffic Management (ATM) Authorities and
Planners for RVSM, RNAV routes and RNP implementation in the CAR and SAM Regions
(AP/ATM/5 RVSM-RNAV-RNP)**

(Panama, Panama, 18 to 20 June 2003)

**Agenda Item 4: Review of the issues related to RVSM implementation in the CAR/SAM
Regions**

(Presented by Mexico)

Summary

This working paper presents, for the information of the meeting, a summarized report of the first ATC/RVSM simulation carried out by Mexico (MRVSM) in March and April 2003.

1. Introduction

1.1 In keeping with the important tasks to be carried out for RVSM implementation, the ATC shall conduct simulations between FL290 and FL410 inclusive, in a radar environment.

1.2 In the case of Mexico, these simulations were conducted in March and April 2003 for a total of 4 weeks, in each of the Area Control Centres of Mazatlán, Monterrey and Mérida. The MEX/ACC was left pending for a future date.

1.3 Simulations were carried out in keeping with a uniform RVSM simulation programme for all ACCs that defined, for each week, the important aspects to be assessed within a virtual RVSM scenario during peak hours in each sector.

1.4 The controllers of the RVSM Working Group created in each ACC were tasked with disseminating RVSM information, organizing and carrying out the simulations and documenting the results obtained in said exercise.

2. Relevant results of the RVSM simulation in Mexico

2.1 Objective of the first simulation

2.1.1 Make the operational concept, use and problems of RVSM known to the participating controllers.

2.2 Airspace

2.2.1 The controlled upper airspace from FL290 to FL410 inclusive, and the adjacent sectors, were considered.

2.3 Scenarios

2.3.1 Real-like scenarios were developed, taking into account aircraft, ATS routes, and peak hours, in keeping with the simulation guidance programme. Experienced route controllers, who will act as monitors during the implementation process, participated.

2.4 Inclusion of the letter W in box 10 of the Flight Plan

2.4.1 It is vital for the ATC that the various flight plan (FPL and RPL) originators include the letter W; otherwise, there will be a negative impact on traffic display and, particularly, on the application of the separation by the controller. Likewise, flight plan templates containing protection parameters to prevent this type of errors should be developed in order to improve the reliability of the flight plan information supplied to the ATC.

2.5 Use of flight levels

2.5.1 During the simulation, it was noted that some controllers had difficulties to properly understand and apply the new flight levels and, particularly, FL310, FL350 and FL390. This becomes critical when the traffic is more dense, and the use of current levels prevails. In this respect, it is advisable to give controllers sufficient time to practice before the implementation takes place, and to have the new cruise level table on display in the control position for a prudential time after RVSM implementation for quick reference.

2.6 Application of the 1000-ft separation

2.6.1 Initially, monitoring and maintaining a 1000-ft separation between aircraft creates stress in controllers, but it decreases as they get used to the new separation between FL290 and FL 410.

2.7 Revision of the Letters of Agreement

2.7.1 It is advisable to revise the Letters of Agreement between adjacent ACCs, so as to avoid, during a prudential period of time following RVSM implementation, agreements that allow aircraft with different levels to enter the sector.

2.8 **Increased work load**

2.8.1 The work load of the controller is increased by the lack of knowledge of the level table and phraseology, the presence of non-RVSM aircraft and the application of a 2000-ft separation, bad weather conditions and flight level monitoring. In no case did the workload exceed the observed capacity of the controller. It is necessary to define an easy method to measure the workload of the controller during separation, co-ordination, communication, and other functions.

2.9 **RVSM complexity**

2.9.1 In our case, the addition of six levels favours air traffic control activities, and thus does not add any complexity.

2.10 **ATC-cleared non-RVSM commercial aircraft**

2.10.1 To avoid additional complexity and work load for the controller, non-RVSM aircraft should only be cleared on schedules and/or routes with scarce movement of previously-identified aircraft.

2.11 **Suspension of RVSM**

2.11.1 It is not practical or advisable to suspend RVSM in airspace sections or routes because it is difficult for the controller to monitor and achieve the proper separation. It is therefore recommended, whenever possible, to apply the suspension by altitude blocks.

2.12 **RVSM transition areas**

2.12.1 Transition areas are not desirable due to their complexity and impact on users; however, if the case arises, sectors will need to be accommodated. It is very important to know duly in advance to the implementation date if an adjacent State is not going to start RVSM implementation concurrently, since that would require the organization and establishment of a sector duly equipped and staffed to meet such requirement.

2.13 **300-ft or greater deviations**

2.13.1 Monitoring of the altitude transponder (Mode C) for reporting deviations must be increased. Likewise, altimeter settings must be entered regularly into the ATC computer in the control position. The 300-ft or greater deviation concept to avoid using Mode C information in vertical separation should be adjusted to 200 ft, in keeping with the new RVSM altimetry precision requirements.

2.14 Display modification and conflict alert (STCA)

2.14.1 The ATC software will need to be modified in order to identify non-RVSM aircraft by means of a colour or letter in the radar label. The conflict alert parameter (STCA) will also need to be modified from 2000 to 1000 ft.

2.15 Parallel offset (2 NM) procedure

2.15.1 In a radar environment where a 10-NM or greater (horizontal) separation is applied, it is advisable to study the possibility of the pilot applying the offset procedure (2 NM parallel to the centre of the route, provided this does not represent a 5-NM lateral reduction).

2.16 Identification of non-RVSM aircraft

2.16.1 The use of colour strips that stand out from the rest could help the manual controller visualize non-RVSM aircraft in the control position.

2.17 Training of ATC personnel

2.17.1 From the practical point of view, it is felt that the training of ATC personnel should last enough and take place prior to RVSM implementation.

2.18 ACAS contingencies

2.18.1 The current procedure shall be applied, providing useful traffic information only.

2.19 Failure of airborne altimetry systems

2.19.1 Once the pilot has confirmed the failure, the procedure would be to descend below flight level 290; however, if, in the opinion of the controller, traffic conditions allow it, the possibility of maintaining the aircraft within RVSM airspace should be examined, taking into account the airport of destination and applying an offset procedure or a lateral separation between adjacent traffic levels in opposite directions.

3. Suggested action

3.1 The meeting is invited to take note of the present proposal as feedback for the RVSM implementation process in the CAR/SAM Regions.