



ASSEMBLY — 36TH SESSION

TECHNICAL COMMISSION

Agenda Item 31: Continued evolution of a performance-based global air traffic management (ATM) system

**RVSM IMPLEMENTATION PLAN
AND FLIGHT LEVEL HARMONIZATION IN CHINA**

(Presented by the People's Republic of China)

EXECUTIVE SUMMARY

This paper introduces the RVSM implementation plan and the RVSM Flight Level Allocation Scheme (FLAS) in China, which will be implemented on 21 November 2007 in the China FIRs. This paper also contains information on harmonizing of flight level assignment procedures wherever reduced vertical separation minimum (RVSM) is being applied through the worldwide.

Action: The Assembly is invited to:

- a) Recognize that States should harmonize the flight level allocation scheme when they implement RVSM in the areas where meters or feet is used for RVSM level allocation;
- b) Propose that Annex 2 — *Rules of the Air* should be reviewed and amended to incorporate the joint proposal of the metric RVSM FLAS by China and the Russia Federation into Annex 2, and provide the harmonized cruising level tables expressed in feet and in metres for areas feet or meters is used for altitude and elevation.

<i>Strategic Objectives:</i>	This working paper relates to Strategic Objectives D — <i>Enhance the efficiency of aviation operations</i>
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<i>Financial implications:</i>	N/A
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<i>References:</i>	Annex 2 — <i>Rules of the Air</i>
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¹ Chinese and English versions provided by China.

1. INTRODUCTION

1.1 Now, China is running the second largest aviation transportation system in the world. In addition, China will hold important events, including 2008 Beijing Olympic Games, 2010 Shanghai World Expo and Guangzhou Asian Games, which has imposed a higher demand on increasing air transportation and airspace efficiency.

1.2 To meet the needs of aviation industry's development and to further improve the airspace capacity and operational efficiency, China, after in-depth research, decided to implement reduced vertical separation minimum (RVSM) in the Beijing, Guangzhou, Kunming, Lanzhou, Shanghai, Shenyang, Urumqi and Wuhan FIRs and Sector 01 (airspace over the island) of the Sanya FIR at 1600UTC on 21 November 2007. The oceanic airspace of the Sanya FIR (Sectors 02 and 03) has implemented RVSM along with the South China Sea region.

2. DISCUSSION

2.1 In regard to the current situation of China's legal environment and metric system, China determines to continue applying metric system to flight levels when implementing RVSM. The China RVSM flight level allocation method is formed through ATC radar simulation experiments and repetitive researches and assessments, based on international standards and China's situation. To harmonize the flight level allocation standard as possible, in case of using metric system in flight levels in China while her neighboring countries use feet system, and to reduce differences thereby, China will implement 500-meter vertical separation between flight level of 8400 meters to 8900 meters, and 300-meter vertical separation in other altitude blocks below 12500 meters. This allocation method is verified through ATC radar simulation in Guangzhou in the middle of November 2006 and it is proved that this method can smoothly inherit to the current measures of China, and can realize China system's connection with those of the neighboring countries. The difference between metric system and feet system standards will not exceed 30 meters for RVSM flight levels and will ensure the safe transition of flight levels during exit and entry.

2.2 The ICAO's Reduced Vertical Separation Minimum Implementation Task Force is working with China to address vital issues such as RVSM FLAS, harmonization of Flight level and transition, ATC and flight crew training, RVSM airworthiness and operational approval, and most importantly the safety assessment and monitoring to support the application of RVSM in China. China is also enhancing its coordination with ICAO, International Air Transport Association (IATA), International Federation of Air Line Pilots' Associations (IFALPA), neighboring countries and all stakeholders operating in China's airspace including international airlines.

2.3 At present, the preparation of RVSM implementation is going on as scheduled, and more information can be found in China RVSM website: www.atmb.net.cn/rvsm. China has finished the PRELIMINARY RVSM ASSESSMENT OF SOVEREIGN CHINESE AIRSPACE report with the support of RVSM TF and FAA. The report provides the summary of the preliminary readiness and safety assessments, supporting the Go/No-Go decision for the planned RVSM implementation in sovereign Chinese airspace on 21 November 2007 (UTC time). The report demonstrates that, based on the collected TSD, it is expected that approximately 92.5 per cent of aircraft operations will be RVSM approved by

November 2007, greater than the 90 per cent readiness target. In regard to the risk estimation for sovereign Chinese airspace RVSM implementation, the large height deviation (LHD) occurrences in sovereign Chinese airspace since January 2006 were examined. Based on the collected TSD and LHD reports, both technical and total risks were found to satisfy quite well the agreed TLS value of no more than 2.5×10^{-9} and 5.0×10^{-9} fatal accidents per flight hour due to the loss of a correctly established vertical separation standard of 300m (1,000ft) and to all causes, respectively. The detailed report has been presented to the ICAO RVSM TF 32 meeting.

2.4 ICAO A35 (refer to WP/305) reviewed the A35-WP/165 by IFALPA, Recommendation 4/9 and 4/10 of the Eleventh Air Navigation Conference, the Commission recognized that moving toward a single unit of altitude measurement remained a long-term objective of ICAO, but that no progress could be expected in the foreseeable future. In view of potential related safety aspects, the Commission felt that the matter should be further pursued when circumstances permit. It is noted that in Annex 5 — *Units of Measurement to be Used in Air and Ground Operations* meters is the Primary unit for altitude and elevation while feet is Non-SI alternative unit for altitude and elevation.

2.5 It is recognized that the system of cruising levels specified in Annex 2 — *Rules of the Air*, Appendix 3, Table of Cruising Levels has the maximum difference in cruising level experienced by any aircraft transitioning between meters and feet was 23 m (75 ft). And It is also noted that currently there are four FLAS in the world, i.e. RVSM in feet, CVSM in feet, Russia CVSM in meters (500m VSM) and China CVSM in meters (600m VSM).

2.6 China and Russia Federation had jointly developed the proposal of amendment to include the new table to be applied for the area where metric system is used for RVSM level allocation. It is also noted that the RVSM FLAS proposed by China and Russia Federation moves to a better alignment with the Annex 2 Tables of Cruising Levels in feet, and the maximum difference between meters and feet was 30 m (100 ft). It is noted that the joint effort by China and Russian Federation will encourage the current four FLAS in the world into two harmonized FLAS, which enhances safety and efficiency. Please refer to http://www.icao.or.th/meetings/2007/rvsm_tf31/wp07.pdf for the proposal of amendment.

3. CONCLUSIONS

3.1 China will carry out RVSM in the Beijing, Guangzhou, Kunming, Lanzhou, Shanghai, Shenyang, Urumqi and Wuhan FIRs and Sector 01 of the Sanya FIR at 1600UTC on 21 November 2007.

3.2 Bearing in mind that moving toward a single unit of altitude measurement remains a long-term objective of ICAO and recognizing that no progress could be expected in the foreseeable future, ICAO and states should harmonize the flight level allocation scheme when they implement RVSM in the area where meters or feet is used for RVSM level allocation.

3.3 The Annex 2 — *Rules of the Air* should be reviewed and amended to provide the harmonized cruising level tables expressed in feet and in metres for areas feet or meters is used for altitude and elevation, and the metric RVSM FLAS should be based on the joint proposal by China and the Russia Federation.