



*International Civil Aviation Organization*

**The Third Meeting of the Regional Airspace Safety Monitoring Advisory Group  
(RASMAG/3)**

Bangkok, Thailand, 6 - 7 June 2005

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**Agenda Item 6: Airspace safety monitoring documentation and regional guidance material**

**UPDATED ASIA RVSM MINIMUM MONITORING REQUIREMENTS**

(Presented by Monitoring Agency for Asia Region)

**Summary**

This working paper proposed the updated RVSM Minimum Monitoring Requirements (MMR) for the Asia Region in order to coincide with the requirements in the Pacific Region and the ones recommended by ICAO.

**1. Introduction**

1.1 Since RVSM has been fully implemented between FL 290 and 410 in the Asia Region in November 2003, including Western Pacific/South China Sea (WPAC/SCS) and Bay of Bengal (BOB), MAAR has not officially updated the RVSM Minimum Monitoring Requirements (MMR) for the Asia Region.

1.2 The Pacific RVSM MMR were updated by the Pacific Approval Registry and Monitoring Organization (PARMO) on 4 February 2004. This Pacific MMR concurred with the requirements recommended in the ICAO Draft Regional Monitoring Agency (RMA) Handbook.

1.3 For the harmonization of the airspace safety monitoring in the Asia and Pacific Regions, this working paper proposes the update of the RVSM MMR for the Asia Region, which concur with the Pacific RVSM MMR.

**2. Updated RVSM MMR for Asia Region**

2.1 The updated RVSM MMR for the Asia Region is provided in the [Attachment](#) of this working paper. The new RVSM MMR for the Asia Region shall be effective as of **1 July 2005**.

2.2 In this regard, MAAR will distribute the letter concerning the update of RVSM MMR in the Asia Region to all concerning States, operators, and RMAs. The updated MMR will also be posted on the MAAR website.

**3. Action by the Meeting**

3.1 The meeting is invited to:

- Note the information presented in this working paper,
- Adopt the updated RVSM MMR for the Asia Region, and
- Discuss the necessity of long-term RVSM monitoring program for the Asia/Pacific Region

**ASIA RVSM MINIMUM MONITORING REQUIREMENTS:**

**AS OF: 1 July 2005**

1. UPDATE OF MONITORING REQUIREMENTS CHART AND WEBSITE. As significant data is obtained, monitoring requirements for specific aircraft types may change. When the chart is updated, a letter will be distributed to States and operators. The updated chart will be posted on the MAAR website being maintained by Aeronautical Radio of Thailand, Ltd. (AEROTHAI) on behalf of the International Civil Aviation Organization (ICAO) Asia-Pacific regional planning group. The website address is:

<http://www.aerothai.co.th/maar>

2. INITIAL MONITORING. All Asia operators that operate or intend to operate in airspace where RVSM is applied are required to participate in the RVSM monitoring program. The attached chart of monitoring requirements establishes requirements for initial monitoring associated with the RVSM approval process. In their application to the appropriate State authority for RVSM approval, operators must show a plan for meeting the applicable initial monitoring requirements.

3. AIRCRAFT STATUS FOR MONITORING. Aircraft engineering work that is required for the aircraft to receive RVSM airworthiness approval must be completed prior to the aircraft being monitored. Any exception to this rule will be coordinated with the State authority.

4. APPLICABILITY OF MONITORING FROM OTHER REGIONS. Monitoring data obtained in conjunction with RVSM monitoring programs from other regions can be used to meet Asia monitoring requirements. The Monitoring Agency for Asia Region (MAAR), which is responsible for administering the Asia monitoring program, has access to monitoring data from other regions and will coordinate with States and operators to inform them on the status of individual operator monitoring requirements.

5. MONITORING PRIOR TO THE ISSUE OF RVSM OPERATIONAL APPROVAL IS NOT A REQUIREMENT. Operators should submit monitoring plans to the responsible civil aviation authority that show how they intend to meet the requirements specified in the table below. Monitoring will be carried out in accordance with this table.

6. AIRCRAFT GROUPS NOT LISTED ON THE CHART. Contact the MAAR for clarification if an aircraft group is not listed on the Minimum Monitoring Requirements chart or for clarification of other monitoring related issues. An aircraft group not listed in the table below will probably be subject to Category 2 monitoring requirements.

7. TABLE OF MONITORING GROUPS. A table of monitoring groups is provided in the pages following the Minimum Monitoring Requirements Chart. The table shows the aircraft types and series that are grouped together for operator monitoring purposes.

8. TRAILING CONE DATA. Altimetry System Error estimations developed using Trailing Cone data collected during RVSM certification flights can be used to fulfill monitoring requirements. It must be documented, however, that aircraft RVSM systems were in the approved RVSM configuration for the flight.

9. MONITORING OF AIRFRAMES THAT ARE RVSM COMPLIANT ON DELIVERY. If an operator adds new RVSM compliant airframes of a type for which it already has RVSM operational approval and has completed monitoring requirements for the type in accordance with the attached chart, the new airframes are not required to be monitored. If an operator adds new RVSM compliant airframes of an aircraft type for which it has NOT previously received RVSM operational approval, then the operator should complete monitoring in accordance with the attached chart.

10. FOLLOW-ON MONITORING. Monitoring is an on-going program that will continue after the RVSM approval process. A follow-on sampling program for additional operator aircraft will be coordinated by the Asia-Pacific RVSM Implementation Task Force.

MONITORING AGENCY FOR ASIA REGION (MAAR)

EFFECTIVE AS OF: 1 July 2005

| MONITORING IS REQUIRED IN ACCORDANCE WITH THIS CHART, HOWEVER, IT IS NOT REQUIRED TO BE COMPLETED PRIOR TO OPERATIONAL APPROVAL   |  |  |
|---|--|--|
| MONITORING CATEGORY   | AIRCRAFT TYPE  | MINIMUM OPERATOR MONITORING FOR EACH AIRCRAFT GROUP  |
| <p><b>1</b></p> <p>Group approved <u>and</u> monitoring data indicates performance in accordance with RVSM standards.</p> <p><b>Group Definition:</b> aircraft have been manufactured to a nominally identical design and build and for RVSM airworthiness approval fall into a group established in an RVSM certification document (e.g., Service Bulletin, Supplemental Type Certificate, Type Certificate Data Sheet).</p> | <p>[A30B, A306], [A312 (GE), A313 (GE)], [A312 (PW), A313 (PW)], A318, [A319, A320, A321], [A332, A333], [A342, A343], A344, A345, A346</p> <p>B712, [B721, B722], [B733, B734, B735], B737(Cargo), [B736, B737/BBJ, B738/BBJ, B739], [B741, B742, B743], B74S, B744 (5" Probe), B744 (10" Probe), B752, B753, [B762, B763], B764, B772, B773</p> <p>CL60(600/601), CL60(604), C560, [CRJ1, CRJ2], CRJ7, DC10, [E135, E145], F100, GLF4, GLF5, LJ60</p> <p>L101, MD10, MD11, MD80 (All series), MD90</p> | <p>Two airframes from each fleet* of an operator to be monitored as soon as possible but <b>not later than 6 months after the issue of RVSM operational approval</b></p> <p><i>* Note. For the purposes of monitoring, aircraft within brackets [ ] may be considered as belonging to the same monitoring group. For example, an operator with six A332 and four A333 aircraft may monitor one A332 and one A333 or two A332 aircraft or two A333 aircraft.</i></p>                |
| <p><b>2</b></p> <p>Group approved but insufficient monitoring data collected to move aircraft to Monitoring Category 1. Group definition applies.</p>   | <p>Other group aircraft other than those listed in Category 1 including:</p> <p>A124, ASTR, B703, B731, B732, BE20, BE40, C500, C25A, C25B, C525, C550**, C56X, C650, C750, CRJ9, [DC86, DC87], DC93, DC95, F2TH, [FA50 FA50EX], F70, [F900, F900EX], FA20, FA10, GLF2(II), GLF(IIB), GLF3, GALX, GLEX, H25B(700), H25B(800), H25C, IL62, IL76, IL86, IL96, J328, L29(2), L29(731), LJ31, [LJ35, LJ36], LJ45, LJ55, SBR1, T134, T154, T204, P180, PRM1, YK42</p>   | <p>60% of airframes from each fleet of an operator (round up if fractional), as soon as possible but <b>not later than 6 months after the issue of RVSM operational approval.</b></p> <p>(*Note: If 60 percent of the fleet yields a fractional number, round up to the next whole aircraft (e.g., for a fleet of 2 aircraft, <math>0.6 \times 2 = 1.2</math>; therefore, 2 aircraft must be monitored).</p> <p>** Refer to aircraft group table for detail on C550 monitoring</p> |
| <p><b>3</b></p> <p>Non-Group</p> <p><b>Non-group Definition:</b> aircraft that do not fall under the group definition <u>and</u> for RVSM airworthiness approval are presented as an individual airframe.</p>   | <p>Non-group approved aircraft</p>   | <p>100% of aircraft shall be monitored as soon as possible but <b>not later than 6 months after the issue of RVSM operational approval.</b></p>  |

**MONITORING GROUPS FOR AIRCRAFT CERTIFIED UNDER GROUP APPROVAL  
REQUIREMENTS**

| <b>Monitoring Group</b>        | <b>ICAO Designator</b>       | <b>A/C Type</b>              | <b>A/C Series</b>   |
|--------------------------------|------------------------------|------------------------------|---|
| A124                           | A124                         | AN-124 RUSLAN                | ALL SERIES  |
| A300                           | A306<br>A30B                 | A300<br>A300                 | 600, 600F, 600R, 620, 620R, 620RF<br>B2-100, B2-200, B4-100, B4-100F,<br>B4-120, B4-200, B4-200F, B4-220,<br>C4-200 |
| A310-GE                        | A310                         | A310                         | 200, 200F,300, 300F   |
| A310-PW                        | A310                         | A310                         | 220, 220F,320   |
| A318                           | A318                         | A318                         | ALL SERIES  |
| A320                           | A319<br>A320<br>A321         | A319<br>A320<br>A321         | CJ , 110, 130<br>110, 210, 230<br>110, 130, 210, 230  |
| A330                           | A332,<br>A333                | A330                         | 200, 220, 240, 300, 320, 340  |
| A340                           | A342,<br>A343,               | A340                         | 210, 310  |
| A345                           | A345                         | A340                         | 540   |
| A346                           | A346                         | A340                         | 640   |
| A3ST                           | A3ST                         | A300                         | 600R ST BELUGA  |
| AN72                           | AN72                         | AN-74, AN-72                 | ALL SERIES  |
| ASTR                           | ASTR                         | 1125 ASTRA                   | ALL SERIES  |
| ASTR-SPX                       | ASTR                         | ASTR SPX                     | ALL SERIES  |
| AVRO                           | RJ1H,<br>RJ70,<br>RJ85       | AVRO                         | RJ70, RJ85, RJ100   |
| B712                           | B712                         | B717                         | 200   |
| B727                           | B721<br>B722                 | B727                         | 100, 100C, 100F,100QF, 200, 200F  |
| B732                           | B732                         | B737                         | 200, 200C   |
| B737<br>(Classic)              | B733<br>B734<br>B735         | B737                         | 300, 400, 500   |
| B737<br>New Generation<br>(NG) | B736<br>B737<br>B738<br>B739 | B737<br>B737<br>B737<br>B737 | 600<br>700, 700BBJ<br>800<br>900  |
| B737 (Cargo)                   | B737                         | B737                         | 700C  |
| B747Classic<br>(CL)            | B741<br>B742<br>B743         | B747                         | 100, 100B, 100F, 200B, 200C, 200F,<br>200SF, 300  |
| B74S                           | B74S                         | B747                         | SR, SP  |
| B744-5                         | B744                         | B747                         | 400, 400D, 400F (With 5 inch Probes)  |
| B744-10                        | B744                         | B747                         | 400, 400D, 400F (With 10 inch Probes)   |
| B752                           | B752                         | B757                         | 200, 200PF  |
| B753                           | B753                         | B757                         | 300   |

| Monitoring Group | ICAO Designator | A/C Type  | A/C Series                                    |
|------------------|-----------------|---|---|
| B767             | B762<br>B763    | B767  | 200, 200EM, 200ER, 200ERM, 300, 300ER, 300ERF |
| B764             | B764            | B767  | 400ER   |
| B772             | B772            | B777  | 200, 200ER, 300, 300ER                        |
| B773             | B773            | B777  | 300, 300ER                                    |
| BE40             | BE40            | BEECHJET 400A   | ALL SERIES                                    |
| BE20             | BE20            | BEECH 200 -KINGAIR  | ALL SERIES                                    |
| C500             | C500            | 500 CITATION,<br>500 CITATION I,<br>501 CITATION I SINGLE PILOT   | ALL SERIES                                    |
| C525             | C525            | 525 CITATIONJET, 525 CITATIONJET I                                | ALL SERIES                                    |
| C525-II          | C25A            | 525A CITATIONJET II   | ALL SERIES                                    |
| C525 CJ3         | C25B            | CITATIONJET III   | ALL SERIES                                    |
| C550-552         | C550            | 552 CITATION II   | ALL SERIES                                    |
| C550-B           | C550            | 550 CITATION BRAVO  | ALL SERIES                                    |
| C550-II          | C550            | 550 CITATION II, 551 CITATION II SINGLE PILOT                     | ALL SERIES                                    |
| C550-SII         | C550            | S550 CITATION SUPER II  | ALL SERIES                                    |
| C560             | C560            | 560 CITATION V, 560 CITATION V ULTRA, 560 CITATION V ULTRA ENCORE | ALL SERIES                                    |
| C56X             | C56X            | 560 CITATION EXCEL  | ALL SERIES                                    |
| C650             | C650            | 650 CITATION III , 650 CITATION VI , 650 CITATION VII             | ALL SERIES                                    |
| C750             | C750            | 750 CITATION X  | ALL SERIES                                    |
| CARJ             | CRJ1,<br>CRJ2   | REGIONALJET   | 100, 200, 200ER, 200LR                        |
| CRJ-700          | CRJ7            | REGIONALJET   | 700   |
| CRJ-900          | CRJ9            | REGIONALJET   | 900   |
| CL600            | CL60            | CL-600<br>CL-601  | CL-600-1A11<br>CL-600-2A12, CL-600-2B16       |
| CL604            | CL60            | CL-604  | CL-600-2B16                                   |
| BD100            | CL30            | CHALLENGER 300  | ALL SERIES                                    |
| BD700            | GL5T            | GLOBAL 5000   | ALL SERIES                                    |
| CONC             | CONC            | CONCORDE  | ALL SERIES                                    |
| DC10             | DC10            | DC-10   | 10, 10F, 15, 30, 30F, 40, 40F                 |
| DC86-7           | DC86,<br>DC87   | DC-8  | 62, 62F, 72, 72F                              |
| DC93             | DC93            | DC-9  | 30, 30F                                       |
| DC95             | DC95            | DC-9  | SERIES 51                                     |
| E135-145         | E135,<br>E145   | EMB-135, EMB-145  | ALL SERIES                                    |
| F100             | F100            | FOKKER 100  | ALL SERIES                                    |

| Monitoring Group | ICAO Designator                  | A/C Type  | A/C Series   |
|------------------|----------------------------------|---|--|
| F2TH             | F2TH                             | FALCON 2000   | ALL SERIES   |
| F70              | F70                              | FOKKER 70   | ALL SERIES   |
| F900             | F900                             | FALCON 900, FALCON 900EX                                      | ALL SERIES   |
| FA10             | FA10                             | FALCON 10   | ALL SERIES   |
| FA20             | FA20                             | FALCON 20<br>FALCON 200                                       | ALL SERIES   |
| FA50             | FA50                             | FALCON 50, FALCON 50EX  | ALL SERIES   |
| GALX             | GALX                             | 1126 GALAXY   | ALL SERIES   |
| GLEX             | GLEX                             | BD-700 GLOBAL EXPRESS   | ALL SERIES   |
| GLF2             | GLF2                             | GULFSTREAM II (G-1159),                                       | ALL SERIES   |
| GLF2B            | GLF2                             | GULFSTREAM IIB (G-1159B)                                      | ALL SERIES   |
| GLF3             | GLF3                             | GULFSTREAM III (G-1159A)                                      | ALL SERIES   |
| GLF4             | GLF4                             | GULFSTREAM IV (G-1159C)                                       | ALL SERIES   |
| GLF5             | GLF5                             | GULFSTREAM V (G-1159D)  | ALL SERIES   |
| H25B-700         | H25B                             | BAE 125 / HS125   | 700B   |
| H25B-800         | H25B                             | BAE 125 / HAWKER 800XP, BAE 125 / HAWKER 800, BAE 125 / HS125 | ALL SERIES/A, B/800  |
| H25C             | H25C                             | BAE 125 / HAWKER 1000   | A , B  |
| IL86             | IL86                             | IL-86   | NO SERIES  |
| IL96             | IL96                             | IL-96   | M , T, 300   |
| J328             | J328                             | 328JET  | ALL SERIES   |
| L101             | L101                             | L-1011 TRISTAR  | 1 (385-1), 40 (385-1), 50 (385-1), 100, 150 (385-1-14), 200, 250 (385-1-15), 500 (385-3) |
| L29B-2           | L29B                             | L-1329 JETSTAR 2  | ALL SERIES   |
| L29B-731         | L29B                             | L-1329 JETSTAR 731  | ALL SERIES   |
| LJ31             | LJ31                             | LEARJET 31  | NO SERIES, A   |
| LJ35/6           | LJ35<br>LJ36                     | LEARJET 35 LEARJET 36   | NO SERIES, A   |
| LJ40             | LJ40                             | LEARJET 40  | ALL SERIES   |
| LJ45             | LJ45                             | LEARJET 45  | ALL SERIES   |
| LJ55             | LJ55                             | LEARJET 55  | NO SERIES B, C   |
| LJ60             | LJ60                             | LEARJET 60  | ALL SERIES   |
| MD10             | MD10                             | MD-10   | ALL SERIES   |
| MD11             | MD11                             | MD-11   | COMBI, ER, FREIGHTER, PASSENGER  |
| MD80             | MD81,<br>MD82,<br>MD83,<br>MD87, | MD-80   | 81, 82, 83, 87, 88   |

| Monitoring Group | ICAO Designator        | A/C Type               | A/C Series               |
|------------------|------------------------|------------------------|--------------------------|
|                  | MD88                   |                        |                          |
| MD90             | MD90                   | MD-90                  | 30, 30ER                 |
| P180             | P180                   | P-180 AVANTI           | ALL SERIES               |
| PRM1             | PRM1                   | PREMIER 1              | ALL SERIES               |
| T134             | T134                   | TU-134                 | A, B                     |
| T154             | T154                   | TU-154                 | A , B, M, S              |
| T204             | T204,<br>T224,<br>T234 | TU-204, TU-224, TU-234 | 100, 100C, 120RR, 200, C |
| YK42             | YK42                   | YAK-42                 | ALL SERIES               |