



International Civil Aviation Organization

**The Special Coordination Meeting for the Bay of Bengal area (SCM/BOB)
and The Sixteenth Meeting of the Bay of Bengal ATS Coordination Group
(BBACG/16)**

Bangkok, Thailand, 31 January – 4 February 2005

Agenda Item 3: Review current operations across the Bay of Bengal and identify problem areas

**SUMMARY OF THE SECOND MEETING OF THE REGIONAL AIRSPACE SAFETY
MONITORING ADVISORY GROUP (RASMAG/2)**

(Presented by Secretariat)

SUMMARY

This paper presents a summary of the Report of the Second Meeting of the Regional Airspace Safety Monitoring Advisory Group (RASAMG/2).

1. INTRODUCTION

1.1 This working paper reviews relevant parts of the Report of the RASMAG/2 meeting which was held from 4 – 8 October 2004 at the ICAO Asia and Pacific Office, Bangkok, Thailand.

2. ACTION BY THE MEETING

2.1 The Meeting is invited to note the summary of the Report of the RASMAG/2 attached as **Appendix** to this paper.

Excerpts from the Report of the RASMAG/2

Agenda Item 4: Review the airspace safety monitoring arrangements in the Asia/Pacific Region and the activities of regional airspace safety monitoring agencies

4.5 The meeting appreciated the report provided by Australia and noted with concern the number of operational errors involving an adjacent ATS provider. Australia advised the meeting that follow up action had been taken with the responsible parties, and through longstanding coordination arrangements established by bi-lateral agreement, operational problems were regularly being discussed. The meeting, whilst appreciating that effective coordination between the two parties was ongoing, was of the view that the Secretariat should consider undertaking a mission to the State (s) concerned in the near term to assess the safety management practices in respect to RVSM operations, the incident reporting procedures in place and any follow-up mitigation action taken on operational errors. The Secretariat agreed to consider whether such a mission could be undertaken in the short term given the available resources.

Report of MAAR's RMA activities

4.6 MAAR presented a draft of their annual report of airspace safety review of RVSM implementation and operation in the Bay of Bengal airspace which involved 15 FIRs. The review was conducted based on a one-month traffic sample data collected in July 2004. It was important to note that not all States had provided suitable traffic sample data for analysis and the overall results of the analysis would therefore have to be updated when this data became available.

4.7 The number of flights in the traffic data was broken down into various categories and summarized as shown below:

- a) daily flights operating in the FIR;
- b) the top-50 State pairs, based on FIR-flights (charts showed for each State pair, traffic in both direction);
- c) top-50 city pairs, based on FIR-flights (chart showed, for each city, traffic in both directions);
- d) top 50 commercial operators, in terms of total FIR-flights between FL290 to 410 inclusive (these operators represent over 90 percent of the operations observed in the sample);
- e) the aircraft types observed in the various FIR samples were combined into aircraft groups (the number of FIR-flights of the top 50 aircraft group were depicted); and
- f) the flight level utilization in the RVSM airspace between FL 290 to 410 inclusive were depicted.

4.8 MAAR drew attention to a principal responsibility of an RMA, which is to establish and maintain a central registry of State RVSM approvals of operators and aircraft using RVSM airspace. The MAAR RVSM approval registry database established since 27 September 2003 formed part of the global approvals registry database and the details were summarized in its report. The complete details of RVSM approval registry records are available on the MAAR website (www.aerothai.co.th/maar).

4.9 Based on the traffic sample data of the number of aircraft operating in the RVSM airspace, this indicated that the database containing RVSM approval data should be more extensive. Thus, it was very likely that there were aircraft and operators using the RVSM airspace that were not listed in the database. Accordingly, MAAR requested the concerned States to provide RVSM approval records of all registered aircraft to MAAR as soon as possible.

Large height deviation reports

4.10 Based on the requirement of safety monitoring for the RVSM implementation in Asia Region, all concerned States were required to submit large height deviation (LHD) reports to MAAR on a monthly basis. The LHD reports were used to estimate risks from technical and operational errors, which would facilitate the completion of the safety oversight for the Asian airspace where RVSM was implemented. In summary, there were 9 LHD occurrences in the Bay of Bengal, which accounted for 35 minutes of operational errors since January 2003. The total number of LHD occurrences and duration were considered to be relatively small.

Safety oversight for the RVSM implementation in the Bay of Bengal airspace

4.11 The MAAR report summarized the results of the safety assessment for the Bay of Bengal RVSM implementation. **Table 4-1** below provides the draft estimates of technical, operational, and total risks calculated for the Bay of Bengal RVSM implementation (some data, including the data for Yangon and Jakarta FIRs was not available, and therefore was not able to be taken into account).

Source of Risk	Lower Bound Risk Estimation	TLS	Remarks
Technical Risk	5.59×10^{-10}	2.5×10^{-9}	Below Technical TLS
Operational Risk	1.43×10^{-9}	-	-
Total Risk	1.99×10^{-9}	5.0×10^{-9}	Below Overall TLS

Table 4-1: Draft Risk Estimates for the RVSM Implementation in BOB

4.12 Based on the collision risk estimates, the technical risk for the RVSM implementation in the Bay of Bengal was 5.59×10^{-10} fatal accidents per flight hour. The total risk attributed to all causes was 1.99×10^{-9} . Therefore, the current estimates of both technical and total risks satisfy 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 1,000 ft, and to all causes, respectively.

4.13 MAAR advised the meeting that they would update the draft annual report and associated risk calculations on receipt of the missing traffic sample data and large height deviation reports.

Update on conducting an airspace safety review for RVSM implementation in the Western Pacific/South China Sea area

4.14 MAAR provided an update with regard to conducting an airspace safety review of RVSM implementation in the WPAC/SCS area. In accordance with the requirement of the RVSM/TF, a safety review was necessary to support the proposed changes to the RVSM flight level origination scheme under consideration for the WPAC/SCS airspace. The traffic data for use in the analysis was for the period 1 to 31 July 2004 and States had been requested by the RVSM/TF to submit the data to MAAR. The meeting was informed by MAAR that of the 10 States responsible for 14 FIRs involved in the WPAC/SCS area, complete data had only been provided by 5 States covering 6 FIRs. In regard to LHD reports, 6 FIRs had no reports submitted. The meeting, in recognizing that this was a very

poor response and that without the missing data the safety assessment could not be completed, stressed that follow-up action would be required to obtain the data.

Matters arising from the MAAR reports

4.15 The meeting thanked MAAR for its comprehensive and detailed report of RVSM operations in the Bay of Bengal area for the preceding year and the safety review carried out. The meeting was pleased to note that results of the risk calculations were well within the TLS. However, there were a number of disturbing issues that had been identified by MAAR that required urgent follow up:

- a) missing traffic sample data;
- b) missing large height deviation reports;
- c) incomplete and non-reporting of State approvals registry data; and
- d) incomplete information on follow-up monitoring of aircraft height-keeping performance in accordance with the minimum monitoring requirements.

4.16 The meeting was concerned that some States had failed to fulfill their obligations towards ICAO safety requirements for ongoing operation of RVSM. The periodic review and updating of the safety assessments for RVSM airspace was an essential part of RVSM operations, along with the maintenance of the regional and global records of States' aircraft and operator RVSM approvals. The provision of monthly LHD reports (including "NIL reports" where applicable) was essential for determining operational errors that impact on RVSM safety. The absence or incompleteness of such data denigrates the integrity of the safety assessment results.

4.17 The meeting emphasized that the implementation and continued application of RVSM and other reduced separation minima were predicated on safety assessments being performed and updated, and the target level of safety being demonstrated as having been met. The documentation of aircraft results from the height monitoring programme was a key safety activity that enabled any adverse trends in the accuracy of aircraft altimetry system performance to be detected and remedial action taken. It was recalled that through the height monitoring programme of the North Atlantic and later verified by European results (both regions operate height monitoring units), an undesirable drift in the altimetry system error (ASE) had been detected. The ICAO Separation and Airspace Safety Panel (SASP) was examining this problem, which appeared to be most likely associated with drift characteristics of the pressure sensors within Air Data Computer or Air Data Modules. SASP had noted that there was no immediate concern for the safety of RVSM operations, since the aircraft were still within the required tolerances. SASP had agreed that the ASE drift issue justified the need for long-term monitoring.

4.18 The meeting recognized that this sort of problem should be made known to State safety authorities to reinforce the need for due diligence in their safety management programmes and to fully cooperate with the regional RVSM monitoring programme. The meeting agreed that those States who had not submitted the required data and information to MAAR as described above, be informed and requested to submit the data as a matter of priority. Accordingly, the meeting prepared a draft letter to be sent to States by the Regional Office.

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

6.1 The meeting recalled that one of the duties of the RMAs was to regularly circulate reports reviewing RVSM related performance in affected FIRs relative to the established safety goals. Based on this performance, estimates of technical and overall risk would be calculated and then compared with the RVSM safety goal, the relevant target level of safety (TLS).

6.2 The RASMAG/1 meeting had agreed that RMAs should provide quarterly reports covering traffic sampling and operational errors, with an annual assessment report of the achieved level of safety and results of monitoring activity. The quarterly reporting schedule was in line with what was currently undertaken by PARMO and would be adopted by MAAR. Reporting for organizations involved in monitoring of reduced horizontal separation was agreed to be on a six monthly basis. RASMAG/1 had also reviewed the reporting procedures adopted by the various groups in the region, and agreed that all reports by the authorized groups related to safety management activities carried out for the international airspace of the Asia/Pacific Region should be made available to the RASMAG. RASMAG would review the reports and present a consolidated annual report to APANPIRG on the state of the safety of the international airspace in the region.

6.3 MAAR updated the meeting in this regard, advising that they were undertaking regular reporting to the RVSM/TF. As the RVSM/TF was active in the Asia region and therefore meeting a number of times each year, MAAR was regularly preparing RVSM safety monitoring reports and therefore considered that the need for additional quarterly reporting was redundant. MAAR acknowledged that the FIRs under PARMO jurisdiction would have different reporting needs as, in many cases, the concerned FIRs were continuing application of RVSM, and no longer had strong involvement with the RVSM/TF. In the case of the proposed implementation of RVSM in the domestic airspace of the Tokyo and Naha FIRs and Incheon FIR scheduled later in 2005, although these FIRs were under the jurisdiction of PARMO, as PARMO did not have the capability to assist as a result of their commitment to the US domestic RVSM implementation scheduled for 20 January 2005, PARMO had agreed that MAAR should conduct the safety assessment and monitoring to support this implementation on behalf of PARMO.

6.4 As a result, the meeting agreed that a reporting period of 6 months was appropriate for the medium term and that the reporting dates be adjusted in order to ensure that RASMAG was able to meet its requirement to provide an annual report to APANPIRG. In this regard, the meeting agreed that as the month of December routinely experienced high traffic levels, this should be adopted as the standard sample period for traffic sample data collection throughout the MAAR, PARMO and AsAR areas of responsibility, commencing from December 2005. Traffic sample data collected in December would be submitted to the RMAs by the end of January, allowing analysis and report preparation by the RMAs in order to update RASMAG in April/May and allow time for RASMAG to prepare an update for APANPIRG in August/September each year.