



International Civil Aviation Organization

**Fifteenth Meeting of the APANPIRG ATM/AIS/SAR Sub-Group
(ATM/AIS/SAR/SG/15)**

Bangkok, Thailand, 25 – 29 July 2005

Agenda Item 6: Review progress of the Regional Airspace Safety Monitoring Advisory Group (RASMAG)

**REPORT OF THE ACTIVITIES OF THE REGIONAL AIRSPACE
SAFETY MONITORING ADVISORY GROUP (RASMAG)**

(Presented by the Secretariat)

SUMMARY

This paper presents a summary of the work undertaken to date by the RASMAG. The paper seeks support from the Sub Group in addressing areas in which airspace safety monitoring needs to be enhanced and highlights two draft conclusions which will be considered by APANPIRG/16 (August 2005) in respect of airspace safety concerns.

1. INTRODUCTION

1.1 The Regional Airspace Monitoring Safety Advisory Group (RASMAG) was established under the terms of APANPIRG/14 (August 2003) Decision 14/48, which also required RASMAG to report annually to the ATM/AIS/SAR Sub Group and APANPIRG in respect of its airspace safety monitoring activities.

1.2 The establishment of RASMAG resulted from the initiatives of APANPIRG in addressing the inclusion by ICAO of safety management provisions in Annex 11 and the extensive implementation of reduced separation applications like RVSM that had necessitated increased safety planning and monitoring activities by States. RASMAG was the first safety group being formed by ICAO to centralize the assistance to States and provide advice on regional airspace safety and monitoring activities involving flight operations and the provision of air traffic services. Whilst a primary task of RASMAG is to review the monitoring and safety assessment activities carried out by the regional monitoring agencies established by APANPIRG for implementation and operation of reduced separation minima, other airspace safety matters are also taken into consideration.

1.3 RASMAG has now met three times – RASMAG/1 in April 2004, RASMAG/2 in October 2004 and RASMAG/3 in June 2005, and has conducted a 3 day ATS Safety Management Seminar in June 2005 subsequent to the RASMAG/3 meeting.

2. DISCUSSION

Establishment of a Safety Monitoring Agency (SMA)

2.1 RASMAG/1 agreed that it was necessary to establish safety monitoring groups to undertake the safety management programmes for the application of required data link services and related horizontal separation minima.

2.2 The following areas were identified as requiring a safety monitoring group to be established for airspace safety monitoring services and safety assessments in the Asia Region:

- a) South China Sea area, for the safety assessment of the RNP 10 route structure and reduced horizontal separation, and application of data link services;
- b) RNP 10 routes across the Bay of Bengal area, for the safety assessment and monitoring of the routes, reduced horizontal separation, and application of data link services; and
- c) RNP 10 routes from South-East Asia to the Middle East, for the safety assessment and monitoring of the routes, reduced horizontal separation, and application of data link services.

2.3 RASMAG/1 noted in regard to a) above, that the Civil Aviation Authority of Singapore was the designated Monitoring Authority (MA) for the collection and collation of the navigation performance data for the SCS routes. The States concerned have a Letter of Agreement in place requiring the reporting of gross errors of 15 NM and greater for the RNP 10 routes to the MA.

2.4 In reviewing the work of APANPIRG/15 (August 2004), RASMAG/2 noted the recommendation under APANPIRG Decision 15/5 to adopt the term safety monitoring agency (SMA). RASMAG/2 recognized the need for a clear distinction between the monitoring or assessment of technical performance and the assessment of the safety of a particular implementation. The meeting noted that CRAs and FITs monitor technical performance but do not assess system safety. The latter task was the role of an SMA in the case of reduced horizontal separation. In order to remove any confusion regarding the role and function of an SMA the meeting agreed that a recommendation should be put to APANPIRG/16 (August 2005) to amend Decision 15/5 to read as follows:

Draft Decision 16/xx1

That, the term Safety Monitoring Agency (SMA) be used to describe an organization approved by regional agreement to provide airspace safety services for international airspace in the Asia/Pacific region for implementation and operation of reduced horizontal separation.

2.5 RASMAG/2 also discussed the need to develop some form of guidance material for SMAs and the meeting agreed to develop a guidance document for distribution to and consideration by RASMAG members in due course. The document should include a guide to the safety assessment actions needed for the implementation of reduced horizontal separation, such as the assessment being undertaken by ISPACG for the implementation of 30NM lateral /30NM longitudinal separation minima utilizing ADS.

Australia as RMA/SMA

2.6 RASMAG/2 noted that APANPIRG/15 had agreed under Conclusion 15/6 that Airservices Australia be designated as an RVSM Regional Monitoring Agency (RMA) and SMA for the airspace where it was undertaking this responsibility, as well as to provide safety services for the implementation of data link for the specified airspace. APANPIRG had recognized that Airservices Australia was responsible for RVSM operations and associated safety management services west of a line 12 NM east of the east coast of Australia (i.e. that international airspace for which PARMO was not the approved RMA). Also, it was noted that Airservices had provided the safety assessment services for the implementation of the South China Sea and Bay of Bengal route systems and associated reduced lateral separation. They were also providing similar and additional safety services for data link services in the international airspace of the Brisbane and Melbourne FIRs that included the airspace of the southern Indian Ocean.

Report of Australia's RMA activities

2.7 RASMAG/3 was informed that the estimate of technical risk in the Australian domestic RVSM airspace and the Indian Oceanic RVSM airspace was found to be more than one order of magnitude less (i.e. less risky) than the technical TLS in each case. However, Australia reported that the results for the operational risk did not meet the TLS. There were a total of 236 minutes of operational errors in the 12 month period to December 31, 2004 resulting in an estimate of risk due to operational errors that exceeded the TLS in both Australian domestic RVSM airspace and Indian Oceanic RVSM airspace. Consequently, the overall (i.e. technical plus operational risk) vertical risk in RVSM airspace, weighed by flight hours in each airspace, is 9.26×10^{-9} fatal accidents per flight hour which exceeds the TLS of 5×10^{-9} fatal accidents per flight hour.

2.8 Australia confirmed that although the TLS had not been met within the Australian FIRs during 2004, an inspection of the operational error data indicated that this was a direct consequence of three or four large height deviation (LHD) reports of extended time duration. Of note is the fact that none of these LHD reports identified issues specific to RVSM per se, but were errors that were likely to be equally resident in CVSM airspace. However, Airservices Australia had investigated the circumstances surrounding these incidents by formal process, with the result that specific recommendations and actions had been identified and were being implemented in an effort to reduce the likelihood of similar incidents occurring in the future.

Report of PARMO's RMA activities

2.9 The Pacific Approvals Registry and Monitoring Organization (PARMO) briefed RASMAG/3 in respect of PARMO activities and provided the most recent in a series of quarterly reports issued by PARMO for review by the meeting. The report detailed safety monitoring outcomes for the Pacific RVSM airspace over the first quarter of 2005. The meeting was advised that while most States involved had provided the necessary data to enable suitable safety analysis, some States had not provided any data. RASMAG/3 noted with concern the lack of routine provision of large height deviation reports (LHD) from some States (including 'NIL' reports) and the fact that 2 States had not reported any data since April 2004.

2.10 PARMO informed the meeting that the analysis indicated that the overall vertical collision risk for the Pacific was 1.64×10^{-9} fatal accidents per flight hour, which is approximately 67% below the Target Level of Safety (TLS) and therefore satisfies the TLS.

Report of MAAR's RMA activities

Bay of Bengal

2.11 The Monitoring Agency for the Asia Region (MAAR) presented a report on their review of airspace safety for the RVSM implementation in the Bay of Bengal (BOB) area. MAAR noted that there were a number of instances where some States had not provided the required data for analysis. However, MAAR considered that the lack of data, while of note, did not impact significantly on the review in a statistical sense. MAAR reported that total time allocated to LHD since 2003 in the BOB totaled 48.4 minutes resulting from 9 reports. The meeting was informed that in the BOB airspace the total risk was assessed as 3.18×10^{-9} , thereby satisfying the agreed TLS value of no more than 5.0×10^{-9} fatal accidents per flight hour.

Western Pacific/South China Sea

2.12 MAAR informed RASMAG/3 that in the case of the Western Pacific (WPAC) and South China Sea (SCS) airspace there were significant issues regarding the lack of data provision by States which impacted on the level of confidence that could be placed in the results of the safety assessment. In contrast to the data from the BOB, the SCS review evidenced a total time allocated to LHD since 2003 as 237.3 minutes resulting from 104 reports. This was in comparison to the 9 LHD reports (48.4 minutes) submitted in respect of the Bay of Bengal. MAAR noted that 88 of the WPAC/SCS reports (85%) related to issues with ATC-unit to ATC-unit transfer/transition messaging.

2.13 RASMAG/3 was informed that the technical risk for the WPAC/SCS area was provisionally calculated as 5.66×10^{-10} and the operational risk as 4.34×10^{-9} . The total risk was provisionally assessed as 4.90×10^{-9} . MAAR expressed their significant concern that the TLS may have been exceeded given the calculated high risk value and the fact that there was a significant amount of data unavailable from some States. Accordingly, the information from MAAR should be considered as provisional and MAAR would update the safety assessment when the missing data became available.

2.14 In response to questioning as to whether the numbers of LHDs identified in the WPAC/SCS assessment were related to the RVSM transition activity at the boundary of SCS airspace, MAAR commented that the main reason for the errors was the lack of coordination for the changes of flight level assignment between 2 adjacent FIRs in WPAC/SCS. However, it was difficult to ascertain whether the errors were directly caused by the RVSM transition issues. More information would be required from the States concerned. In this regard, MAAR recommended that the issue be discussed in detail in the next RVSM/TF (FLOS Review) when the comprehensive material is available to MAAR.

2.15 As a result of the high numbers of LHDs reported, RASMAG/3 strongly endorsed the recommendation made to States by the MAAR regarding the need to mitigate identified LHD occurrences, fully endorsing MAAR's statement that:

Based on the LHD summary, it is important to note that the number of LHD occurrences and erroneous duration for aircraft operations in the WPAC/SCS RVSM airspace are extremely high. Therefore, MAAR strongly recommends all States concerned to put in place remedial actions to mitigate such significant errors on an urgent basis.

2.16 RASMAG/3 requested that the Regional Office circulate a letter to affected States, alerting them to the issues raised by MAAR and seeking their urgent attention in respect of remedial actions.

What is meant by a Target Level of Safety (TLS)?

2.17 In view of the fact that the TLS was being exceeded in areas under the jurisdiction of the Australian RMA and, if sufficient data were available, were likely to be exceeded in areas under the jurisdiction of MAAR, RASMAG/3 considered the question of what was actually meant by a TLS and the necessary actions if the outcomes of airspace safety monitoring determined that the TLS had been exceeded.

2.18 RASMAG/3 reviewed references in Annex 11, the Air Traffic Services Planning Manual (Doc 9426) and the Manual on Airspace Planning Methodology for the Determination of Separation Minima (Doc 9689) in this respect, noting guidance in respect to the derivation and application of TLS.

2.19 The meeting considered information provided in the ICAO Airspace Planning Manual, Doc 9426, Part II, Para 4.10.3.8. This information, while related to monitoring for minimum navigation performance specification (MNPS), was considered to be conceptually applicable.

... it must be kept in mind that the target level of safety is equivalent to an expectation of very long time intervals between collisions and that a small increase in the statistical probability of collision during a six (or even a twelve) month period can be therefore acceptable. Such an investigation may show that the causes for the large deviations can be eliminated by improved procedures. Such procedures should then be brought to the attention of the operators and/or air traffic controllers through the appropriate channels. Results should then be closely observed.

2.20 Similar information was detailed in the ICAO Manual on Airspace Planning Methodology for the Determination of Separation Minima, Doc 9689, para 8.10:

If monitoring demonstrates that performance is outside the established limits, remedial action will need to be instituted to restore the system to conformance. A number of options may be considered, namely:

- a) improving training programmes for individual operators or ATS providers;*
- b) changing ATC operating procedures;*
- c) limiting demand;*
- d) modifying the route structure or airspace classification (level of ATS provided); or*
- e) increasing separation minima.*

2.21 It was therefore considered by RASMAG/3 that a single event in which airspace safety monitoring identified that the target level of safety had been exceeded, was not sufficient cause to cease the application of the separation minimum. However, it would be important to consider use of the steps stated above, continue monitoring and re-assess the safety on a regular basis to ensure that there was not an unsafe trend. RASMAG/3 recognized the importance of providing guidance to States in respect of the TLS issues discussed above and agreed to add an item to the RASMAG Task List in this regard, for future action.

Tripartite RMA meeting

2.22 RASMAG/3 noted that in comparing the reports of the three RMAs, there were still some areas where it was possible that different values were being used in the modeling. Australia had identified some concerns regarding the way that TCAS reports were being included. As a result, Australia considered that there were a number of standardization issues relevant to the risk modeling methodologies used by the three RMAs that needed to be addressed as a matter of urgency. Following discussion with representatives from PARMO and MAAR, Australia proposed to the meeting that it would be a productive exercise for the three RMAs to meet with an aim to standardize their work methods. RASMAG/3 supported this proposal and requested the RMAs to coordinate in order to facilitate this work. Australia agreed to coordinate such a meeting.

Establishment of a Central Reporting Agency (CRA) for FIT-SEA

2.23 Japan updated RASMAG/3 in respect of its offer to provide CRA services via the CRA of-Japan for the FANS Implementation Team for the South East Asia region (FIT-SEA). Japan had advised SEACG/12 (May 2005) that the provision of CRA services would be an extension of the existing CRA Japan activities in the Tokyo FIR as aircraft were operating from the Tokyo FIR to the South-East Asia area. This would also provide continuous CRA services across this geographical area.

2.24 During SEACG/12, the Philippines, Singapore, IATA and IFALPA had thanked CRA Japan for their offer to set up the CRA and the preparation work that they had done, and supported the proposal. The Regional Office also expressed its appreciation and endorsed CRA Japan's proposal. Viet Nam and Indonesia requested that the Regional Office inform the respective DGCAs officially of the financial, technical and operational aspects of the CRA and seek their position on CRA Japan's offer. Accordingly, the Regional Office had written to these two States, requesting a response in regard to Japan's offer by 30th June 2005. To date, no response has been received by the Regional Office in this regard.

2.25 RASMAG/3 reviewed the proposed TOR and Operations Manual for the FIT-SEA CRA, providing feedback to Japan in this respect. RASMAG/3 supported the proposal by CRA of Japan to provide CRA services to the FIT-SEA, noting that under this interim proposal there would be no initial charge for setting up and operating the CRA.

RVSM Pre-Implementation Safety Assessment in the Japan Domestic Airspace

2.26 Japan provided information to RASMAG/3 in respect of the establishment of the Airspace Safety Monitoring Unit (JASMU) in JCAB in April 2004, and the method of airspace safety assessment used by this Unit to facilitate the implementation of RVSM in the Japan domestic airspace scheduled in late September 2005, and the provisional results of preliminary safety assessment. A preliminary assessment had been conducted for a period between July 2004 and May 2005, during which 10 Large Height Deviation (LHD) reports were received in the Japanese domestic airspace where RVSM would be implemented in September 2005. An additional assessment would be conducted prior to the RVSM/TF/26 meeting in July, the results of this are reported in working paper 3 to the ATM/AIS/SAR Sub Group

Monitoring of Aircraft Navigation Errors for RNP 10 Operations over the South China Sea

2.27 RASMAG/3 recalled that when the revised South China Sea route structure was implemented on 1 November 2001, an essential aspect of the project was the establishment of RNP 10 monitoring arrangements along four of the routes, *i.e.* L625, M771, N884 and N892. Hong Kong China, Philippines and Singapore were made responsible for the collection of relevant data

concerning flight operations along these routes, including examples of Gross Navigational Errors (GNE, >15NM lateral displacement) and a letter of agreement was established in this respect. These States were also required to forward the data collected, each month, to the Civil Aviation Authority of Singapore (CAAS), which is the monitoring authority for RNP 10 operations over the South China Sea.

2.28 Singapore advised RASMAG/3 that no occurrences of GNE had been reported in the 12 month period leading up to the meeting.

Safety assessment for RNP10 Operations in the SCS area

2.29 A safety analysis was required to be carried out prior to implementation of RNP 10 operations in the SCS in November 2001, in order to confirm that the navigation accuracy and other safety considerations expected to be achieved would not exceed the agreed TLS. As this task required mathematical expertise that was not generally available within the South China Sea ATS Route Structure Implementation Task Force (SCS/TF), assistance was requested from Australia to carry out the safety assessment. The safety assessment conducted by Airservices Australia concluded that the lateral collision risk would be less than the required TLS of 5×10^{-9} fatal accidents per flight hour. Accordingly, the SCS route network was implemented in November 2001.

2.30 SCS/TF/7 (January 2002) noted that the results of this safety assessment suggested that a new traffic movement sample should be collected to complete the safety assessment once the revised route structure had been implemented because the traffic data used for this preliminary assessment did not reflect the revised route structure. The Task Force agreed that a further safety assessment for RNP 10 operations in the revised South China Sea ATS route structure based on the actual traffic movement should be conducted.

2.31 SCS/TF/8 (December 2002) endorsed the position described above. SEACG/11 (May 2004) considered the matter and added an action item to the SEACG Action Plan. APANPIRG/15 noted that SEACG/11 had agreed to update the safety assessment in relation to the implementation on 1 November 2001 of RNP 10 and 60 NM lateral separation on the South China Sea routes. APANPIRG/15 also noted that RASMAG/1 had identified a need for a safety monitoring group to be responsible for safety assessment activities, and that there would be a need to designate such a safety organization for the SCS area.

2.32 SEACG/12 (May 2005) noted the delays in updating the safety assessment, acknowledging that as no updated safety assessment had been undertaken since before the implementation of the route system in November 2001 nearly 4 years ago a review of the safety assessment was long overdue.

2.33 RASMAG/3, in noting that Australia had conducted the original pre-implementation safety assessment, requested that Australia again be approached and requested to complete the post implementation safety assessment. The RASMAG Chairman undertook to follow up with Airservices Australia and coordinate a response with the Regional Office in the next few weeks. To date, no response has been received.

Delay to the Review of FLOS in the WPAC/SCS Area

2.34 RASMAG/3 was informed that during the review of regional Flight Level Allocation Scheme (FLOS) issues undertaken by RVSM/TF/22 (September 2004), States reached agreement in regard to commencing a work programme aimed at reviewing and amending the modified single alternate FLOS presently in use in the Western Pacific (WPAC) and South China Sea (SCS) areas.

2.35 The review of FLOS arrangements had been precipitated as a result of the RVSM implementation in the Bay of Bengal and Beyond area in November 2003 using a single alternate FLOS, requiring RVSM transition arrangements between the modified single alternate FLOS used in the WPAC/SCS areas. MAAR had provided an update to RVSM/TF/22 of reported large height deviation (LHD) occurrences in the RVSM airspaces submitted by States in both the WPAC/SCS and Bay of Bengal and Beyond areas, noting that the LHD occurrences were more significant in the WPAC/SCS transition areas.

2.36 In support of the proposed changes, in addition to State safety assessments, the Monitoring Agency for Asia Region (MAAR) was required to carry out a safety assessment for the Western Pacific/South China Sea that included, amongst others, consideration of the revised level assignments proposed and resulting transition areas and associated procedures. In order to undertake these activities, MAAR required the provision by States of complete traffic sample data (TSD) for the month of July 2004, and RVSM Large Height Deviation (LHD) data for a continuous 12-month period.

2.37 Although many affected States were able to provide data to MAAR as requested, in spite of frequent reminders by MAAR and a State letter issued by the Regional Office, several States responsible for significant portions of the airspace in the South China Sea area failed to submit the required data in time for MAAR to complete the safety assessment to be reviewed at the scheduled April 2005 FLOS review meeting. In the absence of the MAAR safety assessment, no change to the existing FLOS arrangements could be authorized and the April 2005 FLOS review meeting was postponed.

2.38 In acknowledgement of the issues associated with the implementation of RVSM in the Japan (domestic) and Incheon FIRs in September 2005, it was agreed that any change to the SCS FLOS should be delayed until after the 90-day review meeting of the Japan/Republic of Korea RVSM implementation. Accordingly, the meeting will be scheduled in February 2005.

2.39 RASMAG/3 recognized that the safety concerns intended to be addressed by RVSM/TF/22 in respect of RVSM transition arrangements would not be addressed until appropriate data had been provided to MAAR for analysis and a RVSM/TF meeting had considered the outcomes of the safety assessment. The meeting also recognized that the non provision of safety data by some States and consequent inability of MAAR to complete the safety assessment would lead to a deferment of at least 10 months in the implementation of the proposed changes to the SCS FLOS.

2.40 RASMAG/3, noting that the proposed changes to the SCS FLOS were derived in order to address identified operational safety concerns reviewed during RVSM/TF/22, expressed strong concerns in respect of the delay. In this regard, the meeting also noted the matters raised by MAAR's recent reporting in respect of the large numbers of Large Height Deviations (LHDs) recorded for the SCS airspace and the implications in respect of the RVSM transition arrangements, expressing very strong concerns that arrangements agreed at RVSM/TF/22 were expected to assist in reducing the numbers of LHDs and therefore should be progressed with the minimum of delay.

Non Submission by States of Safety Related Data

2.41 RASMAG/2 (October 2004) was concerned that some States had failed to fulfill their obligations towards ICAO safety requirements for ongoing operation of RVSM, noting a number of disturbing issues that had been identified by MAAR and PARMO 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.

2.42 RASMAG/2 recognized that these problems 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. Accordingly, RASMAG/2 prepared a draft letter highlighting these concerns and requesting the immediate submission of safety data. Letters of this type were transmitted by the Regional Office during early December 2004 to 13 States of the Asia and Pacific Regions who were identified as not having submitted data in accordance with the requirements of approved RMAs. Whilst many States provided safety data in response to the letter, some States have still not provided suitable data to MAAR.

2.43 In accordance with the concerns raised by RASMAG/2 in respect of the non provision of data by States, the Regional Office had presented a discussion paper in relation to RASMAG to the 41st Conference of the Director Generals of Civil Aviation of the Asia and Pacific Region (the 41st DGCA's Conference), held in Hong Kong, China during November 2004. In respect of this discussion paper, the meeting noted that the Report of the 41st DGCA's Conference recorded the following:

RASMAG/2 (October 2004) 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. Accordingly, RASMAG/2 requested that the 41st Conference of the Director Generals of Civil Aviation of the Asia and Pacific Region be advised, in order to alert DGCA's to the disturbing problem of the non provision of safety data by many States and the consequent inability to demonstrate the current safety performance of some aspects of regional operations, including those related to the application of reduced separation minima.

2.44 As a result of the Conference discussions, the 41st DGCA's Conference formulated 10 action items. One of these actions items was in respect of RASMAG and is recorded as follows:

DGCA Action Item 41/6

Recognizing the ICAO provisions on implementing Safety Management Systems, the Conference urged all Administrations in the Asia Pacific Region to fully support the APANPIRG Regional Airspace Safety Monitoring Advisory Group (RASMAG)

2.45 The follow up actions that have had to be continually undertaken by the Regional Office and regional RMAs in an effort to ensure States provide suitable safety data in respect of their responsibilities under Annex 11 - *Air Traffic Services* provisions are excessive and cannot be sustained.

2.46 The non provision by States of appropriate safety data in a timely manner, in accordance with ICAO provisions and the requirements of RMAs appointed by APANPIRG means that the safety performance of the regional airspaces in which reduced separation has been implemented cannot be fully demonstrated.

2.47 RASMAG/3 expressed significant concern in respect of the non-provision of data and formulated a statement and two draft Conclusions for consideration by APANPIRG, as follows:

RASMAG is aware that despite efforts to encourage States to provide data to enable the assessment of mandated safety targets for the implementation of reduced separation minima, some States have not met their responsibilities.

RASMAG considers that the failure of some States to provide monitoring data as required in accordance with Annex 11 provisions and Regional Supplementary Procedures (Doc 7030), has led to an inability to update required safety assessments. This leads to a lack of confidence in the safety of the operating system, in particular with respect to reduced separation applications i.e. an inability to demonstrate whether target levels of safety are being achieved.

Accordingly RASMAG has drafted the following two conclusions for consideration by APANPIRG/16:

Draft Conclusion 16/xx1

That, recognizing that some States had not adequately complied with safety management provisions, further implementation of reduced separation minima within the Asia and Pacific Region should only proceed in circumstances where implementing States can demonstrate an ability to comply with Annex 11 Chapter 2 safety management provisions for the continuous monitoring and regular assessment of the safety level achieved.

Draft Conclusion 16/xx2

That the non provision by States of safety related data to approved monitoring agencies be included in the APANPIRG Deficiencies List in respect of a deficiency in a safety management system, in order to promote the resolution of these issues.

Funding of Airspace Monitoring Activities

2.48 RASMAG/3 acknowledged that many difficulties were being experienced in the provision of safety monitoring services throughout the Region. There were many issues associated with the need to effectively fund and operate multinational infrastructure and air navigation services, including services related to airspace safety. In many instances, the expertise required for safety monitoring activities was not readily available in each State, requiring States to collaborate in the provision of safety services and to work towards establishing suitable mechanisms for the funding of multinational infrastructure and services.

2.49 RASMAG/3 was also advised that at the ISPACG/19 meeting (Brisbane, February 2005), the United States had informed the meeting that the funding of the ISPACG CRA by the FAA would expire in September 2005, and other funding arrangements would need to be considered.

2.50 RASMAG/3 recognized that the provision of safety monitoring services was essential for continued operation of reduced separation minima including RVSM. It was therefore important to understand how States could best organize to provide necessary safety monitoring services and to consider the wider issues of funding necessary for the provision safety services for the international airspaces in the region such as for the application of RVSM and reduced horizontal separation.

2.51 RASMAG/3 noted the work being undertaken in respect of the funding of CRA services for the Bay of Bengal ADS/CPDLC operational trial, as reported in working paper 23 to this Fifteenth ATM/AIS/SAR Sub Group meeting. RASMAG/3 agreed that funding issues were very significant in overcoming obstacles in the provision of safety monitoring services and, as a

consequence of time limitations during the meeting, added an item to the RASMAG Task List in this respect, to ensure the ongoing study of funding circumstances.

2.52 The critical nature of funding issues in respect of the provision of airspace safety monitoring services is highlighted in ICAO State Letter IND/05/13 (9 May 2005) in respect of the Discontinuation of RVSM monitoring mechanisms in the Middle East Region (MID) and the consequent need of ICAO to consider the withdrawal of RVSM operations from the MID Region. The State Letter has been included as Information Paper 16 to the ATM/AIS/SAR/SG/15 meeting.

MAAR Current and Future Role

2.53 Since 2 September 2003, when MAAR assumed the RMA duties and responsibilities for the Asia Region, MAAR had provided safety monitoring for RVSM implementation in the Bay of Bengal (BOB) and Western Pacific/South China Sea (WPAC/SCS). In addition, because of the limited availability of PARMO resulting from the workload associated with the implementation of RVSM in wide areas of the US, Canada and Mexico in January 2005, MAAR had assisted ICAO in assessing the safety of the RVSM implementation in Japan and Republic of Korea (ROK) domestic airspace planned for September 2005.

2.54 MAAR updated RASMAG/3 in respect of future activities, expressing its intention to fulfill the role of Safety Monitoring Agency (SMA) to support the implementation of RNP-based horizontal-plane separation minima in the Asia Region, in addition to its current RMA duties.

2.55 In regards to the provision of airspace safety monitoring for the implementation of the RNP-based horizontal-plane separation minima in the Asia Region, although the technical capability and prior experience of MAAR as an RMA provided valuable expertise, MAAR would still need to acquire the specific technical/operational know-how for the provision of RNP-based horizontal-plane separation minima airspace monitoring. MAAR reported that in this regard, they were in consultation with the FAA Technical Center and coordinating a business arrangement with CSSI in order to allow MAAR to fulfill the roles and responsibilities of the SMA for the Asia Region.

2.56 MAAR reported that in order to expand its role to provide SMA services in addition to the RMA services currently provided at no charge, MAAR would require financial support on a cost-recovery basis. Also, aircraft operators intending to conduct height keeping performance monitoring for RVSM-approved aircraft through AEROTHAI would be charged on a cost-recovery basis.

2.57 RASMAG/3 expressed appreciation for MAAR's existing RMA work and encouraged MAAR to continue to its present initiatives in respect of moving towards the provision of SMA services. The options to obtain SMA services regionally were very limited and having an operational SMA readily accessible would assist States in meeting their obligations in respect of ICAO safety provisions.

Reporting requirements

2.58 In considering the requirements for routine safety assessments, RASMAG/2 agreed that the annual provision by States of suitable traffic sample data (TSD), in addition to the ongoing routine reporting of large height deviation and gross navigational errors, was suitable for FIRs in the MAAR area of jurisdiction. The meeting agreed that the TSD reporting dates should be adjusted in order to ensure that RASMAG was able to meet its requirement to provide an annual report to APANPIRG. In this regard, RASMAG/2 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 areas of responsibility, commencing from December 2005. Traffic sample data collected in December would be submitted to MAAR 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.

2.59 RASMAG/2 also recognized that although there was currently no SMA in the Asia Region undertaking horizontal safety monitoring and assessment, this would occur in the foreseeable future. In order to minimize the impact on States of the need to collect traffic sample data, the meeting considered that efforts should be made to align the arrangements for the collection of horizontal traffic sample data information with the RVSM data collection, resulting in all required data being collected simultaneously during the annual December sampling.

RASMAG/3 Safety Seminar

2.60 RASMAG/3 recalled the background in respect to the decision by RASMAG to conduct the 3-day safety seminar that had been arranged immediately subsequent to the RASMAG/3 meeting. RASMAG/1 had expressed concern that, because the Annex 11 provision on safety management programme only came into effect on 27 November 2003, there was little lead time for States to establish safety management systems and to develop safety assessment expertise to address complex airspace environments where reduced separation minima was being implemented and operating. It was recognized that States who had implemented safety management systems and used a systematic approach to evaluating operational risk and managing ongoing operations, were much better equipped to deal with airspace safety matters. States that had little experience with safety management systems and had not put in place arrangements specifically to deal with ATS safety matters, would find it difficult to manage complex airspace and reduced separation that required safety assessments to be performed.

2.61 RASMAG/1 had recognized that these issues had a significant impact on the ability of the RMAs, CRAs and safety monitoring groups to undertake their work effectively and agreed that more attention needed to be given to education, and a start could be made by holding an ATS safety management workshop on the matters described above with an emphasis on practical hands-on experience.

2.62 RASMAG/3 considered that these concerns were still valid and endorsed the conduct of the seminar. The meeting noted that the original proposals had included provision for the Seminar material to form the basis for a small team of experts to travel to States and provide on site safety management training. The meeting was informed that, despite the generous commitment of IATA to assist with travel arrangements, the concept of presenting a traveling safety workshop to States of the region was not able to proceed as a result of resource limitations of the Regional Office and some of the States involved.

2.63 RASMAG/3 meeting expressed regret in respect of these circumstances. The Regional Office advised that a CD-ROM of the presentations to the Seminar would be widely available to States. Whilst recognizing the value of a CD-ROM, the meeting acknowledged that simply reading the material on the CD would be of significantly less value than hearing the commentary that went with the CD presentations and proposed that arrangements be made to produce a video or DVD of the seminar. As it was too late to make arrangements for this seminar, the meeting elected to pursue the idea further at a later time and requested that the 3 regional RMAs include this matter in the discussions at their proposed joint meeting. Additionally there was agreement that the proposal to take the safety seminar developed by RASMAG to specific States should be pursued. The three RMAs agreed they could undertake this activity with the support of IATA and would develop a programme and schedule. The matter was included in the RASMAG task list.

2.64 The 3-day RASMAG ATS Safety Management Seminar was conducted from 8 to 10 June 2005 at the ICAO Asia/Pacific Regional Office. The objective of the seminar was to raise the awareness of States in the Asia and Pacific Region in relation to the ICAO provisions regarding safety

management systems, with emphasis on compliance with Annex 11- *Air Traffic Services* provisions regarding the implementation of systematic and appropriate ATS safety management programmes. Details of the Seminar programme have been included in the **Appendix**.

3. ACTION BY THE MEETING

3.1 The meeting is invited to

- a) note the activities of RASMAG as reported in this paper;
- b) in recognizing State safety management responsibilities in accordance with Annex 11 provisions to provide data to MAAR, urge States to initiate appropriate oversight to ensure that the established safety monitoring requirements are met;
- c) note that the month of December every year has been agreed as the annual period for the collection of traffic sample data in respect of both RVSM and RNP safety analysis;
- d) note that no follow up safety assessment has been undertaken in regard to the operation of the RNP 10 and 60NM route structure in the South China Sea since implementation in November 2001 and assist to identify mechanisms to ensure the completion of this safety assessment in a timely manner;
- e) identify and initiate actions to ensure that a follow up safety assessment for the SCS route structure is able to be conducted in a timely manner, including the collection of suitable traffic sample data by affected States;
- f) note the non provision of safety data by some States and consequent inability to conduct safety assessments, and identify methods to ensure safety data is provided in a complete and timely manner in accordance with the requirements of safety monitoring agencies, including regional RMAs;
- g) identify issues arising from the inability to complete the safety assessments as a result of the lack of safety data, including ongoing FLOS issues in the South China Sea area;
- h) endorse the position of RASMAG and MAAR in respect to the recommendation that States concerned put in place remedial actions on an urgent basis to mitigate the large number of RVSM large height deviations reported in the South China Sea area;
- i) support MAAR in the proposal to expand services to include SMA services in addition to RMA services;
- j) support RASMAG to arrange and conduct regional safety seminar activities in accordance with the Seminar conducted as part of the RASMAG/3 meeting; and
- k) note the draft Decision and two draft Conclusions formulated by RASMAG for consideration by APANPIRG/16 (August 2005);

RASMAG ATS Safety Management Seminar

8 – 10 June 2005, Bangkok, Thailand

Programme Details

Wednesday, 8th June 2005

Session 1:

- a) ICAO ATS Safety Management Provisions
Mr. Andrew Tiede, ICAO Regional Officer, ATM
- b) The Need for and Fundamentals of Safety Management Systems
Mr. Robert Butcher, Airservices Australia
- c) The Need for Safety Assessments and Safety Monitoring in Reduced Vertical and Horizontal Separation Implementation
Mr. Brian Colamosca, US Federal Aviation Administration

Session 2:

- a) The Role of the Airlines in risk assessment activities and their contribution to safety analyses undertaken by States
Mr. Neil Jonasson, IATA Asia/Pacific Office
- b) Implementation of ICAO Safety Management Requirements – The Monitoring of Safety Levels in Hong Kong ATC Operations
Mr. Fan Wai Chuen Lucius, Civil Aviation Department, Hong Kong, China
- c) Central Reporting Agency for the FANS Implementation Team for South-East Asia (FIT-SEA CRA)
Mr. Yoshiro Nakatsuji, Air Traffic Control Association, Japan

Thursday, 9th June 2005

Session 3:

- a) RVSM – Safety Considerations in Planning and Implementation
Mr. Sydney Maniam, RVSM/TF Chairman, Civil Aviation Authority of Singapore
- b) MAAR's Activities with regard to RVSM Safety Assessments, Traffic Sampling, State Reporting Formats, Analyses and Reporting
Dr. Paisit Herabat, Monitoring Agency for the Asia Region (MAAR), AEROTHAI
- c) How Safety Assessments and Monitoring are conducted – The Essential Elements & What States need to provide to MAAR
Dr. Paisit Herabat, Monitoring Agency for the Asia Region (MAAR), AEROTHAI

- d) Outline of Recommended Guidelines for ADS/CPDLC Deployment
Mr. Hiroshi Matsuda, Air Traffic Control Association, Japan

- e) Incident Reporting and Data Collection
Mr. Robert Butcher, Airservices Australia

Session 4:

- a) Description of the Roles, Responsibilities and Functions of Airspace Safety Organizations – RASMAG, RMAs, SMAs, CRAs, FITs etc.
Mr. Andrew Tiede, ICAO Regional Officer ATM
- b) Collision Risk Modelling, Technical Risk, Risk from Operational Errors, Target Level of Safety – An Explanation in Simple Terms
Mr. Brian Colamosca, US Federal Aviation Administration
- c) Safety Assessment and Monitoring in Japan's domestic RVSM Implementation
Mr. Takashi Imuta, Civil Aviation Bureau, Japan

Friday, 10th June 2005

Session 5:

- a) Finance Arrangements – Mechanisms to facilitate collaborative funding of safety monitoring agencies
Dr. Paul Hooper, ICAO Regional Officer, Air Transport
- b) Risk Analysis
Mr. Toby Farmer, Civil Aviation Authority of New Zealand
- c) Hazard Identification Methodologies and Hazard Mitigation Strategies
Mr. Robert Butcher, Airservices Australia
- d) ICAO Regional Airspace Planning, Implementation and Safety Arrangements
Mr. Andrew Tiede, ICAO Regional Officer ATM

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