

ELEVENTH AIR NAVIGATION CONFERENCE

Montreal, 22 September to 3 October 2003

**Agenda Item 4: Capacity-enhancement
measures**

4.2 Regional measures

:

HARMONIZATION OF FLIGHT LEVEL ASSIGNMENT METHODOLOGY ACROSS FLIGHT INFORMATION REGION BOUNDARIES

(Presented by the United States)

SUMMARY

This paper presents the United States' view on the need to harmonize flight level assignment procedures wherever reduced vertical separation minimum (RVSM) are being applied, and recommends worldwide adoption of a system of cruising levels specified in Annex 2 — *Rules of the Air*, Appendix 3, Table of Cruising Levels.

Action by the conference is in paragraph 3.

1. INTRODUCTION

1.1 Over the past ten years, the volume of air traffic crossing international boundaries between adjacent States and regions has increased dramatically. During that same period, significant achievements in horizontal separation minima reduction, coupled with improvements in airborne navigation, have reduced the margin of error in procedural application of air traffic control.

1.2 Simultaneously, many States and regions are implementing reduced vertical separation minimum (RVSM) to further enhance their effectiveness in serving airspace users. A key component of this effort is introduction of a new system of cruising level assignments to safely organize traffic flows. Annex 2, Appendix 3, Table of Cruising Levels, provides a uniform framework for introduction of this standard.

2. DISCUSSION

2.1 In many areas of the world, specific facility-to-facility Letters or Memoranda of Agreement specify the appropriate cruising levels to be assigned to aircraft operating in a particular direction. These specific instructions take into account the predominant traffic flows within and between the regions, as well as the unique characteristics of each State's cruising level procedures.

2.2 The differences between individual air traffic facility cruising level procedures are mitigated in many cases by sterilization of altitudes within one or both flight information regions. This practice limits capacity and flexibility as we move to a more dynamic communications, navigation, and surveillance/air traffic management (CNS/ATM) environment.

2.3 With the introduction of RVSM, however, the latitude to mask differences in this manner is almost eliminated. With only 300 metres (1 000 ft) separating the respective cruising levels, every effort must be made to standardize and simplify procedures. This reduces complexity for air traffic controllers and for flight crews.

2.4 Of specific concern is adoption of the cruising levels outlined for RVSM between 8 850 metres (FL 290) and 13 100 metres (FL 430). The following table describes the precise difference in corresponding Flight Levels, whether expressed in feet or metres, as recommended in Annex 2, Appendix 3:

FL	Metres	Feet	Difference Between Corresponding Levels Expressed in Feet to Levels Expressed in Metres	Direction of Flight
290	8 850	29 000	-10 metres (-33 ft)	◦
300	9 150	30 000	-6 metres (-20 ft)	»
310	9 450	31 000	-1 metres (-3 ft)	◦
320	9 750	32 000	+4 metres (+13 ft)	»
330	10 050	33 000	+8 metres (+26 ft)	◦
340	10 350	34 000	+13 metres (+43 ft)	»
350	10 650	35 000	+18 metres (+59 ft)	◦
360	10 950	36 000	+23 metres (+75 ft)	»
370	11 300	37 000	-22 metres (-72 ft)	◦
380	11 600	38 000	-18 metres (-59 ft)	»
390	11 900	39 000	-13 metres (-43 ft)	◦
400	12 200	40 000	-8 metres (-26 ft)	»
410	12 500	41 000	-3 metres (-10 ft)	◦

FL	Metres	Feet	Difference Between Corresponding Levels Expressed in Feet to Levels Expressed in Metres	Direction of Flight
430	13 100	43 000	6 metres (+20 ft)	»

2.5 As the table of Annex 2 levels illustrates, the maximum difference in cruising level experienced by any aircraft transitioning between metres and feet is only 23 metres (75 ft). By contrast, on some regional boundaries where this conversion is made today using State-specific procedures for conventional vertical separation (500 metres or 2 000 ft), the cruising level difference is as great as 287 metres (941 ft) and averages over 165 metres (541 ft).

2.6 The vast majority of international turbojet traffic cruises in this altitude stratum between FL 290 and FL 430.

2.7 All aircraft can easily accommodate adoption of the cruising levels according to Annex 2, Appendix 3 guidance, whether measured in metres or feet. No new aircraft avionics equipment or ground ATM systems are needed. In some cases, development of conflict detection and resolution algorithms will be simplified because special rules to accommodate cruising level conversions can be avoided.

2.8 Adopting this common cruising level procedure will enhance safety, while reducing controller and flight crew workload and complexity during transition to RVSM.

3. ACTION BY THE CONFERENCE

3.1 The conference is invited to agree to the following recommendation:

Recommendation 4/xx — Harmonization of flight level assignment methodology across flight information boundaries

That ICAO:

- a) encourage States to use the cruising level assignment procedures outlined in Annex 2 — *Rules of the Air*, Appendix 3 for all RVSM operations.
- b) organize work to assure regional planning of this important implementation work wherever RVSM is under consideration.

— END —