

INTERNATIONAL CIVIL AVIATION ORGANIZATION



**REPORT OF THE FOURTH MEETING OF THE
ASIA/PACIFIC AIRSPACE SAFETY MONITORING TASK FORCE
(APASM TF/4)**

BANGKOK, THAILAND, 9 – 12 DECEMBER 2002

The views expressed in this Report should be taken as those of the
Task Force and not have the Organization.

Adopted by the Task Force
and published by the ICAO Asia and Pacific Office

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PART I – HISTORY OF THE MEETING

1. Introduction

1.1 The Fourth Meeting of the Asia/Pacific Airspace Safety Monitoring Task Force (APASM TF) was held in Bangkok from 9 to 12 December 2002 at the ICAO Asia/Pacific Office.

2. Attendance

2.1 The meeting was attended by 18 experts from 7 States and 2 International Organizations. A list of participants is at Appendix A to this report.

3. Officers and Secretariat

3.1 Mr. Jeffrey Bollard, Chief Engineer – Technical Standards of Airservices Australia, acted as Chairperson and presided over the meeting throughout its duration.

3.2 Mr. David J. Moores, Regional Officer ATM was the Secretary for the meeting. He was assisted by Mr. John E. Richardson, Regional Officer ATM and Captain Roger Mulberge, Regional Officer Flight Safety.

4. Opening of the Meeting

4.1 Mr. David J. Moores, on behalf of Mr. Lalit Shah, Regional Director of the Asia and Pacific Regional Office welcomed participants to Bangkok. He reminded the meeting that this was the first Task Force meeting since the thirteenth meeting of the Asia Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/13) held on 9 to 13 September 2002, which had thoroughly reviewed the report of the APASM TF and had made a number of significant comments for this meeting to consider. In considering the work to be completed, APANPIRG/13 (Conclusion 13/45 refers) had given priority to the development of an Asia Pacific Region Regional Airspace Safety Monitoring Agency (RASMA), and the aim of this meeting should be to progress the outstanding work to be presented to APANPIRG/14 to be held on 4 to 8 August 2003.

4.2 With reference to APANPIRG/13, attention was drawn to the change to the chairperson for the APASM TF. The United States had informed APANPIRG/13 that the Federal Aviation Administration (FAA) could not continue to provide the chairperson for the Task Force. Further, at APANPIRG/13 Airservices Australia offered to take over the chairperson role, which was gratefully accepted by APANPIRG/13. Subsequently, Mr. Jeffrey Bollard, Chief Engineer, Airservices Australia was nominated and accepted by ICAO as chairperson of the APASM TF. Mr. Moores, on behalf of Task Force members, expressed appreciation to the FAA and Ms. Leslie McCormick for chairing the Task Force for the first phase of its work leading up to APANPIRG/13, and acknowledged the excellent progress that had been made. Mr. Moores introduced the new Chairperson and handed the meeting over to him.

4.3 Mr. Bollard in his opening remarks thanked delegates for their participation and looked forward to a productive meeting. He recognized that APANPIRG/13 had raised a number of challenging issues that needed to be addressed, which would need to be examined in detail. Also, this meeting would need to develop a detailed work plan to progress the work in a timely manner. He briefly summarized some main issues that would require further consideration, such as what kind of entity would RASMA be:

an independent business as originally envisaged or a body established under ICAO; in regard to timing to complete the TF work plan, the arrangement between AEROTHAI and FAA to transfer the reduced vertical separation minimum (RVSM) monitoring function carried out by the Asia Pacific Approvals Registry and Monitoring Organization (APARMO) in the Asia Region from the FAA to AEROTHAI, some of the pressure to set up the RASMA had been removed; arrangements for the FANS Interoperability Teams (FITs) and Central Reporting Agencies (CRAs) established by the Informal Pacific Air Traffic Control Coordinating Group (IPACG) and the Informal South Pacific Air Traffic Services Coordination Group (ISPACG) to monitor data link performance for automatic dependent surveillance (ADS) and controller pilot data link communication (CPDLC) would need to be considered as well as monitoring arrangements for required navigation performance (RNP); funding issues would need to be progressed and the best collection mechanism for user charges decided; and the meeting should clearly identify and prioritize the problems to be pursued.

5. **Language and Documentation**

5.1 All discussions were conducted in English. Documentation was issued in English. A total of 6 Working Papers and 4 Information Papers were considered by the meeting. A list of the Working and Information Papers is at Appendix B.

PART II - REPORT ON AGENDA ITEMS

Agenda Item 1: Adoption of Agenda

1.1 The meeting considered the provisional agenda and adopted it as the agenda for the meeting:

Agenda Item 1: Adoption of Agenda

Agenda Item 2: Review of the report of APANPIRG/13 on the APASM/TF

Agenda Item 3: Review the amended Terms of Reference

Agenda Item 4: Establish a work plan for the establishment of the RASMA

Agenda Item 5: Review the action plan

Agenda Item 6: Future Work – Meeting Schedule

Agenda Item 7: Other Business

Agenda Item 2: Review of the report of APANPIRG/13 on the APASM/TF

2.1 The meeting undertook a detailed review of the report of the APANPIRG/13 meeting (Agenda Item 3 to the Report on APANPIRG/13 refers) in regard to the establishment of RASMA and arrangements between AEROTHAI and the FAA to transfer the APARMO monitoring function for the Asia Region.

General comments

2.2 Before commencing a detailed review, the meeting was invited to make general comments on the Report of APANPIRG/13 and the establishment of the RASMA.

2.2.1 Fiji advised the meeting that they were planning to implement RNP 10 in the first half of 2003 and would be interested to seek the support of RASMA to undertake safety assessments and to provide advice on other safety management requirements.

2.2.2 India drew attention to the main objective of RASMA, which was to ensure that its services were provided to all regional airspace, safety authorities, air traffic service providers and aircraft operators in an efficient and cost effective manner. This included providing data collection and analysis services that States may require to enable them to meet their airspace safety management requirements.

2.2.3 IATA commented that RASMA had a principal role to provide monitoring oversight and to coordinate these activities for States in the region.

2.2.4 The FAA reminded the meeting that the extensive experience gained with RVSM implementation had motivated and influenced the establishment of RASMA. In this regard, RVSM required a sustained need for a safety oversight function. States were required to meet the safety provisions in Annex 11 and these needed to be translated into regional requirements. The RVSM data collection was a valuable resource to support airspace changes such as reduction in separation standards. Also, RASMA would be required to support regional implementation programmes and to continue to foster overall system safety.

2.2.5 The meeting was advised that the Japan Civil Aviation Bureau (JCAB) is discussing the necessity of a RVSM monitoring function for its domestic RVSM implementation planned for 2005.

2.2.6 In view of the information above concerning the RVSM monitoring agencies being established by India and Japan, the meeting recognized that consideration would need to be given to integrate these national activities as part of the regional monitoring process. Further, when more States implement RVSM in their domestic airspace they would set up airspace safety monitoring services, which would need to be harmonized at a regional level, a role envisaged for RASMA. The meeting noted that the Separation and Airspace Safety Panel (SASP) was developing a draft amendment to Annex 11 that required all airspace where RVSM was implemented to be part of a regional monitoring programme. If this proposal was adopted by ICAO, the meeting was of the view that this would strengthen global harmonization of RVSM airspace safety management.

2.2.7 The meeting considered that it would be helpful to clarify the term APARMO. As agreed by APANPIRG, APARMO is the RVSM regional monitoring agency (RMA) for the Asia and Pacific Region. APARMO incorporates a group of functions with terms of reference established by APANPIRG that provide for the services, activities and responsibilities necessary for implementation and ongoing operation of RVSM. The APARMO services are provided by the FAA at their own cost. In regard to the transfer of the Asia part of APARMO to AEROTHAI, it was understood that all APARMO functions would be undertaken by AEROTHAI for the applicable airspace. Further, with the transfer of the RVSM monitoring responsibility for the Asia Region to AEROTHAI, the management of APARMO would be carried out by two organizations.

2.2.8 In light of the above, it was pointed out that the name adopted by AEROTHAI for its monitoring agency, Monitoring Agency for the Asia Region (MAAR), could lead to some misunderstanding in regard to its relationship to APARMO. However, it was noted that the name identified that another organization other than the FAA, which was associated with APARMO, was providing RVSM airspace safety monitoring services for Asia. However, a change in name would require all documentation referring to APARMO, in particular, the *Guidance Material on the Implementation of a 300 m (1 000 ft) Vertical Separation Minimum (VSM) Between FL 290 and FL 410 Inclusive for Application in the Airspace of the Asia Pacific Region* to be amended. In this regard, AEROTHAI and FAA reviewed the matter and recommended that this should be referred to the RVSM Task Force, which was agreed by the meeting.

2.2.9 In regard to States providing airspace safety management services, the meeting was reminded of the primacy of States who are responsible for the safety of the airspace under their jurisdiction. In regard to the role of RASMA, it should assist States to meet their obligations for airspace safety and coordinate such activities in respect to international airspace. Accordingly, the meeting recognized that it was a State responsibility to decide whether to participate in this process or not. In order to achieve a uniform global standard for RVSM operations, States would need to fully participate in regional monitoring programmes and adopt these practices for their domestic RVSM implementation, and to provide relevant monitoring data to the RMA for that area.

2.2.10 The meeting noted that experience to date showed that States were fully cooperating with APARMO and seeking assistance when they lacked expertise in airspace safety management practices. In this regard, it was emphasized that there was a need for a body such as RASMA. Further, the meeting was informed that the SASP was developing a RMA handbook that would provide detailed guidance on establishing and operating a RMA, thereby ensuring that a common basis existed to carry out monitoring activities. Further details on the handbook are described below.

Establishment of APARMO

2.3 The meeting was given a brief overview of the background to the establishment of APARMO. The IPACG/11 meeting (January 1998) in conjunction with ISPACG established the Pacific RVSM Task Force to begin the planning process to implement RVSM in the Pacific Region (planned for 24 February 2000). The Pacific Approvals Registry and Monitoring Organization (PARMO) was established modeled on the Central Monitoring Agency (CMA) set up by the North Atlantic System Planning Group (NAT SPG) for RVSM implementation (March 1997) on the NAT organized track system, and in accordance with the ICAO *Manual on Implementation of a 300 m (1 000 ft) Vertical Separation Between FL 290 and FL 410 Inclusive* (Doc 9574). The FAA William J. Hughes Technical Center undertook to provide the services for PARMO using FAA funding, at no cost to the users or other ATS provider States.

2.3.1 The APANPIRG/9 meeting (August 1999) noting the work of IPACG and ISPACG to implement RVSM in the Pacific Region, established the RVSM Task Force to continue the planning process initiated by IPACG and ISPACG. Subsequently, the RVSM TF expanded the RVSM implementation plan to include the Western Pacific and SCS Areas (with implementation scheduled for October 2001). In the absence of another competent agency, the FAA offered to provide RVSM airspace safety monitoring services for the Western Pacific and SCS Areas on a no cost basis, which was accepted by the RVSM TF.

FASID and multi-national agreements

2.4 The meeting noted that the APASM TF in developing the RASMA Plan had taken into account the Asia/Pacific Facility and Services Implementation Document (FASID), which provided general guidelines on the establishment and provision of a multi-national air navigation facility/service. In this regard, the Task Force recognized that the establishment of RASMA fitted these guidelines, which were used to establish the framework for RASMA. Also, the FASID provided for multi-national agreements, which could be used between States and RASMA to make use of its services.

2.4.1 The meeting considered the need for multi-national agreements and was of the view that there would be legal issues involved that could make the process of establishing such an agreement very complicated. Also, it was felt that such a high level agreement was not necessary for the Contracting States of ICAO to make use of ICAO services. In this regard, the meeting agreed that establishing RASMA as an independent business entity was not necessary, as RASMA would not need to provide technical airspace safety monitoring services. This was a State responsibility as required by Annex 11, and provision of airspace safety monitoring services would be a matter for States to undertake.

Role of RASMA and provision of airspace safety monitoring services

2.5 The meeting considered at length the role of RASMA in light of the discussion at APANPIRG/13 and the responsibilities of States for airspace safety mentioned above. In consideration of the need for airspace safety monitoring services, the meeting recognized that to date under APANPIRG, arrangements for and the provision of airspace safety monitoring services for international airspace were being provided by monitoring agencies established by APANPIRG, i.e. APARMO (for RVSM in the Pacific Region), AEROTHAI (for RVSM in the Asia Region), Civil Aviation Authority Singapore (for navigation performance for the SCS ATS route system) and Airservices Australia (for lateral navigation performance for Australian FIRs, and safety assessments for the Revised ATS Routes Asia to Middle East/Europe South of the Himalayas (EMARSSH)). In addition, States were establishing RVSM airspace safety monitoring services for their domestic airspace. The meeting agreed in line with its terms of reference, to develop a table of regional requirements for airspace safety monitoring services based on the major traffic flows to identify where present and future airspace safety monitoring services were required. An initial draft of this table is in Appendix C.

2.5.1 In regard to the above, India stated that they intend to provide RVSM monitoring for the airspace under their responsibility. The necessary arrangements for RVSM monitoring are underway and included establishing a height monitoring unit (HMU) and GPS monitoring units (GMUs). The results of their monitoring and all other relevant data would be shared with the Asia RMA. India further informed the meeting that civil aviation requirements for aircraft airworthiness, operational control and training of personnel for their RVSM implementation plan have already been issued. The meeting expressed its appreciation to India on the steps taken to develop its own monitoring and airspace safety management capability. India would provide an information paper to the next meeting to give an update on their RVSM plan. Japan confirmed that they were planning to implement RVSM in their domestic airspace in 2005 and would establish a monitoring programme. They would fully coordinate their activities with the Asia RMA.

2.5.2 The meeting recognized that some States would not have the expertise necessary to set up and operate airspace safety monitoring services, and RASMA would be expected to assist such States to make the necessary arrangements, if requested. In this regard, APANPIRG in establishing the requirement for RASMA, took into account a need to provide support to States to establish airspace safety monitoring and airspace safety assessment services.

2.5.3 The meeting was of the view that RASMA, as envisaged in the RASMA Plan, may not be constituted in a way that met the actual need of States in light of the circumstances described above. The meeting had identified that there were airspace safety monitoring resources available in the Asia/Pacific Region that could meet the airspace monitoring requirements. However, as APANPIRG had recognized, it was also essential to coordinate and harmonize monitoring activities regionally and on a global basis, and an organization was needed to carry out this task.

2.5.4 In regard to the regional airspace safety monitoring services required, the meeting identified three areas to be covered: RVSM, RNP and data link communications applications. So far, RMAs for the Asia and Pacific Regions had been established for RVSM. Monitoring was being carried out for specified route systems where reduced horizontal separation was applied, e.g. the SCS route system and organized track systems in the Pacific Region where RNP 10 was applied as indicated above. In regard to monitoring of ADS and CPDLC performance, this was being carried out by States in the Pacific Region under the supervision of the informal ATC coordination groups.

2.5.5 The meeting agreed that a more effective arrangement would be to establish RASMA as a body under APANPIRG that would fulfill APANPIRG's requirement to centralize and harmonize all airspace safety monitoring and safety assessment activities in the region, whilst meeting individual State requests to obtain assistance from suitable experts to develop their airspace safety management obligations for international airspace. The meeting agreed to redefine the role and functions of RASMA and to consider the most appropriate way to develop its structure. A draft organizational matrix was prepared as a decision making tool to assist the Task Force and would be further developed at future meetings.

Criteria for airspace safety monitoring services

2.6 The meeting noted that requirements for monitoring aircraft height-keeping performance and the safety of RVSM operations had been more comprehensively developed than for other ATM services, such as reduced horizontal separation based on RNP, and monitoring of ADS and CPDLC. For RVSM, a handbook with detailed guidance on the requirements for establishing and operating RMAs was at an advanced stage of development by the SASP and was expected to be completed early next year. There was no comparable document under development by ICAO for horizontal separation or data link communication applications.

2.6.1 The meeting recognized that considerable effort over many years had gone into establishing airspace safety arrangements to ensure that RVSM would be implemented and operated on a global basis to uniform standards. As worldwide implementation of RVSM was now well advanced, there is a high level of confidence in the efficacy of the safety arrangements for RVSM. However, it was important to look ahead to the future requirements of implementing more advanced CNS/ATM systems based on GNSS, ATM automation and data link communications. In comparison to RVSM, these were far more technically complex systems and the RVSM airspace safety management model would not be appropriate to meet safety requirements to operate these systems. The meeting agreed that it should address CNS/ATM systems operational safety monitoring and assessment requirements as implementation of these systems was fundamental to the ICAO Global Air Navigation Plan for CNS/ATM Systems, which provided a basis for regional CNS/ATM planning.

2.6.2 The experience gained by IPACG and ISPACG FITs through their CRA programmes to monitor ADS and CPDLC performance for both aircraft and ground systems, has provided a valuable resource on which to develop monitoring requirements. As there is considerable material available, the meeting agreed that a handbook on the lines of the RVSM handbook, could be developed for ADS and CPDLC monitoring requirements. The meeting agreed to develop this material with contributions to be provided by the Air Traffic Control Association (ATCA) Japan and Boeing.

2.6.3 In regard to RNP and application of reduced horizontal separation minima such as 30 and 50 NM, ICAO does not provide detailed guidelines on monitoring requirements. The primary source of information is the North Atlantic (NAT) minimum navigation performance specification (MNPS) monitoring arrangements. The meeting noted that lateral navigation monitoring requirements had been established by the SCS Task Force for RNP 10 operations on the SCS route system, and these were being carried out by the Civil Aviation Authority Singapore. In this regard, the meeting agreed that the above sources would provide a basis for developing an RNP monitoring handbook.

Funding arrangements

2.7 At APANPIRG/13 funding arrangements for establishing RASMA and providing airspace safety monitoring and assessment services were recognized to be of significant importance. States had expressed concern over how charges would be applied and funding distributed to pay for RASMA and contracted services. The meeting recognized that providing adequate funding to ensure airspace safety management services were provided to an acceptable level was a critical issue. In this regard, from a user perspective and based on the limited cost analysis done in early 2001 for areas of the Asia/Pacific Region where RVSM and data link communications services have been implemented, the estimated monitoring cost was in the order of US\$ 4 million per year. The meeting agreed that further work would be necessary to confirm this estimate.

2.7.1 In view of the benefits gained from implementing RVSM, reduced horizontal separation and data link communications services, the cost to users of funding airspace safety monitoring services by ATS service providers was not considered to be a major issue. However, arrangements concerning the recovery of costs for airspace safety monitoring services was an issue that needed to be resolved. The meeting considered a number of options and included financial information in its draft organizational matrix to assist in evaluating the preferred choice.

Annex 11 provisions for airspace safety management systems

2.8 The meeting noted that for some States, meeting the Annex 11 provision on airspace safety management systems was of considerable concern and high priority. It could be expected that they would have expectations on RASMA to provide assistance. Whilst recognizing the importance to States in meeting their obligations in accordance with Annex 11, this was not a primary role envisaged for RASMA. The meeting further noted that Amendment 40 to Annex 11 and Amendment 1 to the PANS-

ATM (Doc 4444) in regard to airspace safety management applicable on 27 November 2003 gave insufficient lead time to enable many States to meet these requirements. It was also noted that there was no ICAO guidance material available on the subject. In this regard, APANPIRG/13 (Conclusion 13/44) had addressed this matter.

2.8.1 In light of the above, the meeting was informed that safety management guidance material was being developed by ICAO but publication was unlikely in the near term. Also, ICAO was arranging seminars and workshops to be held in the regions, and one was under consideration for the Asia/Pacific Region in 2004. The meeting encouraged States with the capability to provide assistance where possible.

Handbook for a Regional Monitoring Agency Supporting Implementation
and Continued Safe Use of the Reduced Vertical Separation Minimum

2.9 The meeting was provided information on the development by SASP of the *Handbook for a Regional Monitoring Agency Supporting Implementation and Continued Safe Use of the Reduced Vertical Separation Minimum*, which was intended to provide a set of working principles common to all RMAs. These principles have been agreed as a result of the combined experience of the NAT CMA, EUROCONTROL, and the APARMO. It was noted that the concept of a RMA as required in Doc 9574 for RVSM implementation, is essential to help ensure safety of RVSM operations. The meeting recognized that a RMA has a significant role to play in all aspects of the monitoring process. Accordingly, the handbook being developed by SASP provided detailed guidance on the following working principles common to all regional monitoring agencies:

- a) establishment and maintenance of an RVSM approvals database;
- b) monitoring and reporting aircraft height-keeping performance and the occurrence of large height deviations;
- c) monitoring aircraft height-keeping performance;
- d) establishment of a technical height monitoring function;
- e) pre-implementation technical height monitoring requirements for a given region or portion thereof;
- f) post-implementation technical height monitoring requirements for a given region or portion thereof;
- g) reporting of aircraft height-keeping performance estimates;
- h) monitoring the occurrence of large height deviations;
- i) conducting safety and readiness assessments and reporting results;
- j) monitoring operator compliance with State approval requirements after RVSM implementation; and
- k) remedial action.

2.9.1 The meeting noted that the handbook was still at the draft stage and was expected to be completed in the first half of 2003. The meeting agreed that the handbook provided a basis for regions to

establish and operate RMAs, and would facilitate global harmonization of RMA activities, and was fully supported.

Progress on establishment of the Asia RMA for RVSM

2.10 The meeting was updated on the progress made by AEROTHAI in supporting RVSM implementation in the Asia Region. AEROTHAI in setting up the Asia Region RVSM monitoring agency had chosen the name Monitoring Agency for the Asia Region (MAAR) to distinguish themselves from the FAA who had in the past held full responsibility for APARMO. However, in light of the comments above, the resolution of the naming of the Asia RMA would be left to the RVSM TF. Irrespective of the name, AEROTHAI would be assuming all responsibilities, duties and functions previously carried out by the FAA for airspace safety monitoring and safety assessment for RVSM in the Asia Region. The infrastructure for MAAR had been established. The area of responsibility was agreed with the FAA and endorsed by APANPIRG/13 and included the airspace of the Western Pacific, SCS and the Bay of Bengal. The establishment of MAAR was at an advanced stage and it would be ready to assume full responsibility by January 2003. In the event that AEROTHAI could not complete all arrangements in time, the FAA had kindly offered to continue to support RVSM monitoring functions for the Asia Region until the AEROTHAI infrastructure was assured.

2.10.1 In response to a question regarding airspace safety monitoring services AEROTHAI could provide, they confirmed that at this stage, they were only providing RVSM services, and had no immediate plans to undertake additional services. The meeting recognized that AEROTHAI had a challenging task ahead especially with RVSM implementation on the EMARSSH route system scheduled for 27 November 2003. AEROTHAI also clarified that they would not be charging users for providing airspace safety monitoring services or safety assessments but GMU data collection services would be charged on a cost recovery basis.

2.10.2 The meeting noted the good progress made by AEROTHAI with the assistance of FAA to set up its monitoring agency, which had been a complex undertaking. The meeting recognized that this was a notable achievement by both organizations. The meeting acknowledged that without the generous support and expertise provided by the FAA, the improvements and benefits attained through the implementation of RVSM in the Asia Region and the transfer of technology and expertise to AEROTHAI would not have been possible.

Review of the RASMA Plan

2.11 The meeting reviewed the RASMA Plan presented to APANPIRG/13. The meeting identified a number of areas where the RASMA Plan needed to be amended. The idea of establishing a business had been abandoned in favour of a group to be constituted under APANPIRG. The role of RASMA also needed to be changed to reflect a non-technical monitoring role and to assist States to provide airspace safety monitoring services as requested by States. Also, the objective for RASMA to provide airspace safety monitoring services would be changed to arranging such services for States. The concept of a Board of Directors had been changed to a core team management group made up of members with technical and business expertise. The meeting noted that the name RASMA had caused some concern to APANPIRG/13, as the term monitoring implied an oversight function, which could be interpreted as assuming State responsibilities. It was agreed that a new name more accurately describing the role of the group was needed.

2.11.1 The meeting recognized that the Plan for establishing RASMA was one of its primary products to be delivered to APANPIRG/14, on which a decision would be made whether to adopt the recommendations of the Task Force. Therefore, it was essential to the successful completion of the work of the Task Force to ensure that the Plan provided information presented in sufficient detail and clarity to facilitate APANPIRG making a decision based on the Task Force recommendations. The meeting

recognized that completing the Plan was a high priority and time was a constraining factor with the APANPIRG/14 meeting scheduled from 4 to 9 August 2003.

Renaming of RASMA

2.11.2 The meeting recalled that APANPIRG/13 (Report on Agenda Item 3, 3.116) noted that the term “monitoring agency” in the name RASMA could imply a safety oversight function, which was a State responsibility and the name could be changed to avoid any misunderstanding. Further, the meeting had been considering, as described above, that the role of RASMA had changed from that originally envisaged by the Task Force. Therefore, to better reflect the present thinking about the sort of non-technical monitoring entity that was needed, members discussed a list of names prepared for consideration by the meeting. The meeting agreed that the name **Asia Pacific Airspace Safety Advisory Group (APASAG)** best described the body it considered should be constituted by APANPIRG to provide the overall airspace safety functions for the Asia Pacific Region. The terms of reference, duties and responsibilities would be developed at future meetings.

Agenda Item 3: Review the amended terms of reference

3.1 The meeting reviewed the terms of reference (TORs) of the APASM TF revised by APANPIRG/13. In general, the meeting considered that the TORs had been substantially covered in its work, and no difficulties were foreseen to complete the work in accordance with the TORs. In developing the action plan and tasks to complete the outstanding work, the TORs were taken into account.

Agenda Item 4: Establish a work plan for the establishment of the RASMA

4.1 The meeting considered the outstanding work to be completed and incorporated this in the action plan established at the APASM TF/3 meeting.

Agenda Item 5: Review the action plan

5.1 The APASM TF Action Plan, which was formulated at APASM TF/1 and updated at APASM TF/2 and APASM TF/3, was further updated and is at Appendix D.

Agenda Item 6: Future Work – Meeting Schedule

6.1 The meeting reviewed the necessary progress to complete its work programme, and agreed to the schedule of meetings below. The FAA in offering to host the APASM TF/6 meeting at Honolulu, requested the meeting to consider accepting this venue as it would reduce the cost to the FAA at a time of budgetary constraints and would facilitate them continuing to provide the present level of support to the Task Force. The meeting acknowledged the significant contribution FAA made to the Task Force and accepted their offer.

APASM TF/5	24-26 February 2003	Bangkok
APASM TF/6	5-7 May 2003	Honolulu
APASM TF/7 (tentative)	9-11 July 2003	Bangkok

Agenda Item 7: Other business

7.1 The meeting reviewed the agenda for the meeting and revised it to better reflect the work required for the next meeting. The revised proposed agenda is contained in Appendix E.

Establishment of an APASM TF Web site

7.2 The meeting felt it desirable to establish a Web presence to exchange information on the work of the Task Force. In this regard, in considering where a Web site could be hosted, the meeting expressed its preference for an ICAO Web site. However, if there were difficulties to establish and maintain the site, the FAA offered to provide a Web site. The meeting agreed that the Secretary would consider the necessary arrangements and advise the next meeting.

Special Meeting of the Regional Monitoring Agencies

7.3 The meeting was presented with information on the Special Meeting of the Regional Monitoring Agencies (Special RMA) held at ICAO Headquarters, Montreal from 4 to 6 November 2002. This meeting was convened in follow up to the fourth meeting of the All Planning and Implementation Regional Groups (ALLPIRG) Conclusion 4/6, regarding RVSM certification process, as well as the issues that had been identified in Appendix C to the ALLPIRG/4 report relating to "Inter-regional issues and missing elements which need to be addressed to facilitate interregional planning and the harmonization of Air Navigation Systems".

7.4 The principal objective of the Special RMA meeting was to address the issues identified by the ALLPIRG, and to initiate the development of a roadmap that would facilitate improved co-operation and co-ordination between all RVSM RMAs. To achieve this objective, the main deliverable was a draft RMA handbook under development by the SASP. In this regard, the meeting had reviewed the draft handbook presented at the Special RMA meeting as described above, and recognized the importance for all RVSM RMAs to adopt a common set of requirements and procedures in conducting the activities of the RMA. The meeting endorsed the handbook being developed by the SASP.

7.5 Another important objective of the Special RMA meeting was to provide a forum for all the RMAs to exchange information, identify issues and provide an opportunity for newly established RMAs to benefit from the experience of the established RMAs. In this regard, the Special RMA meeting agreed that a forum was required to ensure that all RMAs were working to the same standard and to provide an opportunity for RMAs to change or improve arrangements that exist between them. It was pointed out that a mechanism existed within ICAO through the PIRGs but this was considered too high a level to be able to effectively address very technical matters. It was noted that ICAO would explore ways and means to provide such a forum.

7.6 The meeting noted the outcome of the Special RMA meeting and that positive steps had been taken at a global level to harmonize the implementation and ongoing management of RVSM operations worldwide. In this regard, the meeting noted that it had been identified and agreed to include in the handbook a mapping of States to RMAs for the purpose of receiving RVSM approval data and to register RVSM approvals related to a State. The meeting considered that in regard to the Asia/Pacific Region, it would be advantageous for harmonization and efficiency in the management of monitoring

activities in general, that States be assigned to an RMA by the APANPIRG. The meeting agreed that further consideration of this subject was required.

7.7 In regard to developing an Asia/Pacific handbook for monitoring horizontal navigation performance as discussed above, the meeting noted that the Middle East CMA (MECMA) had experience in this activity and could be a useful source of information.

7.8 The meeting expressed the view that, in light of the global nature of airspace safety monitoring activities, it was important for the Asia/Pacific Region to continue to be represented at any future meetings established by ICAO on inter-regional coordination and harmonization of airspace safety monitoring activities.

APASM TF/4
Appendix A to the Report

LIST OF PARTICIPANTS

STATE/NAME	DESIGNATION/ADDRESS	TEL/FAX/E-MAIL
AUSTRALIA		
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Appendix A to the Report

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LIST OF INFORMATION AND WORKING PAPERS

WORKING PAPERS

WP No.	Date	Agenda Item	Presented by	Subject
1	9/12/02	1	Secretariat	Provisional Agenda
2	9/12/02	2	Secretariat	Extracts of APANPIRG/13 Report – Agenda Item 3
3	9/12/02	4	Secretariat	Plan for RASMA
4	9/12/02	3	Secretariat	APASM Task Force Revised Terms of Reference
5	9/12/02	5	Secretariat	APASM Task Force Action Plan
6	9/12/02	4	Secretariat	Handbook for a Regional Monitoring Agency Supporting Implementation and Continued Safe Use of the Reduced Vertical Separation Minimum

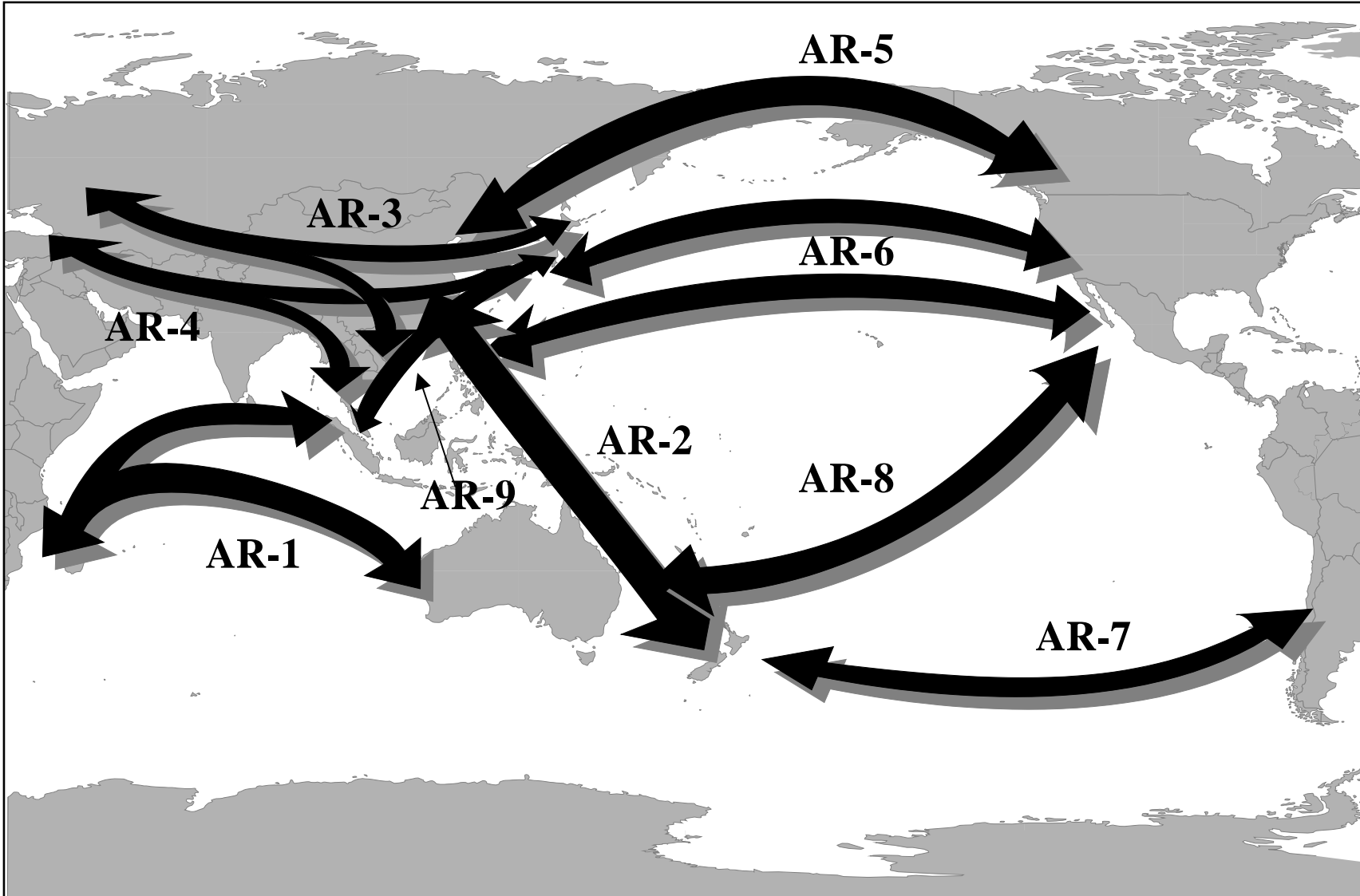
INFORMATION PAPERS

IP No.	Date	Agenda Item	Presented by	Subject
1	9/12/02	-	Secretariat	List of Information and Working Papers
2	9/12/02	2	Secretariat	JCM-RVSM MID/ASIA/1 Report
3	9/12/02	2	Thailand	Progress Report of AEROTHAI in supporting RVSM Implementation in the Asia Region
4	12/12/02	7	Secretariat	Draft Summary of Discussions of the Special Meeting of the Regional Monitoring Agencies (RMA)

APPENDIX C

ASIA PACIFIC AIRSPACE SAFETY MONITORING REQUIREMENTS

Figure 1.1 - Major Traffic Flows



PROVISION OF AIR TRAFFIC SERVICES

Draft

Table 1

Major Traffic Flow	RVSM	RNP-10	RNP-4	CPDLC/ADS
AR-1 (South Asia to Africa)	India, Indonesia, Thailand	India, Indonesia, Thailand		
AR-2 (Asia to Australia/New Zealand)	Hong Kong, China, Japan, Papua New Guinea, Philippines, Singapore	Hong Kong, China, Japan, Philippines, Singapore		
AR-4 (Asia to Europe (South of Himalayas))				
AR-5 (Asia to North America via NOPAC)	Japan, USA	Japan, USA		Japan, USA
AR-6 (Asia to North America via CENPAC)	Japan, USA	Japan, USA		Japan, USA
AR-7 (Australia/New Zealand to South America)		Australia, New Zealand		
AR-8 (Australia/New Zealand to North America)	Australia, Fiji, New Zealand, Tahiti, USA	Australia, Fiji, New Zealand, Tahiti, USA		Australia, Fiji, New Zealand, Tahiti, USA
AR-9 (Northeast Asia to Southeast Asia)	Honk Kong, China, Japan, Philippines, Singapore, Thailand, Viet Nam			

PROVISION OF AIRSPACE SAFETY MONITORING SERVICES

Draft

Table 2

Major Traffic Flow	RVSM		RNP-10		RNP-4		CPDLC/ADS	
	Now	Future	Now	Future	Now	Future	Now	Future
AR-1 (South Asia to Africa)	N/A	AEROTHAI India						
AR-2 (Asia to Australia/New Zealand)	AEROTHAI		Airservices					
AR-4 (Asia to Europe (South of Himalayas))	AEROTHAI	AEROTHAI India						
AR-5 (Asia to North America via NOPAC)	FAA	FAA JCAB	FAA JCAB	FAA JCAB		FAA JCAB	FAA JCAB	FAA JCAB
AR-6 (Asia to North America via CENPAC)	AEROTHAI FAA	AEROTHAI FAA JCAB	FAA JCAB Singapore	FAA JCAB Singapore		FAA JCAB Singapore?	FAA JCAB	FAA JCAB
AR-7 (Australia/New Zealand to South America)	N/A		Airservices					
AR-8 (Australia/New Zealand to North America)	FAA	FAA	Airservices FAA	Airservices FAA		Airservices FAA	FAA (Boeing)	FAA (Boeing)
AR-9 (Northeast Asia to Southeast Asia)	AEROTHAI	AEROTHAI	Singapore	Singapore				

PROVISION OF AIRSPACE SAFETY ASSESSMENT

Draft

Table 3

Major Traffic Flow	RVSM		RNP-10		RNP-4		CPDLC/ADS	
	Now	Future	Now	Future	Now	Future	Now	Future
AR-1 (South Asia to Africa)	N/A	AEROTHAI India?						
AR-2 (Asia to Australia/New Zealand)	AEROTHAI		Airservices					
AR-4 (Asia to Europe (South of Himalayas))	AEROTHAI	AEROTHAI India?						
AR-5 (Asia to North America via NOPAC)	FAA	FAA JCAB	FAA JCAB	FAA JCAB		FAA JCAB	FAA JCAB	FAA JCAB
AR-6 (Asia to North America via CENPAC)	AEROTHAI	JCAB AEROTHAI	FAA JCAB	FAA JCAB		FAA JCAB	FAA JCAB	FAA JCAB
AR-7 (Australia/New Zealand to South America)	N/A		Airservices					
AR-8 (Australia/New Zealand to North America)	FAA	FAA	Airservices FAA	Airservices FAA		Airservices FAA		
AR-9 (Northeast Asia to Southeast Asia)	AEROTHAI	AEROTHAI	Airservices?	Airservices?				

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APASM/TF ACTION PLAN

ID	Description	Start	Finish	Resource Names
1	Clearly describe airspace safety monitoring requirements in accordance with ICAO provisions	12-Dec-01	5-May-03	Task Force
1a	Follow the development of ICAO Separation and Airspace Safety Panel guidance as it relates to RVSM regional monitoring agencies	12-Dec-01	5-May-03	Task Force
1b	Send State letter to identify States wishing to enter into arrangements for airspace safety monitoring and/or safety assessment services	12-Dec-02	1-Mar-03	ICAO Regional Office
1c	Develop handbook detailing requirements for horizontal monitoring including State responsibility for providing data	12-Dec-02	5-May-03	Australia, US, Singapore
1d	Develop handbook detailing requirements for communications/surveillance system monitoring including State responsibility for providing data	12-Dec-02	5-May-03	Japan, US, Boeing
1e	Determine initial requirements for airspace safety monitoring and safety assessment services	12-Dec-02	15-Mar-03	ICAO Regional Office
2	Develop the organization and structure of an airspace safety monitoring organization for the Asia/Pacific Region	12-Dec-01	5-May-03	Task Force
2a	Develop the APASAG plan for the establishment of an airspace safety monitoring organization	14-Dec-01	5-May-03	Task Force
2b	Consider organizational models and provide comments to support a decision	12-Dec-02	5-May-03	Task Force
2c	Specify procedures for selecting Core Team and APASAG staff	13-Sep-02	5-May-03	Task Force
3	Identify the cost of operating monitoring services and a system for its funding	14-Dec-01	5-May-03	Task Force
3a	Obtain information on the cost of performing current monitoring services	14-Dec-01	5-May-03	Boeing, Japan, US, Thailand, India
3b	Determine funding requirements	12-Dec-02	5-May-03	Task Force
3c	Propose a recommended funding arrangement	12-Dec-02	5-May-03	Task Force
3d	Coordinate with other regional monitoring organizations to ensure inter-regional harmonization of charging for CMA	14-Dec-01	5-May-03	ICAO, Task Force
3e	Examine information to determine an appropriate level of cost recovery for airspace safety monitoring in APAC	13-Sep-02	5-May-03	Task Force
4	Identify airspace safety monitoring and assessment resources	14-Dec-01	5-May-03	Task Force
4a	Encourage current States/agencies providing airspace safety monitoring services to share technology and information	14-Dec-01	Ongoing	Australia, Japan, US, Singapore, Boeing, CSSI
4b	Provide information on India's height monitoring equipment plans	12-Dec-02	24-Feb-03	India
5	APASAG implementation issues			
5a	Identify States/agencies available to provide airspace safety monitoring and assessment services	13-Sep-02	5-May-03	Task Force
5b	Determine responsibility and coverage of monitoring agencies (regional, by State, by function, or major traffic flow)	13-Sep-02	5-May-03	Task Force
5c	Determine need for additional States/agencies to provide airspace safety monitoring and assessment services	12-Dec-02	5-May-03	Task Force
5d	Provide sample format and examples of contracts currently in use for airspace safety monitoring services	12-Dec-02	5-May-03	Japan, US, Boeing

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APASM/TF ACTION PLAN

ID	Description	Start	Finish	Resource Names
6	Prepare an appropriate amendment to the Asia Pacific Regional Air Navigation Plan for the establishment of APASAG	13-Sep-02	5-May-03	Task Force Chairperson, US , ICAO
7	Report progress			
7a	Report progress to ATS/AIS/SAR/SG/13	24-Feb-03	19-May-03	Task Force Chairperson
7b	Report progress to CNS/ATM/IC/SG/10	24-Feb-03	14-Jul-03	Task Force Chairperson
7c	Report progress to CNS/MET/SG/7	24-Feb-03	14-Jul-03	Task Force Chairperson
8	Report to APANPIRG/14	5-May-03	4-Aug-03	Task Force Chairperson

**PROPOSED PROVISIONAL AGENDA FOR THE APASM TF/5 MEETING
24-26 MAY 2003, BANGKOK**

Agenda Item 1: Adoption of Agenda

Agenda Item 2: Airspace monitoring requirements

- a) describe airspace monitoring requirements in accordance with ICAO provisions;
- b) follow the development of guidelines for RVSM RMAs by the Separation and Airspace Safety Panel;
- c) develop a handbook detailing requirements for horizontal monitoring including State responsibility to provide data;
- d) develop a handbook detailing requirements for communications/navigation systems including State responsibility to provide data; and
- e) determine initial requirements for airspace safety monitoring and safety assessment services.

Agenda Item 3: Development of the organization and structure for APASAG

- a) develop the plan for APASAG;
- b) organizational models for the ASASAG structure; and
- c) procedures for selecting Core Team members;

Agenda Item 4: Financial arrangements

- a) cost of performing current monitoring services;
- b) funding requirements;
- c) funding arrangement;
- d) level of user charges for airspace safety monitoring; and
- e) coordinate with other regional monitoring organizations to harmonize charges for air navigation services.

Agenda Item 5: Implementation issues

- a) States/agencies able to provide airspace safety monitoring and assessment services;
- b) responsibility and coverage of monitoring agencies (regional, by State, by function or major traffic flow);
- c) additional States/agencies to provide airspace safety monitoring and assessment services;
- d) sample format and examples of contracts currently in use for airspace monitoring services; and
- e) task force working arrangements and information distribution.

Agenda Item 6: Amendment to the Asia Pacific Air Navigation Plan for establishment of APASAG

Agenda Item 7: Review the action plan

Agenda Item 8: Future Work – Meeting Schedule

Agenda Item 9: Other Business

— END —

**PROPOSED PROVISIONAL AGENDA FOR THE APASM TF/5 MEETING
24-26 MAY 2003, BANGKOK**

Agenda Item 1: Adoption of Agenda

Agenda Item 2: Airspace monitoring requirements

- a) describe airspace monitoring requirements in accordance with ICAO provisions;
- b) follow the development of guidelines for RVSM RMAs by the Separation and Airspace Safety Panel;
- c) develop a handbook detailing requirements for horizontal monitoring including State responsibility to provide data;
- d) develop a handbook detailing requirements for communications/navigation systems including State responsibility to provide data; and
- e) determine initial requirements for airspace safety monitoring and safety assessment services.

Agenda Item 3: Development of the organization and structure for APASAG

- a) develop the plan for APASAG;
- b) organizational models for the ASASAG structure; and
- c) procedures for selecting Core Team members;

Agenda Item 4: Financial arrangements

- a) cost of performing current monitoring services;
- b) funding requirements;
- c) funding arrangement;
- d) level of user charges for airspace safety monitoring; and
- e) coordinate with other regional monitoring organizations to harmonize charges for air navigation services.

Agenda Item 5: Implementation issues

- a) States/agencies able to provide airspace safety monitoring and assessment services;
- b) responsibility and coverage of monitoring agencies (regional, by State, by function or major traffic flow);
- c) additional States/agencies to provide airspace safety monitoring and assessment services;
- d) sample format and examples of contracts currently in use for airspace monitoring services; and
- e) task force working arrangements and information distribution.

Agenda Item 6: Amendment to the Asia Pacific Air Navigation Plan for establishment of APASAG

Agenda Item 7: Review the action plan

Agenda Item 8: Future Work – Meeting Schedule

Agenda Item 9: Other Business

— END —