

INTERNATIONAL CIVIL AVIATION ORGANIZATION
ASIA AND PACIFIC OFFICE



REPORT OF THE FOURTEENTH MEETING OF THE
APANPIRG ATM/AIS/SAR SUB-GROUP
(ATM/AIS/SAR/SG/14)

Bangkok, Thailand, 28 June – 2 July 2004

The views expressed in this Report should be taken as those of
The Group and not the Organization

Approved by the Meeting
And published by authority of the Secretary General

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ATM/AIS/SAR/SG/14
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Attachment 1 List of Participants

Attachment 2 List of Working Papers and Information Papers

PART I – HISTORY OF THE MEETING

1. Introduction

1.1 The Fourteenth meeting of the APANPIRG Air Traffic Management/Aeronautical Information Services/Search and Rescue Sub-Group (ATM/AIS/SAR/SG/14) was held at the Kotaite Wing of the ICAO Asia and Pacific Regional Office, Bangkok, Thailand on 28 June to 2 July 2004.

2. Attendance

2.1 The meeting was attended by 58 participants from 15 States, 3 International Organizations and 1 Data Services provider. A list of participants is given at **Attachment 1**.

3. Officers and Secretariat

3.1 Mr. George P.S. Chao acted as Chairman of the Sub-Group throughout its duration.

3.2 Mr. David J. Moores, Regional Officer ATM, ICAO Asia/Pacific Office, was Secretary of the meeting and was assisted by Mr. Andrew Tiede and Mr. Kyotaro Harano, Regional Officers ATM, and Mr. K.P. Rimal, Regional Officer CNS.

4. Language and Documentation

4.1 The discussions were conducted in English. Documentation was issued in English with a total of 30 Working Papers, 4 Flimsies and 15 Information Papers being considered by the meeting. A list of papers presented is included in **Attachment 2** to this report.

5. Opening of the Meeting

5.1 The meeting was opened by Mr. David Moores, who welcomed participants on behalf of Mr. L.B. Shah, Regional Director, Asia and Pacific Regional Office. Mr. Shah wished to convey to the meeting his regrets at not being able to be present due to his absence from Bangkok. The Regional Office was pleased to hold the meeting at its new Conference building generously provided to ICAO by the Royal Thai Government, and named the Kotaite Wing in honour of Dr. Assad Kotaite, President of the Council of ICAO.

5.2 Since the ATM/AIS/SAR/SG meeting last year the ATM Section of the Regional Office has had a very busy meeting schedule with the RVSM implementation programme for the Bay of Bengal and Beyond area taking priority. Air traffic management problems involving the Bay of Bengal, some of long standing, required convening of four special coordination meetings. With the good cooperation of all partners involved, progress is being made and efforts continue to further enhance the peak period traffic flows from Asia to Europe across the northern part of the Bay of Bengal. With RVSM being implemented by Japan and the Republic of Korea in June 2005, a significant milestone will be reached when all international oceanic airspace in the Asia/Pacific Region will be operating RVSM. All parties involved are congratulated on this outstanding achievement.

5.3 Mr. George Chao, Chairman of the Sub-Group, welcomed participants to what will be his final meeting as Chairperson. At last year's meeting the Severe Acute Respiratory Syndrome (SARS) had cast a dark cloud over the proceedings. Also, there had been a significant disruption to

ICAO meeting activities. This year fortunately the situation was much brighter but ICAO was troubled by budgetary constraints. There was considerable material to be covered by this meeting which reflected the many operational issues that had been dealt with this past year. Apart from the success of RVSM implementation, the EMARSSH project had come to an end and the Bay of Bengal ATS Coordination Group reactivated. Also, it was gratifying to see the initiatives taken to rekindle the ADS and CPDLC implementation effort. He wished delegates a successful meeting and appreciated the excellent facility now available to the Regional Office.

6. **Draft Conclusions, and Decisions of the ATM/AIS/SAR Sub-Group**

6.1 The ATM/AIS/SAR Sub-Group records its actions in the form of Draft Conclusions, Draft Decisions and Decisions within the following definitions:

- a) **Draft Conclusions** deal with matters that, according to APANPIRG terms of reference, merit directly the attention of States, or on which further action is required to be initiated by the Secretary according to established procedures.
- b) **Draft Decisions** relate to matters dealing with the internal working arrangements but requires the prior agreement of the APANPIRG before it can be implemented or otherwise.
- c) **Decisions** of ATS/AIS/SAR Sub-Group relate solely to matters dealing with the internal working arrangements of the ATS/AIS/SAR Sub-Group.

6.2 **List of Draft Conclusions**

- Draft Conclusion 14/2 – Review ATS Route Requirements
- Draft Conclusion 14/3 – FANS 1/A Operations Manual (FOM)
- Draft Conclusion 14/4 – Implementation of 2 NM lateral offset procedures in the Asia/Pacific Region
- Draft Conclusion 14/5 – Review of Annex 11 airspace classification provisions for RVSM and RNP operations
- Draft Conclusion 14/6 – State contact point for submission of ATS incident reports

6.3 **List of Draft Decisions**

- Draft Decision 14/1 – To dissolve the EMARSSH Task Force
- Draft Decision 14/7 – Amendment to the Terms of Reference of the ATM/AIS/SAR/SG

PART II – REPORT ON AGENDA ITEMS

Agenda Item 1: Adoption of Provisional Agenda

1.1 The meeting reviewed the following provisional agenda presented by the Secretariat and adopted it as the agenda for the meeting.

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| <u>Agenda Item 1:</u> | Adoption of Provisional Agenda |
| <u>Agenda Item 2:</u> | Review the APANPIRG/14 Report and subsequent ANC/Council Actions with respect to ATM/AIS/SAR issues |
| <u>Agenda Item 3:</u> | Review and progress the tasks assigned to the ATM/AIS/SAR/SG by APANPIRG |
| <u>Agenda Item 4:</u> | Consider problems and make specific recommendations concerning the provision of ATM/AIS/SAR in the Asia/Pacific Region |
| <u>Agenda Item 5:</u> | Review progress of the Regional Airspace Safety Monitoring Advisory (RASMAG) |
| <u>Agenda Item 6:</u> | Deficiencies in the Air Navigation field |
| <u>Agenda Item 7:</u> | Update the list of ATM/AIS/SAR Tasks together with priorities |
| <u>Agenda Item 8:</u> | Any other business |
| <u>Agenda Item 9:</u> | Date and venue for next meeting |

Agenda Item 2: Review the APANPIRG/14 Report and subsequent ANC/Council Actions with respect to ATM/AIS/SAR issues

APANPIRG/14 Report and ANC/Council Decisions

2.1 The meeting reviewed the Conclusions and Decisions with respect to ATM/AIS/SAR matters agreed to at the APANPIRG/14 meeting (August 2003) and noted the actions taken by the Air Navigation Commission (ANC) and the Council of ICAO in regard to the APANPIRG/14 report. The following are the highlights of the ANC's review:

Matters related to ATM/AIS/SAR

- a) RVSM - The Commission congratulated APANPIRG on the implementation of RVSM in the Bay of Bengal and Beyond (effective 27 November 2003) and noted the considerable safety, operational, environmental and passenger service benefits accrued as a result.

With respect to the request for the inclusion of RVSM phraseologies for CPDLC in PANS-ATM (Doc 4444), the Commission noted that the issue was already being addressed by the Secretariat.

- b) ICAO Flight Plan - The Commission supported the request by APANPIRG for the review of the ICAO Flight Plan to include RNP approval status and requested the Secretary General to develop and provide adequate guidance. The Commission noted the establishment of a study group by the Secretariat to address the issue.
- c) ACAS II - The Commission shared concern that although the carriage of ACAS II by aircraft in excess of 15,000kg or more than 30 passengers had been mandatory since 1 January 2003, some States had not yet specified these carriage requirements and some operators have not implemented. The Commission noted the criticality of these requirements in respect of RVSM and called upon the Secretary General to urge States to comply with Annex 6 in this regard.
- d) MET products - The Commission agreed with APANPIRG that Meteorological (MET) products aimed at supporting ATM decisions could be very useful to ATS units. The Commission called upon the Secretary General to take appropriate action to develop provisions in Annex 3 for additional meteorological services to ATS in regard to the weather phenomena that cause significant changes in ATC procedures, such as large scale weather deviation contingency procedures.

Matters related to Meteorology

- a) SIGMET Format - The Commission agreed with APANPIRG that the current SIGMET format, as specified by Annex 3, needed some amendments aimed at standardizing the reporting of the geographical location of the weather phenomenon in SIGMET. The Commission requested the Secretary General to develop amendments to standardize the SIGMET message format.
- b) MET/ATM Cooperation - In recognizing the importance of continuous cooperation between MET and ATM providers, the Commission agreed with

APANPIRG that a MET/ATM coordination seminar should be organized in the Asia/Pacific Region during 2004.

Matters related CNS/ATM implementation and related activities

- a) RASMAG - The Commission noted that APANPIRG had decided to establish the Regional Airspace Safety Monitoring Advisory Group (RASMAG) and requested the Secretary General to monitor the regional developments and formulate an approach for global harmonization of regional safety monitoring arrangements.

Deficiencies in the air navigation field

- a) APAC Supplement - The Commission welcomed the initiative of APANPIRG in developing the concept of the Asia/Pacific Supplement to the Uniform Methodology that would provide a safety analysis and consideration of associated risk factors, resulting in the allocation of appropriate priority in addressing deficiencies.

Future Work Programme

- a) PIRG efficiency/effectiveness - With regard to increasing the efficiency and effectiveness of the PIRGs, the Commission noted that APANPIRG had reviewed its role and working methods. The Commission concurred with APANPIRG that the present format and style of the reports appeared to meet the requirements of the States in the region. APANPIRG confirmed that the periodicity, duration and format of its meeting are appropriate to the needs of the region.

The Commission noted that participating States and international organizations, in offering full commitment to APANPIRG, expressed confidence in the mechanism, work programme and productivity of the PIRG and also commended the Regional Office in this context.

- b) APANPIRG Terms of Reference - The Commission noted that APANPIRG had reviewed and proposed amendments to its terms of reference (TOR). The Commission further revised the TOR proposed by APANPIRG in order to reflect all aspects of enhancing the efficiency and effectiveness of PIRGs and recommended that Council approve these revised TOR.
- c) Regional Office Resources - The Commission noted that APANPIRG had expressed concern at the lack of Regional Office resources, in particular the vacancies in the ATM and AIS/MAP positions. In noting that an ATM position has since been filled, the Commission supported the need to fill the AIS/MAP position.

Other business

- a) The Commission supported APANPIRG's recommendation that Viet Nam become a full member of APANPIRG and requested that the Council approve Viet Nam's membership.

2.2 Following the ANC action, the Council considered the APANPIRG/14 report on the basis of the ANC report. Actions taken by the Council and Commission including States and the Secretariat on the Conclusions and Decisions of the APANPIRG/14 meeting are shown at **Appendix A** to the Report on Agenda Item 2.

Review of Outstanding Conclusions and Decisions of APANPIRG

2.3 The meeting reviewed the progress on the outstanding Conclusions and Decisions of APANPIRG and updated the consolidated list. The list is included as **Appendix B** to the Report on Agenda Item 2.

Key Priorities for CNS/ATM Implementation in the Asia Pacific Region

2.4 The meeting reviewed and updated the list of Key Priorities for CNS/ATM Implementation as last updated during the APANPIRG/14 meeting in August 2003. The list is included as **Appendix C** to the Report on Agenda Item 2.

ATM/AIS/SAR/SG/14
Appendix A to the Report on Agenda Item 2

FOLLOW- UP TO BE INITIATED ON THE CONCLUSIONS/DECISIONS IN ATM/AIS/SAR FIELDS OF APANPIRG/14

(Changes recommended by the ATM/AIS/SAR/SG/14 in **redline** and **strikeout**)

Report Reference ----- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
C14/1	ANC	~~Review of the ICAO flight plan to include aircraft RNP type approval status~~ That, in light of the requirements of some States for a detailed knowledge of the RNP type approval status of aircraft, ICAO be requested to review current flight planning equipment suffix provisions and revise the ICAO Flight Plan accordingly. Noted the conclusion and that it had already agreed to the establishment of a study group to address this issue.	A Study Group has been established by ICAO Headquarters.	Close (Action being taken by HQ)
C14/2		~~Revision of the Guidance Material on CNS/ATM Operations in the Asia/Pacific Region~~ That, as a matter of priority, and in line with the review by ICAO at the request of the Air Navigation Commission, a Task Force be established to revise the <i>Guidance Material on CNS/ATM Operations in the Asia/Pacific Region</i>, in coordination with States responsible for the Pacific Operations Manual (POM) with the intent of harmonizing both documents.	A Review Task Force was established and met in Honolulu, Hawaii in October 2003, and conducted an extensive review of the Guidance Material addressing comments provided by ICAO Headquarters. Also, the operations procedures document used in the Pacific Region (Pacific Operations Manual) was also reviewed and harmonized with ICAO requirements to the extent possible. A revision to the Guidance Material is under preparation by the Regional Office.	Completed (Close)

ATM/AIS/SAR/SG/14
Appendix A to the Report on Agenda Item 2

Report Reference ----- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
~~C14/4~~		~~Circulation of amendment proposal APAC 99/9-ATS (Sigmet in Volmet) to the APAC ANP (Doc 9673)~~ ~~That, the Asia/Pacific Regional Office circulates the amendment proposal APAC 99/9-ATS to the Asia/Pacific ANP (Doc 9673) to States and international organizations.~~	~~APAC 99/9-ATS was circulated to States and International organizations for comment by the Regional Office on 20 May 2004. The results are under review.~~	~~Completed (Close)~~
C14/5		ATS Route Network Review Task Force (ARNR/TF) That, a Task Force comprising representatives from States and appropriate International Organizations be formed to review the ATS route network for the Asia/Pacific Region with draft Terms of Reference as shown in Appendix B to the Report on Agenda Item 2.1.	~~The Regional Office requested States and users by letter to identify present and future route requirements to be considered by ARNR/TF/1 to be held in September 2004.~~	On-going
C14/6	ANC	Implementation of ACAS II and pressure-altitude reporting transponders in the Asia Pacific Region That, States in the Asia/Pacific Region as a matter of urgency implement ACAS II and pressure-altitude reporting transponders required by Annex 6 especially in view of RVSM operations. Noted the conclusion and, as one of the possible means, requested the Secretary General to write specifically to States not having done so to urge them to ensure carriage of ACAS II and pressure-altitude reporting transponders by aircraft in accordance with Annex 6 provisions.	~~ICAO State Letter AN 11/6.1-04/31 issued on 30 April 2004 on a proposed amendment to Annex 6 on additional requirements for carriage of ACAS II and associated training requirements for pilots.~~ ~~States to update the Regional Office on status of implementation of ACAS II and pressure-altitude reporting transponders.~~	On-going

ATM/AIS/SAR/SG/14
Appendix A to the Report on Agenda Item 2

Report Reference ----- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
C14/7		Implementation of a 2 NM lateral offset procedure That, subject to the ICAO guidelines being revised, States should develop a 2 NM lateral offset procedure to be implemented in all relevant airspace in the Asia/Pacific Region, and the Regional Supplementary Procedures amended as appropriate. This procedure to be harmonized with other regions to ensure uniform application globally.	A State Letter under preparation by ICAO Headquarters to revise the guidelines for 2 NM offset procedures to be applied globally . Based on the ICAO revised guidelines, States to promulgate in State AIPs the routes and airspace where offsets are authorized as required by Annex 2 (Chapter 3, 3.6.2.1.1).	On-going
C14/9		AIRAC provisions That, ICAO be requested to again reinforce to States the critical safety nature of AIS and adherence to Annex 15 provisions, particular those relating to AIRAC, as well as the need to ensuring accurate and timely publication of AIS data.	Timelines for the dissemination of changes to AIS are contained in Annex 15. The AIS Implementation Task Force (AI/TF) to undertake a study of the application of Annex 15 requirements.	On-going
C14/45		Fostering of exchanges between MET and ATM a) the MET Authorities/Providers of the States, be encouraged to continually assess with the corresponding ATM authorities the requirements for MET information with the aim of developing new products/information to support the ATM, bearing in mind the potential costs and benefits involved; and b) ICAO be invited, in coordination with WMO, to organize a MET/ATM coordination seminar in ASIA/PAC Region in 2004, to foster the exchanges between the MET and ATM experts in order to facilitate further development of the MET component of the CNS/ATM systems in the ASIA/PAC Region.	A seminar to be scheduled by the Regional Office during 2005.	On-going

ATM/AIS/SAR/SG/14
Appendix A to the Report on Agenda Item 2

Report Reference ----- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
	C	Noted the conclusion and invited the Secretary General, in coordination with WMO, to organize a MET/ATM coordination seminar in the ASIA/PAC Region during 2004.		
C14/53	C	Filling up key vacant posts in the ASIA/PAC Regional Office That, the ASIA/PAC Regional Office resources be strengthened by filling up the ATM and AIS/MAP vacant positions. Noted the conclusion and requested the Secretary General, as a matter of urgency, to strengthen the Asia/Pacific Regional Office specifically by filling the AIS/MAP vacant post.	ATM is at full strength as of June 2004. The AIS/MAP position remains vacant.	Completed On-going

LIST OF OUTSTANDING CONCLUSIONS/DECISIONS IN ATM/AIS/SAR FIELDS

(Changes recommended by the ATM/AIS/SAR/SG/14 in **redline** and ~~strikeout~~. Closed items from APANPIRG/14 removed from the list)

Report Reference ----- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
C 2/28		Implementation of Area Control Service That in view of recent improvements in the point-to-point communications and imminent improvement in HF air-ground communication, States concerned be urged to take urgent action to upgrade advisory and flight information services to area control service in the area over the Bay of Bengal by early 1993 along major ATS routes in their respective FIRs to enhance the safety of the rapidly increasing air traffic movement.	a) Some routes in the Arabian Sea within the Mumbai FIR are still classified Class F with Advisory Services b) States to update the Regional Office on the current status	On-going On-going
C 3/24		Implementation of RVSM & RNP in the Pacific Region That, Australia, New Zealand and United States requested to prepare proposals for the implementation of RVSM and RNP in the Pacific Region based on the work done by the ISPACG.	a) RNP 4 implementation being considered (30/30 NM separation implementation in Auckland and Brisbane FIRs planned for November 2004) Note: RVSM was implemented in the Pacific Region on 24 February 2000. This action on RVSM was completed. (ATM/AIS/SAR/SG/14 noted that this Conclusion dates from APANPIRG/3, RVSM has been implemented in the Pacific Region. RNP 10 has been extensively implemented in the Pacific Region and the focus is now on RNP 4. Consider replacing this Conclusion with more up to date one)	On-going

ATM/AIS/SAR/SG/14
Appendix B to the Report on Agenda Item 2

Report Reference ----- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
C 4/2		States in the Asia Region to review their SAR system That, a) States in the Asia Region review their SAR system in the context of the matters which require urgent addressing in the PAC Region and detailed in Appendix B, and advise the ICAO Regional Office. Noted the Conclusion.	a) Review of Asian States SAR is continuing. The ICAO Regional Office is actively fostering the enhancement of SAR throughout the Region as part of the normal work programme. Deficiencies will be listed as they become apparent. b) States to update the Regional Office by 30 April each year	On-going
C 8/9	ANC	Co-ordinated Activity – SAR That, ICAO undertakes co-ordinated activity on a regional basis to improve the level of SAR response throughout the Asia/Pacific Region. Noted the conclusion and requested the Secretary General to take appropriate action.	a) A SAREX and associated SAR seminar focused on the Bay of Bengal area is programmed to take place in 2004-2005; and b) A similar project will be organized for the South China Sea and Pacific islands area. ~~Note: ICAO seminar being planned in conjunction with the Hong Kong, China annual SAREX in November 2003)~~ Note: An ICAO seminar was held in conjunction with the Hong Kong China SAREX in November 2003 States to advise the Regional Office of their annual SAREX programmes and consider including an ICAO seminar.	2004 On-going On-going

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Appendix B to the Report on Agenda Item 2

Report Reference ----- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
C 8/39	C	CNS/ATM Training Workshops and Seminars That, the ICAO Regional Office continue to arrange CNS/ATM training workshops and seminars with the assistance of CNS/ATM Stakeholders and partners as necessary. Noted the conclusion	Several CNS/ATM workshops and seminars were held in the year 2000. Further workshops and seminar will be programmed to be held in 2004/05 - considered in 2005.	2004 On-going
C 9/2		Transition to WGS-84 in the ASIA/PAC Region That, in order to achieve uniformity in aeronautical data publication across the Regions, those States which have not yet determined and published WGS-84 data, urgently undertake to complete the task in the shortest possible time frame.	States are reminded that CNS/ATM relies on WGS84 as the only datum that can be loaded into the FMS database and is fundamental to the implementation of RNP, GNSS, and ADS. ICAO Regional Office continues to undertake follow-up action with States concerned. The non-implementation of WGS-84 is listed as a Deficiency.	On-going
C 9/8		ATS Route Amendments It is reiterated that, States should provide information regarding implemented, re-aligned or deleted ATS routes to ICAO by 30 April of each year in order to permit the periodic update of the Document of ATS Route Network.	Some information has been received. States were reminded of this Conclusion at ATS/AIS/SAR/SG/12. The Document of ATS Route Network has been revised and updated. Any changes to the RANP should be notified by States through an Amendment Proposal. An ATS Route Network Review Task Force has been established by APANPIRG/14 and scheduled to meet in the 1st - 3rd quarter of 2004 in September 2004.	On-going

ATM/AIS/SAR/SG/14
Appendix B to the Report on Agenda Item 2

Report Reference ----- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
C 9/9		Human Factor in the Provision of ATS That, a) ICAO consider holding Human Factors seminars in the Asia/Pacific Region which are focused directly on Human Factors associated with the provision of ATS, and; b) States be urged to make regular presentations to Sub-Group meetings regarding “lessons learned” relating to Human Factors associated with the implementation of the new CNS/ATM Systems.	a) The first ATS Human Factors Seminar was conducted in 2000. b) States are urged to provide information to ICAO on lessons learned.	On-going On-going
	ANC	Noted the conclusion		
D 9/39		CNS/ATM Training and Human Resource Development Task Force That, a CNS/ATM Training and Human Resource Development Task Force be established with the following Terms of Reference: a) Recommend a strategy for a regional approach towards planning the development and implementation of CNS/ATM training; b) Recommend a co-ordination mechanism for the establishment of regional training capabilities in CNS/ATM systems; c) Recommend a framework for regional training plans and consider the applicability of including this material in the Regional Air Navigation Plan; d) Take into consideration the work of ICAO TRAINAIR, the ICAO Regional Human Resources Planning and Training Needs Study Group and the APANPIRG/7 Training Task Force and recommend mechanisms for regional integration of the outputs from these groups.	The Task Force held its first meeting in July 1999. A Regional CNS/ATM Training & Human Resource Development Strategy was developed. Further work may be progressed when the outputs of the ICAO Human Resource Planning and Training Needs Study Group become available.	On-going

ATM/AIS/SAR/SG/14
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Report Reference ----- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
C 9/51	C	Strengthening the Regional Office Resources That, the ASIA/PAC Regional Office resources be strengthened to permit the proper maintenance of the ASIA/PAC FASID and implementation of uniform methodology for the identification of shortcomings, the first step being the filling of the vacant AIS/MAP post. Noted the conclusion and requested the Secretary General to take appropriate action thereon	Secretary General has been requested to take appropriate action.	On-going
C 10/2		Uniform Promulgation of FIR Boundary Way-points That, States review their aeronautical materials and that of their adjacent States and, through co-ordination with adjacent States, ensure uniform promulgation of FIR boundary way-points using WGS-84 as the basis of the Datum.	ICAO continues to monitor situation and will co-ordinate with individual States where the uniform promulgation of FIR Boundary way-points has not been achieved.	On-going
~~C 10/3~~		~~ANP Amendment Proposal to include SIGMET in VOLMET Broadcasts (ASIA)~~ ~~That, the ASIA/PAC Air Navigation Plan (Doc 9673) be amended to add a requirement for inclusion of SIGMET in VOLMET broadcasts for the Asia Region.~~	~~Amendment proposal APAC 99/9-ATS has been drafted and will be circulated to States and Organizations concerned. Superseded by Conclusion 14/4~~	~~On-going~~ Completed (Close proposal circulated)
C 10/4		Implementation of Area Control Service and 10-Minute Longitudinal Separation using Mach Number Technique in the Bay of Bengal area 1) That, States in the Bay of Bengal area a) Complete the upgrade of airspace from advisory and flight information services to area control service along ATS routes, as appropriate;	1) a) ~~implemented~~ Some routes in the Mumbai FIR remain under advisory service due to inadequate communications which is being remedied	On-going

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Report Reference ----- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
		b) ~~complete the implementation of 10 minute longitudinal separation minima using Mach Number Technique; and~~ c) identify ATS routes where 10-minute longitudinal separation minima for RNAV equipped aircraft without using MNT could be applied and implement such minima. 2) That, Sub-regional ATS Co-ordination Groups concerned place a high priority on items 1) a), b) and c) above.	b) ~~Implemented; and~~ Note: LOAs of some States require updating. The Regional Office to coordinate c) Implementation subject to provisions of ICAO separation standards. 2) Implementation continues to be co-ordinated through the Bay of Bengal ATS Co-ordination Group (BBACG).	~~On-going~~ Completed On-going On-going
C 11/1	ANC	RVSM Minimum Monitoring Requirements That, ICAO be requested to develop globally applicable short and long-term RVSM minimum monitoring requirements for aircraft. Noted the conclusion and that SASP is studying the short- and long-term objectives for RVSM monitoring.	The ICAO Separation and Airspace Safety Panel (SASP) is studying the short- and long-term objectives for RVSM monitoring. RMAs, RASMAG and parties concerned to review and harmonize adoption of the RVSM minimum monitoring requirements for the Asia/Pacific Region	On-going
C 11/6		~~Mandatory Carriage and Operation of Pressure Altitude Reporting Transponders~~ ~~That, States take immediate steps to mandate the carriage and operation of pressure altitude reporting transponders within all FIRs in the Asia/Pacific Region.~~	~~Two surveys have been conducted in conjunction with the survey relating to the carriage of ACAS-II for the purpose of monitoring the implementation status in the Region.~~ ~~States, as a matter of urgency, to update the Regional Office on the status of implementation.~~	~~On-going~~ (Close superseded by Conclusion 14/6)

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Appendix B to the Report on Agenda Item 2

Report Reference ----- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
C 11/9	C	Search and Rescue Agreements between States and Establishment of a Search and Rescue Register That, States are to complete their SAR agreements with their neighbouring States and forward such agreements to the ICAO office to be included in a register on SAR Agreements. Noted the conclusion and requested the Secretary General to urge States to complete SAR agreements with their neighbouring States and forward such agreements to ICAO.	States have been urged to complete their SAR agreements with their neighboring States. Information has been received from some ASEAN States on signed agreements with their neighbours. A registry of SAR agreements is maintained by the Regional Office and updated at the ATM/AIS/SAR/SG.	On-going
C 12/1		Observation of non-compliance of RVSM operational approval procedures ~~That, States are urged to co-operate with APARMO to investigate RVSM approval status of operators and aircraft with the aim of resolving problems of RVSM non-compliant operations.~~	~~States were urged to co-operate with APARMO in this regard.~~ ~~Letter to States issued by Regional Office (2003) re update of approval status~~ ~~Note: The Monitoring Agency for the Asia Region (MAAR) commenced operating in September 2003 and took over responsibilities for the Asia Region from APARMO (renamed PARMO) and takes follow-up action on non-compliant operators. This is also kept under review by RASMAG.~~	~~On-going~~ Completed (Close)

ATM/AIS/SAR/SG/14
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Report Reference ----- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
C-12/3	ANC	~~Implementation of RVSM in the Bay of Bengal area and beyond in conjunction with the planned implementation in the Middle East Region~~ That, States are urged to implement RVSM in the Bay of Bengal area and beyond in conjunction with the planned implementation in the Middle East Region on 27 November 2003 in order to realize the end-to-end seamless RVSM operation between Asia/Middle East/Europe south of the Himalayas. Noted the conclusion and requested the Secretary General to urge the States concerned to implement RVSM to provide an end-to-end Asia/Europe RVSM environment.	~~RVSM Task Force defined the airspace in which RVSM will be implemented on 27 November 2003, which includes Bangkok, Calcutta, Chennai, Colombo, Delhi, Dhaka, Jakarta, Karachi, Katmandu, Kuala Lumpur, Lahore, Male, Mumbai and Yangon FIRs. All States concerned have agreed to the implementation date of 27 November 2003. RVSM Task Force has been progressing its tasks towards the planned implementation in the Bay of Bengal and beyond.~~	~~On-going~~ Completed (Close)
C-12/4		~~Inter regional co-ordination between the Asia and Middle East Regions in relation to RVSM implementation~~ That, ICAO facilitate inter regional co-ordination between the Asia and Middle East Regions involving States concerned with the aim of joint harmonized implementation of RVSM.	~~The 1st Joint Interface Meeting of RVSM Task Forces between the Asia/Pacific and Middle East Regions involving India, Maldives and Pakistan from the Asia Region and Afghanistan, Islamic Republic of Iran, Oman, the United Arab Emirates (UAE) and Yemen from the Middle East Region, as well as IATA and IFALPA, was held in Abu Dhabi, UAE, from 19 to 20 October 2002.~~ ~~A final JCM meeting before implementation on 27 November 2003 is scheduled in Abu Dhabi on 27-28 August 2003.~~ Note: Implementation on 27 November 2003 and on-going coordination being undertaken by RASMAG	~~On-going~~ Completed (Close)

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Report Reference ----- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
C 12/6		Regional Contingency Planning Survey That, ICAO survey States in the Asia/Pacific Region to determine the status of contingency planning and the extent to which contingency plans are exchanged between neighbouring States.	A survey from States on the status of their National Contingency Plan arrangements has not been completed. Nevertheless, a framework for National Contingency Plans was presented to States at ATS/AIS/SAR/SG/12. States were encouraged to use this framework in developing their Plans in coordination with their neighbouring States. States had agreed under C10/37 to revise their Contingency Plans by 2003 and to update the Regional Office	On-going
C 12/10	C	Special implementation project – International seminar and SAREX That, ICAO urgently consider a proposal for an Asia/Pacific Special Implementation Project to be established with the primary objective to improve search and rescue services, co-ordination and cooperation between States. Noted the conclusion and that such a project would be put forward for the Council's approval through established procedures.	~~Due to other priorities in the ATM field, it was decided to defer the Special Implementation Project on the International Seminar and SAREX to 2002. States will be approached regarding the hosting of this SAREX/Seminar. When this decision has been finalized, other States of the Bay of Bengal area will be invited to contribute to the conduct and organizational aspects of making this event a success.~~ Note: The SIP was established but was unable to be actioned. SIP approval has expired. An ICAO Seminar and SAREX for the Bay of Bengal hosted by India is planned for March 2005. The ATM/AIS/SAR/SG to keep under review and identify other candidates for SIPs.	On-going

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Report Reference ----- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
C-12/38		~~Revision and Publication of Guidance Material on CNS/ATM Operations in the Asia/Pacific Region~~ That, a) ~~the Guidance Material on CNS/ATM Operations in the Asia/Pacific Region, Chapter 4, paragraph 6 on the application of separation using ADS be revised in line with the views of the Air Navigation Commission (157-2) on reviewing the report of APANPIRG/11 as follows:~~ ~~6. Application of procedural horizontal separation using ADS~~ ~~Aircraft position information obtained by ADS may be used for the application of procedural horizontal separation minima contained in the PANS-RAC (Doc 4444), Part III. Area Control Service where aircraft position reports are necessary to apply the appropriate separation minimum.~~ ~~Note: ICAO is processing amendments to the PANS-RAC to include procedures for the provision of ADS services for air traffic control with an applicability date in November 2002.~~ b) ~~the revised Guidance Material on CNS/ATM Operations in the Asia/Pacific Region be published by ICAO as soon as practicable~~	~~A Task Force was established by APANPIRG/14 to revise the APAC Guidance Material Guidance and coordinate with IPACG and ISPACG with a view to harmonize the Pacific Operations Manual. A Task Force meeting is scheduled 2-3 October 2003 in Honolulu to coincide with the IPACG/ISPACG/FIT meeting.~~ ~~Note: This Task is on the work programme of the ATS/AIS/SAR/SG and will be progressed with priority.~~	~~On-going (Close, superseded by Conclusion 14/2)~~
D-12/39		~~Development of guidance material on the use of ADS for the application of separation~~ ~~That, the CNS/ATM/IC/SG review the provisions in the PANS-ATM, Part XII (Doc 4444) on ADS services, and develop guidance material on the use of ADS for the application of separation to be included in the Guidance Material on CNS/ATM Operations in the Asia/Pacific Region as appropriate.~~	~~In light of Amendment 1 to PANS-ATM and the review by ANB of the Guidance Material on CNS/ATM Operations in the Asia/Pacific Region, work on this item has not been progressed and needs to be taken into account in the overall review of this Guidance Material.~~	~~On-going (Close, superseded by Conclusion 14/2)~~

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Report Reference ----- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
D 12/47		Follow-up actions on the Conclusions of ALLPIRG/4 Meeting That, the following conclusions of ALLPIRG/4 meeting be addressed by the relevant sub-groups as part of their work programme and report its outcome. Conclusions 4/1, 4/2, 4/8 and 4/13- CNS/ATM IC SG Conclusions 4/3 and 4/7- ATS/AIS/SAR SG Conclusions 4/3 - CNS/MET SG Conclusions 4/10 and 4/11- All Sub-Groups Conclusion 4/3 - Increased emphasis on addressing interregional issues and missing elements That, with a view to facilitating interregional planning and the harmonization of air navigation systems, ICAO and the CNS/ATM partners put more emphasis on the addressing of interregional issues and the missing elements as outlined in Appendix C to the report on Agenda Item 2. ~~Conclusion 4/11 – Single definition~~ ~~That ICAO be invited to refine the following single definition of a shortcoming/deficiency with a view to its incorporation into the uniform methodology for the identification and reporting of air navigation shortcomings and deficiencies:~~ ~~“A deficiency is a situation where a facility, service or a procedure is not provided in accordance with ICAO Standards and Recommended Practices which has a negative impact on the safety, regularity and/or efficiency of international civil aviation”.~~	Both CNS/ATM/IC/SG and ATM/AIS/SAR/SG noted the results of ALLPIRG/4 Conclusions. Action already in hand as part of the work programme of the Sub-Groups. Further follow-up action will be taken as appropriate.	On Going On-going Completed

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Report Reference ----- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
C-13/2	ANC	Development of procedures relating to multi-part NOTAM and NOTAM Checks by NOTAM That, ICAO consider developing procedures relating to multi-part NOTAM and NOTAM Checks by NOTAM based on the procedures contained in the draft Chapter 3 of the <i>Guidance Manual for AIS in the Asia/Pacific Region</i> at Appendix C to the Report on Agenda Item 2.1, for global application, and including them in the <i>Aeronautical Information Services Manual</i> (Doc 8126). Noted the conclusion and requested the Secretary General to take this into account when updating the <i>Aeronautical Information Services Manual</i> (Doc 8126).	ICAO to include guidance material covering NOTAM Check Lists in update to <i>Aeronautical Information Services Manual</i> (Doc 8126)	On-going (Close, action being taken by ICAO Headquarters)
C-13/3	ANC	Guidance Materials concerning the operating procedures for AIS dynamic data (OPADD) and the use of the Internet for information transfer as Chapters 3 and 4 respectively of the Guidance Manual for AIS in the Asia/Pacific Region That, the guidance materials concerning the operating procedures for AIS dynamic data (OPADD) (at Appendix C to the Report on Agenda Item 2.1) and the use of the Internet for information transfer (at Appendix D) be published as Chapters 3 and 4 respectively of the <i>Guidance Manual for AIS in the Asia/Pacific Region</i> be published in accordance with the established procedures. Noted the conclusion and that the Secretariat was developing a proposal for the development of guidelines for the operational use of the Internet by States to access and/or disseminate various categories of aeronautical information.	Chapter 3 (OPADD) already included in regional Guidance Manual—Chapter 4 (Internet) being developed by ICAO Headquarters.	On-going (Close, action being taken by ICAO Headquarters)

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Report Reference ----- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
C 13/5		Development of lateral offset procedures for application in the Asia/Pacific Region That, as a matter of urgency, the ATS/AIS/SAR Sub-Group develop lateral offset procedures for application in the Asia/Pacific Region in coordination with other regional planning groups and bodies concerned.	Further development of the use of lateral offsets to be considered by the Bay of Bengal ATS Coordination Group (BBACG) and the South East Asia ATS Co-ordination Group. Note: This task is overtaken by events and the provision of new guidelines for 2 NM offset is under development by SASP.	On-going (Close, overtaken by events 2 NM offset procedures being issued by ICAO.)
C 13/6		Amendment to the Regional Supplementary Procedures That, the MID/ASIA and PAC Regional Supplementary Procedures, ICAO Doc 7030 be amended in accordance with the proposed amendment in Appendix F to the Report on Agenda Item 2.1.	The proposed amendment to the SUPPs in relation to the application of 55.5 km (30 NM) using ADS and 93 km (50 NM) lateral and longitudinal separation minima within the Asia/Pacific Regions is being circulated to States and international organizations.	On-going (Completed)
D 13/10		ATS/AIS/SAR Subject/Task List That, the ATS/AIS/SAR Subject/task List as contained in Appendix L to the report on Agenda Item 2.1 be adopted as the current work assignment for the AIS/AIS/SAR/ Sub-Group replace the current Subject/task List as assigned by APANPIRG/12/		On-going (Close routine task of APANPIRG)

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Report Reference ----- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
C 13/34		Strengthening the Civil/Military Coordination Programme That, due to an increase in military activity within and adjacent to the Asia Pacific Region, 1. States are urged to: a) remain vigilant with regard to military activity within or near their area of responsibility; b) continue effective civil/military coordination with military authorities concerned; and, c) advise and coordinate with adjacent States and ICAO of any significant increase in military activity which may have an affect on international aircraft operations. 2. ICAO to arrange an Asia/Pacific Regional Seminar on Civil/Military Coordination and, if considered necessary, to follow-up with sub-regional Civil/Military Co-ordination Workshops in areas as deemed appropriate.	A Seminar had been planned for 2003, but postponed due to disrupted meeting schedule, and to be re-scheduled for 2004.	On-going
C 13/44		~~Support for States to establish Safety Management Systems to meet the obligation of Annex 11~~ ~~That, ICAO and States with safety management expertise support the implementation of Annex 11 safety management system requirements through holding seminars, workshops and the provision of guidance material.~~	~~This subject has been addressed by the APASM TF which endorses the need for assistance to States to establish Safety Management Systems, supported by the following:~~ ~~a) Hold SMS Seminar in the first quarter of 2004;~~	~~On-going~~ ~~(Close - subject under RASMAG)~~ Completed

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Report Reference ----- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
			b) ~~Consideration be given to development of regional guidance material; and~~ c) ~~Encourage States with appropriate expertise to assist other States with the development of their SMS.~~ Note: APANPIRG/14 established the RASMAG which under its terms of reference assists States to achieve established levels of safety for international airspace within the Asia/Pacific Region and facilitates the distribution of safety related information to States. A SMS seminar was held in Singapore in December 2003 and another seminar is planned in Beijing in November 2005.	(Being addressed by RASMAG) (Being addressed by RASMAG)
C-13/47 (Corrig. No.1)		Key Priorities for CNS/ATM Implementation That, in order to facilitate the implementation of the Key Priorities for CNS/ATM in the Asia/Pacific Region, ICAO is requested to: a) ~~re convene the FANS Action Team for the Bay of Bengal (FAT BOB), and form a similar group for the Western Pacific/South China Sea; and,~~ b) ~~adopt the broad terms of reference for these groups as follows:~~ i. ~~identify elements of the key CNS/ATM priorities which have not been implemented on a coordinated basis;~~ ii. ~~consider the implementation of these elements, on a prioritized basis, taking into account user operational requirements, cost benefit and environmental concerns; and,~~	a) ~~A meeting of the BBACG and FAT BOB is scheduled on 8-12 September 2003.~~ b) ~~A meeting of the SEACG and FAT SEA is scheduled on 8-12 December 2003.~~ Note: BBACG/13 & FIT-BOB/2 (FAT-BOB renamed) was held in September 2003. SEACG/11 and FIT-SEA/1 was held in May 2004. The work plans of these groups addresses the matters raised.	On-going (Completed)

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Report Reference ----- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
	ANC	iii. ~~develop action plans for CNS/ATM implementation as appropriate on a collaborative basis.~~ ~~Noted the conclusion and that the FANS action team has been reconvened to develop an action plan so as to identify and implement the elements of the key CNS/ATM priorities which have not been implemented on a coordinated basis.~~		

KEY PRIORITIES FOR CNS/ATM IMPLEMENTATION IN THE ASIA/PACIFIC REGION
(Changes recommended by the ATM/AIS/SAR/SG/14 in **redline** and **strikeout**)

NO.	KEY PRIORITIES	DESCRIPTION	MILESTONES	SUB-GROUP	STATUS
1	ATN Implementation	Implementation of Ground-to-Ground element of ATN is required.	2005	CNS/MET ATN Transition Task Force	2005
2	Incorporation of CNS/ATM Material into Regional ANP & FASID	Incorporation of CNS/ATM Material into Regional ANP & FASID	APANPIRG/13	ATM/AIS/SAR	On-going
3	WGS-84 Implementation	To achieve uniformity in aeronautical data publication across the Region in order to ensure a standard reference system for CNS/ATM.	Immediate (Effective Date was 1 Jan 1998)	ATM/AIS/SAR	Implementation is monitored at each meeting using the uniform format for the reporting of WGS-84 implementation. Report progress to APANPIRG/15
4	RVSM Implementation	To provide more efficient flight profiles and to increase airspace capacity in conjunction with the implementation of CNS/ATM.	Bay of Bengal – 27 November 2003 Domestic airspace of Tokyo and Naha FIRs and Incheon FIR – June 2005	ATM/AIS/SAR	Completed On-going

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NO.	KEY PRIORITIES	DESCRIPTION	MILESTONES	SUB-GROUP	STATUS
5	RNP Implementation En-route RNP 10 & 4 Terminal RNP 4& 1 Approach RNP 0.3	Implement RNP based navigation, operation and procedures to improve the efficiency and flexible use of airspace.	Report to APANPIRG	ATM/AIS/SAR & CNS/ATM/IC	On Going Phased implementation.
6	ADS-C	The implementation of ADS in oceanic or remote areas in accordance with the Regional CNS/ATM Plan is required for the enhancement of safety and ATM.	APANPIRG FIT-BOB reconvened September 2003. Bay of Bengal operational trial of ADS/CPDLC commenced February 2004 FIT-SEA inaugural meeting May 2004. South China Sea operational trial of ADS/CPDLC expected 2006/2007	ATM/AIS/SAR	Phased implementation. Revised Regional CNS/ATM Guidance Material developed containing ADS section. Implementation focus and timetable need to be developed. States are gaining experience in the use of ADS.
7	Technical Co-operation in Regional CNS/ATM Planning & Implementation	The continuation and enhancement of ICAO's co-ordinating role of technical co-operation in CNS/ATM planning and implementation, in close co-operation with all partners and taking into account the regional approach, is required.	APANPIRG/14 .	All	Sub-Groups to identify requirements.

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NO.	KEY PRIORITIES	DESCRIPTION	MILESTONES	SUB-GROUP	STATUS
8	Preparation for WRC-2007	The co-operative participation of States is required with their respective telecommunications regulatory authorities, regional groups such as the APT and at the WRC, preparatory meetings and study groups to ensure that aviation spectrum requirements are fulfilled including GNSS spectrum requirements are protected.	WRC-2007	All	
9	GNSS Implementation • ABAS • SBAS • GBAS	To implement GNSS in accordance with the Asia Pacific Regional Strategy. Develop regional GNSS Augmentation requirements Ensure region wide awareness of developing GNSS systems integrate into Regional Plan.	On Going. Report to APANPIRG	All,	SBAS – WAAS IOC announced on 10 July 2003 SBAS receiver - TSO C145/6 receivers now available GBAS – FAA LAAS contract for delivery in 2006
10	ATS route implementation	To review and develop new requirements for ATS routes.	APANPIRG/15 APANPIRG/14 established the ATS Route Network Review Task Force (ARNR/TF). The first meeting is scheduled in September 2004.	ATM/AIS/SAR	~~2004~~ On-going States to undertake review of current and future route requirements to submit to ARNR/TF

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NO.	KEY PRIORITIES	DESCRIPTION	MILESTONES	SUB-GROUP	STATUS
11	Final phase of WAFS	To implement transition to the final phase of WAFS to support the CNS/ATM system.	2004	CNS/MET	• WAFS Transition Plan and Procedures has been developed and is being successfully implemented. • Transfer of responsibility of RAFCs to WAFCs London and Washington has been implemented. • Closure of RAFCs has been implemented.
12	MET Chapter 8 of the ASIA/PAC Regional Plan for New CNS/ATM System	To develop MET components of the ASIA/PAC CNS/ATM concept/strategy To develop MET Chapter of the Regional CNS/ATM Plan	2003 2004	CNS/MET with assistance of the ATM/AIS/SAR & METATM TF	• The first draft of MET Chapter of the Regional CNS/ATM Plan has been developed. • METATM TF to develop MET components of the ASIA/PAC CNS/ATM concept/strategy.

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NO.	KEY PRIORITIES	DESCRIPTION	MILESTONES	SUB-GROUP	STATUS
13	Data – link Communications	Implementation of CPDLC. AIDC to be introduced where ATM automated systems are implemented.	On -going February 2004- CPDLC operational trial in the Bay of Bengal area 2006/2007 CPDLC operational trial expected in the South China Sea area 2005	All All	Sub-Groups to review progress of implementation. Implementation focus and time-table need to be developed.
14	ADS-B	Data Link Selection for ADS/B recommended by ADS-B Task Force <u>Target date of Implementation:</u> States, where appropriate, implement “ADS-B out” for ground-based surveillance services on a sub-regional basis. ADS-B Task Force to develop implementation plan and sub-groups foster implementation.	2006	CNS/MET All	APANPIRG/14 adopted 1090 MHz ES as the data link for ADS-B in ASIA/PAC region. Australia actively progressing wide implementation of ADS-B

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NO.	KEY PRIORITIES	DESCRIPTION	MILESTONES	SUB-GROUP	STATUS
15	Implementation of APV and RNP Approaches	Review applicability of APV and RNP Approach Design Standards for Asia Pacific. Develop implementation strategy.	On Going. Report to APANPIRG	ATM/AIS/SAR	APV and RNP Design standards now in PANS OPS. Aircraft certified for RNP and APV approaches.
16	Data Link Flight Information Services (DFIS) applications	To implement the following applications via request/response mode of data link in the Asia and Pacific Regions: a) Data link –automatic terminal information services (D-ATIS); b) VOLMET data link service (D-VOLMET); c) Pre-Departure Clearance (PDC) delivery via data-link;	2008	All	Trials and demonstrations are conducted and some operational services are provided by States; D-VOLMET to be implemented by VOLMET Broadcast Stations specified in the FASID.
17	Safety Management Systems	States to establish national safety management systems and effective application of safety programmes which are required for the provision of air traffic services.	APANPIRG/14 established the Regional Airspace Safety Monitoring Advisory Group (RASMAG). First meeting in April 2004	CNS/ATM/IC/SG RASMAG/SG (Subject to APANPIRG/14)	Annex 11 provision effective 27 November 2003. On-going RASMAG activities

Agenda Item 3: Review and progress the tasks assigned to the ATM/AIS/SAR/SG by APANPIRG

Review of RVSM/TF meeting reports

RVSM Implementation

3.1 The meeting reviewed the work of the RVSM Task Force (RVSM/TF) established by APANPIRG to implement and follow-up on implementation of RVSM in the Asia/Pacific Region. Since the ATS/AIS/SAR/SG/13 meeting (23-27 June 2003) and the APANPIRG/14 meeting (August 2003), the RVSM/TF activities focused on the West Pacific/South China Sea (WPAC/SCS) and the Bay of Bengal and Beyond areas. The meeting noted the FIRs in the region that were already operating RVSM and updated the implementation status (**Appendix A** refers). The meeting also noted the implementation planning of Japan and the Republic of Korea to implement RVSM in the Naha and Tokyo FIRs (domestic) and the Incheon FIR respectively in June 2005 (paragraph 3.119 refers).

3.2 The Task Force met eight times since its activities were reported to ATS/AIS/SAR/SG/13 as shown below:

RVSM/TF/18/19 – 90-day and One-year Review of WPAC/SCS and Planning for the Bay of Bengal and Beyond
30 June – 4 July 2003, Bangkok Thailand

Special ATS Coordination Meeting - Finalization of RVSM Operational Plan for the Bay of Bengal and Beyond
11-13 August 2003, Kuala Lumpur, Malaysia

2nd RVSM Joint Coordination Meeting (JCM/2) - Middle East/Asia Region
27-28 August 2003, Abu Dhabi, United Arab Emirates

Special ATS Coordination Meeting - RVSM Transition Procedures
3-5 September 2003, Bangkok, Thailand

RVSM/TF/20 - RVSM Implementation Bay of Bengal and Beyond (GO/NO-GO)
27-31 October 2003, New Delhi, India

Special ATS Coordination Meeting - India and Pakistan RVSM Transition Procedures
7-9 January 2004, Bangkok, Thailand

RVSM/TF/21 - 90-day Review of Bay of Bengal and Beyond Implementation
8-12 March 2004, Bangkok, Thailand

Special ATS Coordination Meeting - Air Traffic Flow Management Bay of Bengal
12-13 April 2004, Singapore

3.3 The Task Force meetings included a wide representation from States planning to implement RVSM, international organizations, operators and industry groups. Four Special ATS Coordination Meetings (SCM) had been convened to deal with specific problems that had arisen. In order to accomplish its work programme, the Task Force progresses its work through three Work Groups to focus on the following:

- a) Safety and Airspace Monitoring;
- b) ATC Operations; and
- c) Aircraft Operations and Airworthiness

RVSM/TF/18/19 – 90-day and One-year Review of WPAC/SCS and Planning for the Bay of Bengal and Beyond

3.4 The report of the RVSM/TF/18/19 meeting was reviewed by the APANPIRG/14 meeting (August 2003).

Special Coordination Meeting - Finalization of RVSM Operational Plan for the Bay of Bengal and Beyond

3.5 The RVSM/TF convened a SCM (August 2003) to finalize the operational plan for RVSM operations in the Bay of Bengal and Beyond, to complete preparations for RVSM implementation. Taking into account the operational requirements of international traffic flows and domestic operations in the Bay of Bengal and Beyond, the SCM agreed on the assignment of RVSM levels. The SCM reviewed the no-pre-departure coordination procedures (No-PDC) for the assignment of levels for departures from Bangkok, Kuala Lumpur and Singapore to Europe, and agreed that the No-PDC flight levels for departures from Kuala Lumpur and Singapore would be FL280, FL320, FL340, FL380 and FL400 for the parallel routes over the Bay of Bengal.

3.6 In respect to Letters of Agreement (LOAs), the SCM agreed that all States involved in RVSM implementation in the Bay of Bengal and Beyond should complete the LOAs prior to the RVSM/TF/20 meeting in October 2003. Where necessary, the States should arrange for bi-lateral meetings to finalize the LOAs.

3.7 The SCM reviewed operations on the Revised ATS Route Structure – Asia to Middle East/Europe South of the Himalayas (EMARSSH), and recalled the issue of ATS route congestion that had been discussed at ATS/AIS/SAR/SG/13. The following outstanding issues were considered:

- a) bottlenecks over Delhi, India causing significant delays for Delhi westbound departures;

The SCM considered that this problem would be resolved under the proposed Traffic Orientation Scheme (TOS).

- b) restrictions on flight levels on ATS route L333 over India due to military considerations require the use of an additional level, FL 280;

The SCM was informed by India that lowering of the Minimum Enroute Altitude (MEA) on L333 from FL310 to FL280 was currently being coordinated with Indian Military Authorities. In the event that it could not be lowered, FL300 would be considered.

- c) requirement for extension of P628 joining ASOPO to Rahim Yar Khan (RK) within Indian airspace, which at present was unable to be used due to military considerations;

India was considering the route extension, and Pakistan had agreed to this route within their airspace.

- d) effective use of Mach Number Technique (MNT) procedures as application by some Bay of Bengal States was inconsistent and not in accordance with the ICAO ATS Planning Manual (Doc 9426), causing unnecessary delays to long-haul international aircraft; and,

States previously had been urged to follow the procedures as provided for in ICAO documents thus avoiding unnecessary delays. The SCM was assured that these issues had been resolved and that a smooth operation of MNT procedures across the Bay of Bengal could be expected in the future.

- e) application of the TOS for flights transiting the Kabul FIR.

IATA presented a TOS, which had been previously presented to the EMARSSH Post Implementation Review meeting in April 2003. The TOS was only required for the night-time westbound peak period.

3.8 The SCM agreed to take follow-up action on the TOS and devise an air traffic management plan to optimize the use of available routes and flight levels through the Kabul FIR. This would require Malaysia, Singapore and Thailand to meet as a matter of urgency, to discuss and put in place a plan for aircraft departing from their airports and transiting the Kabul FIR, taking into account the level restrictions and other requirements through that airspace.

Other operational issues

3.9 The SCM also noted that departures from Singapore and Kuala Lumpur flight planning via the airspace of the Islamic Republic of Iran could be allocated P628, N877 or alternatively, the Bay of Bengal routes to the south, to avoid congestion over TIGER, which was in non-radar airspace in the Delhi FIR.

3.10 In regard to Phuket departures to Europe, the SCM considered that these aircraft should not interfere with the scheduled services during the night-time peak hours. Consequently, the meeting concluded that these operations should be subject to PDC procedures and that such flights should be encouraged to operate outside the regular peak traffic period.

2nd RVSM Joint Coordination Meeting (JCM/2) - Middle East/Asia Regions

3.11 The JCM/2 (August 2003) between the RVSM Task Forces of the Middle East and Asia Regions reviewed and agreed to the revised RVSM implementation strategy for the Middle East and Asia Regions.

3.12 The JCM/2 reviewed and made some changes to the FLOS India presented to the SCM held at Kuala Lumpur (August 2003) for the Indian FIRs that took into account the requirements of international and domestic traffic flows over the Bay of Bengal and India. The flight level orientation scheme (FLOS) for the RVSM band FL 290-410 inclusive was designed with in-built separation of crossing tracks, and for weather deviations over the Bay of Bengal, which were significant during cyclonic activity in the monsoon season.

3.13 The JCM/2 was informed of the concern of the RVSM/TF/19 meeting (July 2003) that some States had not submitted large height deviation (LHD) reports, and incomplete data could have an impact on the estimation of operational risk and subsequent comparison to the target level of safety (TLS). The ICAO Regional Office, Bangkok would be taking follow-up action to inform the individual States concerned to submit their reports as matter of priority to ensure that the safety assessment was completed prior to the RVSM/TF/20 meeting in October 2003.

3.14 The JCM/2 was advised that one of the major problems that would directly impact on the efficiency of RVSM operations was related to the provision of air traffic services in the Kabul FIR. The main problem being that FL280 was not available and due to the heavy weight of the majority of flights on these routes, only FL310 and FL350 were operationally viable, and a significant number of aircraft could not reach FL350 by the Kabul FIR within which no flight level changes were permitted. In this regard, the States concerned, ICAO and IATA had continuously pressed the Coalition Forces to release FL280 for international overflights, even if this was limited to a four hour window to accommodate the night time peak traffic flow. However, to date, no progress had been made and efforts continue to try and resolve this problem.

3.15 The JCM/2 noted that the introduction of RVSM in the Kabul FIR and the FIRs in the Commonwealth of Independent States and the Russian Federation that were involved in the major traffic flows, was urgently required to enable RVSM benefits to be fully realized on the main traffic flows to/from Asia and Europe. Until progress was made to implement RVSM in these airspace, the westbound traffic flow from Asia to Europe via the Kabul FIR would continue to suffer ongoing constraints. The ICAO Middle East Office, Cairo to which Afghanistan was accredited, would pursue this matter further.

3.16 India and Pakistan provided the JCM/2 with an update on transition arrangements for aircraft transiting westbound from Indian airspace into Pakistan and to Afghanistan and beyond.

3.17 The JCM/2 agreed to adopt 0200 UTC as the cut-over time for RVSM implementation on 27 November 2003, and noted that this was the same time used for the implementation of the EMARSSH route structure on 28 November 2002.

3.18 The JCM/2 was updated on the activities of the Regional Monitoring Agencies for the Asia and Mid Regions, i.e. the Monitoring Agency for the Asia Region (MAAR) operated by AEROTHAI, Thailand, and the Middle East Central Monitoring Agency (MECMA) operated by the General Civil Aviation Authority, United Arab Emirates.

3.19 The States adjoining the Arabian Sea/Indian Ocean RVSM and conventional non-RVSM vertical separation minimum (CVSM) interface area, proposed a flight level allocation scheme (FLAS) for use between these areas. The proposed FLAS for the Arabian Sea area in the Mumbai FIR had been designed to conform with the traffic flow over the Bay of Bengal and continental Indian airspace. In this regard, due consideration had been given to both the westbound and eastbound traffic on EMARSSH routes over the Arabian Sea.

3.20 The JCM/2 was advised that at the MID/RVSM/TF/9 meeting (24-27 August 2003), the GO decision was taken to implement RVSM in the Middle East Region on 27 November 2003 based on the outcomes of the Safety and Monitoring Work Group (SAM/WG), the ATC Work Group (ATC/WG) and the Operations/Airworthiness Work Group (OPS/AIR/WG).

Special Coordination Meeting - RVSM Transition Procedures

3.21 The RVSM/TF convened a SCM (September 2003) to address issues concerning transition procedures arising from RVSM implementation in the Bay of Bengal and Beyond. In particular, the SCM considered the transition arrangements between the South China Sea and Bay of Bengal areas, and developed coordination procedures for the transfer of control of aircraft using the modified single alternate FLOS and the single alternate FLOS respectively. With these measures resolved this would facilitate the RVSM/TF/20 making a final decision as to whether RVSM would be implemented on 27 November 2003.

3.22 In regard to the safety assessment for A1/P901, MAAR advised the SCM that the total risk attributable to all causes for the use of bi-directional single alternate FLOS on A1/P901 exceeded the agreed TLS of 5×10^{-9} fatal accidents per flight hour. In the case of A202, the total risk did not exceed the TLS, but the technical risk was relatively high. In light of the results of the safety assessment, MAAR recommended that uni-directional routes using the single alternate FLOS be implemented on ATS routes A1/P901 and A202 in the future. In light of the foregoing, the SCM agreed that RVSM single alternate FLOS would not be implemented on A1/P901 in non-radar procedural ATC airspace between positions BUNTA and DAGON on A1, and ITBAM and IKELA on P901. The SCM agreed that the modified single alternate FLOS should continue to be used on A1/P901 on that portion of the routes.

3.23 In regard to A202, the SCM agreed that implementation of RVSM on A202 on the non-radar portion of the route, would be dependent on the coordination of the States concerned. The SCM noted that the technical risk of 2.3×10^{-9} fatal accidents per flight hour as determined by the safety assessment was close to the maximum permitted technical risk of 2.5×10^{-9} fatal accidents per flight hour, and this should be taken into account by States when determining whether to implement RVSM on A202 in non-radar airspace.

3.24 The SCM agreed that where appropriate, transition procedures should be incorporated in the respective LOAs. In addition, AIP Supplements published by States should contain detailed operational and transition procedures.

3.25 MAAR presented an update of the LHD reports for the period between June 2001 and July 2003 received by the Asia/Pacific Approvals Registry and Monitoring Organization (APARMO) and MAAR. It was found that one of the LHD reports showed that an aircraft had been operating at the wrong flight level, FL360 in the opposite direction to its assigned flight level FL350 for a 10 minute period. Because the incident occurred in transition airspace, this raised cause for concern over transition airspace operations. Further, the transition taking place was from the single alternate FLOS to the modified single alternate FLOS, i.e. no transition was made from even to odd flight levels in the transition area.

3.26 In light of the above, MAAR recommended that a comprehensive study of the use of different FLOS in the WPAC/SCS should be conducted with a view to harmonization. Use of a single alternate FLOS would remove the requirement to conduct transition between RVSM FLOSs.

3.27 The SCM recognized the problems with RVSM operations using the single alternate FLOS and the modified single alternate FLOS in adjacent airspace in the WPAC/SCS and Bay of Bengal areas. In this regard, the SCM was reminded that at the RVSM/TF/18 meeting, it was agreed to carry out a detailed study of this matter, and to continue to operate the dual FLOS arrangement after implementation of RVSM in the Bay of Bengal area due to the limited time available to study the issue in detail.

3.28 The SCM also recognized the safety issues related to transition operations, and the incident described above underlined the potential risks involved. Therefore, it was imperative that States and ATS Providers responsible for transition procedures ensure that an appropriate level of safety management was in place prior to conducting transition operations. Further, controller training should include a thorough understanding of transition procedures and operations in the transition area.

RVSM/TF/20 - RVSM Implementation Bay of Bengal and Beyond (GO/NO-GO)*Operational Considerations*

3.29 The RVSM/TF/20 meeting (October 2003) carried out a final review of the RVSM Implementation Plan for the Bay of Bengal and Beyond area, which had been successfully completed by the States concerned. The States present provided an update on their activities and readiness to implement RVSM.

3.30 In view of the concerns that had been expressed at previous Task Force meetings over the Myanmar communication problems, an operational trial was put in place by the Department of Civil Aviation, Myanmar for the northern portion of the Yangon FIR (Sector 1) to make use of the Mandalay Airport ATC VHF radio coverage and secondary surveillance radar to cover the transition area on A599 between the Kunming/Yangon FIR boundary position LINSO and LASHIO VOR in the Yangon FIR. Also, direct speech circuits were available between Yangon ACC and Mandalay ATC for ground/ground communication on VSAT, IDD and HF. AFTN was also available and aircraft flight plans were being provided to the Mandalay Approach Control Unit by Yangon ACC for overflying traffic. A NOTAM had been issued requesting operators to address their flight plans to Mandalay Approach. The foregoing measures were expected to provide significant improvements to controller/pilot communications and if the trial was successful, this would be made permanent until Yangon ACC communications were improved.

3.31 The transition procedures (Myanmar AIC 03/03 refers) on A599 between Kunming and Yangon FIRs for transition between China metric and RVSM levels were reviewed to overcome the problem of westbound traffic having to carry out a double transition, firstly from China metric levels to CVSM levels in the Kunming FIR and then after passing LINSO to RVSM levels. Two additional options were proposed: under Option 1, Kunming ACC would effect transition from China metric to RVSM levels in the Kunming FIR (non-RVSM); and under Option 2, China metric levels would be maintained to the Kunming/Yangon FIR boundary (LINSO) and transition to RVSM levels would be carried out in the Yangon FIR. The Regional Office would coordinate with China and Myanmar to adopt either Option 1 or Option 2.

3.32 Under the flight level allocation scheme agreed by the RVSM Task Force for the northern part of the Yangon FIR, FLs 310, 350 and 390 would not be used by India for eastbound flights on A599 and A201. Consequently, the existing transition arrangement for FLs 290, 330, 370 and 410 to change to China metric levels would continue with Kunming ACC carrying out the transition in the Kunming FIR between LINSO and GMA VOR on A599.

3.33 The Task Force considered several key issues relating to RVSM/CVSM transition arrangements and the air traffic flow management (ATFM) procedures between India, Pakistan and Afghanistan. After a lengthy discussion, transition and traffic flow arrangements were agreed for traffic transiting Pakistan airspace to/from the Kabul FIR. Measures were put in place on a one month trial basis and would be reviewed at a special coordination meeting to be held at the Asia/Pacific Regional Office on 7-9 January 2004.

3.34 The Task Force noted with appreciation the generous assistance provided by the Civil Aviation Authority of Singapore (CAAS) to train 40 Myanmar air traffic controllers on RVSM operations in Yangon from 13 to 19 October 2003.

3.35 The Task Force considered the implementation of lateral offset procedures, taking into account the ICAO guidelines which were being updated by the Separation and Airspace Safety Panel (SASP). In light of this, the meeting agreed to review the matter at a future meeting.

3.36 The Task Force reiterated the need for States to provide timely and accurate submission of large height deviation reports to MAAR, including “Nil Reports” where appropriate.

3.37 The Task Force noted that most States had finalized LOAs with adjoining ATS Units and that other States had exchanged drafts LOAs ahead of finalization.

Readiness Assessment for the Implementation of RVSM in Bay of Bengal

3.38 The Task Force noted the readiness of aircraft and operators for RVSM operations on international routes in the Bay of Bengal and Beyond area. More than 88 percent of civil registered aircraft were RVSM approved. Further, some domestic and regional airlines were in the process of receiving RVSM approval and the number of approved aircraft should increase. Hence, the 90 percent target should be reached in the near term. The Task Force agreed that the readiness of operators and aircraft met the requirement for the planned implementation of RVSM in the Bay of Bengal on 27 November 2003.

3.39 The Task Force noted that most RVSM operators had installed ACAS II (TCAS II Version 7), and this was incorporated in the RVSM approval process, and was necessary to improve the operational and safety level for RVSM operations.

3.40 The Task Force reviewed the post RVSM implementation monitoring requirements for aircraft height-keeping performance, and agreed that this should be established for the Bay of Bengal and Beyond area. The Task Force proposed to renew the assessment of GPS Monitoring Units (GMUs) flight monitoring by sampling method every two years for the group or non-group aircraft. The Task Force however agreed that the frequency of monitoring should be decided on a global basis. The Task Force considered that the State Authority should be responsible for coordinating the flight monitoring according to the ICAO procedures in the *Manual on Implementation of a 300 m (1 000 ft) Vertical Separation Minimum between FL 290 to FL 410 Inclusive* (Doc 9574).

3.41 The Task Force was informed that the transfer of the duties and responsibilities of the Regional Monitoring Agency (RMA) for the Asia Region from the APARMO to the MAAR took place on 2 September 2003.

Final Safety Assessment for the Implementation of RVSM in Bay of Bengal

3.42 The Task Force reviewed the final safety assessment for the implementation of RVSM in the Bay of Bengal area taking into account the summary of the traffic sample data (TSD) and LHD reports associated with the implementation of RVSM provided by MAAR. The Task Force reported that there had been no LHDs reported due to aircraft system failure or pilot error and adverse weather in Bay of Bengal and Beyond area since 1997.

3.43 Based on the collision risk estimates, the technical and operational risks for the RVSM implementation in the Bay of Bengal were 1.00×10^{-9} and 2.08×10^{-9} fatal accidents per flight hour, respectively. The total risk attributed to all causes was 3.08×10^{-9} . The risk estimates for both technical and total risks satisfied the agreed TLS value of no more than 2.5×10^{-9} and 5.0×10^{-9} fatal accidents per flight hour due to the loss of a correctly established vertical separation standard of 1,000 ft and due to all causes, respectively.

3.44 IATA expressed concern regarding the occurrences of LHDs due to operational errors, and sought solutions to prevent the reoccurrences of such errors. The Task Force noted that MAAR would notify the ICAO Asia Pacific Regional Office of LHD occurrences, so that ICAO could liaise with the States concerned to take appropriate actions.

Review of the Monitoring Requirements for States in Bay of Bengal and Beyond Area

3.45 The Task Force was reminded of the duties and responsibilities of MAAR related to maintaining the RVSM approval records and facilitating the transfer of approval data to/from other RVSM RMAs. Further, the Task Force recognized the importance of maintaining an up-to-date global database of State approved RVSM aircraft, and that the Regional Office would issue a State letter advising States of the requirements to provide the required safety reports to MAAR.

Implementation on 27 November 2003 (Go/No-Go Decision)

3.46 Taking into account the preparations that had been completed by the States concerned and the results of the operator readiness and safety assessments, the Task Force agreed to go ahead with the implementation of RVSM in the Bay of Bengal and Beyond on 27 November 2003.

Air Traffic Flow Management Plan for the Bay of Bengal Area

3.47 The Task Force noted the development of the Air Traffic Flow Management Plan (ATFMP) for the Bay of Bengal Area by the Bay of Bengal ATS Coordination Group (BBACG) to maximize air traffic management and operational efficiency for traffic departing from South-East Asia, India and Pakistan airports to Europe through Afghanistan airspace.

Afghanistan airspace restrictions

3.48 The Task Force recognized that traffic flows through Afghanistan airspace were constrained by restrictions imposed by the Coalition Forces (Afghanistan airspace control authority). This had a major affect on traffic delays being experienced at major airports in the Asia Region. Discussions had been ongoing between the Coalition Forces, ICAO and other concerned organizations to obtain more airspace capacity in the Kabul FIR for international civil operations. The unavailability of FL280 was one of the main contributing factors to delay. Also, full benefits of RVSM could not be realized due to RVSM not being implemented in the Kabul FIR. Accordingly, the Task Force urged ICAO to arrange a meeting with the Coalition Forces and other parties concerned to gain additional use of airspace, in particular FL280.

EMARSSH route improvements

3.49 India informed the Task Force that agreement had been reached between Airports Authority of India (AAI) and the Indian military authority to extend ATS route P628 from ASOPO to Rahim Yar Khan VOR (RK) and that the MEA could be lowered from FL310 to FL300 and similarly on L333. The route changes would be put into effect as soon as administrative arrangements were completed.

Special Coordination Meeting - India and Pakistan RVSM Transition Procedures

3.50 The SCM was convened (January 2003) to carry put a one-month review of the operation of the transition procedures in Pakistan airspace as agreed at RVSM/TF/20. The SCM noted that other ATM matters affecting the RVSM airspace in the Bay of Bengal and Beyond area were under consideration, i.e. development of an ATFMP for the Bay of Bengal area by the BBACG; airspace constraints in the Kabul FIR, which had a major impact on delays to traffic from South-East Asia during the night-time peak period; an additional flight level, FL280 was being pursued with the Coalition Forces; and an extension of EMARSSH route P628 from ASOPO to RK had been approved by India and once implemented, would provide an alternative parallel route, thereby relieving traffic congestion over the Delhi area.

3.51 The extension of ATS route P628 from ASOPO-VIKIT (position on the Delhi/Karachi FIR boundary), and the segment VIKIT - RK had been approved by India as reported to RVSM/TF/20. India and Pakistan agreed to coordinate the issue of a NOTAM on the implementation of the P628 extension on 22 January 2004. The SCM agreed that further improvements to the routing were required and the sector RK-Kandahar should be implemented as soon as possible. In this regard, the Regional Office, Bangkok would coordinate with Afghanistan, the Middle East Office and other parties concerned as soon as practicable.

3.52 The SCM agreed that all Bay of Bengal States, including Pakistan and Afghanistan should urgently work towards implementing an ATFM as a means to resolving the night-time peak hour traffic delays. In this regard, the meeting recalled that considerable work had already taken place on developing an ATFM, and the issues involved were understood by all parties concerned. As the statistics showed, there was sufficient capacity on the existing Afghanistan routes to meet the present demand for the westbound peak night-time traffic flow. However, taking into account future traffic growth and the need to cater for contingency situations such as short notice airspace closures and traffic disruption due to adverse weather over the Bay of Bengal, the SCM agreed that there was a requirement for States to continue their cooperative effort to put in place a comprehensive and permanent ATFM. The SCM was advised by the Secretariat that this subject was on the work programme of the BBACG who would continue to progress this effort.

3.53 The SCM agreed that in the short term, the main concern was to optimize the use of the available airspace by applying a flexible use of available flight levels and routes, and to improve coordination and sharing of flight plan information between the ACCs concerned. In this regard, the meeting agreed that all flight level assignment for the Bay of Bengal routes should be subject to a flexible approach where due consideration was given to airports with the higher traffic load. In this context, Malaysia, Singapore and Thailand agreed to review their practices and to optimize flight level assignment.

Long-Term improvements

3.54 The SCM identified the following improvements that could be achieved over the long term for operations over the Bay of Bengal and Beyond:

- route network review (the ATS Route Network Review Task Force (ARNR/TF) first meeting was planned in September 2004);
- integrated ATFM system;
- progress Kabul FIR interface with adjoining FIRs to the west;
- establish full (remainder) EMARSSH routes;
- integration of ATM systems (e.g. ADS, CPDLC and ADS-B);
- reduction of longitudinal separation standard to 50 NM; and
- improvements to ATS infrastructure in Kabul FIR.

RVSM/TF/21 - 90-day Review of Bay of Bengal and Beyond Implementation

3.55 The RVSM/TF/21 meeting (March 2004) carried out a 90-day review of the implementation of RVSM in the Bay of Bengal and Beyond area on 27 November 2003. The Task Force was updated by the States present (India, Indonesia, Maldives, Myanmar, and Thailand) who had implemented RVSM and the international organizations involved (IATA, IFALPA and IFATCA) in respect to RVSM operations since implementation. Information was provided to the Regional Office by Malaysia, Pakistan and Sri Lanka who were unable to attend the meeting.

Operational issues

3.56 IATA presented a review from the airlines' perspective of the air traffic management situation over the Bay of Bengal, Indian continental airspace and the Kabul FIR in the context of long-haul flights from South-East Asia to Europe following RVSM implementation. In this regard, flight levels had doubled leading to overall easing of traffic congestion, and assignment of more economic levels to both overflying and Indian domestic traffic. However, there were a number of outstanding issues for example, longitudinal separation requirements for A466 and N644, flight level transition and communications in the Yangon FIR, air traffic management in the Bay of Bengal and overall optimization of the airspace capacity, which needed to be addressed to improve the overall traffic flow.

3.57 The Task Force considered the issues raised by IATA. It was recognized that with FL280 available in the Kabul FIR since it was approved by the Coalition Forces for use on 26 January 2004 (available from 2000-2400 UTC on ATS routes A466, N644 and L750), the capacity had increased to 3 useable levels on each of the two routes, making a total capacity of 36 slots per hour. The Task Force agreed to refer this matter to Pakistan for their consideration.

3.58 The Task Force reviewed existing trial arrangements for aircraft operating on A466 (or N644) to route via M770 instead of L759. This was to free up slots on L759/L750 which would otherwise be occupied by flights routing via A466 or N644 which could route via M770 instead. The Task Force discussed the possibility of making this a permanent arrangement. IATA informed the Task Force that they had no objection to making permanent the current trial requesting operators to fly particular routes. However, if the intention was to fix the route operators could flight plan, they would need to coordinate with the operators who were affected and provide feedback on the proposal through ICAO.

Air traffic management plan

3.59 IATA recalled that traffic departing from some South-East Asian airports continue to suffer lengthy delays from time to time. Available statistics indicated that traffic departing Singapore Airport suffer lengthy delays on occasions when traffic bunched on a specific route because of unfavorable winds and weight limitations. In particular, delays were significant when flights bunched on L759. Various measures to avoid such bunching had to date not led to significant improvement, as airlines had found it possible to flight-plan away from this preferred route only on rare occasions. In IATA's view, a comprehensive air traffic management plan for the whole of the Bay of Bengal was the only viable long term solution. Further, an automated system would offer a more efficient system.

3.60 The Task Force appreciated the detailed information provided by IATA on the air traffic management issues they considered required further improvement in the Bay of Bengal area.

Transition procedures and communications problems in the Yangon FIR

3.61 IATA reminded the Task Force that flights transiting the Yangon FIR continue to experience communications problems with Yangon ACC both in the northern and southern sectors of the Yangon FIR. The implementation of a procedure for Mandalay Approach Control to relay for Yangon ACC provided some relief, but the intermittent operation meant that a substantial percentage of aircraft were not able to communicate with Yangon ACC for long periods while transiting the FIR. This was highly unsatisfactory in view of westbound aircraft operating between LINSO and Lashio (LSO) VOR in the Yangon FIR being required to transition from CVSM to RVSM levels. Also, eastbound aircraft west of LINSO were required to transition to China metric levels. Experience had shown that while transitions between China metric and ICAO CVSM levels were not a problem, radio communications with Yangon ACC were not always possible.

3.62 The Task Force reviewed existing procedures for transition of aircraft from CVSM to RVSM levels between Kunming and Yangon ACCs. The Task Force noted the difficulties faced by operators with regard to the lack of continuous availability of air-ground communications with Yangon ACC (or Mandalay Approach). The Task Force agreed that the procedures should be improved to cater for situations when there were no communications with Yangon ACC (or Mandalay Approach). IATA proposed a revised system for the transition of aircraft from CVSM to RVSM. Agreement on a revised transition procedure between China and Myanmar as agreed at RVSM/TF/20 was still required.

3.63 The Task Force recognized the longstanding difficulties Myanmar had experienced with its communications infrastructure. The Secretariat advised that in recent discussions with Myanmar, plans to upgrade the ATS communications were being progressed. There were positive signs that this may be overcome in the short term. ICAO would be conducting a further high level mission to Myanmar in March 2004 to address these issues with the Myanmar Government.

Direct route Rahim Yar Khan (RK) - Kandahar

3.64 The Secretariat informed the Task Force that the ICAO Middle East Office had followed-up on the outcome of the SCM on India and Pakistan Transition Procedures held on 7-9 January 2004 and coordinated with Afghanistan, Pakistan and the Coalition Forces to obtain approval for the route. Good progress had been made and approval had been granted by Afghanistan and Pakistan. The Coalition Forces was considering the matter and was expected to make a decision whether to implement the route in the near term. The Task Force recognized that with the availability of this direct segment, considerable benefits would be achieved in relieving the congestion on L759.

Dhaka FIR communication requirements

3.65 IATA requested that States review their ATC and pilot coordination procedures in the area surrounding the Dhaka FIR. The Dhaka FIR was surrounded by Kolkata FIR, except for a short segment in the southeast which shares a common boundary with the Yangon FIR for about 75 NM. Four international routes traverse the Dhaka FIR, namely L507, B465/A599, G463 and A201. The transit times over the three FIRs were of short duration ranging from 4 to 27 minutes. In the worst case scenario, an aircraft could fly through 4 FIRs within 27 minutes, or 215 NM.

3.66 IATA drew attention to the PANS-ATM, Doc 4444 (Chapter 10, paragraph 10.4.2.41) on transfer of control procedures. In this regard, IATA requested that the current procedures and practices be reviewed and streamlined, taking into consideration cockpit workload, current air-ground and ground-ground communications difficulties, and provisions in PANS-ATM (Chapter 10, paragraph 10.4.2.4.5 refers).

3.67 The Task Force noted the information provided by IATA and recognized that the communication requirements imposed by Bangladesh, India and Myanmar should be rationalized and the situation reviewed by the States concerned, as there appeared to be an unreasonable communication burdened imposed on pilots. As this matter was outside the scope of the agenda for this Task Force meeting, it was agreed to refer the matter to the States concerned and the ATM/AIS/SAR/14 meeting on 28 June-2 July 2004 for follow-up.

Pakistan introduction of FL280

3.68 Pakistan informed the Task Force that FL280 had been implemented in concurrence with India since 6 March 2004. The LOA was updated and aircraft operating on ATS route N644, A466 and L750 were accepted at SAMAR and TIGER at FL280 between 1930 to 2230 UTC to meet the time restriction enforced on the above ATS routes in the Kabul FIR. The departures from Delhi, Lahore and Islamabad were accommodated between 2231 to 1929 UTC as per the arrangements agreed between India and Pakistan for transition of air traffic through Kabul FIR at the last RVSM/TF/20 meeting held at Delhi on 20-24 October 2004.

Review of No PDC-Procedure

3.69 The Task Force recognized the need to further enhance the allocation of all RVSM flight levels during the night-time peak traffic period for traffic operating over the Bay of Bengal. The meeting agreed that a more flexible approach was required to share of levels based on the actual traffic demand. Singapore and Thailand agreed to coordinate with India, Malaysia, Myanmar, IATA, and IFALPA, and based on traffic statistics and operational requirements, to develop appropriate arrangements. Further, the Task Force emphasized that prior to implementing any changes, the agreement of all parties concerned was required. To this end, a special ATS coordination meeting involving India, Malaysia, Myanmar, Singapore, Thailand and IATA would be held as soon as possible, to finalize details of the procedures.

3.70 The Task Force also agreed that changes in the assignment of RVSM levels should be introduced as part of an operational trial from 15 April 2004. The operational trial would last for 2 months and each State concerned would issue a NOTAM on the revised procedures.

3.71 India highlighted the need for AIP amendments to be published on the revised assignment of RVSM levels. The Task Force agreed that the AIP amendments should be issued on AIRAC date 15 April 2004 subject to agreement being reached by all parties concerned.

Airspace Classification for RVSM Operations

3.72 ICAO informed the Task Force that it was necessary for States that had implemented RVSM to classify the airspace according to the ICAO classification of airspace in Annex 11 – *Air Traffic Services*. The Task Force agreed that States involved should review the airspace where RVSM was being applied and classify the airspace as appropriate.

RVSM Minimum Monitoring Requirements

3.73 The Task Force reviewed the draft updated Pacific RVSM Minimum Monitoring Requirements (MMR) as issued by PARMO on 4 February 2004. The Task Force noted some differences from existing minimum monitoring requirements on the subject of Monitoring Category (Experienced and Non-experienced Airlines); Aircraft Type (Group and Non-group Aircraft); Monitoring Time Limitation and Minimum Total Fleet for Monitoring. The Task Force also noted that some States in the Bay of Bengal and Beyond area were in the process of performing GMU height-keeping performance monitoring. In this regard, the Task Force considered that GMU monitoring needs to be conducted by the States concerned with reference to existing requirements applicable as adopted by the RVSM/TF and approved by APANPIRG.

3.74 The Task Force emphasized the need for consistency in applying global monitoring requirements. MAAR planned to adopt the global monitoring requirements when the RMA Handbook was finalized and published by ICAO.

Monitoring Programme for Height-Keeping Performance

3.75 The Task Force reviewed the monitoring programme for aircraft height-keeping performance and large height deviation. Since RVSM implementation on 27 November 2003, there had been no reports of large height deviations due to aircraft system failure and adverse weather in the Bay of Bengal and Beyond.

3.76 The Task Force noted that most domestic and regional operators of some States required their aircraft to be monitored. India expressed a concern that there were a limited number of GMUs available in the Asia Region, and this would require operators to wait for monitoring to be carried out by MAAR. The Task Force noted that most of the fleets had been issued airworthiness approval before RVSM implementation on 27 November 2003, which would expire within the next two months. In this regard and in order to avoid the suspension of the airworthiness approval, the Task Force suggested that the airlines and the States concerned requiring GMU services should closely coordinate with MAAR.

3.77 MAAR advised on the potential of non-compliant aircraft operating in the RVSM airspace of the Asia Region. In this regard, the Task Force considered that non-compliant aircraft operating in RVSM airspace would significantly affect the operational safety risk and thus the total collision risk. Further, the Task Force highlighted that it remained the responsibility of the State authority, ATS providers and airlines to prevent non-compliant aircraft from entering RVSM airspace.

3.78 The Task Force emphasized that it was important for the authorities responsible for RVSM approvals to ensure that the registry of RVSM approved aircraft was kept up-to-date. This would facilitate ATC verifying aircraft suspected not to be RVSM approved.

Continuous Airworthiness Programme and Monitoring

3.79 The Task Force considered that the continuous airworthiness and post implementation height-keeping performance monitoring programme should be included in the State Authority Procedures and the Airline Manual. The Task Force noted that the post implementation of aircraft height-keeping performance included sampling by GMU. The frequency of GMU monitoring should be established and harmonized on a global basis under the ICAO RVSM monitoring programme

Approval Process

3.80 The Task Force adopted the guidelines and procedures in the Asia Pacific RVSM Programme for Operator and Aircraft Approval for the introduction of RVSM in the Bay of Bengal and Beyond. In addition, a 90 percent operator approval target was set for the introduction of RVSM in the Bay of Bengal and Beyond.

Flight Crew Procedures

3.81 The Task Force adopted the flight crew procedures (including contingency procedures) that had been developed for RVSM operations in the Pacific and Western Pacific areas. The Task Force reviewed the large scale weather deviation procedures contained in the Jeppesen Manual for the Bay of Bengal and Beyond area in regard to the weather deviation procedure, which specified that aircraft deviating due to weather had to climb or descend 500 ft. The meeting agreed that the contingency procedure for large scale weather deviation in the Bay of Bengal should be in line with the procedure applied in South China Sea of 300 ft climbing or descending, and that the correct procedures had been incorporated within the respective State AIP SUP documents. The Task Force agreed that Jeppesen should be informed of this matter. ICAO would follow-up as appropriate.

Safety and Airspace Oversight Issues

3.82 With the approval of APANPIRG, AEROTHAI assumed responsibility from the APARMO on 2 September 2003 to take over the RMA for the Asia Region operated by MAAR.

Review of Safety Oversight

3.83 The monitoring of the overall system performance to ensure that the established TLS was being met and maintained was a pre-requisite for RVSM implementation. In this context, States provided monthly reports on LHDs to MAAR. Details of operational errors were also provided to the airlines/operators of aircraft involved.

3.84 The Task Force reviewed the safety oversight for the post implementation of RVSM in the Bay of Bengal area as presented by MAAR. Based on the TSD collected between 15 December 2002 and 15 February 2003, and the summary of the LHD reports, the technical and operational risks for the RVSM implementation in the Bay of Bengal were 1.83×10^{-9} and 1.25×10^{-9} fatal accidents per flight hour, respectively. The total risk attributed to all causes was 3.41×10^{-9} . The risk estimates of both technical and total risks satisfied the agreed TLS value of no more than 2.5×10^{-9} and 5.0×10^{-9} fatal accidents per flight hour due to the loss of a correctly established vertical separation standard of 1,000 ft and to all causes, respectively.

Trends of Risk Estimates for the Post RVSM Implementation in Bay of Bengal

3.85 The Task Force emphasized that all States must continue to provide MAAR with monthly reports on LHD, including a 'NIL' occurrence report. The reports should be sent to MAAR via e-mail or fax by the first week of the following month.

3.86 The Task Force agreed to collect new TSD to accurately represent the traffic volume for the one-year review after RVSM was implemented in Bay of Bengal. In this context, MAAR requested TSD for the month of July 2004. In order to allow sufficient time to prepare for the one-year safety oversight review, the TSD data should be submitted to MAAR (via e-mail) no later than 31 August 2004.

3.87 The Task Force discussed the continuous monitoring for post RVSM implementation in the Asia Region and long-term monitoring requirements. In this regard, the Task Force acknowledged the need for the development of the global long-term monitoring plan, which required the consultation of ICAO and related Regional Monitoring Agencies.

3.88 The RVSM/TF/21 agreed that regions that had implemented or were planning to implement RVSM, when making changes to procedural requirements, such as MMR, which had global implication, should only do so as agreed through ICAO. The Task Force noted that variations in the MMR already existed between the Asia/Pacific, North Atlantic, Middle East and European Regions. ICAO would coordinate with the RMAs to address this matter.

Future Work

3.89 The RVSM/TF/21 recalled that at the RVSM/TF/18 meeting, Japan and the Republic of Korea informed the meeting of their plans to jointly implement RVSM in the Incheon, Naha and Tokyo FIRs on 9 June 2005. In this regard, the monitoring programme would come under the PARMO. Further, at RVSM/TF/18 Japan and the Republic of Korea had indicated that they would be interested to work with the ICAO RVSM/TF to develop and implement their RVSM plan. The Task Force agreed that in view of the successful implementation of RVSM in the Bay of Bengal area and follow-up, the Task Force was in a position to support Japan and the Republic of Korea. In this regard, the Republic of Korea requested ICAO to coordinate with Japan and PARMO to consider progress of their implementation planning, and to convene a meeting at the earliest convenience at a date and venue to be confirmed by the Secretariat.

3.90 The RVSM/TF/21 meeting agreed on the future work of the Task Force as follows:

RVSM SCM: RVSM Implementation by Japan and the Republic of Korea
5 - 7 July 2004, Bangkok

RVSM/TF/22: Review FLOS for Western Pacific/South China Sea area
20 - 24 September 2004, Bangkok

RVSM/TF/23: One-year follow-up review of the Bay of Bengal and Beyond area
8 - 12 November 2004, Bangkok (tentative)

Special Coordination Meeting - Air Traffic Flow Management Bay of Bengal

3.91 At the RVSM/TF/21 meeting, it was agreed that a review of the existing No-PDC arrangements for the assignment of RVSM levels on the Bay of Bengal routes should be carried out and a SCM was convened in Singapore (April 2004). The SCM reviewed the existing assignment of RVSM levels to reduce ground delays for westbound international departures from Bangkok, Kuala Lumpur and Singapore during peak traffic periods. In particular, the SCM took into account the current No-PDC procedures with a view to introducing a flexible system that would cater for traffic based on actual demand at departure airports.

3.92 With regard to the arrangement of sending ATFM messages for the release of FL300 to westbound international departures from Kuala Lumpur and Singapore, Thailand reported that there were difficulties in providing accurate time slots. The main reason was the significant difference between the estimated time of departure (derived from the flight plan) and the actual time of departure. Thailand also informed the SCM that some operators could not comply with the Mach number restrictions imposed for operations on ATS route L759 during peak traffic periods, as these were not within the capabilities of the aircraft.

3.93 Malaysia reported that during time slots when there were no westbound international departures from Kuala Lumpur, FL280 and FL320 had been released to Singapore. However in most cases, Malaysia had not been able to obtain the release of FL300 from Bangkok ACC when coordination was effected. Malaysia also informed the SCM that some operators could not comply with the Mach number restrictions for operations on ATS route L759, as these were not within the capabilities of the aircraft. In addition, there were several cases when flights were not able to reach FL320 within Kuala Lumpur FIR, which required ATC to effect coordination for these flights to continue climb in Bangkok FIR. Malaysia and Thailand agreed to address this issue bi-laterally at a later date.

3.94 Singapore reported that additional levels were not available during the daily peak of

westbound international departures. As a result, ground delays at Singapore had not been alleviated. In addition, airlines preferred to operate on ATS route L759 as compared to the other routes that were available. This had created a bunching effect and compounded the congestion on the ground.

3.95 The SCM reviewed traffic movement data of westbound international departures from Bangkok, Kuala Lumpur and Singapore, as well as overflights over the Indian FIRs. The meeting agreed that FL280, FL300, FL320 and FL340 could be better utilized to cater for peak traffic flows of international departures from 1330 UTC to 1930 UTC. During this period, FL300 and FL340 would be released (as No-PDC levels) to Bangkok ACC for traffic operating on ATS routes L301 and N895. Aircraft operating on ATS routes P762, L645 and A327 would be assigned FL300 (as a No-PDC level). In the event that FL300 and/or FL340 were not required, Bangkok ACC would release the levels for westbound departures from Kuala Lumpur or Singapore.

3.96 The SCM agreed that the assignment of FL280 and FL320 (as No-PDC levels) for westbound international departures from Kuala Lumpur and Singapore would continue on a 24-hour basis. In the event that additional levels were required, Kuala Lumpur ACC would coordinate with Bangkok ACC on the assignment of FL300 or FL340 respectively.

3.97 In addition, during the period 1330-1930 UTC, pre-departure coordination would be effected between the ACCs concerned on the assignment of other levels, in order to maximize traffic flows on the respective ATS routes.

3.98 The SCM also agreed that the assignment of RVSM levels for traffic operating outside the period 1330-1930 UTC would be based on existing procedures specified in the respective State AIP Supplements for RVSM operations in the Bay of Bengal area. In addition, current No-PDC procedures between Malaysia, Singapore and Thailand would continue to be applied.

3.99 To facilitate the process, the SCM agreed that Malaysia, Singapore and Thailand would conduct a 3-month operational trial commencing 17 May 2004. The States concerned would issue a NOTAM on the revised assignment of RVSM levels, not later than 10 May 2004. In addition, the existing operational trial on the assignment of RVSM levels would be extended until 16 May 2004.

3.100 India reminded the SCM that Myanmar should continue to ensure that longitudinal separation of aircraft was maintained at MABUR and BUBKO (as agreed at the SCM/RVSM/IND-PAK Meeting). Thailand agreed to coordinate with Myanmar for the current arrangements to be continued.

3.101 The SCM agreed that Malaysia, Singapore and Thailand would collect 24-hour traffic movement data of westbound international departures for the period 7 to 13 June 2004. The data should be sent to MAAR for collation not later than 21 June 2004.

3.102 The SCM agreed to hold a meeting in late June 2004 to review the effectiveness of the measures that would be put in place for the operational trial. The dates and venue for the meeting would be confirmed through the Regional Office.

Action arising from the review of the RVSM reports

3.103 ATM/AIS/SAR/SG/14 expressed appreciation to the RVSM/TF for the substantial work programme they successfully completed in regard to the WPAC/SCS and Bay of Bengal and Beyond area implementation. This had completed the major part of RVSM implementation in the region for the international airspace. The special coordination meeting next week (5-7 July) regarding the Japan and Republic of Korea implementation would be the final stage of RVSM implementation in international oceanic airspace involving the RVSM/TF.

3.104 India advised the meeting that in respect to the MEA for P628 and L333, although India could accept FL300, Pakistan was unable to lower the MEA below FL310, and India would therefore also use FL310.

3.105 In regard to paragraph 3.23, China informed the meeting that radar service was being provided on A202 and that the entire route from Hong Kong to Bangkok was under radar service, and this should be taken into account when reviewing the safety assessment. The meeting agreed that MAAR would be informed, and RASMAG would also be made aware of this situation.

3.106 In regard to paragraphs 3.65-3.67, the meeting agreed that improvement to the radio communication procedures was required and as Bangladesh and Myanmar were not present at this meeting, requested the Regional Office to coordinate with the States concerned to review the procedures and bring them in line with the PANS-ATM as appropriate. This issue would be referred to the BBACG/15 meeting in October 2004 for follow-up.

RVSM Transition procedures between the Kunming and Yangon FIRs

3.107 The ATM/AIS/SAR/SG/14 meeting recalled that RVSM/TF/20 reviewed the RVSM transition procedures between the Kunming and Yangon FIR and had proposed two additional options for the transition procedures, as reported in paragraph 3.31 above. Operators had found the present westbound transition procedure to be unnecessarily restrictive and inefficient, and IATA had requested that the procedure be improved by removing the requirement for a double transition.

3.108 The meeting recalled that the present arrangement (Option 3) for westbound flights on A599 required a double transition from China metric levels to CVSM and then to RVSM levels. Option 1 provided for RVSM transition to take place in the Kunming FIR, and under Option 2, the traffic maintained China metric levels to LINSO and transitioned to RVSM in the Yangon FIR. IATA had indicated that operators preferred Option 1 as Kunming ACC had reliable two-way radio communication in the area concerned, which was not the case in the Yangon FIR.

3.109 Subsequent to the RVSM/TF/20 meeting, the Regional Office conducted a mission to the Air Traffic Management Bureau (ATMB), CAAC in Beijing, China on 29–30 March 2004. ATMB agreed in principle to change the Kunming/Yangon FIR RVSM transition procedure to Option 2. China was unable to support Option 1, as RVSM could not be implemented in a transition area in the Kunming FIR. On coordination by the Regional Office with the DCA, Myanmar, they agreed to adopt Option 2 in line with the recommendation of RVSM/TF/20.

3.110 Following coordination with IATA, the Regional Office proposed a transition procedure in accordance with Option 2 (**Appendix B** refers), and this was forwarded to China and Myanmar for their approval.

3.111 China and Myanmar were presently considering the proposal and were expected to take formal action to change the transition procedure and amend the LOAs between Kunming and Yangon ACCs. Also, agreement was required on the implementation date.

3.112 The meeting recognized that adoption of this transition procedure would simplify the

present arrangement, and remove the double transition. Under the amended procedure, the transitions would take place in the Yangon FIR where RVSM applied. Also, the procedure included provision for loss of radio communications.

RVSM minimum monitoring requirements

3.113 The United States provided information on the latest version of the MMRs dated 4 February 2004 (**Appendix C** refers) for the Pacific Region agreed by PARMO. These were intended to replace the previous MMRs dated 1 October 2002 used by PARMO and MAAR (**Appendix D** refers). The MMRs (February 2004) also had been agreed by the North Atlantic Central Monitoring Agency (NAT CMA) and EUROCONTROL. They were also being used to support the RVSM implementations in North American airspace and in the airspace of the Caribbean and South American Regions (CAR/SAM) in January 2005.

3.114 IATA informed the meeting that the MMRs were important to operators as they were required to meet the monitoring requirements. It was important that global MMRs were provided as there were regional variations which could impose unreasonable burden on operators. An example was given of the Middle East Region MMRs requiring 55 airframes of a fleet to be monitored, whereas in the Asia/Pacific Region, only 15 airframes were required. Therefore, it was essential that ICAO provides global MMRs.

3.115 The meeting recognized the variations in the MMR between regions, and this had also been noted by the RVSM/TF and the RASMAG. Information provided by the United States indicated, that apart from the Middle East Region RMA, the other RMAs had agreed to adopt a common MMR.

3.116 The meeting reviewed the MMR proposed by PARMO intended to be adopted by APANPIRG for the Asia/Pacific Region, which was supported by MAAR. The meeting considered that it was not in a position to thoroughly examine the MMRs without appropriate technical expertise, especially from aircraft operators. In this regard, the Secretariat advised the meeting that the ICAO SASP was responsible for developing the ICAO RVSM requirements and a RMA Handbook was being prepared that contained guidance on MMRs. It was likely that the PARMO MMRs were in line with the ICAO guidance as they participated in the SASP work. However, there was no up-to-date information available on the status of the handbook and whether the proposed PARMO MMRs were in line with ICAO guidance. In this regard, the meeting agreed it was not in a position to make a recommendation that the PARMO MMRs be adopted by APANPIRG for the Asia/Pacific Region.

3.117 The meeting agreed that the United States, IATA and the Regional Office should look into this matter further and obtain a more accurate understanding of the status and requirements for minimum monitoring requirements. In this regard the meeting requested that the parties coordinate their follow-up action and report the outcome to the RVSM/TF/22 meeting in September and the RASMAG/2 meeting in October.

3.118 The Secretariat suggested that it was possible that the MMR issue had been resolved by ICAO through the work of SASP. In this case, it would be possible if all parties concerned were in agreement, that APANPIRG/15 could be so informed and a decision to adopt the agreed MMRs could be made.

RVSM Implementation in the Tokyo and Naha FIRs

3.119 Japan updated the meeting regarding the progress of RVSM implementation in the Tokyo and Naha FIRs. RVSM operations in the oceanic airspace only of the Tokyo and Naha FIRs commenced in February 2000. The Japan Civil Aviation Bureau (JCAB) and the Civil Aviation Safety Authority, Republic of Korea (KCASA) had agreed to a simultaneous implementation of RVSM in their domestic airspaces in the Naha, Tokyo and Incheon FIRs with a target date of 9 June 2005. This implementation will provide significant benefits to the large number of flights overflying the Tokyo and Naha FIRs, which connect the United States of America and Asian countries.

3.120 The coordinating group for the implementation of the domestic RVSM was established by JCAB in April 2003, and consists of airline operators, ATC service providers, regulatory authorities and other interested parties. The final plan will be announced by NOTAM or AIC about four months prior to implementation.

3.121 The planned altitude stratum for the RVSM implementation was from FL290 to FL410 inclusive. The RVSM airspace would be defined as exclusive airspace for RVSM operation with the exception of some special flights. The implementation was planned to utilize a single alternate FLOS for level allocation. The number of RVSM approved aircraft was currently about 70 percent, but was expected to exceed 94 percent at the implementation date. With regard to carriage of ACAS II, all aircraft have upgraded to TCAS Version 7.

3.122 In Japan, the Electronic Navigation Research Institute (ENRI) carried out the safety assessment for the RVSM implementation and the technical risk was calculated as 1.56×10^{-9} fatal accidents per flight hour. Planning includes provision for a further assessment of operational risk about 10 months after implementation.

3.123 PARMO had been undertaking the RVSM monitoring service for the oceanic RVSM airspace in the Tokyo and Naha FIRs since implementation in February 2000.

3.124 KCASA advised the meeting that the RVSM implementation plan has been developed for the Incheon FIR to implement RVSM simultaneously with Japan on 9 June 2005. The RVSM airspace would be defined as exclusive airspace with the exception of some military aircraft. The planned altitude stratum for the Korean RVSM was FL290 to FL410 inclusive, which would be coordinated with the Japanese domestic RVSM.

3.125 A task force for implementation of the Korean RVSM was established in May 2001, which consisted of KCASA, Military National Defense (MND), Korea Airspace Research Institute (KARI), Korea Airline Pilots Association, Korean Air, Asiana Airline and Airlines Operation Committee. The details of the Korean RVSM implementation plan would be coordinated with JCAB. The final plan would be announced by NOTAM or AIC well prior to the implementation date. Interested parties in the Asia Region were welcome to join the Korean Task Force meetings for the Korean RVSM.

3.126 Since airspace safety monitoring required a good knowledge of airspace structure and characteristics, KCASA would designate Incheon ACC as an airspace safety-monitoring unit that was responsible for the Korean RVSM safety assessment and continuous monitoring.

3.127 Also, JCAB and KCASA would coordinate with the ACCs in adjoining FIRs. i.e. Shanghai ACC, Taipei ACC and Vladivostok ACC. Also, with Taipei ACC having started its RVSM operation last year, JCAB and KCASA would need to coordinate with Taipei, China about altitude usage between FIRs.

3.128 The Korean Task Force recalled that at the RVSM/TF18 meeting (July 2003), Japan and Korea had invited the ICAO RVSM/TF to consider the necessity for FLOS harmonization and

adopting a single alternate flight level orientation scheme over the whole South China Sea area as well as in the region. Also, they indicated that they would be interested to work with the ICAO RVSM/TF to develop and implement their RVSM plans.

3.129 The RVSM/TF noted the progress being made by Japan and Korea on RVSM implementation planning. In response to their interest to coordinate the implementation through ICAO, an RVSM special ATS coordination meeting is scheduled for 5-7 July 2004 to review progress to date. The ICAO RVSM/TF would provide assistance to Japan and Korea as appropriate.

3.130 In regard to the harmonization of the FLOS between the South China Sea area and the rest of the region, this was being dealt with by the RVSM/TF/22 meeting, which would be held on 20-24 September 2004.

3.131 The ATM/AIS/SAR/SG/14 meeting recognized the significant work accomplished by the RVSM/TF and complimented the members for their outstanding achievement to oversee RVSM implementation and follow-up in the Asia Region. IATA concurred and expressed appreciation that RVSM had been implemented smoothly, noting that there were operational issues still to be resolved in the airspace concerned. However, RVSM implementation had been highly successful and operators were gaining significant benefits.

EMARSSH One-year Post Implementation Review Meeting

3.132 The EMARSSH One-year Post Implementation Review Meeting (OYR) was held on 12-16 January 2004 at the Regional Office. The review included operational and technical aspects of air traffic management and flight operations related to the route structure as well as further enhancements since implementation on 28 November 2002.

3.133 The meeting reviewed the Action Plan of the EMARSSH Post Implementation Review Meeting (PIRM) held from 31 March to 2 April 2003 at the Gold Coast, Australia which included the following items:

- a) review the route description of L333 to include FL280;
- b) establishing a new route linking ASOPO to RK;
- c) create a procedure whereby a fixed Mach number requirement is applied on a route;
- d) the development of a westbound flow management plan;
- e) pursue additional flight levels in Kabul FIR;
- f) investigate the capability of some flights climbing to FL350 before Kabul FIR;
- g) pursuit of consistent application of proper MNT; and
- h) follow-up implementation of BB17 and BB18 with States concerned.

3.134 The review meeting agreed that appropriate follow-up action was being taken on the PIRM Action Plan, and any outstanding issues would be referred to the appropriate ATS coordination group.

Route Issues

3.135 A number of route issues were identified, including the following:

- a) to progress implementation of routes in the Kathmandu FIR, further civil/military consultation was required by adjacent States. The meeting agreed that this matter should be given priority and brought to the attention of the BBACG and the ARNR/TF;
- b) improvements could be achieved to route structures in Pakistan, including proposed Himalaya 1, Pakistan 1, Pakistan 7 and restructuring of A466. The meeting agreed that this matter should be referred to the ARNR/TF and BBACG;
- c) Thailand raised problems of aircraft not being able to operate below the Bay of Bengal RNP 10 airspace due to some conventional ATS routes over the Bay of Bengal having been withdrawn when the EMARSSH route structure was implemented. Also it was not possible to use FL260 for traffic departing from South-East Asia airports. Thailand would submit a paper to the BBACG/14 meeting (2-6 February 2004) for consideration;
- d) IATA noted that because the parallel route structure in the northern part of the Bay of Bengal airspace could not be fully implemented in accordance with the EMARSSH plan, this had resulted in four of the parallel routes converging into two and creating traffic congestion over northern India especially in the Delhi area. The problem was further complicated by the Afghanistan airspace situation, whereby flight level and route restrictions reduced airspace capacity and RVSM was not being implemented. India and Pakistan with the cooperation of their military authorities agreed to implement the extension to P628 from ASOPO direct RK with effect from 22 January 2004. To gain maximum benefit from this route, the segment RK direct Kandahar should be implemented as a matter of priority. The matter would be referred to the BBACG/14 meeting and to the Route Review Task Force.
- e) IATA requested that implementation of the following route segments be pursued:
 - PRA – SERKA – SOKAM
 - GASIR – BIRJAND
 - NH – ZAHEDAN

3.136 The review meeting agreed to refer this matter to the ARNR/TF and the BBACG.

Review of Air Traffic Management and Operations

3.137 In discussing ATM and operational issues, the review meeting noted:

- a) considerable discussion and effort was being made by other meetings such as the RVSM/TF and BBACG to address the route and airspace restrictions affecting the traffic flow across the Bay of Bengal and Kabul FIR;
- b) the lack of progress made by Myanmar to improve its air-ground communications to address the deficiency recorded by APANPIRG. Recognizing that six EMARSSH routes pass through the Yangon FIR, RVSM operations were being conducted and the safety concerns arising from the poor ATS communications, the meeting urged ICAO to continue its effort to impress on Myanmar the importance of making immediate improvements to their communication infrastructure;
- c) that ADS and CPDLC was now operational for the Kolkata FIR on a 24 hour basis and for the Chennai FIR from 0230 to 2030 UTC (expected to be 24 hour in the near term);
- d) N563 was restricted across Indian airspace as it entered a military restricted area that was operational during day time hours. India was not confident that any further concessions from the military for the extended use of N563 could be gained in the short term;
- e) the need to harmonize the application of MNT to apply 10 minutes longitudinal separation across the Bay of Bengal in respect to a faster aircraft following. The procedures were contained in the ICAO ATS Planning Manual (Doc 9426), and Malaysia was of the view that they should be contained in the PANS-ATM (Doc 4444) which would facilitate States in introducing the procedures. States should update their LOAs to include the faster aircraft following MNT procedure. The meeting prepared a list of entry/exit points on the Bay of Bengal routes where the procedure should be applied;
- f) discussions concerning application of fixed Mach number M0.84 on L759 as part of the ATFMP measures being introduced to improve departure delays being experienced at South-East Asia airports. The procedure calls for operators intending to flight plan on the route, to be capable of operating aircraft at M0.84 at or above FL280. The matter would be referred to the BBACG/14 and RVSM/TF 90-day Review meeting, and
- g) the EMARSSH route structure would continue to require refinements and modifications to route alignment, and introduction of additional routes. The operation of ultra- long haul flights by new aircraft models may require new routes for city pairs as services were introduced. Future route development and airspace changes in the region would be kept under review by APANPIRG, the Route Review Task Force and various ATS coordination groups.

Lessons Learnt

3.138 The One-year Review meeting considered the lessons learnt and benefits derived from the planning and implementation process of the EMARSSH project that could be of value for other similar activities and highlighted the following matters:

- a) using a small core team of experts to manage the project provided continuity, impetus and centralized project management. This arrangement was highly recommended for projects of this size;
- b) AIS is an integral and essential element of a modern ATM system and as such the composition of future core teams should include an AIS expert;
- c) in planning airspace arrangements, careful attention needed to be given to operational end use ensuring that the airspace structure met operational requirements. Also, users should take full advantage of all routing options available;
- d) unexpected international events could seriously impair the effectiveness of route operations and attention needed to be given to contingency arrangements;
- e) data collection and management should be assigned to a single management source;
- f) project timing should be kept to a minimum and careful attention given to meeting timelines;
- g) Regional Monitoring Agency (RMA) services should be identified and established early in the process;
- h) cooperation and coordination from military authorities was essential. They must be involved early in the process and well informed on the objectives of the project;
- i) meeting requirements for international operators, domestic operations must be fully considered and measures put in place to ensure minimum disruption to their operations;
- j) with complex airspace changes, information on developments must be kept in the public forum to ensure all operators remain up-to-date on the changes to be implemented and the operational requirements;
- k) planning should be forward looking and cognizant of the potentially rapidly changing technological advances in aircraft operations and commercial imperatives;
- l) close coordination with adjacent regions was necessary to harmonize procedures and planning objectives;
- m) information flow for the planning process should be broadly available and especially at the operational level;
- n) early provision for training requirements must be thoroughly developed and timely delivered;

- o) awareness of and coordination on other related changes being planned or implemented by other groups, and to continually update the ICAO Regional Office on progress especially on early advice of potential difficulties; and
- p) plan must be well defined, meet user requirements, be realistic, achievable in a timely manner and supported by all parties.

3.139 The One-year Review meeting was satisfied that all outstanding issues had been identified and all appropriate follow-up action taken, and agreed that any further work could be assigned to other groups as appropriate. Accordingly the meeting requested that the Secretariat recommend to APANPIRG/15 that the EMARSSH Task Force be dissolved. In view of this, the meeting formulated the following Draft Decision:

Draft Decision 14/1 – To dissolve the EMARSSH Task Force

That, as the EMARSSH Task Force has completed the EMARSSH project, and that all outstanding issues have been identified and follow up actions completed or assigned to other ATS coordination groups as appropriate, the EMARSSH Task Force be dissolved.

Implementation of ATS Routes

3.140 The meeting recalled that APANPIRG/13 (September 2003) noted that a number of ATS routes that had been agreed to by the States concerned at the Third Asia/Pacific Regional Air Navigation Meeting (RAN/3) in 1993 had not been implemented in accordance with the Asia Pacific Basic Air Navigation Plan (BANP, Doc 9673) and included this updated information in the list of deficiencies in the air navigation field maintained by APANPIRG.

3.141 The meeting noted that the deficiency list contained routes that:

- a) had not been implemented by States as required by Doc 9673;
- b) had been implemented by States, but not in accordance with the established BANP requirement; or
- c) had been implemented by States, although the requirement has not been established by regional air navigation agreement.

3.142 A large number of other changes to the ATS route structures in the Asia/Pacific Region, in particular the SCS revised ATS route structure and the EMARSSH project, had taken place since 2001. Other route changes also had been made by many States in the region. In addition there was a need to update the five-letter name-codes and coordinates that had been assigned to the significant points on these routes. The majority of these changes had not yet been recorded in the BANP. The meeting was advised by the Secretariat that the revised APAC ANP, which comprised two documents, BANP and FASID had not yet been published by ICAO, and the document required considerable updating.

3.143 In light of the foregoing, APANPIRG/14 agreed that there was a need to thoroughly review and update the BANP, prepare a master database of the routes that had been implemented, update the five-letter name-codes and co-ordinates that had been assigned to the significant points on the ATS routes, and undertake a study of future route requirements. Consequently, APANPIRG/14 adopted Conclusion 14/4, forming the ARNR/TF to address the issues described above. The first meeting of the Task Force is scheduled for 6-10 September 2004.

3.144 The meeting noted that there would be a considerable volume of work in particular for compilation and management of databases, charts and ANP amendments, therefore it was considered essential for the continuity of the work that a core team should be established. States and international organizations were requested to make available personnel who could be expected to remain with the ARNR/TF for extended periods.

3.145 In preparation for the ARNR/TF/1 meeting, it was agreed that States and users should undertake a thorough review of their ATS route requirements, provide details of any changes made to existing routes and notify future route requirements to the ARNR/TF/1 meeting. In support of this initiative, the meeting formulated the following Draft Conclusion:

Draft Conclusion 14/2 – Review of ATS Route Requirements

That, States and users undertake a thorough review of their ATS route requirements (including future requirements) and any changes that have been made to existing routes, and submit this information to the ATS Route Network Review Task Force meeting in September 2004.

Revision of the Guidance Material on CNS/ATM Operations in the Asia/Pacific Region

3.146 The meeting recalled that under APANPIRG/14 Conclusion 14/2 a Task Force was set up to review the regional *Guidance Material on CNS/ATM Operations in the Asia and Pacific Region* (hereafter referred to as the *Guidance Material*). APANPIRG/14 took this action on the request of the Air Navigation Commission to ensure that the *Guidance Material* was in accordance with the ICAO Standards and Recommended Practices (SARPs) and to PANS-ATM, Doc 4444, in particular with Amendment 1 (applicable 28 November 2002).

3.147 The Commission also wished to see other ADS and CPDLC operating procedures being used by States brought into line with ICAO provisions to the extent possible. In this regard, APANPIRG/14 requested the Task Force to coordinate its work with States responsible for the Pacific Operations Manual (POM) with the intent of harmonizing the POM and the *Guidance Material*. The POM contains the FANS-1/A operating procedures and requirements applicable in the Pacific FIRs. The document was owned and managed by the FANS Interoperability Teams (FITs) of the Informal Pacific ATC Coordination Group (IPACG), and the Informal South Pacific ATC Coordinating Group (ISPACG).

3.148 On a recommendation of the Review Task Force, ISPACG and IPACG renamed the POM the FANS-1/A Operations Manual (FOM) reflecting the suitability of these procedures for global application across all FANS 1/A operations.

3.149 The meeting was reminded that in developing the *Guidance Material*, the South Pacific Operations Manual (later renamed the POM) was used as the source material for Part III. Therefore, the two documents were already harmonized. The meeting also noted that ICAO did not produce SARPs, PANS and guidance material for data link applications using the FANS 1/A aircraft system, which was the only system currently available for airborne application to provide ADS and CPDLC services. In the absence of ICAO provisions, the primary documents available to States for the operating procedures for FANS 1/A ADS and CPDLC services in the Asia/Pacific Region were the Regional *Guidance Material* and the FOM.

3.150 The *Guidance Material* Review Task Force Meeting hosted by the Federal Aviation Administration (FAA) of the United States was held at Honolulu, Hawaii, United States on 2-4 October 2003. In its review, the Task Force took into account the comments and issues raised in the

ICAO Headquarters review of the *Guidance Material*. To the extent possible, this material was incorporated in the *Guidance Material*.

3.151 The meeting was advised by the Secretariat that due to resource constraints in the ATM Section at the Regional Office this past year, it was not possible to complete the revision of the *Guidance Material*. However, since the ATM personnel situation had improved recently, the work would be progressed with suitable priority. Upon completion, the revised *Guidance Material* would be coordinated with ICAO Headquarters and presented to APANPIRG for adoption.

3.152 The meeting agreed that in the interest of safety of air traffic operations of FANS 1/A and ADS/CPDLC applications worldwide, it was imperative that ICAO endorses a common operating procedures and requirements document for global application. At present, the only such document available to States was the FOM. The meeting agreed that this document should be recognized officially by ICAO as an acceptable document to be used by States in the provision of ADS and CPDLC services.

3.153 In light of the foregoing, the meeting formulated the following Draft Conclusion:

Draft Conclusion 14/3 – FANS 1/A Operations Manual (FOM)

That, the FANS 1/A Operations Manual (FOM) be adopted by States and users in the Asia/Pacific Region as the ADS and CPDLC operating procedures and requirements document to be used with FANS 1/A aircraft, and in conjunction with the *Guidance Material on CNS/ATM Operations in the Asia and Pacific Region*.

Implementation of lateral offsets

3.154 The meeting recalled that following the issue of ICAO State letter AN 13/11.6-00/96 dated 3 November 2000 on the use of lateral offsets as a safety measure to reduce the risk of collision in the event of loss of vertical separation, the implementation of lateral separation in the Asia/Pacific Region had been considered by this Sub-Group. The guidelines allowed for the use of a 1 NM offset right of track where the minimum lateral separation was 50 NM in an RNP 10 non-radar environment.

3.155 The SASP revised the guidelines by State letter AN 13/11.6-02/21 dated 31 May 2002 to allow for the application of offset procedures of up to 2 NM right of track provided that a safety analysis for the particular airspace had shown that the proposed procedures would meet appropriate safety criteria.

3.156 The MID/ASIA/PAC/RAC *Regional Supplementary Procedures* (Doc 7030) was amended (APAC-S 00/4 refers) on 4 March 2004 allowing for implementation of 1 NM offset procedures in designated FIRs in the Asia/Pacific Region where a minimum lateral separation of 50 NM was being used with RNP 10. The following FIRs were approved to apply the 1 NM offset procedures: Auckland Oceanic, Brisbane, Honiara, Melbourne, Nauru, New Zealand, Port Moresby, Easter Island, Nadi and Tahiti.

3.157 The 2 NM offset procedures being developed by SASP provided greater safety benefit and incorporated the wake turbulence procedure (which previously permitted aircraft to deviate up to 2 NM left or right of track to avoid wake turbulence on a temporary basis). This procedure was already being used on a limited basis in the western portion of the North Atlantic Region. In light of these developments, some States preferred to wait for the outcome of the SASP work, which was expected to provide guidance for worldwide application of 2 NM procedures with a minimum lateral separation of 50 NM/RNP 10 and 30 NM/RNP 4.

3.158 The Secretariat updated the meeting on the work of SASP who had completed its work to revise the guidelines for the 2 NM offset procedures and a State letter was presently being

prepared by ICAO to be circulated in the near term. A copy of the draft guidelines is provided in **Appendix E** to the Report on Agenda Item 3.

3.159 The meeting recalled that APANPIRG/14 Conclusion 14/7 recommended that States should develop 2 NM lateral offset procedures to be implemented in all relevant airspace in the Asia/Pacific Region and to amend Doc 7030 accordingly. In this regard, at the request of the meeting, Australia who had implemented the 1 NM offset procedures, provided a copy of their AIP amendment to be used as a model by States. The model AIP amendment was updated to be used with the 2 NM offset procedures. This is included as **Appendix F** to the Report on Agenda Item 3.

3.160 IATA requested that when implementing 2 NM offset procedures that this was done in a coordinated manner over contiguous airspaces to avoid a patchy application of the procedures. The meeting noted that as the 2 NM offset procedures would be globally applicable, all States responsible for airspace where this procedure could apply, should implement the procedure, as this was a safety enhancement measure. Accordingly, the meeting agreed that ATS coordination groups in the Asia/Pacific Region should adopt a coordinated approach to implement the 2 NM offset procedures simultaneously.

3.161 In light of the foregoing, the meeting agreed to the following Draft Conclusion:

Draft Conclusion 14/4 – Implementation of 2 NM lateral offset procedures in the Asia/Pacific Region

That, States in the Asia/Pacific Region implement the 2 NM lateral offset procedures in accordance with ICAO guidance on a common AIRAC date to be coordinated by the ICAO Regional Office with States, ATS Coordination Groups and users concerned.

3.162 In regard to the above, the meeting recognizing that ICAO would be issuing a State letter containing guidance material on the application of 2 NM lateral offset procedures in the near term, therefore States should commence planning as soon as possible to implement the 2 NM offset procedures.

AIS - Amendments to Annex 4 and Annex 15

3.163 The meeting noted that since ATS/AIS/SAR/SG/13 some important amendments to Annexes 4 and 15 had been adopted by ICAO with effective date 25 November 2004.

3.164 Amendment 33 to Annex 15 (*Aeronautical Information Services*) included new provisions concerning definitions, the vertical reference system and the temporal reference system for international civil aviation, electronic terrain data (effective 2008), obstacle data (effective 2010) and aeronautical data quality requirements, and new requirements to include GNSS-related elements in the Aeronautical Information Publication (AIP) and in NOTAM.

3.165 Amendment 53 to Annex 4 (*Aeronautical Charts*) would introduce changes concerning: the new definitions; common reference system and the introduction of a new Radar Minimum Altitude Chart.

3.166 States were reminded to take note of the above amendments.

AIS Implementation Task Force (AITF)

3.167 The meeting recalled that APANPIRG/14 noted, in considering the future of the AIS Automation Task Force, that it should be reactivated and renamed the AIS Implementation Task

Force (AITF) to ensure that AIS matters continued to be progressed. Accordingly, APANPIRG/14 adopted Decision 14/8 reactivating the Task Force to study AIS automation and related matters and to assist States to implement ICAO SARPs on AIS in an expeditious manner. The first meeting of the Task Force is scheduled for 29 November – 3 December 2004.

Importance of Timely and Accurate AIS Data

3.168 The meeting was reminded that IATA had advised APANPIRG/14 that implementation of major changes on dates other than the published AIRAC cycles and with insufficient lead-time to implement a change was a significant safety problem. In noting comments made by the ICAO AIS Seminar held at the Regional Office in December 2002 and IATA's concern that the extent of such non-compliance was alarming, with a few States routinely not carrying out their obligations under Annex 15, APANPIRG/14 recorded Decision 14/9 requesting that ICAO again reinforce to States the critical safety nature of AIS and of adherence to Annex 15 provisions, particular those relating to AIRAC, as well as the need to ensure accurate and timely publication of AIS data.

3.169 The meeting emphasized the criticality of States adhering to the AIRAC system when publishing AIS information. The meeting agreed that this matter should be examined by the AITF. The Secretariat would include this item on the agenda of AITF.

3.170 The meeting noted that the AIS/MAP post at the Asia/Pacific Regional Office remained vacant in spite of continued concern expressed by APANPIRG on the importance of having adequate AIS/MAP expertise available at the Regional Office. This matter was first raised at APANPIRG/9 (August 1998) under Conclusions 9/51 and again at APANPIRG/14 under Conclusion 14/53. Both the Council of ICAO and the Air Navigation Commission had endorsed APANPIRG's position. In regard to Conclusion 14/53, the Council on reviewing the report of APANPIRG/14 had requested the Secretary General, as a matter of urgency, to strengthen the Regional Office specifically by filling the AIS/MAP vacant post.

3.171 The Secretariat advised the meeting that in addition to the vacant AIS/MAP post, the ATM Section personnel had reduced from three officers in September 2002 to one officer in May 2003 and replacement officers were appointed at the end of April and June 2004. During that period, the ATM Section workload was particularly excessive with RVSM implementation in the Bay of Bengal on 27 November 2003 taking priority, and with unexpected difficulties concerning air traffic management arrangements for air traffic operations in the Bay of Bengal area, four unplanned special ATS coordination meetings had been convened. The main reason for the vacant posts not being filled was budget constraints, and ICAO was likely to face continued budget difficulties which may become more stringent over the next triennium period 2005-2007. If staffing cut-backs became necessary, the AIS/MAP post was unlikely to be filled. The budget situation would be decided by the 35th Assembly of ICAO on 28 September to 8 October 2004.

3.172 Japan was particularly concerned that the lack of AIS/MAP expertise at the Regional Office could adversely affect the work of the AIS Implementation Task Force at a time when AIS automation and implementation of quality systems by States was reaching a critical phase. The Secretariat reminded the meeting that States could offer assistance to ICAO by providing an AIS expert on a temporary assignment and this would be greatly welcomed.

Carriage and operation of Airborne Collision Avoidance Systems (ACAS) II and pressure-altitude reporting transponders

3.173 The meeting recalled that APANPIRG/14 (August 2003) had reviewed the results of a survey conducted by the Asia/Pacific Regional Office in August 2000, and updated in June 2001, to obtain detailed information from States regarding the status of their implementation plans for the carriage and operation of pressure-altitude reporting transponders, and of the implementation plans for

the carriage and operation of ACAS II.

3.174 APANPIRG/14 took into account the following:

- a) from 1 January 2002, Annex 10 Volume IV requires all aeroplanes to be equipped with pressure-altitude reporting transponders, and
- b) from 1 January 2003, Annex 6 requires aeroplanes in excess of 15,000kg maximum certificated take-off mass or that are authorized to carry more than 30 passengers to be fitted with ACAS II;

3.175 The meeting also recalled that APANPIRG/14 had noted and endorsed the APANPIRG/12 (August 2001) position that where States had not established the requirement for the carriage and operation of pressure-altitude reporting transponders specified as a Standard in Annex 6, this should be reported and managed as a deficiency under the terms of the Uniform Methodology for the Identification, Assessment and Reporting of Air Navigation Deficiencies.

3.176 APANPIRG/14 agreed that it was a matter of urgency that States implement Annex 6 requirements in regard to ACAS II and pressure-altitude reporting transponders, especially in RVSM operations. APANPIRG/14 formulated the following Conclusion:

Conclusion 14/6 – Implementation of ACAS II and pressure-altitude reporting transponders in the Asia Pacific Region

That, States in the Asia/Pacific Region as a matter of urgency implement ACAS II and pressure-altitude reporting transponders required by Annex 6, especially in view of RVSM operations.

3.177 The meeting drew the attention of States to the importance of complying with Annex 6 provisions on the carriage of ACAS II and pressure-altitude reporting transponders and the potential safety consequences of operators being non-compliant especially in RVSM operations. Accordingly, States who had not notified the Regional Office of the status of implementation of ACAS II (**Appendix G** to the Report on Agenda Item 3) and pressure-altitude reporting transponders (**Appendix H** to the Report on Agenda Item 3) were urged to review and update the information (by way of formal notification to the Regional Office) in order to ensure that an accurate record of the status of implementation is available for consideration by APANPIRG/15.

Search and Rescue mattersSAR Capability of ICAO States in the Asia/Pac Region

3.178 The APANPIRG/14 meeting reviewed the SAR Capability Matrix Table, which provides a comprehensive listing of the SAR Capability of ICAO States in the Asia/Pacific Region. The SAR Capability Table was updated by the meeting as shown in **Appendix I** to the Report on Agenda Item 3.

Provision of SAR and SAR Agreements

3.179 The meeting reviewed the ICAO register of SAR agreements for the Asia/Pacific Region and updated the register with the following information:

- a) New Zealand was developing SAR agreements with the Cook Islands, Fiji, Samoa, Tonga and French Polynesia;
- b) France had exchanged working papers with New Zealand and the United States for SAR agreements with Auckland and Hawaii;
- c) the Australian Maritime Safety Authority provided an updated SAR Agreement between Australia and Indonesia; and
- d) LAO PDR notified the Regional Office that a LOA had been put in place with Viet Nam since 1998 for provision of assistance for SAR.

3.180 The updated register of SAR Agreements is shown at **Appendix J**. A model SAR agreement is provided in **Appendix K** to the Report on Agenda Item 3 to assist States prepare MOUs regarding the provision of SAR services.

3.181 New Zealand informed the meeting that the Rescue Coordination Centre New Zealand (RCCNZ) would take over responsibility from the National Rescue Coordination Centre for search and rescue in New Zealand at 0000 UTC on 5 July 2004. The New Zealand SAR Region remains unchanged but SAR activities will be coordinated by the RCCNZ.

3.182 The new RCCNZ is co-located at the Maritime Operations Centre. The contact details are as follows:

Postal address: Rescue Coordination Centre of New Zealand
Avalon TV Studios
Percy Cameron Street, Avalon
PO Box 30050, Lower Hutt
New Zealand

Emergency Operations: Operations Room Administration:

Telephone:	64 4914 8389	64 4914 8380
Fax:	64 4914 8383	64 4914 8388
AFTN:	NZWNYCYX	
Inmarsat-C:	582 451 200 067	
E-Mail:	rccnz@msa.govt.nz	rccnz@msa.govt.nz

SAR Seminar and Exercises

3.183 The meeting recalled that in accordance with previous APANPIRG conclusions, States were requested to develop formal programmes for SAR exercises and forward these to the ICAO Asia/Pacific Regional Office on an annual basis by 30 April. Such exercises should be made available for other States to participate as observers. States were requested to provide information on such activities to the Regional Office.

3.184 The meeting was advised by the Secretariat that the ICAO Asia/Pacific Regional Seminar and SAREX planned for the Bay of Bengal area as recommended by APANPIRG/12 (August 2001) was deferred to 2003, and then due to the outbreak of the Severe Acute Respiratory Syndrome (SARS) in the Asia Region in February 2003, it was further deferred to 2004. The Seminar and SAREX for the Bay of Bengal area was tentatively scheduled for November 2004 to be hosted by India.

3.185 India informed the meeting that following coordination with the National Maritime SAR Coordinating Authority responsible for search and rescue in India, there was insufficient time this year to organize a SAREX in November. Instead, India proposed that the SAREX be held in March 2005. The meeting agreed that the Seminar and SAREX should be organized for March 2005 and the Secretariat would coordinate arrangements with India in due course.

3.186 ICAO conducted a two-day SAR Seminar in conjunction with the Hong Kong, China Annual SAREX hosted by the Civil Aviation Department, Hong Kong, China on 24-25 November 2003.

Amendment 17 to Annex 12

3.187 The meeting was informed by the Secretariat that the Council of ICAO adopted Amendment 17 to Annex 12 on 26 March 2004 with an applicability date of 25 November 2004. The amendment stemmed from a review by the Secretariat to align Annex 12 with the International Maritime Organization (IMO) Convention to the extent possible and makes provision for more cost-effective civil SAR services by more closely harmonizing them with maritime SAR services and facilitating, where practicable, their organization on a cooperative, regional basis.

3.188 The meeting noted the information and requested States to note the Amendment applicability date and bring this to the attention of the appropriate authorities.

40th DGCA Conference

3.189 The meeting was updated on the outcome of the 40th DGCA Conference held at Ulan Bator, Mongolia on 1-5 September 2003 in regard to SAR matters. The Conference agreed on Action Item 40/4, which states:

Recognizing the complexity and the need to place highly specialized resources at a short notice for search and rescue, the Conference urged States to cooperate fully in sharing information and resources as far as practicable and to keep ICAO Regional Office informed of all agreements in this regard.

3.190 The meeting noted the DGCA recommendation and endorsed this position which was being given priority at Sub-Group meetings. In addition, the register of SAR agreements was reviewed at every Sub-Group meeting. Also, the Regional Office reminded States prior to APANPIRG meetings to take action to put SAR agreements in place with neighbouring States, and to inform the Regional Office of such agreements and provide a copy for the record. Further, at SAR Seminars held by ICAO, the importance of SAR agreements was always highlighted as a priority matter to be addressed by States.

3.191 The meeting would continue to place emphasis on the requirement for SAR agreements between States. In cases where States do not have resources to adequately provide search and rescue services to cover the international airspace under their responsibility, the meeting stressed the importance of arrangements being put in place to obtain SAR services from other States.

ATC Contingency Procedures during failure of Data Link System

3.192 Japan presented a proposed amendment to the Regional Supplementary Procedures (SUPPs, Doc 7030) MID/ASIA/PAC/RAC-5 relating to ATC contingency procedures during failure of data link systems in the oceanic airspace of the Pacific Region. The IPACG had agreed to implement 50 NM longitudinal separation minimum in the North and Central Pacific using data link (ADS and CPDLC) systems, and intended to further reduce the longitudinal separation minimum to 30 NM in the future. The ISPACG also plans to implement the reduced longitudinal separation minimum using data link systems in the South Pacific in the near future.

3.193 The meeting was advised that if the data link system fails, the separation minimum being applied using data link communications would need to be replaced by alternate separation using HF. ICAO procedures for the application of 50 NM and 30 NM longitudinal separation minima using data link are detailed in the PANS-ATM, Doc 4444. The procedures include ATC actions using an alternate means of communication when an ADS periodic or waypoint change event was not received within a certain time (PANS-ATM paragraph 4.2.6.4.3.3 refers). The proposed amendment to the SUPPs was developed to provide more detailed contingency procedures than those contained in the PANS-ATM to deal with situations where reduced horizontal separation was being used and alternate separation could not be immediately applied especially in busy traffic.

3.194 The meeting reviewed and provided comments on the amendment proposal, agreeing that the proposal required further work to address the intent of the procedure and to consider including time limitations for applying alternate separation. The meeting agreed that the amendment proposal would also need to be harmonized with existing PANS-ATM provisions relating to short-term data link outage (including paragraph 5.4.2.6.4.3.3).

3.195 The Secretariat would review the proposal and coordinate with JCAB and ICAO Headquarters to finalize the proposal.

RVSM IMPLEMENTATION STATUS IN THE ASIA/PACIFIC REGION

(Last Updated June 2004)

FIR/AOR	RVSM Implementation Date	Comments
Anchorage Arctic	24 Feb 2000	RVSM Transition Airspace only
Anchorage Continental	24 Feb 2000	RVSM Transition Airspace only
Anchorage Oceanic	24 Feb 2000	
Auckland Oceanic	24 Feb 2000	
Bali	31 Oct 2002	
Bangkok	21 Feb 2002	Specific routes on 21 Feb 2002. Whole FIR on 27 Nov 2003
Beijing	TBD	
Biak	Not applicable	Subject to Indonesia upper airspace consolidation
Brisbane	24 Feb 2000	Oceanic East of Australia 24 Feb 2000 - Remainder of FIR 1 Nov 2001
Calcutta	27 Nov 2003	
Chennai	27 Nov 2003	
Colombo	27 Nov 2003	
Delhi	27 Nov 2003	
Dhaka	27 Nov 2003	
Guangzhou	TBD	
Hanoi	31 Oct 2002	
Ho Chi Minh	21 Feb 2002	
Hong Kong	31 Oct 2002	
Honiara	24 Feb 2000	
Incheon	9 June 2005	Planned implementation
Jakarta	31 Oct 2002	
Karachi	27 Nov 2003	
Kathmandu	27 Nov 2003	

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FIR/AOR	RVSM Implementation Date	Comments
Kota Kinabalu	21 Feb 2002	
Kuala Lumpur	21 Feb 2002	Eastern part on 21 Feb 2002. Western part on 27 November 2003
Kunming	TBD	
Lahore	27 Nov 2003	
Lanzhou	TBD	
Male	27 Nov 2003	
Manila	21 Feb 2002	
Melbourne	1 Nov 2001	
Mumbai	27 Nov 2003	
Nadi	24 Feb 2000	
Naha	24 Feb 2000	Pacific Oceanic (non-exclusive RVSM airspace) on 24 Feb 2000. Whole FIR planned on 9 June 2005.
Nauru	24 Feb 2000	
New Zealand (Domestic)	13 July 2000	Non-exclusive RVSM airspace
Oakland Oceanic	24 Feb 2000	
Phnom Penh	21 Feb 2002	
Port Moresby	13 Apr 2000	
Pyongyang	TBD	
Sanya AOR	31 Oct 2002	N892 within the oceanic airspace of Sanya AOR on 21 February 2002
Shanghai	TBD	
Shenyang	TBD	
Singapore	21 Feb 2002	
Tahiti	24 Feb 2000	Non-exclusive RVSM airspace
Taipei	21 Feb 2002	
Tokyo	24 Feb 2000	Pacific Oceanic (non-exclusive RVSM airspace) on 24 Feb 2000. Whole FIR planned on 9 June 2005.
Ujung Pandang	31 Oct 2002	Phased Implementation

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FIR/AOR	RVSM Implementation Date	Comments
Ulaan Baatar	TBD	
Urumqi	TBD	
Vientiane	31 Oct 2002	
Wuhan	TBD	
Yangon	27 Nov 2003	

PROPOSED RVSM TRANSITION PROCEDURES BETWEEN KUNMING AND YANGON FIRS

1 Proposed Transition Procedures between LASHIO and LINSO

Eastbound aircraft

Fly eastbound RVSM level to LASHIO. Request for level change at LASHIO from Yangon ACC to China metric level. Effect level change to China metric level and complete as soon as possible and before LINSO.

Contingency procedure

If no radio contact with Yangon ACC, pilots will transmit blind and effect level change after LASHIO to China metric level and complete the level change as soon as possible before LINSO in accordance with the flight level allocation assignment as shown in the Transition Level Table below.

Westbound aircraft

Fly China metric level to LINSO. Upon clearance by Kunming ACC, to effect level change at LINSO to RVSM flight level. Contact Yangon ACC. To complete level change as soon as possible, before LASHIO.

Contingency procedure

If no radio contact with Yangon ACC, pilots will transmit blind and continue level change to cleared RVSM level in accordance with the flight level allocation assignment as shown in the Transition Level Table below.

Level change

All level changes from China metric to RVSM and vice versa are to be initiated and completed within the Yangon FIR. Levels changes between the China metric and RVSM levels shall be in conformance with the levels contained in the Transition Table below. To ensure that there will always be not less than 1000 feet between aircraft during transition, aircraft shall only be cleared to transition from one flight level to the corresponding flight level in a level pair. For example, a westbound aircraft at 10800 metres shall be cleared to transition to RVSM FL 360 only.

2 **Transition Level Table between CHINA METRIC LEVELS and ICAO RVSM Levels for A599 between LASHIO AND LINSO**

ICAO RVSM LEVEL	CHINA METRIC LEVEL
410 (not available)	
400 (not available)	
390(not available)	
380 Westbound	12000 (FL393) Westbound
370 Eastbound	11400 (FL374) Eastbound
360 Westbound	10800 (FL354) Westbound
350(not available)	
340(not available)	
330 Eastbound	10200 (FL334) Eastbound
320 Westbound	9600 (FL315) Westbound
310(not available)	
300(not available)	
290 Eastbound	9000 (FL295) Eastbound
280 Westbound	8400 (FL275) Westbound

PACIFIC RVSM MINIMUM MONITORING REQUIREMENTS:

As of 4 February 2004

1. UPDATE OF MONITORING REQUIREMENTS CHART AND WEBSITE.

As significant data is obtained, monitoring requirements for specific aircraft types may change. When the chart is updated, a letter will be distributed to States and operators. The updated chart will be posted on the PARMO website being maintained by the Federal Aviation Administration (FAA) on behalf of the International Civil Aviation Organization (ICAO) Asia-Pacific regional planning group. The website address is:

<http://www.tc.faa.gov/acb300/parmo>

2. INITIAL MONITORING.

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

3. AIRCRAFT STATUS FOR MONITORING.

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

4. APPLICABILITY OF MONITORING FROM OTHER REGIONS.

Monitoring data obtained in conjunction with RVSM monitoring programs from other regions can be used to meet Pacific monitoring requirements. The Pacific Approvals Registry and Monitoring Organization (PARMO), which is responsible for administering the Pacific monitoring program, has access to monitoring data from other regions and will coordinate with States and operators to inform them on the status of individual operator monitoring requirements.

5. MONITORING PRIOR TO THE ISSUE OF RVSM OPERATIONAL APPROVAL IS NOT A REQUIREMENT.

Operators should submit monitoring plans to the responsible civil aviation authority that show how they intend to meet the requirements specified in the table below. Monitoring will be carried out in accordance with this table.

6. AIRCRAFT GROUPS NOT LISTED ON THE CHART.

Contact the PARMO for clarification if an aircraft group is not listed on the Minimum Monitoring Requirements chart or for clarification of other monitoring related issues. An aircraft group not listed in the table below will probably be subject to Category 2 monitoring requirements.

7. TABLE OF MONITORING GROUPS.

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

8. TRAILING CONE DATA.

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

9. MONITORING OF AIRFRAMES THAT ARE RVSM COMPLIANT ON DELIVERY

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

10. FOLLOW-ON MONITORING.

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

PACIFIC APPROVALS REGISTRY AND MONITORING ORGANIZATION
EFFECTIVE AS OF: 4 FEBRUARY 2004

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

Monitoring Groups for Aircraft Certified under Group Approval Requirements

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

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Monitoring Group	ICAO Designator	A/C Type	A/C Series
B744-10	B744	B747	400, 400D, 400F (With 10 inch Probes)
B752	B752	B757	200, 200PF
B753	B753	B757	300
B767	B762 B763	B767	200, 200EM, 200ER, 200ERM, 300, 300ER, 300ERF
B764	B764	B767	400ER
B772	B772	B777	200, 200ER, 300, 300ER
B773	B773	B777	300, 300ER
BE40	BE40	BEECHJET 400A	ALL SERIES
BE20	BE20	BEECH 200 -KINGAIR	ALL SERIES
C500	C500	500 CITATION, 500 CITATION I, 501 CITATION I SINGLE PILOT	ALL SERIES
C525	C525	525 CITATIONJET, 525 CITATIONJET I	ALL SERIES
C525-II	C25A	525A CITATIONJET II	ALL SERIES
C525 CJ3	C25B	CITATIONJET III	ALL SERIES
C550-552	C550	552 CITATION II	ALL SERIES
C550-B	C550	550 CITATION BRAVO	ALL SERIES
C550-II	C550	550 CITATION II, 551 CITATION II SINGLE PILOT	ALL SERIES
C550-SII	C550	S550 CITATION SUPER II	ALL SERIES
C560	C560	560 CITATION V, 560 CITATION V ULTRA, 560 CITATION V ULTRA ENCORE	ALL SERIES
C56X	C56X	560 CITATION EXCEL	ALL SERIES
C650	C650	650 CITATION III , 650 CITATION VI , 650 CITATION VII	ALL SERIES
C750	C750	750 CITATION X	ALL SERIES
CARJ	CRJ1, CRJ2	REGIONALJET	100, 200, 200ER, 200LR
CRJ-700	CRJ7	REGIONALJET	700
CRJ-900	CRJ9	REGIONALJET	900
CL600	CL60	CL-600 CL-601	CL-600-1A11 CL-600-2A12, CL-600-2B16
CL604	CL60	CL-604	CL-600-2B16
BD100	CL30	CHALLENGER 300	ALL SERIES
BD700	GL5T	GLOBAL 5000	ALL SERIES

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Appendix C to the Report on Agenda Item 3

Monitoring Group	ICAO Designator	A/C Type	A/C Series
CONC	CONC	CONCORDE	ALL SERIES
DC10	DC10	DC-10	10, 10F, 15, 30, 30F, 40, 40F
DC86-7	DC86, DC87	DC-8	62, 62F, 72, 72F
DC93	DC93	DC-9	30, 30F
DC95	DC95	DC-9	SERIES 51
E135-145	E135, E145	EMB-135, EMB-145	ALL SERIES
F100	F100	FOKKER 100	ALL SERIES
F2TH	F2TH	FALCON 2000	ALL SERIES
F70	F70	FOKKER 70	ALL SERIES
F900	F900	FALCON 900, FALCON 900EX	ALL SERIES
FA10	FA10	FALCON 10	ALL SERIES
FA20	FA20	FALCON 20 FALCON 200	ALL SERIES
FA50	FA50	FALCON 50, FALCON 50EX	ALL SERIES
GALX	GALX	1126 GALAXY	ALL SERIES
GLEX	GLEX	BD-700 GLOBAL EXPRESS	ALL SERIES
GLF2	GLF2	GULFSTREAM II (G-1159),	ALL SERIES
GLF2B	GLF2	GULFSTREAM IIB (G-1159B)	ALL SERIES
GLF3	GLF3	GULFSTREAM III (G-1159A)	ALL SERIES
GLF4	GLF4	GULFSTREAM IV (G-1159C)	ALL SERIES
GLF5	GLF5	GULFSTREAM V (G-1159D)	ALL SERIES
H25B-700	H25B	BAE 125 / HS125	700B
H25B-800	H25B	BAE 125 / HAWKER 800XP, BAE 125 / HAWKER 800, BAE 125 / HS125	ALL SERIES/A, B/800
H25C	H25C	BAE 125 / HAWKER 1000	A , B
IL86	IL86	IL-86	NO SERIES
IL96	IL96	IL-96	M , T, 300
J328	J328	328JET	ALL SERIES
L101	L101	L-1011 TRISTAR	1 (385-1), 40 (385-1), 50 (385-1), 100, 150 (385-1-14), 200, 250 (385-1-15), 500 (385-3)
L29B-2	L29B	L-1329 JETSTAR 2	ALL SERIES
L29B-731	L29B	L-1329 JETSTAR 731	ALL SERIES

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Monitoring Group	ICAO Designator	A/C Type	A/C Series
LJ31	LJ31	LEARJET 31	NO SERIES, A
LJ35/6	LJ35 LJ36	LEARJET 35 LEARJET 36	NO SERIES, A
LJ40	LJ40	LEARJET 40	ALL SERIES
LJ45	LJ45	LEARJET 45	ALL SERIES
LJ55	LJ55	LEARJET 55	NO SERIES B, C
LJ60	LJ60	LEARJET 60	ALL SERIES
MD10	MD10	MD-10	ALL SERIES
MD11	MD11	MD-11	COMBI, ER, FREIGHTER, PASSENGER
MD80	MD81, MD82, MD83, MD87, MD88	MD-80	81, 82, 83, 87, 88
MD90	MD90	MD-90	30, 30ER
P180	P180	P-180 AVANTI	ALL SERIES
PRM1	PRM1	PREMIER 1	ALL SERIES
T134	T134	TU-134	A, B
T154	T154	TU-154	A , B, M, S
T204	T204, T224, T234	TU-204, TU-224, TU-234	100, 100C, 120RR, 200, C
YK42	YK42	YAK-42	ALL SERIES

ASIA/PACIFIC RVSM MINIMUM MONITORING REQUIREMENTS

At 1 October 2002

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

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

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

4. MONITORING OF AIRFRAMES THAT ARE RVSM COMPLIANT ON DELIVERY. If an operator adds new RVSM compliant airframes of a type for which it already has RVSM operational approval and has completed monitoring requirements for the type in accordance with the attached chart, the new airframes are not required to be monitored - except as targeted at a later date in the follow-on monitoring program. If an operator adds new RVSM compliant airframes of an aircraft type for which it has **NOT** previously received RVSM operational approval, then the operator should complete monitoring in accordance with the attached chart.

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

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

www.aerothai.co.th/maar/

7. PRIOR RVSM EXPERIENCE. When a new-entrant-RVSM operator completes the regional monitoring requirements for State approval for all of its Pacific aircraft types or North Atlantic aircraft types, the operator is considered by MAAR to have "Prior RVSM Experience."

For most aircraft types, monitoring is not required to be completed PRIOR to operational approval being granted, however participation in monitoring IS REQUIRED in accordance with the attached chart.

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MONITORING NOT REQUIRED PRIOR TO THE GRANT OF RVSM APPROVAL, HOWEVER PARTICIPATION IN MONITORING IS REQUIRED IN ACCORDANCE WITH THIS CHART			
CATEGORY		AIRCRAFT TYPE	MINIMUM OPERATOR MONITORING FOR EACH AIRCRAFT GROUP
1	OPERATORS PLANNING TO CONDUCT OPERATIONS IN PACIFIC AIRSPACE <u>AND</u> OPERATORS WITH PRIOR RVSM EXPERIENCE PLANNING TO OPERATE IN THE WESTERN PACIFIC/SOUTH CHINA SEA AREA	New aircraft types from a manufacturer with a demonstrable track record of the production of MASPS compliant airframes or [A30B, A306], A310 (GE), A310 (PW), [A319, A320, A321], A330, A340, B712, [B721, B722] [B733, B734, B735] [B736, B737/BBJ, B738, B739] [B741, B742, B743, B74S] B744, [B752, B753], [B762, B763], B764 [B772, B773], DC10, MD10, MD11, MD80, L101 CL60, GLEX, GLF3, GLF4, GLF5 [F900, F900EX] FA50, FA50EX, F2TH, LJ45 LJ60, H25B	Two airframes of each type* to be monitored as soon as possible but not later than 6 months after the issue of RVSM operational approval. <i>* Note. For the purposes of the minimum monitoring requirement, aircraft within parenthesis [] may be considered as the same type.</i>
Category 2 below has been adopted in preparation for RVSM implementation in the Western Pacific/South China Sea Area on 21 Feb 2002			
2	OPERATORS WITHOUT PRIOR RVSM EXPERIENCE WHOSE OPERATIONS ARE PRIMARILY IN THE WESTERN PACIFIC/SOUTH CHINA SEA AREA	Same types as above in section 1.	At least 3 airframes of each type unless operator has only 1 or 2 of a type, then all operator airframes of that type should be monitored. Monitoring to be completed as soon as possible but not later than 3 months after the issue of RVSM operational approval or not later than 3 months after the start of Western Pacific/South China Sea/Bay of Bengal RVSM operations, whichever occurs later.

MONITORING REQUIRED PRIOR TO THE GRANT OF RVSM APPROVAL			
3	OPERATORS OF AIRCRAFT TYPES SHOWN IN THE BLOCK TO THE RIGHT	Other group or non –group aircraft other than those listed above including: A124, ASTR, B707, B731, B732, C525, C560, C650, C750, DC8, DC9, E145, FA10, FA20, F100, GLF2, GALX, H25A, H25C, IL62, LJ31, LJ35, LJ55, MD90 or New aircraft types from a manufacturer without a demonstrable track record of the production of MASPS compliant airframes.	60% of target number of airworthiness approved, same type, airframes of each operator to be monitored or individual monitoring of airworthiness approved airframes of a given operator.

ATTACHMENT to State letter AN 13/11.6-04/

**DRAFT REVISED GUIDELINES ON THE USE OF LATERAL
OFFSETS AND THE EFFECT ON AIRSPACE SAFETY**

(Pending Issue by ICAO)

1. INTRODUCTION

1.1 These guidelines are based on studies carried out by the ICAO Separation and Airspace Safety Panel (SASP) to address airspace safety issues associated with pilots applying lateral offsets when operating aircraft with automatic offset tracking capability. The intent of offset procedures is to reduce the risk of collision due to a loss of planned vertical separation. The impact of the use of lateral offsets on overall airspace safety has been evaluated, and SASP has carried out a technical analysis of safety-related issues. These guidelines are based on the results of this analysis, and are provided to assist States and regional planning groups to identify air traffic services (ATS) routes and airspace where authorization of the use of strategic lateral offsets would enhance existing levels of safety.

1.2 The SASP studies took into account the effects of lateral offsets on the safety of parallel routes with a 60 NM route spacing where compliance with the minimum navigation performance specification (MNPS) is required; with a 50 NM route spacing where RNP 10 is specified; and a 30 NM route spacing where RNP 4 is specified, as well as in crossing track situations where navigational accuracies ranging from RNP 4 to RNP 20 were assumed.

1.3 In accordance with Annex 2 – *Rules of the Air*, intentional deviation from the centre line of an ATS route requires authorization. Annex 2, Chapter 3, paragraph 3.6.2.1.1, states:

“Unless otherwise authorized or directed by the appropriate air traffic control unit, controlled flights shall, in so far as practicable:

- a) when on an established ATS route, operate along the defined centre line of that route; or
- b) when on any other route, operate directly between the navigation facilities and/or points defining that route.”

1.4 As a consequence of this, the implementation of strategic lateral offset procedures requires authorization by the appropriate ATS authority.

2. AIRCRAFT NAVIGATION PERFORMANCE AND AIRSPACE SAFETY

2.1 ICAO separation minima, including lateral route spacings, are based on the assumption that aircraft operate on the centre line of a route. In general, unauthorized deviations from this requirement could compromise safety. However, the use of highly accurate navigation systems (such as global navigation satellite system (GNSS)) reduces the magnitude of lateral deviations from the route centre line and consequently increases the probability of a collision if a loss of vertical separation between aircraft on the same route occurs.

2.2 By using offsets to provide lateral spacing between aircraft, the effect of this reduction in random lateral deviations can be mitigated, thereby reducing the risk of collision. These

guidelines provide information on how such a strategic lateral offset procedure should be implemented.

2.3 As the application of strategic lateral offsets, limited in magnitude and direction as prescribed in these guidelines, has the potential to reduce the risk of collision due to a loss of planned vertical separation, ATS authorities are encouraged to authorize the use of such offsets in oceanic and remote continental airspace.

3. IMPLEMENTATION CONSIDERATIONS FOR ATS AUTHORITIES

3.1 The following considerations shall be taken into account when planning authorization of the use of strategic lateral offsets in a particular airspace.

- a) strategic lateral offsets shall only be authorized in en-route oceanic or remote continental airspace. Where part of the airspace in question is within radar coverage, transiting aircraft should normally be allowed to initiate or continue offset tracking.;
- b) strategic lateral offsets may be authorized for the following types of routes (including where routes or route systems intersect):
 - 1) uni-directional and bi-directional routes; and
 - 2) parallel route systems where the spacing between route centre lines is not less than 55.5km (30 NM).
- c) in some instances it may be necessary to impose restrictions on the use of strategic lateral offsets, e.g. where their application may be inappropriate for reasons related to obstacle clearance;
- d) these offset procedures should be implemented on a regional basis after coordination between all States involved;
- e) the routes or airspace where application of strategic lateral offsets is authorized, and the procedures to be followed by pilots, shall be promulgated in aeronautical information publications (AIPs); and
- f) air traffic controllers shall be made aware of the airspace within which strategic lateral offsets are authorized.

4. LATERAL OFFSET PROCEDURES TO BE APPLIED BY PILOTS

4.1 In the application of strategic lateral offsets, pilots should take the following points into consideration.

- a) offsets shall only be applied in airspace where this has been approved by the appropriate ATS authority;
- b) offsets shall be applied only by aircraft with automatic offset tracking capability;
- c) the decision to apply a strategic lateral offset is the responsibility of the flight crew;

- d) the offset shall be established at a distance of one or two nautical miles to the right of the centre line relative to the direction of flight;
- e) if an offset to mitigate the effects of wake turbulence is required it shall be to the right and the total offset shall not exceed 2 NM from the route centre line
- f) in airspace where the use of lateral offsets has been authorized, pilots are not required to inform air traffic control (ATC) that an offset is being applied; and
- g) Aircraft transiting areas of radar coverage in airspace where offset tracking is permitted may initiate or continue an offset.

DRAFT AIP AMENDMENT
IMPLEMENTATION OF STRATEGIC LATERAL OFFSET PROCEDURES

X. STRATEGIC LATERAL OFFSETS IN OCEANIC AIRSPACE

- X.1 Offsets are only applied in the oceanic airspace in the XXX FIR.
- X.2 Offsets are applied only by aircraft with automatic offset tracking capability.
- X.3 The following requirements apply to the use of the offset:
 - a. The decision to apply a strategic lateral offset is the responsibility of the flight crew.
 - b. The offset shall be established at a distance of one or two nautical miles to the right of the centre line relative to the direction of flight.
 - c. If an offset to mitigate the effects of wake turbulence is required it shall be to the right and the total offset shall not exceed 2 NM from the route centre line.
 - d. In airspace where the use of lateral offsets has been authorized, pilots are not required to inform air traffic control (ATC) that an offset is being applied.
 - e. Aircraft transiting areas of radar coverage in airspace where offset tracking is permitted may initiate or continue an offset.

Carriage and Operation of ACAS and Pressure-Altitude Reporting Transponders
(2nd Survey AP-ATM 0551, 17 August 2000)

Editorial note: Changes are arranged to show "deleted text" using strikeout (~~text to be deleted~~), and "new text" in bold Italics (***new text to be inserted***).

2nd Survey Airborne Collision Avoidance System (ACAS) (Updated 28 June 2004)

State/Territory	Effective date (dd/mm/yy)	Required TCAS types	Applicable airspace	Applicable to		Aeronautical Publication
				turbine-engined aeroplanes of a maximum certified take-off mass in excess of 15000kg or authorized to carry more than 30 passengers engaged in international air transport operations	turbine-engined aeroplanes of a maximum certified take-off mass in excess of 5 700kg or authorized to carry more than 19 passengers engaged in international air transport operations	
Australia	1-Jan-00	Version 7	All airspace within FIRs	YES	No plan	Civil Aviation Regulation and AIP
Bangladesh	1-Jan-03	Version 7				AIP will be published 09/2003
Bhutan						
Brunei Darussalam	1-Jul-01	Version 7	~~Brunei terminal control area~~ <i>All Brunei airspace</i>	YES		<i>Brunei airspace falls inside Kota Kinabalu FIR, therefore Malaysian AIC 06/2000 (March 2000) applies.</i>
Cambodia	1-Jan-03	Version 7	All airspace within FIR	YES		AIP will be published
China	11-Jul-02	Version 7	At the specified 10 airports, and along ATS routes A461, A593 and A599	YES	YES (On 31 Dec 2003)	AIC 06/2001 and AIC 08/2001
	1-Jan-03	Version 7	All airspace within FIR	YES	YES (On 31 Dec 2003)	To be published

Carriage and Operation of ACAS and Pressure-Altitude Reporting Transponders
(2nd Survey AP-ATM 0551, 17 August 2000)

2nd Survey Airborne Collision Avoidance System (ACAS) (Updated 28 June 2004)

State/Territory	Effective date (dd/mm/yy)	Required TCAS types	Applicable airspace	Applicable to		Aeronautical Publication
				turbine-engined aeroplanes of a maximum certified take-off mass in excess of 15000kg or authorized to carry more than 30 passengers engaged in international air transport operations	turbine-engined aeroplanes of a maximum certified take-off mass in excess of 5 700kg or authorized to carry more than 19 passengers engaged in international air transport operations	
Hong Kong, China	1-Jan-00	~~Version 6.04 until 1 Jan-2003~~	~~All airspace within FIR~~	YES		AIP Hong Kong-GEN 1.5-2
	1-Jan-03	Version 7	All airspace within FIR	YES	YES (on 1 Jan 2005)	~~AIC 02/01 dated 1 Feb 2001~~ AIP
Macau, China	1-Jan-00	Version 7	Controlled airspace within Macau ATZ	All fixed wing aircraft registered in Macau greater than 5700 kg or certified for more than <u>9</u> passengers seats.		AIC 07/99 dated 1 Dec 1999
Cook Islands						
DPR Korea	1-Jan-01	ACAS II	All airspace within FIR	all turbine engine aeroplane of maximum take off mass in excess of 90 000kg shall be equipped with ACAS II		AIP
Fiji						
France (French Polynesia)	23-Jan-03	Version 7	All airspace within FIR	YES	YES (on 1 Jan 2005)	AIP & AIC 010/00 dated 3 Aug 2000
(New Caledonia)	23-Jan-03	Version 7	All airspace within FIR	YES	YES (on 1 Jan 2005)	AIP & AIC 010/00 dated 3 Aug 2000

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2nd Survey Airborne Collision Avoidance System (ACAS) (Updated 28 June 2004)

State/Territory	Effective date (dd/mm/yy)	Required TCAS types	Applicable airspace	Applicable to		Aeronautical Publication
				turbine-engined aeroplanes of a maximum certified take-off mass in excess of 15000kg or authorized to carry more than 30 passengers engaged in international air transport operations	turbine-engined aeroplanes of a maximum certified take-off mass in excess of 5 700kg or authorized to carry more than 19 passengers engaged in international air transport operations	
India	31-Dec-98	Any Version	All airspace within FIRs	~~Aeroplane having a maximum-certified passenger seating configuration of more than 30 or maximum payload capacity of more than 3 tonnes~~		
	1-Jan-03	Version 7	All airspace within FIRs	Aeroplane having a maximum certified passenger seating configuration of more than 30 or maximum <u>payload capacity of more than 3 tonnes</u>	YES (on 1 Jan 2005)	Civil Aviation Requirements, Section2, Series 'I', PART VIII, Revision2 dated 4 Dec 2000
Indonesia						
Japan	4-Jan-01	~~Version 6.04 or greater~~ ~~*upgrading to Version 7 before 2003 is under consideration~~	Domestic airspace	YES	YES (on 1 Jan 2005)	~~AIP dated 4 Jan 1996~~
Kiribati						
Lao PDR	1-Jan-03	ACAS II	All airspace within FIRs	YES		Notice to owner/operator No. 0401/DCA dated 15 May 2002
Malaysia	1-Jan-03	Version 7	All airspace within FIRs	YES	YES	AIC 6/2000 dated 10 Mar 2000
Maldives	Jan-00	Version 7	All airspace within FIR	YES	YES (in Jan 2005)	Published on 14 Sep 1997

Carriage and Operation of ACAS and Pressure-Altitude Reporting Transponders
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2nd Survey Airborne Collision Avoidance System (ACAS) (Updated 28 June 2004)

State/Territory	Effective date (dd/mm/yy)	Required TCAS types	Applicable airspace	Applicable to		Aeronautical Publication
				turbine-engined aeroplanes of a maximum certified take-off mass in excess of 15000kg or authorized to carry more than 30 passengers engaged in international air transport operations	turbine-engined aeroplanes of a maximum certified take-off mass in excess of 5 700kg or authorized to carry more than 19 passengers engaged in international air transport operations	
Marshall Islands						
Micronesia, Federated States of						
Mongolia	1-Jan-02	ACAS II	International routes	YES	No	To be issued in Dec 2000 – AIP
Myanmar	1-Jan-03	Version 7	International routes	YES	No	Notice to owner T/42 dated 1 Sep 2000
Nauru						
Nepal	1-Jan-03	Version 7	Not specified	YES	YES (on 1 Jan 2005)	Flight Operations Requirements, Amendment Number 2 dated 18 Feb 2000
New Zealand	1-Aug-03	ACAS II, Version 7	All airspace within FIR	YES. Phased introduction complete with the exception of two types operating as freight only aircraft which must provide risk assessment and mitigation programmes acceptable to the Director	YES (by 01 Jan 2005)	Civil Aviation Rules, parts 121, 125 & 129
Pakistan	1-Jul-01	Version 6.04 or greater	All airspace within FIR	YES		AIP
Palau						
Papua New Guinea						
Philippines	31-Jan-01	Airspace defined by Air Transport Office (ATO)	20%			
	31-Jan-02		50%			
	31-Jan-04		ALL			

Carriage and Operation of ACAS and Pressure-Altitude Reporting Transponders
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2nd Survey Airborne Collision Avoidance System (ACAS) (Updated 28 June 2004)

State/Territory	Effective date (dd/mm/yy)	Required TCAS types	Applicable airspace	Applicable to		Aeronautical Publication
				turbine-engined aeroplanes of a maximum certified take-off mass in excess of 15000kg or authorized to carry more than 30 passengers engaged in international air transport operations	turbine-engined aeroplanes of a maximum certified take-off mass in excess of 5 700kg or authorized to carry more than 19 passengers engaged in international air transport operations	
Republic of Korea	1-Jan-00	~~Version 6.04 or greater & Version 7 after Jan 2003~~	All airspace within FIR	YES	~~N/A~~ YES	Aviation Law, AIP
Samoa	2000	Version 6.04 or greater & Version 7 for new installation after Jan 2002	All airspace within FIR	YES	YES (on 1 Jan 2005)	NOTAM will be issued
Singapore	1-Jan-02	Version 7	All airspace within FIR	YES	YES (on 1 Jan 2005)	AIC will be issued
Solomon Islands						
Sri Lanka	1-Jan-02	Version 7	All airspace within Colombo FIR	YES		~~Aviation Safety Notice issued 2002. AIC will be issued~~ AIP
Thailand	1-Jan-03	Version 7	All airspace within FIR	YES	YES (on 1 Jan 2005)	
Tonga						
U.S.A.	31-Dec-95	Version 6.04 or greater	Within the territorial limit of 12 miles from the US coast	A passenger or combination cargo/passenger (combi) airplane that has a passenger seat configuration, excluding any pilot seat, of more than 10 seats		FAR, Part 121
Vanuatu	1-Jan-00	Version 6.04 or greater	All airspace within FIR	YES	N/A	Australia CAA Act 1998, Subsection 9 (1)
Viet Nam	Jun-03	Version 7	All airspace within FIR	YES	YES	~~NOTAM to be issued- September 2003~~ AIP

Note: Blank indicates that no information has been provided.

Carriage and Operation of ACAS and Pressure-Altitude Reporting Transponders

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2nd Survey on Pressure-Altitude Reporting Transponders (Updated 28 June 2004)

State/Territory	Effective date (dd/mm/yy)	Applicable airspace	Applicable to			Aeronautical Publication
			aeroplanes engaged in international air transport operations	aeroplanes engaged in international general aviation operations	helicopters engaged in international commercial air transport or international general aviation operations	
Australia	Early 1990's	Controlled airspace inside radar coverage	YES	YES	YES	AIP
Bangladesh						
Bhutan						
Brunei Darussalam	1-Jul-01	Brunei terminal control area- All Brunei airspace	YES	YES	YES	<i>Brunei airspace falls inside Kota Kinabalu FIR, therefore Malaysian AIC 06/2000 (March 2000) applies.</i>
			* State aircraft as well			
Cambodia	1-Jan-03	All airspace within FIR				
China	1-Jan-02	All airspace within FIR	YES	YES	YES	Published as AIC 05/2001
Hong Kong,China	1980	Controlled airspace within Hong Kong FIR	YES	YES	YES	AIP Hong Kong GEN 1.5-2
Macau, China	2-Jan-97	Controlled airspace within Macau ATZ	All aircraft flying within Macau ATZ			AIP Macau GEN 1.5-1 dated 2 Jan 1997
Cook Islands						
DPR Korea						
Fiji						
France (French Polynesia)	23-Jan-03	All airspace within FIR	YES	YES (All aircraft in general aviation)	YES	AIP
(New Caledonia)						
India	07-Sep-99	All airspace within FIRs	YES	YES	YES	Civil Aviation Requirements Section2, Series "R", PART IV
Indonesia						

Carriage and Operation of ACAS and Pressure-Altitude Reporting Transponders

(2nd Survey AP-ATM 0551, 17 August 2000)

2nd Survey on Pressure-Altitude Reporting Transponders (Updated 28 June 2004)

State/Territory	Effective date (dd/mm/yy)	Applicable airspace	Applicable to			Aeronautical Publication
			aeroplanes engaged in international air transport operations	aeroplanes engaged in international general aviation operations	helicopters engaged in international commercial air transport or international general aviation operations	
Japan	10-Oct-75	Airspace defined by Minister of Transportation	YES	YES	YES	AIP dated 1 Oct 1975
Kiribati						
Lao PDR						
Malaysia	1-Jan-03	All airspace within FIRs	YES	YES	YES	AIC 6/2000 dated 10 Mar 2000
Maldives	2002	Defined portion	YES	YES	YES	
Marshall Islands						
Micronesia, Federated States of						
Mongolia	1-Jan-02	International routes	YES	NO	NO	To be published in Dec 2001
Myanmar	1-Jan-00	All airspace within FIR	YES	YES	YES	Notice to owner T/41 dated 20 Jan 1999
Nauru						
Nepal	Not specified	Not specified	YES	YES	YES	Flight Operations Requirements, Amendment Number 2 dated 18 Feb 2000
New Zealand	1-Apr-97	Transponder Mandatory Airspace prescribed in NZ Air Navigation Register	YES	YES	YES	Civil Aviation Rules Part 91
Pakistan	1-Jul-01	All airspace within FIR	YES			AIP
Palau						
Papua New Guinea						

Carriage and Operation of ACAS and Pressure-Altitude Reporting Transponders

(2nd Survey AP-ATM 0551, 17 August 2000)

2nd Survey on Pressure-Altitude Reporting Transponders (Updated 28 June 2004)

State/Territory	Effective date (dd/mm/yy)	Applicable airspace	Applicable to			Aeronautical Publication
			aeroplanes engaged in international air transport operations	aeroplanes engaged in international general aviation operations	helicopters engaged in international commercial air transport or international general aviation operations	
Philippines	31-Jan-01	Airspace defined by Air Transport Office (ATO)	20%			
	31-Jan-02		50%			
	31-Jan-04		ALL			
Republic of Korea	30-Nov-94	All airspace within FIR	YES	YES	NO YES	Aviation Law, AIP
Samoa	2000	All airspace within FIR	YES	NO	NO	NOTAM will be issued on 30 Sep 2000
Singapore	Jul-81	All airspace within FIR	YES	YES	YES	AIP in 1981
Solomon Islands						
Sri Lanka	1-Jan-03	All airspace within Colombo FIR	YES	YES	YES	Aviation Safety Notice issued. AIC will be issued
Thailand	26-Feb-99	All airspace within FIR :all comercial transport aeroplanes and international operation helicopters *Defined portion:all general aviation and helicopters	YES	YES	YES	AIC 3/02 dated 23 April 2002
Tonga						
U.S.A.		Defined portion	The requirements are based on the location of aircraft operation, not the weight, engine configuration or type of operation of aircraft			FAR, Part 91
Vanuatu	1-Jan-00	All airspace within FIR	YES	N/A	N/A	
Viet Nam	1994	All airspace within FIR	YES	YES	N/A	Included in AIP

Note: Blank indicates that no information has been provided.

ATM/AIS/SAR/SG/14
Appendix I of the Report on Agenda Item 3

Analysis of SAR Capability of ICAO States in the ASIA/PAC Region

	Training	Alerting	SAR committee	Legislative	Agreements	Relationships	Communications	Quality Control	Civil/Military	Resources	SAREX	Library	Computerisation	SAR programme	Supply dropping	Special equipment	SAR aircraft	Navigation	ELTs	LUT
Australia	E	E	E	E	E	E	C	E	E	E	E	E	E	E	E	E	E	E	C	E
Bangladesh	B	C	D	A	A	C	C	A	D	A	A	C	A	A	C	C	D	A	D	C
Bhutan																				
Brunei	E	E	E	E	E	E	E	E	E	E	E	E	E	E	D	D	E	E	E	A
Cambodia	B	B	B	B	B	B	C	A	B	B	A	C	A	A	A	A	B	A	A	A
China	E	E	E	E	E	E	D	D	E	D	D	C	B	A	E	E	E	E	E	A
Cook Islands	A	B	B	A	A	C	C	C	B	A	B	A	A	A	A	B	B	A	E	A
DPR Korea	B	D	B	D	A	B	D	D	D	C	B	A	A	A	B	A	C	C	A	A
Fiji	B	C	C	C	C	C	C	B	D	C	D	C	A	C	B	A	C	C	C	A
French Polynesia	C	D	D	D	C	D	E	A	E	C	C	B	A	A	E	D	E	E	E	A
Hong Kong, China	E	E	E	E	D	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
India	D	C	C	B	B	C	C	A	C	C	C	C	C	D	D	D	C	A	B	E
Indonesia	E	D	E	E	E	D	D	D	E	D	E	D	D	D	C	D	D	D	D	E
Japan	E	E	E	E	D	E	E	E	E	E	E	E	D	E	E	E	E	E	E	E
Kiribati																				
Lao PDR	B	A	B	B	B	A	B	A	B	B	A	C	A	A	A	A	A	A	A	A
Macau, China	E					E	E				E						E			
Malaysia	E	E	C	E	D	E	E	E	E	E	E	D	E	E	E	D	E	E	E	B
Maldives	B	A	A	A	A	A	A	A	D	A	C	A	A	A	A	A	A	A	A	A
Marshall Islands																				
Micronesia	C	B		A	A	B	C					A		B	B					
Mongolia	A	C	C	A	B	B	B	A	B	B	B	C	B	B	A	A	A	A	B	A
Myanmar	B	A	B	C	A	D	C	C	D	A	A	A	A	A	C	A	D	C	A	A
Nauru																				
Nepal	D	D	C	B	A	C	C	B	D	B	A	B	A	D	D	C	D	D	D	B
New Caledonia	C	D	D	D	C	D	E	A	E	C	C	B	A	A	E	D	E	E	E	E
New Zealand	E	E	E	E	A	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Pakistan	C	C	D	D	A	D	D	C	D	C	A	A	A	A	D	A	D	D	C	E
Palau																				
Papua New Guinea	D	E	D	C	D	D	C	C	D	C	C	D	C	C	C	C	A	A	A	A
Philippines	D	C	E	D	D	C	D	D	E	C	C	C	C	C	C	B	C	E	C	A
Rep. of Korea	C	C	C	C	C	D	E	E	E	E	C	A	D	E	D	E	E	E	E	E
Samoa																				
Solomon Islands																				
Singapore	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Sri Lanka	D	A	C	D	B	C	C	D	E	D	B	C	A	A	D	D	C	A	C	A
Thailand	E	E	E	E	D	E	E	E	E	E	E	D	B	B	E	E	E	E	E	B
Tonga	C	B	A	A	B	C	C	A	D	A	A	A	A	A	A	A	C	A	E	A
United States	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Vanuatu																				
Viet Nam	D	D	D	E	C	D	D	B	E	D	C	C	B	C	C	D	D	C	D	B
Updated 28 June 2004																				
Categorisations:																				
A = Not implemented										D = Meets Annex 12 requirements in most areas										
B = Initial implementation										E = Fully meets Annex 12 requirements										
C = Meets Annex 12 requirements in some areas									Blank = No response											

**STATE SAR AGREEMENTS
(updated 28 June 2004)**

ID NO.	DATE	STATES	REMARKS
1	June 1982	Indonesia / Singapore	
2	August 1984	Malaysia / Singapore	
3	July 1996	Viet Nam / Singapore	
4		Singapore / Thailand	
5		Philippines / Singapore	
6	November 1990	Australia / Indonesia	Updated 5 April 2004
7	February 1999	Cambodia / Viet Nam	
8	December 2000	Malaysia / Singapore Malaysia / Philippines Malaysia / Thailand Malaysia / Indonesia Malaysia / Brunei Darussalam	
9	February 2001	Australia / Papua New Guinea	
10	September 2002	New Caledonia / New Zealand	
11	November 2002	United States / Republic of Palau	
12	1998	Lao PDR/Vietnam	LOA for provision of assistance
		New Zealand/ Cook Islands, Fiji, Samoa, Tonga and French Polynesia	Under development

Model SAR Agreement

MEMORANDUM OF UNDERSTANDING FOR

CO-OPERATION AMONG

THE DEPARTMENT OF NATIONAL DEFENCE OF CANADA

THE DEPARTMENT OF FISHERIES AND OCEANS OF CANADA

THE UNITED STATES COAST GUARD

THE UNITED STATES AIR FORCE

THE UNITED KINGDOM MARITIME AND COASTGUARD AGENCY

THE UNITED KINGDOM CIVIL AVIATION DIVISION OF THE DEPARTMENT OF
ENVIRONMENT, TRANSPORT AND THE REGIONS

AND

THE UNITED KINGDOM MINISTRY OF DEFENCE

CONCERNING
SEARCH AND RESCUE

1. Introduction

- 1.1 The Department of National Defence of Canada as represented by the Canadian Forces (CF), the Department of Fisheries and Oceans of Canada as represented by the Canadian Coast Guard (CCG), the United States Coast Guard (USCG), the United States Air Force (USAF), the United Kingdom Department of Environment, Transport and the Regions (DETR), as represented by the United Kingdom Maritime and Coastguard Agency (MCA) and the United Kingdom Civil Aviation Division (CAD), and the United Kingdom Ministry of Defence (MOD), hereinafter referred to as the “Participants” of this Memorandum of Understanding (MOU), recognise the benefits that have been enjoyed from previous co-operative arrangements, including the Exchange of Notes dated 24th and 31st January, 1949 between Canada and the United States relating to aeronautical Search and Rescue (SAR) operations along the common boundary of the two countries, and further recognise that additional benefits may be enjoyed from the co-operative arrangements detailed herein.
- 1.2 The Participants recognise the great importance of co-operation in maritime and aeronautical SAR, and in the provision of expeditious and effective SAR services to save lives and reduce suffering. The Participants also recognise the assumed responsibilities for SAR within the framework of the International Convention on Maritime Search and Rescue, 1979 and of the Convention on International Civil Aviation 1944, with particular attention paid to Annex 12 (Search and Rescue) of the latter Convention, both Conventions as amended.
- 1.3 The Participants have reached the following understanding.

2. Objectives and Scope

- 2.1 This MOU establishes a framework for co-operation among the Participants of each country in carrying out activities and sets out their various responsibilities.

3. Responsibilities

- 3.1 Any Participant, on receiving information of a maritime or aeronautical incident where any person is in distress within its search and rescue region(s) (SRRs), will take urgent measures to provide the most appropriate assistance, regardless of the nationality or status of such a person or the circumstances in which the person is found.
- 3.2 SAR operations should normally be carried out in accordance with the relevant SAR manuals and recommendations of the International Civil Aviation Organisation (ICAO) and the International Maritime Organisation (IMO), taking account of any nationally accepted SAR procedures.
- 3.3 To ensure that SAR operations are conducted in an efficient and co-ordinated manner, the Participants of each country concerned should consult and co-operate with each other as necessary and appropriate, lending assistance as capabilities allow. If primary responsibility for co-ordination of a SAR response or operation cannot be immediately ascertained, the Participants of each country concerned should consult to resolve the responsibility.
- 3.4 For any SAR operation involving co-ordination among Participants from more than one country, the Participants will, through appropriate consultation, decide in each case which Participant will have primary responsibility for co-ordinating the SAR operation.
- 3.5 Entry of SAR units onto or over the territory of the countries of those Participants conducting SAR operations will, to the best of their ability, be expeditiously arranged via the appropriate rescue co-ordination centres (RCCs).
- 3.6 Solely for the purpose of rendering emergency rescue assistance to persons, vessels, or aircraft in danger or distress, when the location is reasonably well known, SAR facilities of a Participant may immediately enter onto or over the territory of another Participant country, with notification of such entry made as soon as practicable.
- 3.7 To facilitate the co-ordination referred to in this Section, the Participants of each country concerned will, to the best of their ability, keep each other fully and promptly informed of all relevant SAR operations. They should develop appropriate procedures to provide for the most effective and efficient means of communication.

4. SAR Regions

- 4.1 The SRRs of the United States of America and Canada are separated geographically by a continuous line connecting the following co-ordinates:

45° 00' N 040° 00' W, 45° 00' N 053° 00' W, 43° 36' N 060° 00' W, 41° 52' N 067° 00' W, 44° 30' N 067° 00' W, north to the intersection with the national boundary, westerly along the transcontinental national boundary to 48° 30' N 124° 45' W, 48° 30' N 125° 00' W, 48° 20' N 128° 00' W, 48° 20' N 145° 00' W, 54° 40' N 140° 00' W, 54° 40' N 136° 00' W, 54° 00' N 136° 00' W, 54° 13' N 134° 57' W, 54° 39' 27" N 132° 41' W, 54° 42' 30" N 130° 36' 30" W, northerly along the national boundary to the Beaufort Sea, and thence north to the North Pole.

- 4.2 The SRRs of the United Kingdom and Canada are separated geographically in the North Atlantic Ocean by a continuous line joining the following co-ordinates:

58° 30' N 030° 00' W, and 45° 00' N 030° 00' W.

- 4.3 The establishment of SRRs is intended only to effect an understanding concerning the regions within which a Participant accepts primary responsibility for co-ordinating SAR operations.

- 4.4 The delimitation of SRRs is not related to, and will not, prejudice the boundaries between countries.

5. Rescue Co-ordination Centres

- 5.1 The primary operational points of contact under this MOU are the nationally and internationally recognised RCCs of the Participants of each country involved. Participants of each country involved will, to the best of their ability, keep each other informed about their RCCs and associated SRRs, and provide any information which might be useful, in order to expedite and improve co-ordination.

- 5.2 The primary method for co-ordination of SAR activity will be via RCCs, as referred to in paragraph 5.1. However, this MOU is not intended to preclude any appropriate direct communication which may be considered necessary between any SAR facility or other organisational element of the Participants, when speed of reaction requires it and time is of the essence, or other similar circumstances dictate.

- 5.3 In addition to that related to specific SAR cases, Participants of each country should exchange information that may serve to improve the effectiveness of SAR operations. This information may include, but not be limited to, communication details, information about SAR facilities; descriptions of available airfields; knowledge of fuelling and medical facilities; and information useful for training SAR personnel.

6. Co-operation

- 6.1 The subordinate elements of all Participants of each country may provide for further co-ordination and co-operation by the establishment of appropriate operational MOUs and procedures among the Participants. Such will contain provisions consistent with this MOU.

6.2 The Participants of each country will endeavour to promote mutual SAR co-operation, by giving due consideration to collaborative efforts, including, but not limited to:

- 6.2.1 arranging exchange visits between SAR personnel;
- 6.2.2 carrying out joint SAR exercises and training;
- 6.2.3 using ship reporting systems for SAR purposes;
- 6.2.4 developing SAR procedures, techniques, equipment, facilities, and information systems;
- 6.2.5 providing services in support of SAR operations, such as the use of aircraft landing fields, fuelling and medical facilities;
- 6.2.6 co-ordinating, as appropriate, national positions on international SAR issues of mutual interest;
- 6.2.7 supporting and conducting joint research and development initiatives aimed at reducing search time, improving rescue effectiveness, and minimising risk to SAR personnel; and
- 6.2.8 conducting regular communications checks and exercises including the use of alternative methods to cater for communications overloads during major disasters.

7. Finances

- 7.1 Unless otherwise determined by the Participants, each Participant will fund its own expenses for activities pertinent to this MOU.
- 7.2 The provisions of this MOU are contingent upon the availability of SAR personnel, facilities and funding.

8. Application of this MOU

- 8.1 This MOU is not intended to create binding obligations under international law.
- 8.2 Nothing in this MOU is intended to affect in any way rights and duties based on international agreements or other MOU's pertaining to any of the Participants.
- 8.3 Any dispute regarding the interpretation or implementation of this MOU, or any of its operational MOUs, will be resolved by consultation among the Participants and will not be referred to an international body or third party for settlement.

9. Amendment

- 9.1 This MOU may be amended only with the written consent of all the Participants.

10. Duration, Withdrawal and Termination

- 10.1 The Memorandum of Understanding between the United States Coast Guard, the United States Air Force, the Canadian Forces, and the Canadian Coast Guard signed March 16 and March 24, 1995, and the Search and Rescue Agreement between Chief of Defence Staff, Canadian Forces and Commandant, U.S. Coast Guard signed 25 October, 1974, are hereby superseded.
- 10.2 This MOU will enter into immediate effect, for an indefinite period, upon signature by all Participants.
- 10.3 Any Participant may withdraw from the MOU, by giving not less than six (6) months notice in writing to the other Participants. Such termination will not affect the applicability of this MOU to the remaining Participants.
- 10.4 This MOU may be terminated with the mutual written consent of all the Participants or by any superseding arrangement.
- 10.5 Termination of this MOU will not affect SAR operations in progress at the time of termination unless otherwise determined to by the Participants involved.

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Agenda Item 4: Consider problems and make specific recommendations concerning the provision of ATM/AIS/SAR in the Asia/Pacific Region

Update on ATS Coordination Groups' activities in the Asia/Pacific Region

4.1 The meeting was updated on the activities since the ATS/AIS/SAR/SG/13 in June 2003 of the ICAO and State ATS Coordination Groups that contribute to the work of APANPIRG. The following Sub-Regional ATS Coordination Groups were currently active in the Asia/Pacific Region:

ICAO ATS Coordination Groups

Bay of Bengal ATS Coordination Group (BBACG)
FANS Implementation Team for the Bay of Bengal (FIT-BOB)
South-East Asia ATS Coordination Group (SEACG)
FANS Implementation Team for South-East Asia (FIT-SEA)
China, Mongolia, the Russian Federation, and IATA ATS Coordination Group (CMRI)

State ATS Coordination Groups

Informal South Pacific ATS Coordinating Group (ISPACG)
Informal Pacific ATS Coordinating Group (IPACG)
Russian-American Coordinating Group for Air Traffic Control (RACGAT)

Review of reports of ATS Coordination Groups in the Asia/Pacific Region

ICAO ATS Coordination Groups

Bay of Bengal ATS Coordination Group and FANS Implementation Team for the Bay of Bengal

4.2 The BBACG and the FANS Action Team for the Bay of Bengal (FAT-BOB, subsequently renamed the FANS Implementation Team (FIT)) meetings were temporarily suspended after BBACG/12 and FAT-BOB/1 meetings were held at the Regional Office, Bangkok in June 2000 and in Singapore in August 2000 respectively. This was due to the EMARSSH project being established by APANPIRG/11 (October 2000), which took over the work programme of the BBACG.

4.3 Following implementation of the EMARSSH routes on 28 November 2002, the EMARSSH Project had been substantially completed, and the BBACG and FAT-BOB were reconvened. A combined meeting was held at the Regional Office on 8-12 September 2003. Also, APANPIRG/14 had noted that the reactivation of the FAT-BOB was considered essential to implement data link services to alleviate problems presently encountered over the Bay of Bengal due to poor HF air/ground communications.

FAT-BOB/2

4.4 The FAT-BOB/2 meeting reviewed the previous arrangements established by BBACG/12 for the FAT-BOB. Consideration was given to establishing and operating a Central Reporting Agency (CRA), to investigate funding of the CRA services, and to carry out safety assessments necessary for implementation of reduced separation minima using ADS and CPDLC in accordance with ICAO provisions in Annex 11 and the PANS-ATM (Doc 4444). The meeting agreed that to conduct the safety assessments, this should be carried out by a regional monitoring agency, which would need to be identified and established.

CRA and Safety Assessment issues

4.5 The FAT-BOB/2 reviewed the operating practices of the CRAs established by the ISPACG and IPACG for implementation of ADS and CPDLC in the Pacific Region. In this regard, the Boeing Company had been providing the CRA services for the States that comprise these groups since 1998, and the Japan CRA provided the services for the Tokyo FIR. The detailed requirements for setting up and operating a CRA were contained in the POM. The meeting agreed that the POM would be used as the basis for establishing the requirements for the FAT-BOB CRA.

Central Reporting Agency resource requirements

4.6 The meeting reviewed the CRA resource requirements based on the experience gained by the ISPACG and IPACG CRAs. It was recognized that to be effective, the CRA must have two main components: dedicated staff and adequate tools.

4.7 The meeting recognized that for a CRA to carry out its specialized work, this could only be effectively carried out by aircraft manufacturers, Boeing and Airbus who had the test equipment required to analyze data link system performance and identify the source of network problems. Based on the POM, the meeting agreed to adopt the CRA tasks and resource requirements developed by the meeting.

Operations procedures document

4.8 The meeting agreed to adopt the POM to be used as the operations procedures document for FANS-1/A operations and for ADS and CPDLC services by the States participating in the Bay of Bengal operational trial.

Selection of Central Reporting Agency

4.9 The meeting agreed that the performance of the aircraft and ground ADS and CPDLC systems must be thoroughly evaluated and effective monitoring carried out prior to implementation and for ongoing operations.

4.10 The meeting recalled that Boeing had indicated that they would be willing to provide CRA services for FAT-BOB to support States in the Bay of Bengal area implement ADS and CPDLC services. However, to undertake this work, it would be necessary for Boeing's cost for providing these services to be funded. In this regard, the funding issue required further investigation to resolve difficulties in setting up a mechanism whereby funds could be made available. In this regard, Boeing agreed to provide a cost estimate for CRA services, which would be forwarded to the Secretariat as soon as practicable.

4.11 In addition to establishing a CRA, the meeting recognized that it would be necessary to carry out the safety assessment work for implementation of reduced separation minima using ADS and CPDLC in accordance with ICAO requirements. The meeting agreed that it would be desirable to identify the organizations willing to provide regional monitoring services to the Bay of Bengal area. Further, the meeting agreed that at the next FAT-BOB meeting this matter should be addressed.

Funding considerations

4.12 In considering the funding of the CRA, the meeting noted the outcome of APANPIRG/14 to establish the RASMAG, and consideration given on funding arrangements for provision of airspace safety monitoring services. The meeting further noted that APANPIRG/14 had recognized in principle that user charges would be the main means of funding airspace safety monitoring services. Also, APANPIRG/14 agreed that provision of monitoring services would need to be provided in a cost effective manner based on cost/benefit considerations.

4.13 To progress this matter further, FAT-BOB/2 recognized that States collectively had responsibility to provide CRA services and to conduct safety assessments for implementation and on-going operation of ADS and CPDLC over the Bay of Bengal. The matter was referred to the Air Transport Section of the Asia/Pacific Regional Office for consideration and advice.

Establishment of operational trial

4.14 The meeting agreed to commence an operational trial to assess the performance capability of the ADS and CPDLC systems operated by States in the Bay of Bengal area on AIRAC date 19 February 2004. As a requirement to participate in the trial, the meeting agreed that the ATS providers must have ADS/CPDLC systems that could be evaluated with the objective of bringing these systems into full operational use at the end of the trial period. This would enable the longitudinal separation and crossing track separation to be reduced to 50 NM from the present 10 and 15 minute separations respectively.

Change of title of FAT-BOB

4.15 The meeting considered that the name FANS Action Team (FAT) did not accurately reflect the activities of the Group, which was to implement ADS and CPDLC services in the Bay of Bengal area. Therefore, the meeting agreed to change the name to FANS Implementation Team (FIT).

BBACG/13

4.16 The BBACG/13 meeting (September 2003) reviewed the action items of the EMARSSH Post Implementation Review Meeting (PIRM). Apart from the scheduled One-year Review Meeting of EMARSSH in January 2004, the meeting noted that the EMARSSH project had been completed and all outstanding action items on its work programme would be taken over by the BBACG. Accordingly, the PIRM action items were incorporated in the action plan for BBACG.

4.17 The PIRM had noted that all of the planned EMARSSH Phase II programme, as originally agreed by States, could not be implemented. Therefore, instead of four independent Asia – Europe flows across the northern half of the Bay of Bengal through India, Pakistan and Afghanistan, there were only two independent flows (via TIGER or SAMAR at the India/Pakistan FIR boundary) that existed prior to EMARSSH.

4.18 Recognizing the impact of the restricted route structure on the overall traffic flow and combined with the long standing operational difficulties, IATA proposed a Traffic Orientation Scheme (TOS) to improve the efficiency of air traffic management and make better use of the available capacity on the routes used by traffic transiting the Afghanistan airspace. The PIRM had recognized the value of this proposal and agreed that the TOS required further study.

Air traffic flow management plan for the Bay of Bengal

4.19 BBACG/13 considered implementation of an air traffic flow management plan (ATFMP) to optimize the flow of traffic following RVSM implementation on 27 November 2003 over the Bay of Bengal and Indian continental airspace, and to avoid re-routes during evening peak hours for the westbound traffic flow. The meeting progressed the development of the ATFMP for the Bay of Bengal and to use the TOS proposed by IATA as a basis.

4.20 It was further agreed that a follow-up meeting involving India, Malaysia, Myanmar, Pakistan, Singapore, Thailand, and IATA should be convened as soon as possible.

CNS/ATM Implementation

4.21 BBACG/13 reviewed the results of the FAT-BOB/2 meeting, which had developed an operational plan for States to commence an operational trial of ADS and CPDLC over the Bay of Bengal area scheduled to begin on 19 February 2004. The meeting agreed with the plan and the objective to implement ATC services using these systems.

FIT-BOB CRA funding arrangements

4.22 BBACG/13 noted that a major obstacle to commencing the FIT-BOB operational trial was the provision of funding for establishing and operating the CRA, which was necessary to implement the trial and for ongoing operation of ADS and CPDLC in an operational ATC environment. To progress the matter further, the ICAO Regional Officer Air Transport briefed the meeting on ICAO Joint Financing (JF) arrangements. The meeting was provided with a comprehensive briefing on the various funding arrangements that could be adopted, e.g. DEN/ICE agreement for height monitoring in the North Atlantic and SADIS.

4.23 BBACG/13 further noted that it would also be necessary at a later date to provide for the funding of regional monitoring agency services necessary to carry out safety assessments to implement reduced separation using ADS and CPDLC. In this regard, the cost of operating the regional monitoring agency was expected to be considerably less than the CRA.

4.24 The meeting agreed that the Secretariat would follow-up with the States concerned as a matter of priority to determine whether a meeting of States and other parties concerned could be held in December or early January under the auspicious of the ICAO Asia/Pacific Office Air Transport Section. Subsequently, the meeting was scheduled on 8-10 December 2003.

4.25 The meeting agreed to the FIT-BOB developing the coordinated implementation plan for ADS and CPDLC implementation in the Bay of Bengal.

Third Meeting of FIT-BOB and Fourteenth Meeting of BBACG

4.26 A combined meeting of FIT-BOB/3 and BBACG/14 was held at the Regional Office on 2-6 February 2004.

FIT-BOB/3

4.27 The FIT-BOB/3 meeting considered the objectives and benefits to be derived from implementation of ADS and CPDLC services in the Bay of Bengal and the following were identified:

- a) introduction of reduced horizontal separation based on distance:
 - 1st Phase - 50 NM longitudinal and intersecting track (50 NM lateral separation already implemented on the parallel route system);
 - 2nd Phase - 30 NM lateral and longitudinal separation.
- b) introduction of user preferred routes (UPR);
- c) offsetting for deviation due to weather and contingency procedures including emergencies;
- d) introducing surveillance of non-radar airspace to improve ATM situational awareness;
- e) improved accuracy and reliability of aircraft position reporting;
- f) improve operational efficiency and optimizing flight operations; and
- g) introducing CPDLC as a primary means of communication, thereby improving controller/pilot communications in the HF radio environment and contributing to efficiency and enhancing safety of operations.

Establishment of an operational trial

4.28 India, Indonesia, and Thailand confirmed that they would be able to participate in the operational trial as planned on 19 February 2004. Singapore advised they would not be involved in the trial as flights in the Singapore FIR operating to/from the Bay of Bengal area were within Singapore's radar and VHF coverage. Sri Lanka had been contacted and indicated they would participate in the trial. Malaysia had advised that due to a lack of equipment they could not participate. Myanmar was not in a position to confirm participation in the trial at this time. The meeting noted that India, Indonesia, Myanmar, Singapore, Sri Lanka and Thailand had already introduced ADS/CPDLC on an operational trial basis.

4.29 In considering the period of the trial and based on the experience of the ATS providers in the Pacific Region, FIT-BOB/3 agreed to keep the period open-ended as the performance of ADS/CPDLC systems would vary and the readiness dates of ATS providers to commence operational ATC services following the trial period would also vary. The meeting agreed that the trial would commence on 19 February 2004.

4.30 FIT-BOB/3 recognized that operators required a clear definition of the operational trial area with the FIRs, routes and entry exit points specified. The meeting agreed to compile a table containing this information to be included in the report of this meeting. The meeting emphasized the importance of ATSUs providing ADS/CPDLC services during the notified period of service, as pilots would be attempting to logon. Failed logon attempts would be recorded as fault reports, and pilots would also experience frustration if services were disrupted without prior notification.

4.31 FIT-BOB/3 compiled a list of reference material to be used by States when planning for implementation of ADS and CPDLC services.

4.32 FIT-BOB/3 was encouraged to note that in the Pacific Region over 96 percent of air/ground data link messages using the FANS-1/A system were being successfully completed within the established performance time limit. The meeting was advised that about 15 airlines were operating in the Bay of Bengal with FANS-1/A equipped aircraft and this number was expected to be higher. The meeting noted that based on the Pacific results and the number of FANS-1/A aircraft operating in

the Bay of Bengal area, substantial benefits would be expected for ATS providers and users with the introduction of ADS/CPDLC services.

Establishment of a CRA

4.33 The meeting reviewed and endorsed recommendations of the SCM on Central Reporting Agency Funding for the Bay of Bengal held at the Regional Office in December 2003 as follows:

That, recognizing that the participating States in the FIT-BOB are responsible for the airspace safety management programmes for the provisions of ATS in the FIRs where ADS/CPDLC will be implemented in the Bay of Bengal area, FIT-BOB should:

- a) establish a CRA to evaluate the ground and airborne ADS/CPDLC systems performance during the operational trial;
- b) determine the budget for the CRA in consultation with the CRA service provider, the participating States and users, and to establish the funding arrangement to provide funds for the CRA, taking into account the framework provided in Appendix B to this report;
- c) request IATA to collect funds for the CRA from airlines and other stakeholders as advised by FIT-BOB, and establish an arrangement for the provision of CRA services with a service provider subject to available funds for a trial period of one year;
- d) seek contributions from other parties to contribute to the cost of operating the CRA and make these funds available to the CRA service provider; and
- e) keep the funding arrangements under review during the operational trial period, and to review the efficiency and effectiveness of the funding arrangements prior to the end of the operational trial.

4.34 In consideration of a suitable service provider for the FIT-BOB CRA, Boeing, who was operating the CRA for the Pacific Region, had confirmed at the FIT-BOB/2 meeting that they would be willing to provide CRA services to the States of FIT-BOB to support the operational trial and implementation of ADS and CPDLC services. In this regard, Boeing's offer to provide CRA services for the Bay of Bengal operational trial was accepted. IATA and Boeing were requested to pursue the establishment of a contract on behalf of the FIT-BOB States participating in the operational trial for Boeing to set up and operate the CRA.

Operations procedures document

4.35 The FANS 1/A Operations Manual (FOM) Version 1 (March 2004) was reviewed and adopted by FIT-BOB/3 as the operational procedures to be applied by States participating in the operational trial for the implementation and conduct of ADS/CPDLC operations. The meeting agreed that the FOM should be used in conjunction with the *ICAO Guidance Material on CNS/ATM Operations in the Asia/Pacific Region* which was presently being updated by the Regional Office.

BBACG/14

4.36 The BBACG/14 meeting reviewed and updated the Work Plan agreed at the BBACG/13 meeting. In regard to the outstanding routes to be implemented, these would be referred to the ARNR/TF. In addition, the route segments to be implemented as requested by IATA at the EMARSSH-OYR meeting in January 2004 would be referred to the ARNR/TF as follows:

- a) PRA – SERKA – SOKAM
- b) GASIR – BIRJAND
- c) NH – ZAHEDAN

4.37 The outstanding EMARSSH routes to be implemented in the Kathmandu FIR that had been presented by Nepal to the EMARSSH-OYR were referred to the ARNR/TF.

4.38 In regard to communications action items (COM 15-22), BBACG/14 noted the progress made by India to improve its communication facilities and services. However, there were a number of outstanding matters to be resolved with adjacent States, and ICAO was requested to assist with coordination, urge the States concerned to complete their planned implementation of communications improvements, and update the status at the BBACG/15 meeting.

4.39 BBACG/14 expressed its disappointment with the lack of progress by Myanmar to improve its communications infrastructure. There continued to be frequent pilot reports that indicated no significant improvements had been made. The Secretariat informed the meeting that the Regional Office had conducted ATM and CNS missions to Myanmar in July and October 2003 respectively. It was noted that although Myanmar had plans in place to undertake remedial work, funding had not been provided to commence the projects. The Regional Office was continuing its effort to assist Myanmar where possible, and had urged them to take immediate action to overcome the communications problems.

Review of current operations across the Bay of Bengal and identify problem areas

4.40 BBACG/14 noted that the extension of EMARSSH route P628 from ASOPO to VIKIT (Delhi/Karachi FIR boundary position) was implemented on 22 January 2004.

4.41 IATA requested that consideration be given by India and Pakistan to lowering the MEA on the routes concerned to FL280 to harmonize the MEA for the entire routes, thereby enhancing efficiency of operations. India indicated that there would be difficulties obtaining military approval, and it was unlikely this could be achieved in the near term but the matter would be pursued. Without Pakistan in attendance, it was not possible to determine whether this was feasible in Pakistan airspace.

4.42 BBACG/14 noted that the Afghanistan AIP had not been issued in the ICAO format and AIP aeronautical information was being published on the Coalition Forces Regional Air Movement Control Center (RAMCC) website. The meeting recognized that this was not in line with Annex 15 and the matter should be brought to the attention of the authorities concerned, and could be raised at the proposed Inter-regional Coordination Meeting on Afghanistan.

4.43 BBACG/14 reviewed the Action Plan of the SCM/RVSM/IND-PAK meeting, which had included non-RVSM ATM operational matters related to the Bay of Bengal area.

4.44 BBACG/14 recognized that the Bay of Bengal ATM system lacked a cohesive plan and enhanced technology to allow for a system wide ATFMP to be implemented. At the present stage of development, fine tuning procedures and making better use of existing ATM tools were still the best options. With the absence of Malaysia and Myanmar at this meeting, it was not possible to make

any substantial progress. Thailand advised the meeting that following the SCM/RVSM/IND-PAK meeting where it was agreed to make more flexible use of FL300, which was a No-PDC level reserved for crossing traffic on L301, this had been put into effect on 2 February 2004.

4.45 BBACG/14 recalled the discussions at previous meetings regarding No-PDC practices and recognized the limitations in rigidly adhering to this arrangement. The meeting agreed that a dynamic and flexible approach to ATM was desirable but this was difficult to achieve in practice in the present ATM environment. Whilst the No-PDC arrangement would remain in effect, States agreed to continue their coordination effort to achieve a more flexible assignment of flight levels.

4.46 BBACG/14 recalled that much discussion had taken place concerning the use of a fixed Mach number (M0.84) on L759, which had been introduced to overcome the problem of optimizing the traffic flow with a faster aircraft following when applying 10 minute longitudinal separation using the MNT. The issue of aircraft types such as the B777 and Airbus 330/340 having a maximum IAS of 330 kts (M0.83) at FL280 and being restricted to fly at M0.84 had not been resolved. In light of the above, to resolve the issues of certain aircraft types (all B777 and Airbus 320, 330, 340 family of aircraft) that had difficulty conforming to M0.83/0.84, IATA made several proposals for consideration at the next ATS coordination meeting.

Implementation of the new CNS/ATM systems in the Bay of Bengal airspace

4.47 BBACG/14 noted the results of the preceding FIT-BOB/3 meeting and was satisfied with the arrangements put in place to implement the ADS/CPDLC operational trial in February 2004. However, the non-attendance of key States responsible for a significant portion of the Bay of Bengal airspace and beyond was highly disappointing, and adversely affected the outcome of the meeting.

4.48 BBACG/14 noted that planning and implementation of other elements of the “Asia/Pacific Regional Plan for the New CNS/ATM Systems” such as ATN, AIDC, automated AIS systems, GNSS and ADS-B were progressing slowly. States were urged to give appropriate priority to progressing their implementation planning, in particular in the area of data link communications and ATM automated systems.

4.49 In regard to ADS-B, BBACG/14 was reminded that the ADS-B/TF/2 meeting would be held at Bangkok, Thailand on 22-26 March 2004.

Other business

4.50 The Secretariat presented a proposed amendment to the SUPPs (Doc 7030) MID/ASIA-RAC-9 to include under paragraph 6.5.1, *Area of applicability*, the FIRs in the Bay of Bengal area and beyond where RVSM was implemented on 27 November 2003: Chennai, Colombo, Delhi, Dhaka, Karachi, Kathmandu, Kolkata, Lahore, Male, Mumbai and Yangon.

Eleventh Meeting of SEACG and First Meeting of FIT-SEA

4.51 A combined meeting of SEACG/11 and FIT-SEA/1 was held at the Regional Office on 24-28 May 2004. The meeting had been scheduled in March 2003 but had to be postponed due to the outbreak of SARS that affected the Asia Region in early 2003.

SEACG/11

Review current operations across South-East Asia and identify problem areas

4.52 SEACG/11 reviewed the List of Deficiencies in the ATM/AIS/SAR Fields in the Asia Pacific Region from the APANPIRG/14 report, and States were requested to notify the Regional Office by official correspondence of any amendments, corrections or deletions to the listing.

4.53 SEACG/11 was updated on ICAO activities related to the management of deficiencies in the Air Navigation Field, in particular the outcome of the AN-Conf/11. Further, the meeting reviewed the mechanisms in place to report and follow-up on deficiencies and the Asia/Pacific Supplement to the Universal Methodology for the Identification, Assessment and Reporting of Air Navigation Deficiencies developed by the Deficiency Review Task Force to assist APANPIRG and States better manage the elimination of deficiencies. The States present were urged to bring this matter to the attention of their Administrations.

Dissolution of the Bangkok AOR

4.54 Cambodia informed SEACG/11 of progress made to resume the air traffic services on 8 July 2004 for the Bangkok Area of Responsibility (AOR) operated by AEROTHAI on behalf of the State Secretariat of Civil Aviation of Cambodia (SSCA).

4.55 In regard to concerns expressed by IATA of aircraft requiring to deviate across a narrow portion in the southwest area of the Phnom Penh FIR, this could involve ATC coordination by three ACCs, Bangkok, Ho Chi Minh and Phnom Penh. Cambodia, Thailand and Viet Nam discussed the matter and agreed that it would be preferred to have Viet Nam delegated responsibility for ATS for the small portion of the AOR in question under the terms of a combined ATS operational LOA between the three States.

Updating the SCS routes safety assessment

4.56 SEACG/11 was informed by the Secretariat of the safety assessment arrangements that had been put in place for the implementation of RNP 10 operations on the South China Sea routes on 1 November 2001, where a parallel route structure was operating with 60 NM spacing. The original safety assessment carried out by Airservices Australia had used traffic data based on the previous route structure, and the meeting agreed that there was a need to update the assessment using present traffic data.

4.57 IATA requested that States give consideration to reducing the minimum separation that may be applied to 50 NM as this would afford greater flexibility and facilitate deviations due to weather and other contingencies. In this regard, the meeting was advised by the Secretariat that the MID/ASIA SUPPs would need to be amended to permit the use of 50 NM in the FIRS concerned as a regional agreement was required by all States involved. States were advised to submit an amendment proposal to include the FIRs concerned to the ATM/AIS/SAR/SG/14 meeting or APANPIRG.

4.58 In regard to conducting safety assessments for the SCS routes, RASMAG/1 identified a need for a safety monitoring group to be responsible for safety assessment activities including the separation minima being used with RNP 10, and later when ADS and CPDLC were introduced to apply separation. Further, RASMAG/1 had recommended that APANPIRG/15 consider setting up regional Safety Management Agencies (SMAs) to potentially undertake all safety activities within the area of responsibility of the agency.

4.59 Thailand advised the meeting that joint discussions were underway between AEROTHAI and Airservices Australia on the possibility of establishing a joint SMA to provide safety

assessments services in the Asia Region. It was anticipated that the RASMAG/2 meeting on 4-8 October 2004 would be informed of the outcome of these discussions.

Review of safety assessment for implementation and post implementation of RVSM in the WPAC/SCS

4.60 SEACG/11 reviewed the safety assessment arrangements and results for RVSM implementation and follow-up in the WPAC/SCS area. In this regard, APARMO conducted the safety assessment associated with the planned implementation of RVSM on 21 February 2002 (Phase I). The technical and operational risk assessed by APARMO, i.e. the risk due to all causes, was equal to 1.2×10^{-9} fatal accidents per flight hour, which is well below the TLS value.

4.61 Although the risk estimates were based on using a modified collision risk model (CRM), the meeting noted that it had been recommended that it was and had been safe for RVSM to be implemented in the WPAC/SCS airspace. However, there were a number of LHDs that occurred after the implementation in October 2002 (Phase II) that greatly influenced operational risks. Hence, careful monitoring of LHD occurrences in WPAC/SCS was very important and required. MAAR who took over the RMA responsibilities from APARMO on 2 September 2003, advised that there had been an increase in LHDs in the transition areas involving the modified single alternate and the single alternate FLOS.

4.62 SEACG/11 noted the safety assessment work carried out for RVSM implementation and that States needed to continue to pay close attention to monitoring LHDs and to report these to MAAR on a monthly basis, including NIL reports.

Harmonization of the modified single alternate FLOS applicable in the SCS area with the single alternate FLOS

4.63 SEACG/11 recalled that at the RVSM/TF/16 meeting (September 2002), discussions were held regarding harmonization of the modified single alternate FLOS with the single alternate FLOS that had been implemented by States outside of the WPAC/SCS area. It was considered by RVSM/TF/16 that ultimately a single alternate flight level orientation scheme should be adopted, and studies made in preparation for any transition plan to introduce a single alternate FLOS.

4.64 The SEACG/11 noted that RVSM/TF/18 recognized that the modified single alternate FLOS had been operating well since RVSM implementation in February 2002 and that safety and operational efficiency had been enhanced, and agreed that a detailed study should be conducted to support any change to the FLOS. RVSM/TF/18 agreed to continue with the modified single alternate FLOS for the WPAC/SCS areas, with a view to reviewing the FLOS when the study by States concerned was completed. This issue would be considered by RVSM/TF/22 in September 2004.

Lateral offset developments

4.65 SEACG/11 was updated on developments by SASP to provide global offset procedures utilizing a 2 NM offset, and it was expected that the ICAO guidelines would be revised accordingly in the near term. In this regard, SEACG/11 endorsed the safety benefit of introducing a global 2 NM lateral offset procedures, and agreed that as soon as ICAO published the revised guidelines, States should adopt this procedure.

Improvement to the routing between Hong Kong/Jakarta and beyond

4.66 IATA requested that the meeting consider improving the SCS route structure for flights operating between Hong Kong and Jakarta. Since the introduction of the revised SCS routes on 1 November 2001, flights have suffered severe operational penalties of up to 30 minutes for a round trip. In addition to extra fuel costs, increased maintenance as well as flight crew limitations had resulted in losses for one airline of approximately US\$ 4.6 million annually.

4.67 SEACG/11 considered the IATA proposal and after extensive discussions by the States concerned, agreed to use a northbound route from Jakarta via the Manila FIR to Hong Kong, and a southbound route on the western side of the South China Sea route structure.

4.68 The States agreed to prepare an AIP Supplement for the introduction of the route providing a two AIRAC cycle notification to users. An ANP amendment proposal would be prepared in coordination with the Regional Office. The meeting agreed that the Regional Office should coordinate with the States concerned on the implementation arrangements, and to determine an implementation date as soon as practicable.

Review of No-Pre-departure Clearance procedure

4.69 SEACG/11 was requested by IATA to review the No-PDC arrangement in light of advances in ATM automation and other means available to determine flight level allocation. In view of the advances in ATM automated systems, these should be used to greater effect and air traffic flow management arrangements put in place taking full advantage of these systems to maximize the use of available levels. SEACG/11 recognized that improvements could be made to the No-PDC practices and agreed that this subject would be included on the future agenda of this meeting.

Indonesian route developments

4.70 In its continuing implementation programme of restructuring airspace and routes within Indonesia FIRs, seven new RNP 10 routes were proposed for implementation subject to agreement by other States concerned. IATA requested that further study of the proposal was required to consider the impact on flight operations. SEACG/11 also requested that the other States concerned should coordinate with Indonesia and IATA, and agree on a proposal to amend the APAC ANP. Indonesia would prepare an ANP amendment proposal to be coordinated with the Regional Office.

Harmonization of the lower vertical limit of SCS RNP 10 airspace

4.71 Hong Kong, China brought to the attention of SEACG/11 the variety of lower vertical limits that applied to the SCS RNP 10 routes, which varied between 8000 feet and FL270. Hong Kong proposed that a standard level should be applied to all these routes to the extent possible. SEACG/11 recognized the existing lower limits of the RNP 10 airways effectively precluded non-RNP10 aircraft from using the routes.

4.72 SEACG/11 agreed that only RNP 10 approved aircraft could operate on the RNP 10 route structure. Consequently, it would be necessary to provide for non-RNP 10 aircraft to transit the SCS airspace whilst remaining clear of the RNP 10 route structure. In this regard, the meeting agreed that RNAV routes (non-RNP 10) should be established under the existing RNP 10 routes. The upper limit should be set at FL285 wherever possible to allow RNAV aircraft to flight plan at FL280. SEACG/11 agreed that these arrangements should be kept under review and any changes to the route arrangements, separation criteria or significant increases in traffic density, etc should be subject to further safety assessment.

4.73 Hong Kong, China agreed to prepare an AIP supplement for the Hong Kong AIP and

to distribute a draft supplement to States concerned and IATA for comment. States should adopt the same wording for their respective AIP supplements.

Other business

4.74 The Secretariat suggested that Singapore may wish to consider introducing 50 NM longitudinal and intersecting track separation in the Singapore FIR using ADS. It was recognized that the CAA Singapore had been operating ADS and CPDLC systems successfully for a considerable period and had gained substantial operational experience. Singapore agreed to look into the matter and would keep the meeting informed.

FIT-SEA/1

Establishment of the FIT-SEA

4.75 The FIT-SEA meeting recalled that the ASIA/PAC ANP FASID included requirements for States to implement ADS/CPDLC systems. Also, APANPIRG's List of Key Priorities for CNS Implementation in the Asia/Pacific Region included Key Priority 6: *The implementation of ADS in oceanic or remote areas in accordance with the Regional CNS/ATM Plan is required for the enhancement of safety and ATM.*

4.76 During the course of the APANPIRG/14 meeting, it was noted (paragraph 2.1.104 to the Report on Agenda Item 2) that in recognition of the effectiveness of the ISPACG and IPACG FITs and the establishment of FIT-BOB, a similar mechanism should be established to progress FANS issues in the South-East Asia area. Accordingly, the meeting agreed to implement ADS and CPDLC services for the provision of ATS services in the South-East Asia area, it would be necessary to establish a FIT-SEA and membership would be open to all stakeholders in the area concerned.

4.77 The FIT-SEA would need to establish the implementation plan, identify the airspace where data link services would be implemented and establish an operational trial and the FIT-BOB model and documentation would be followed.

4.78 States involved in the SCS airspace updated the meeting on the status of their data link systems presently operating and being planned, and their preparedness to implement ADS and CPDLC on an operational trial. Only Singapore had implemented ADS and CPDLC with operations commencing in 1997 for the non-radar airspace of the Singapore FIR. Viet Nam expected to be equipped in 2006 and the Philippines in 2007. The other States in the area did not have a requirement to operate ADS and CPDLC as their FIRs were within radar cover. Because of the low level of equipage amongst SCS States, there would be some delay in commencing an integrated operational trial of ADS/CPDLC in the SCS area.

4.79 IATA commented that users expected States to provide surveillance capability for the non-radar airspace, as improving situational awareness for ATC had a positive impact on safety, as well as providing significant benefits for operational efficiency and regularity of flights. On the SCS routes, there was a major area in the middle portion of the airspace outside radar and VHF coverage. Providing data link capability to fill the gap would derive benefits that the airline industry fully supported.

4.80 The meeting reviewed and agreed that the proposed TORs met the requirements for the establishment of the FIT-SEA, and a work plan was developed for its initial activities.

Adoption of documentation

4.81 The FIT-SEA meeting agreed to use the FOM for the ADS/CPDLC operating procedures in conjunction with the *Guidance Material on CNS/ATM Operations in the Asia/Pacific Region* (it was noted that this document was presently being updated by the Regional Office and would be harmonized with ICAO SARPS and PANS to the extent possible and incorporate the operating procedures contained in the FOM).

Selection and establishment of a Central Reporting Agency

4.82 The FIT-SEA recognized that the establishment of a CRA was critical to enable States to implement operational ADS and CPDLC systems. The CRA performed the essential technical analysis of the performance of these systems and undertakes investigation of system failures and other technical malfunctions. This was essential to trace the cause of problems whether in the aircraft or ground systems, and to initiate remedial action by the responsible parties.

4.83 In considering a suitable service provider for the CRA, the meeting noted that Boeing (who was operating the CRA for the Pacific Region) had confirmed at the FIT-BOB/2 meeting (September 2003) that they would be willing to provide CRA services to the States of FIT-BOB. In this regard, it was noted that IATA and Boeing were presently discussing setting up a contract for Boeing to provide the CRA services for the Bay of Bengal operational trial. As Boeing was not represented at the FIT-SEA meeting, this matter could not be progressed and the Secretariat would take follow-up action with Boeing.

4.84 Japan presented information on the roles and activities presently being undertaken by the CRA of Japan in support of operations in the North Pacific. The CRA of Japan was responsible for the Tokyo FIR and commenced operating in May 2001.

4.85 In regard to CRA services for the SCS area, the CRA of Japan offered to undertake the role of CRA as an extension to its existing activities. The meeting sought clarification of the respective roles of the CRA of Japan and its relationship with Boeing. As this information was not immediately available, Japan was asked to clarify the proposed arrangements with Boeing and provide an update to the RASMAG/2 meeting in October 2004.

Establishment of operational trial

4.86 The meeting agreed that the South China Sea area ADS/CPDLC operational trial would be carried out by the Philippines, Singapore and Viet Nam. Indonesia would also participate in this trial for the eastern part of the Jakarta FIR (they were also participating in the Bay of Bengal trial).

ADS-B developments

4.87 The FIT-SEA noted that States were considering ADS-B as a means to provide surveillance in non-radar areas using ground-based systems. The meeting was updated on the work of the ICAO ADS-B Study and Implementation Task Force which held its second meeting in March 2004. It was noted that Australia had the most advanced ADS-B implementation plans in the region and was presently implementing approximately 25 ADS-B ground stations to provide surveillance of the whole of Australian airspace not under radar cover. The Australian ADS-B system was expected to be operational in late 2005 or 2006. Indonesia advised that they were preparing an implementation plan to implement ADS-B in about 2005.

ATS Interfacility Data Exchange (AIDC)

4.88 The FIT-SEA was updated on ATN developments, and noted that with automation in air traffic management, many coordination functions would be accomplished through data exchange between ATM systems using ATN applications such as AIDC or ATS message handling service (AMHS). In regard to AIDC, requirements have not yet been established and the ATN/TF (April 2004) agreed to provide a table to specify requirements to be included in the ASIA/PAC FASID. The meeting noted that AIDC operational trials would need to be carried and some States were conducting such trials, e.g. Hong Kong/Guangzhou, Hong Kong/Bangkok and Japan/United States.

Data Link monitoring requirements

4.89 The FIT-SEA reviewed the data link monitoring requirements that needed to be established for the commencement of an ADS and CPDLC operational trial and ongoing operations. The ATS data link applications support the reduction in horizontal separation to 30 and 50 NM.

4.90 The meeting noted that at RASMAG/1 (April 2004), draft guidance material for end-to-end safety and performance monitoring of data link systems in the Asia/Pacific Region was being developed. The meeting agreed that the guidance material would be used to set up and operate the data link monitoring services under the CRA for the South-East Asia area.

Update on airspace safety monitoring activities for RNP 10 operations in the SCS/WPAC and Bay of Bengal areas

4.91 Singapore updated the meeting on the results of the monitoring of navigation performance on the SCS routes. The CAA of Singapore, which was responsible for the Monitoring Authority for the SCS routes, had collected and analysed the reports from States concerned on gross navigational errors (GNEs) and was pleased to report that there were nil errors for the 12-month report period.

State ATS Coordination GroupsEighteenth Meeting of the Informal South Pacific ATS Coordination Group (ISPACG/18)

4.92 The United States presented an update on the activities of ISPACG, including the main outcomes of the most recent ISPACG/18 meeting (February 2004). The ISPACG/19 meeting would be hosted by Airservices Australia in Brisbane, Australia from 28 February to 03 March 2005.

4.93 The major ISPACG activities/outcomes include:

- a) agreement was completed for Auckland to provide ATM contingency services in the Tahiti FIR, while Brisbane was expected to finalise contingency arrangements with Papua New Guinea by 30 April 2004;
- b) a working group was established to implement 30 NM lateral and 30 NM longitudinal (30/30) separation. It was agreed that the first implementation would be over the Tasman Sea, with a target date of 25 November 2004. The meeting agreed that assistance from ICAO was not yet required, as the resources for implementation exist within ISPACG;

- c) a working group was established to assist in the development of geographically seamless data communications to develop a gateway function which allows ATS providers to communicate with data link equipped aircraft, regardless of which technology is installed;
- d) Action Item 16-12 regarding REPORT REACHING was closed with an INFORMAL RESPONSE received from ICAO;
- e) generic RNP airspace was implemented in Australian administered airspace on 17 April 2003;
- f) user preferred routes (UPRs) have been established between defined city pairs;
- g) Dynamic Airborne Re-route Program (DARP) procedures are now being progressed and reported by the FIT;
- h) the FIT approved domestic CPDLC Requests for Change (RFC) to the FOM; and
- i) Fiji agreed to implement ATS inter-facility data communications (AIDC).

Twenty-first Meeting of the Informal Pacific ATS Coordinating Group (IPACG/21)

4.94 The United States presented an update of the activities of the IPACG, including the major outcomes of the recent IPACG/21 meeting in June 2004. The following IPACG meetings had been conducted since the last meeting of the ATM/AIS/SAR/SG:

- a) IPACG/19 (Providers Only), Tokyo, Japan, 14-17 July 2003;
- b) IPACG/20 (ISPACG representatives invited), Honolulu, USA, 6-10 October 2003; and
- c) IPACG/21, Tokyo, Japan, 7-11 June 2004.

Major outcomes of IPACG/21

4.95 Issues arising from IPACG/21 that were of particular interest to this meeting include the following:

- a) inconsistencies between North Atlantic, North Pacific and South Pacific turnback procedures. The Pacific procedures use a 25 NM offset and a level change of 500 ft, while the North Atlantic procedures call for a 30 NM offset and 500 ft level change. In the South Pacific, half-track spacing not exceeding 25 NM is used. Efforts should be made to harmonize the different procedures;
- b) pending 90-day trial to validate use of non-standard altitude for direction of flight on G344 and R591 when these routes are designated as part of the Pacific Organized Track System (PACOTS). Anchorage Air Route Traffic Control Center (ARTCC) and Tokyo ACC will finalize the draft agreement and establish an implementation date;
- c) JCAB and FAA have agreed on the removal of city-pair restrictions on PACOTS tracks, and removal of time restrictions on PACOTS Track A. These changes will be effective in July 2004;

- d) position report deficiencies that occur in the Oakland FIR continue to be a problem. The number of overdue reports has declined only slightly since 2003. Aircraft operators were encouraged to explain the importance of this problem to crews, remind flight crews of the requirements for position reporting, and to communicate technical problems to the FIT. Tokyo ACC and Oakland ARTCC will continue to investigate overdue reports;
- e) Anchorage ARTCC reported their intent to begin testing of ADS-C in 2004, exact start date to be determined;
- f) JCAB presented a proposed amendment to the ICAO Regional Supplementary Procedures regarding contingency procedures in the event of a loss of data link communication, which would be mutually applied in the Pacific Region.

Thirteenth Meeting of the Russian/American Coordinating Group for Air Traffic Control (RACGAT/13)

4.96 The United States presented a summary of the outcomes of the RACGAT/13 meeting (October 2003), which was held in Vladivostok, Russia. The meeting was attended by representatives of the SCAA of Russia, the United States FAA, FAA Alaska Region, the Civil Aviation Bureau of Japan, the Civil Aviation Authority of Mongolia, IATA, Russian State ATM Corporation (SATMC), Russian ATC Enterprises from North West, North East, Chukotka, Kamchatka, Central Siberia, North Eastern Siberia, Eastern Siberia, and Far East Air Navigation Enterprises of the Russian Federation, Cathay Pacific Airways, Japan Airlines, All Nippon Airways, Singapore Airlines, and U.S. Airlines (United, Northwest, Continental, Delta, FedEx and UPS).

4.97 During the past 10 years, the work of RACGAT has developed to include three main areas of focus addressed by independent subgroups:

- a) Air Traffic Services – this subgroup is devoted to resolution of near-term procedural issues and to the development of optimized route structures across the region;
- b) ATC Modernization Committee – this subgroup is devoted to implementation of infrastructure necessary to support the objectives of the ATS Subgroup, and
- c) Air Traffic Flow Management Subgroup – this subgroup is focused on the development of strategic planning initiatives to improve the efficiency of traffic flows.

4.98 RACGAT/13 continued the development of a RACGAT Route Catalogue. This document was designed as a planning aid for ATS providers in the RACGAT service area. In light of the difficulty of forecasting route demand in today's economic environment, the meeting recognized the importance of solid planning data in prioritizing investment decisions within the region. RACGAT was committed to the development of complete service proposals that could be assessed by service providers and operators with an eye to more effective coordination in the route development process. The first version of the route catalogue was published in April 2004.

4.99 RACGAT did not meet in the Mini-RACGAT format in the spring 2004 timeframe. Both the State Civil Aviation Authority of Russia and the United States Federal Aviation Administration were undertaking significant realignment of their ATS organizations. Pending the outcome of these processes, the United States was tentatively scheduled to host the next RACGAT

meeting in late October 2004.

4.100 The meeting was updated on national and regional activities since the RACGAT/12 meeting as follows:

- a) VFR route for general aviation aircraft between Nome, Alaska and Provideniya Bay, Chukotka was opened. In order to perform flights on this route, on 24 June 2003 the Agreement on coordination procedures between Anadyr ACC and Anchorage ARTCC was signed. On 11-13 August 2003 US aircraft successfully performed test flights on this route;
- b) the segment of B369 Provideniya-BATNI was published in the Russian AIP and from April 2003 was opened for regular flights. The representatives of FAA, Alaska, SATMC and Anadyr ACC signed a new Agreement on coordination between Nome FSS and Lavrentiya Tower, which took into account comments made at the previous meeting. Russian AIP marked borders between Lavrentiya and Provideniya Bay on B369, obligatory reporting point NALID, operating hours and VHF frequencies at Lavrentiya and Provideniya. Future extension of this route to Anadyr and Magadan is planned;
- c) Kamchatka 4 route (B932) was published in AIP for demo flights. In order to conduct flight on this ATS route, an Agreement was signed between Yuzhno-Sakhalinsk ACC and Sapporo ACC as well as between the Petropavlovsk-Kamchatsky ACC and Anchorage ARTCC on 24 July 2003;
- d) while implementing RVSM in the oceanic air space, it will be necessary by 1 November 2004 to solve the issues connected with the organization of parallel offset routes in order to resolve ATM problems posed by opposite direction traffic;
- e) plans to modernize the ACCs of Northern and Eastern Russia. Changes and additions to Amendment 2 to Annex 2 to MOC between FAA and the USSR Ministry of Civil Aviation of 16 February 1999 were forwarded to the FAA in August 2003;
- f) SCAA intends to consolidate Russian ACCs between 2003 and 2010 to establish 20 consolidated ACCs. This will help increase flight safety, optimize air space structure and modernize the ATM system;
- g) the 10 minute-in-trail (MINIT) separation standard was approved by ICAO. Anchorage ARTCC is prepared to sign LOAs with Murmansk and Magadan ACC for reduced separation minimum, 15 MINIT for Murmansk, 10 MINIT for Magadan;
- h) FAA planned implementation of Advanced Technology Oceanic Procedures (ATOP) at Anchorage ARTCC and the planned implementation (January 2005) of RVSM in domestic U.S. airspace, including Anchorage ARTCC, which will no longer be transition airspace. ATOP software testing is expected in late 2004, with initial operating capability expected in the 1st quarter of 2005;
- i) JCAB (Japan) advised the meeting on the new airspace classification implementation plan that will start 19 February 2004. Class A airspace classification above 28,500 feet is expected by the end of 2004. Class B

and C airspace will be introduced in 2005. RVSM will be introduced during the 1st half of 2005 making all Japanese FIRs RVSM. The airspace classification and realignment process will be completed by 1st quarter 2008;

- j) CAA of Mongolia, reported of the implementation of the new digital channel between Ulan Bator ACC and Irkutsk in August 2003 and that the new entry/exit point POLHO was established between China and Mongolia. In addition China have opened three new entry points;
- k) Primorsky Air Navigation reported contingency procedures have been developed between Vladivostok, Pyongyang and Sapporo ACCs;
- l) Chukotka Air Navigation, reported that “Chukotaeronavigatsiya” continues training ATC specialists to work on A218 international air route;
 - since 6 September 2003 the Keperveyem ACC provides ATC in English; and
 - amendments on using additional flight level 9600 meters on A218 and B337 were published in AIP for use;
- m) Kamchatka Air Navigation, reported that since RACGAT/12 the following work had been accomplished:
 - On June 24, 2003 the MOU was signed between Anchorage ARTCC and Petropavlovsk-Kamchatsky ACC on conducting demonstration flights on Kamchatka 4 route (B932). On 24 June 2003 the revised LOA was signed between Anchorage ARTCC and Petropavlovsk-Kamchatsky ACC, where the coordination procedures between the centers during flights on B932 were detailed;
 - Kamchatka Regional CAA and the Institute of Volcano Geology and Geochemistry conducted an international meeting to summarize and assess the Kamchatka Volcanic Emergency Response Team (KVERT) work;
 - continuation of the work on expanding the range of VHF communications in Petropavlovsk; and
 - Kamchatsky ACC to support operations on G583 and B932.
- n) Far East Air Navigation advised that in order to increase the capacity of Trans-Siberian and Far East routes, enhance flight safety in crossing points of R22, B233 and B467 (Yedinka) routes, the “Far East Air Navigation” conducted work on the installation of radar positions in “Svetlaya”. The opening of “Svetlaya” radar station will assist to:
 - provide radar coverage in crossing points on the Japan Sea coast;
 - increase the capacity of Trans-Siberian and Far East routes;
 - transfer from temporary separations to radar separations;
 - decrease delays in Japan airports, and

- organize the flight control group on the basis of Khabarovsk ACC.
- o) Far East Air Navigation is also ready to handle demonstration flights on Kamchatka 4 at the rate of 1 aircraft per 3 hours in order to determine the possibility of ground to- air communications on VHF and HF frequencies. In accordance with the RACGAT/12 decision, a Memorandum was signed with Sapporo ACC, which sets the plan to start demonstration flights on Kamchatka 4 route from August 7, 2003. Requests came from UAL and JAL, however unfortunately no flights have been performed so far. Far East Air Navigation confirmed the need to install VHF relay stations on Kunashir and Iturup islands to provide for a reliable and stable VHF communications for air traffic control on Kamchatka 4; and
- p) new segments of the routes, proposed at Mini-RACGAT/6, Chokurdakh-Oymyakon-Okhotsk-Okha-Likon-Aksun and Okhotsk-Nikolayevsk on Amur were considered and were recommended for implementation.
- q) East Siberia Air Navigation reported:
 - during the first 8 months of 2003, Irkutsk and Bratsk ACCs served 105 aircraft on Polar 2, including 50 flights by Continental Airlines from New York to Hong Kong, and 55 by United Airlines from Chicago to Hong Kong;
 - the work was completed on linking Irkutsk ACC through digital circuits to the network communications circuits, which allow access through fiber-optic network;
 - in November 2003 the digital circuit between Irkutsk ACC and Ulan-Bator ACC will be implemented, and
 - the integration of Kyzyl ACC and Chita ACC through fiber-optic circuits is scheduled to be accomplished in the first quarter of 2004.
- r) Central Siberia Air Navigation, reported on modernization activities in the region:
 - installed and put into operation SSR in Turukhansk and Vanavara ACCs with the “Alpha” and “Nord” display systems;
 - installed the “Alpha” display systems in Khatanga ACC;
 - installed a VHF relay station at Dikson airport, which allows VHF radio communications from Norilsk ACC up to 350 km from the location;
 - organized coordination via satellite circuits between the ACCs under the “Central Siberia Air Navigation” Enterprise between Norilsk - Turukhansk, Norilsk - Tura, Podkamennaya Tunguska - Krasnoyarsk, Krasnoyarsk - Boguchany and Krasnoyarsk - Kolpashevo, and
 - Yeniseysk ACC was closed on March 20, 2003. The area of its responsibility was distributed among Krasnoyarsk, Podkamennaya-Tunguska and Boguchany ACCs.

- s) Central Siberia Air Navigation also advised that short-term plans for technical modernization for the region include:
- In 2003-2004, plans to install SSR in Khatanga and Boguchany ACCs;
 - Considering the issue of establishing a direct coordination channel between Boguchany ACC and Bratsk and Kerensk ACCs;
 - Considering the issue of transferring radar and voice data from Abakan, Kyzyl and Boguchany ACCs to Krasnoyarsk ACC. After resolving the transfer of radar and voice data issues, consolidation of these three ACCs will occur, and
 - In March 2003 the proposal on developing Polar 2A AVERI-Island Sredny-Khatanga was coordinated at a regional level.
- t) North West Air Navigation reported:
- continued work on improving the quality of HF communications in the oceanic air space. Reconstruction of HF antenna fields is scheduled to be completed in 2004;
 - considering reducing the minimum acceptable interval for the flights in the area of responsibility of the Murmansk Oceanic ACC from 20 to 15 min accordingly (for turbo jet aircraft using Mach number techniques) as indicated in Doc 7030, and
 - a new version of the LOA on the coordination procedures between Anchorage ARTCC and Murmansk ACC contains changes regarding the decrease of the longitudinal separation to 15 min. As these changes affect the adjacent ACCs (Bodo, Reykyavik), letters were prepared and forwarded to these Centers. In addition it is necessary to make amendments to the AIP of the Russian Federation.

Matters arising from the review of the ATS Coordinating Groups

4.101 IATA informed the meeting of the high value that its members placed on the bi-lateral RACGAT and the ICAO CMRI meetings. IATA found these groups essential for resolving both long-standing and newly emerging issues affecting the safety, regularity and efficiency of operations on the Cross-Polar and Russian Far East Routes (RFE). Given that these routes spanned different regions the two groups were the only effective means of achieving inter-regional coordination and harmonization in these areas. IATA also noted that several new airlines had begun, or would shortly begin, operations on the Cross-Polar route system.

4.102 IATA expressed its opinion that ICAO's absence from recent RACGAT meetings and the lack of a CMRI meeting since early 2003 had resulted in a lack of coordinated development and harmonization of the Cross-Polar and RFE route systems. With an increasing number of operations in the areas concerned and considering the current economic pressures, IATA requested ICAO to:

- a) give serious consideration to the possibilities of attending future RACGAT meetings; and
- b) convene the next CMRI meeting at the earliest reasonable opportunity.

4.103 The meeting supported IATA's position and urged the Regional Office to give appropriate priority to attending these meetings and to make arrangements to hold the CMRI/5 meeting as soon as practicable.

4.104 The meeting also emphasized the importance for ICAO to attend the ISPACG and IPACG meetings which were the main forums where operational ATS matters concerning the international airspace in the Pacific Region were dealt with. The meeting agreed that ICAO's participation at these meetings was recognized as an essential component which facilitated the successful outcome of the meetings.

4.105 The Secretariat informed the meeting that the Regional Office would take action as soon as practicable to coordinate with the States concerned to convene the CMRI/5 meeting. In regard to attendance at non-ICAO meetings of States outside Bangkok, regrettably for the past two years due to budget and staffing constraints, it was not possible to attend the above meetings. However, the Regional Office recognized the importance of these meetings for the safe and efficient operation of international airspace and to enhance to air traffic operations. The problem was purely a budgetary one, and there were indications that this situation was unlikely to improve in 2005. The situation should become clear after the 35th Assembly of ICAO to be held on September 2004 which would approve ICAO's budget for the triennium 2005 to 2007.

Classification of Airspace in RVSM and RNP environments

4.106 The meeting considered the airspace classification requirements in Annex 11 in respect to airspace where RVSM and RNP were specified. RVSM and RNP requirements had been widely implemented in the Asia/Pacific Region and the Secretariat had noted that a wide variety of airspace classifications from Class A to Class F had been assigned to these airspaces and there did not appear to be any consistency in the choice of classification.

4.107 The Secretariat drew attention to the stringent safety requirements necessary for implementation and operation of reduced vertical and horizontal separation minima. In addition, airspace safety monitoring was required to monitor aircraft height-keeping and navigation performance. Further, in the event that aircraft were unable to maintain the requirements specified in the respective operational approvals, ATC would be required to apply an alternate form of separation and be able to intervene within the time parameters specified by the appropriate safety assessment. Inherent in these requirements was the need for an ATC service to apply appropriate separation for all aircraft operating in the airspace and for continuous safety oversight of the airspace to be provided. The airspace classification requirement includes specification of the ATC service, separation and radio communication requirements. Therefore, in RVSM and RNP airspace it was important to specify the appropriate classification commensurate with the stringent operating restrictions in RVSM and RNP airspaces.

VFR excluded from RVSM airspace

4.108 Although ICAO SARPs do not explicitly provide for airspace classification in regard to RVSM and RNP designated airspace, in order to maintain the integrity of reduced separation operations, the SARPs limit certain operations in these airspaces.

4.109 Annex 2 – *Rules of the Air* (Chapter 4, paragraph 4.5 refers) requires that:

“Authorization for VFR flights to operate above FL290 shall not be granted in areas where a vertical separation minimum of 300 m (1 000 ft) is applied above FL 290”

It was also noted that Table a) of Appendix 3 to Annex 2 does not include VFR flight levels above FL 290.

4.110 Annex 11 (Chapter 2) stipulates the requirement for the classification of airspace in accordance with Class A to G requirements. In this regard, States were required to select those airspace classes appropriate to the operational requirements for the provision of ATS and flight operations in designated airspace. It should be noted that in Class A airspace “IFR flights only are permitted, all flights are provided with air traffic control service and are separated from each other”. In the view of the Secretariat, as Class A airspace excludes VFR operations, therefore it should be utilized to meet the intent of Annex 2 in regard to RVSM airspace.

RNP Considerations

4.111 The Secretariat was of the view that where RNP was applied in RVSM airspace, the provisions of Annex 2 (as above) suggested the mandatory use of Class A airspace. However, as RNP was applied in both RVSM and non-RVSM airspace, and Annex 2 does not refer to RNP airspace, a broader interpretation could be applied as to the appropriate class of airspace to be specified for RNP operations in non-RVSM airspace.

4.112 The Secretariat explained that RNP was used as the basis for applying reduced horizontal separation, and justification to reduce the separation was required in terms of rigorous safety assessments being performed using collision risk models and with the safety level quantified against a TLS. Also, ongoing monitoring was required to ensure that the safety conditions were being met including meeting the specified TLS. Safety assessment parameters for RNP operations assumed that all aircraft operating in such airspace would be operating under ATC and provided with separation. The collision risk models used for RVSM and separation reduction based on RNP did not include consideration of VFR flight operations.

4.113 Annex 2 precludes VFR flights from operating above FL200 unless authorized by the appropriate ATS authority. Therefore, in the case of oceanic RNP airspace, which was generally above FL200, specific State authorization was required for VFR flight in oceanic RNP airspace. The Secretariat was of the view that permitting VFR aircraft to operate in RNP airspace where reduced separation applied, would negate the validity of the collision risk model, unless the VFR aircraft were operating under RNP requirements and provided with ATC separation service or appropriate mitigating measures were put in place. In this regard, only Class A and B airspace would be appropriate, and VFR aircraft would require RVSM and RNP type approval. However, in this context, a VFR flight would have to operate as if it were IFR, therefore, there did not appear to be any valid operational reason why a VFR aircraft should be permitted to operate in RNP airspace under such conditions.

4.114 In recognition that RNP was applied in airspace to reduce aircraft separation in accordance with strict and on-going safety assessment criteria, and that the nature of VFR flight was likely to result in an inability to meet the navigation parameters required for RNP, the Secretariat was of the view that consideration should be given to excluding VFR from operating in such airspace. Accordingly, Class A airspace should be specified for RNP operations.

4.115 The meeting considered the issues surrounding the classification of airspace for use by RVSM and RNP operations and agreed that further study of the subject was required. Accordingly, as the SASP was responsible for developing RVSM, RNP separation and safety requirements, the meeting considered this issue should be referred to SASP.

4.116 In light of the foregoing, the meeting formulated the following draft Conclusion:

Draft Conclusion 14/5 – Review of Annex 11 airspace classification provisions for RVSM and RNP operations

That, ICAO review the airspace classification provisions in Annex 11 to clarify requirements for specifying the class of airspace appropriate for RVSM and RNP operations (where reduced horizontal separation was introduced based on safety assessments requiring a collision risk model to be carried out).

4.117 The meeting urged States to review the airspace classifications specified for RVSM and RNP airspaces, and where necessary, to change the airspace classification taking into account the safety issues raised above.

Oakland ARTCC – Concept for application of 50/50 NM and 30/30 NM separation minima in mixed RNP environment

4.118 The United States briefed the meeting regarding the commissioning programme for the Lockheed Martin Ocean21 ATC System in the Oakland ARTCC and its ability to provide the FAA with a robust automation platform to support reduced separation standards based on RNP equipage.

4.119 The more stringent technical requirements and requisite aircraft equipage costs associated with both RNP 10 and RNP 4 based separation standards created a disparity in the capabilities of airspace users. In an environment such as the Pacific, where aircraft not meeting these more advanced RNP standards were not excluded from operating, the mix of separation standards and CNS equipment introduced major challenges for ATS providers.

Application of 30 NM/50 NM Longitudinal and 30 NM Lateral Separation

4.120 The United States explained that the Oakland Oceanic FIR airspace was available for all airspace users. Oakland ARTCC provided the required separation between RNP 4, RNP 10 and all other aircraft simultaneously. In order to receive 30 NM (RNP 4) or 50 NM (RNP 10) separation standards, users must file an “R” in field 10 of the ICAO flight plan. RNP 4 aircraft would also have to file “NAV/RNP4” in field 18 of the ICAO flight plan. All other users would receive 100 NM lateral separation with the appropriate time-based longitudinal separation.

4.121 Ocean21 managed the application of individual RNP separation standards using separation “flags” corresponding to the RNP 10 – 50 NM longitudinal standard and the RNP 4 – 30 NM longitudinal and 30 NM lateral standards. These flags may be enabled or disabled automatically or manually by the controller. Once the flag was enabled, the aircraft would qualify for the corresponding RNP separation standards for conflict prediction purposes.

4.122 When the specified conditions for RNP separation minima had been met, Ocean21 would automatically enable the corresponding separation flags and begin actively monitoring separation. As aircraft enter FAA controlled airspace, the system performs a series of checks to determine if the aircraft was qualified for RNP separation standards. These checks are summarized as follows:

- a) RNP qualifier /R in the Field 10 of its ICAO flight plan; and
- b) “NAV/RNP4” for RNP 4 aircraft in Field 18 of its ICAO flight plan; and
- c) an active CPDLC connection; and
- d) an ADS-C contract with a periodic reporting interval less or equal to the required 30 NM or 50 NM longitudinal interval; and
- e) for the 30/30 flag, the most recently received ADS-C position report for the flight contains a Figure of Merit (FOM) that meets or exceeds the adapted minimum RNP 4 threshold.

4.123 Based on these checks, the system would determine the appropriate separation standard available, and automatically enable the corresponding RNP separation flag. While Ocean21 provides the capability for enabling and disabling the application of RNP based separation manually, the system’s strength lies in the automation of the end-to-end application of these standards. Ocean21 would automatically:

- a) identify RNP qualification (RNP 4 or RNP 10);
- b) establish CPDLC connections and appropriate ADS-C position reporting contracts;
- c) monitor actual navigation performance based on the FOM;
- d) monitor ADS-C position reporting intervals;
- e) attempt to retrieve missing (by obtaining new) ADS-C reports;
- f) monitor longitudinal and lateral aircraft proximity and conformance; and
- g) in the event that these conditions were no longer met, such as a loss of the CPDLC or ADS-C for an individual or group of aircraft, ATOP would revert to higher RNP separation minimums, then non-RNP separation standards as appropriate.

Application of RNP separation between the Oakland and adjacent participating FIRs

4.124 Separation standards based on FANS-1/A (CPDLC and ADS-C) were dependent upon each provider having the necessary connections in place. The fact that one provider was able to apply reduced separation between two flights did not ensure that the next facility would be able to. It was essential that the implementation of these standards (particularly distance-based longitudinal standards) include the requirement for interoperability testing to be accomplished between all adjacent facilities that plan to offer reduced separation services.

4.125 The full AIDC capability of Ocean21 would facilitate the seamless transfer of aircraft between participating ATS providers. For adjacent facilities with AIDC capabilities, Ocean21 would process all AIDC messaging. It would provide automated coordination that could take full advantage of the negotiating phase for the transfer of an aircraft. Ocean21 would alert the controller when manual coordination must be completed along with providing fully automated coordinating features that would alert controllers of aircraft entering and exiting the FIR.

4.126 As experienced during the initial implementation of FANS-1/A in the Pacific, aircraft

transfer timing issues in conjunction with the required AIDC coordination must be accomplished in the proper order to prevent unexpected and undesired system responses and satisfy the necessary system checks for the continued application of separation. It would be vitally important for participating ATS providers to develop and refine procedures that permit the uninterrupted transfer of aircraft. Procedures should accommodate the following:

- a) identifying aircraft that were RNP qualified;
- b) identifying the pairs of aircraft to which a reduced separation minimum was being applied;
- c) transferring to the receiving facility pairs of aircraft, while monitoring and maintaining the reduced separation minimum being applied; and
- d) resolving potentially differing system discrepancies of distances that may exist between a pair of aircraft when a reduced separation minimum was applied.

User Preferred Routings (UPRs)

4.127 UPR trials between Sydney and Los Angeles were conducted on a limited basis during mid-2000. These UPR trial routes were planned so as to avoid significant weather and restricted airspace. The trials revealed training and workload issues for airline dispatchers and the need for accurate databases. However, the most notable limiting factors experienced were the lack of full AIDC capabilities between all necessary facilities, and the controller workload involved in analyzing a new route and re-clearing the aircraft.

4.128 With the Ocean21 system's robust conflict prediction and AIDC capabilities, controllers would be able to quickly and easily analyze a user's request, even if it would span many sectors. Controllers would have the flexibility and the tools to grant those requests, which in turn would provide for a more efficient use of the airspace.

Implementation of 30 NM lateral and 30 NM longitudinal separation in the South Pacific

4.129 New Zealand and Australia updated the meeting regarding their plans to implement 30 NM lateral and 30 NM longitudinal separation in the Auckland Oceanic and Brisbane FIRs, with a target date for implementation of 25 November 2004.

4.130 The ISPACG/18 established a working group tasked with implementing 30 NM lateral and 30 NM longitudinal separation (30/30/WG) in the ISPACG partners' areas of responsibility, with a view to potentially expanding the procedures to other regions.

4.131 The first meeting of the 30/30WG was held in April 2004 and major outcomes of the meeting were:

- a) benefits of 30/30 were difficult to quantify however fuel burn profiles and loadings were all important. The introduction of 30/30 should happen with no increased costs and was a long term ISPACG objective;
- b) because ICAO had completed the collision risk modeling no further safety assessments were required except those that relate to software and ATSU developments;
- c) RNP Certification Criteria Doc 9613 / FAA Order 8400.12A were reviewed and changes recommended;

- d) 30/30 operations would be introduced in a mixed RNP environment. RNP 4 exclusive airspace was not appropriate due to the un-acceptable penalties it would impose on non-compliant aircraft. It was noted that less than 25 percent of operations in the Auckland Oceanic FIR were expected to be RNP 4 certified;
- e) the existing ICAO standard flight plan did not adequately handle a mixed RNP environment. It was agreed for 30/30 operations in the Auckland Oceanic and Brisbane FIRs the use of all the following designators in the ATC flight plan:
Field 10 D J R
Field 18 DAT/SV NAV/RNP4 indicates:
- Ops Spec approval is granted for 30/30 separation standard and RNP4;
 - crew training for pilots and dispatchers was complete for both RNP 4 and FANS 1/A; and
 - documentation of normal and abnormal procedures for pilots and dispatchers was complete and issued.
- it was intended that these definitions will be published in the New Zealand and Australian AIPs;
- f) the meeting reviewed the FAA papers:
- “ATS Automation in a Mixed RNP Oceanic Environment – The ATOP Approach” and “Concept for the Application of 50/50 NM and 30/30 NM Separation in a Mixed RNP Environment” by Oakland ARTCC, and
- g) Date & Venue for next meeting: 23 & 24 June, Brisbane, Australia.

4.132 The Secretariat drew attention to the requirements for safety assessments when implementing the 30/30 NM separation. The ICAO safety assessment collision risk model as contained in the *Manual on Airspace Planning Methodology for the Determination of Separation Minima* (Doc 9689) for application of lateral and longitudinal separation was performed for specific operational environments with specific characteristics and assumptions. Implementation of 30/30 in any other environment would require validation of the safety assessment model used. Doc 9689 recommends that either a comparative method against a reference system or an evaluation of system risk against a threshold (TLS) be carried out. Doc 4444 requires that prior to implementation, a system verification must be performed to demonstrate operational and technical requirements were met. In the Asia/Pacific Region, APANPIRG established a TLS of 5×10^{-9} fatal accidents per flight hour as the en-route TLS.

4.133 In regard to b) above, the Secretariat queried whether the ICAO safety requirements summarized above had been carried out, as the statement made by the ISPACG/18 meeting suggested that there was no need to conduct a safety assessment because ICAO had already completed the collision risk model. It was pointed out that the ICAO collision risk model was a generic model to be used as a basis for conducting safety assessments, and it was expected that in the implementation process, a safety assessment of the actual operating environment would be made using the methodology in Doc 9689 as mentioned above, to verify that the results of the ICAO model were achieved.

4.134 The meeting noted that ICAO requirements in regard to performing safety assessments, and advised that ISPACG should review their actions in regard to safety assessment

requirements for the airspace where the 30/30 NM separation would be implemented.

4.135 The Secretariat informed the meeting of ICAO Headquarters interest in the 30/30 NM implementation process and requested that information on the implementation and safety assessment activities be made available to ICAO by ISPACG and States involved, as this would be useful for other regions planning to implement the 30/30 NM separation.

Second Meeting of Automatic Dependent Surveillance-Broadcast Study and Implementation Task Force (ADS-B TF/2)

4.136 The meeting noted with interest tasks accomplished by the ADS-B SITF/2 meeting held in Bangkok on 22 - 26 March 2004. It was noted that the Task Force, in its draft Conclusion 2/1, had requested IATA to provide the airlines' plan for implementation of ADS-B to facilitate development of an implementation plan.

4.137 While noting the Task Force draft Conclusion 2/2 regarding exchange of ADS-B surveillance data with neighbours, the meeting expressed the view that the data integrity issue and the legal issue for the use of data received by other States for application of safety services needed to be adequately studied and addressed.

4.138 The meeting was informed that the ADS-B Working Group established by the Task Force under its Decision 2/3, would address various issues identified by its second meeting, and was scheduled to hold its next meeting at the Singapore Aviation Academy on 14-15 October 2004.

4.139 The meeting also noted that draft Conclusion 2/4 proposed adoption of a Subject/ Tasks list for the Task Force, in which the tasks were proposed to be completed by 2005.

4.140 The meeting was informed that the ICAO Operations Data link Panel (OPLINK Panel) was developing an ADS-B concept of use, which would provide guidelines to States for implementation of ADS-B. In this regard, the meeting noted that AN-Conf/11 had endorsed the development of the ADS-B concept of use, and recommended that all future work on the concept be aligned with the ATM operational concept and to meet emerging ATM requirements that emanate therefrom.

4.141 The meeting expressed the view that ADS-B operational procedures should be ready and available before implementation. It was also emphasized that operational requirements established, should meet users requirements in a cost effective manner. The need to carry out inter-regional coordination with neighboring regions was also emphasized. It was expected that the Task Force would take into account the above observations and comments while undertaking its tasks.

Review of Table CNS-1D - ATS Inter-facility Data Communication (AIDC)

4.142 The meeting noted that in order to reflect the current and future operational requirements for AIDC between ACCs concerned, a sample Table CNS-1D was developed and provided in Part IV-CNS of the ASIA/PAC FASID. However, requirements for AIDC have not been specified. The existing format of the Table was modified for better presentation of required details in the Table. A review of the Table by the meeting did not result in any comment.

4.143 The meeting further noted that Version 1 of the Interface Control Document (ICD) for AIDC published in June 1995 was updated in order to allow States to implement their systems in a consistent manner and Version 2 of the ICD was published after its adoption by APANPIRG/14 in Conclusion 14/3 for use by States. The ICD is posted in the ICAO website.

4.144 The current communication infrastructure used to support existing AIDC was based on AFTN procedures. The APANPIRG ATN Transition Task Force has undertaken the task of development of an ATN based ICD, which was expected to be completed by the end of 2005 subsequent to the completion of work undertaken by the OPLINK Panel for the review of the AIDC message sets.

4.145 The meeting also noted that the Table CNS-1D (**Appendix A** to the Report on Agenda Item 4 refers) would be circulated to States to specify requirements for AIDC and subsequently a proposal for amendment of the FASID Table CNS-1D would be processed. The meeting agreed that States should reflect requirements in the Table, where AIDC was operationally required, and to provide information to complete the Table to the Regional Office for processing.

Establishment of more efficient routing Jakarta – Hong Kong – Jakarta

4.146 IATA presented a review of the progress made in the establishment of a more efficient routing between Jakarta and Hong Kong, China/Pearl River Delta airports. The meeting noted that, in general, the SCS routing system had brought many advantages to both airlines and ATS providers. However, since the introduction of the SCS Routes on 1 Nov 2001, flights operating between Hong Kong and Jakarta have experienced operational penalties of up to 30 minutes for a round trip, increasing fuel usage, flight crew limitations and maintenance costs.

4.147 The meeting was advised that the SEACG/11 meeting agreed to implement a new routing scheme between Jakarta and Hong Kong. The agreed routing would be as follows:

Northbound

Jakarta – KIBON – ASISU – LAXOR – DULOP – Hong Kong

Southbound

Hong Kong – CH VOR – L642 – CS NDB (CONSON) – DUDIS – MABLI – KIKOR – Jakarta.

A map of the route is provided in **Appendix B** to the Report on Agenda Item 4.

4.148 The States concerned, Hong Kong, China, Philippines, Viet Nam and Singapore along with IATA held discussions on the arrangements necessary to implement the route and agreed on the tasks to be undertaken. The Regional Office would undertake coordination with States and IATA to progress the implementation effort. It was agreed that a special coordination meeting would be required to finalize all the details, in particular to examine the operational issues including coordinating the promulgation of the route, setting the required lateral and longitudinal separation, agreement on flight level allocation, required coordination procedures, safety assessment, preparing the ANP amendment and finalizing Letters of Agreement.

4.149 The Philippines agreed to host the meeting, tentatively in Manila, and details would be coordinated with the Regional Office. IATA requested that the meeting be convened as soon as practicable.

Review of current ATM situation over the Bay of Bengal and Indian Continental Airspace

4.150 IATA provided the meeting with an overview of the ATM situation in the Bay of Bengal and Indian continental airspace, noting the many benefits for operators that resulted from the EMARSSH implementation (November 2002) and the RVSM implementation (November 2003).

4.151 IATA also noted that rather than delay these initiatives, all parties had agreed that some issues were able to be left unresolved until after the implementations. These included longitudinal separation requirements for A466 and N644 at the Pakistan and Afghan border, flight level transition and ATC communications in Yangon FIR, and air traffic management in the Bay of Bengal and the overall optimization of the airspace capacity. Whilst noting the work being undertaken with regard to the flight level transition and communications problems in the Yangon FIR (as discussed elsewhere in this report), IATA urged States to maintain their impetus and direct attention towards resolving the remaining issues.

4.152 The meeting agreed that the issues described by IATA were important and were already on the work programmes of the forums best positioned to deal with them, such as the RVSM/TF, BBACG and Special Coordination Meetings. The Secretariat reminded the meeting of some of the difficulties that were not under the control of the civil aviation authorities, including the conflict in Afghanistan and other political pressures in the region.

4.153 IATA made particular mention of the cooperation from India and Pakistan in regard to extending P628 from ASOPO to RK to make this route a viable alternative to the frequently congested L759. Planning was underway to link P628 from RK to Kandahar direct to V390, thereby reducing the original track distance by about 100 NM.

4.154 The meeting noted the considerable effort that had been made to improve the traffic flow across the Bay of Bengal and to address airspace constraints in particular those posed by the Kabul FIR and westwards non-RVSM airspace. The meeting recognized the concerted effort of all parties concerned and encouraged their continued commitment to improve the institutional, infrastructure and operational problems to optimize the traffic especially on the major inter-regional traffic flows.

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TABLE CNS-1D
ATS INTERFACILITY DATA COMMUNICATION (AIDC) ROUTING PLAN

Administration	Location of AIDC end system	AIDC Pair		AIDC standard used	Target date of Implementation	Remarks
		Correspondent location	Correspondent Administration			
1	2	3		4	5	6
Australia	Brisbane					
	Melbourne					
Bangladesh						
Bhutan						
Brunei Darussalam						
Cambodia						
China	Beijing					
	Guangzhou					
	Shanghai					
	Shenyang					
	Kunming					
	Urumqi					
	Sanya					
Hong Kong, China						
Macao, China						
Cook Islands						
Democratic People's Republic of Korea						
Fiji						
India	Delhi					
	Mumbai					
	Kolkata					
	Chennai					

ATM/AIS/SAR/SG/14
Appendix A to the Report on Agenda Item 4

TABLE CNS-1D
ATS INTERFACILITY DATA COMMUNICATION (AIDC) ROUTING PLAN

Administration	Location of AIDC end system	AIDC Pair		AIDC standard used	Target date of Implementation	Remarks
		Correspondent location	Correspondent Administration			
1	2	3		4	5	6
Indonesia	Jakarta	Brisbane	Australia	AFTN	2005	
		Singapore	Singapore	AFTN	2008	
	Makassar	Brisbane	Australia	AFTN	2005	
Japan		Tokyo				
		Naha				
Kiribati						
Lao People's Democratic Republic						
Malaysia		Kuala Lumpur				
		Kota Kitabalu				
Maldives						
Marshall Islands						
Micronesia (Federated States of)						
Mongolia						
Myanmar						
Nauru						
Nepal						
New Zealand						
Palau						
Papua New Guinea						
Philippines						
Republic of Korea						

ATM/AIS/SAR/SG/14
Appendix A to the Report on Agenda Item 4

TABLE CNS-1D
ATS INTERFACILITY DATA COMMUNICATION (AIDC) ROUTING PLAN

Administration	Location of AIDC end system	AIDC Pair		AIDC standard used	Target date of Implementation	Remarks
		Correspondent location	Correspondent Administration			
1	2	3		4	5	6
Samoa						
Singapore						
Solomon Islands						
Sri Lanka						
Thailand	Bangkok	Phnom Penh	Cambodia	ATN	2005	
		Vientiane	Laos	ATN	2005	
		Kuala Lumpur	Malaysia	ATN	2005	
		Yangon	Myanmar	ATN	2005	
		Hochiminh	Viet Nam	ATN	2005	
Tonga						
Vanuatu						
Viet Nam						

TABLE CNS-1D
ATS INTER-FACILITY DATA COMMUNICATION (AIDC)
IMPLEMENTATION PLAN

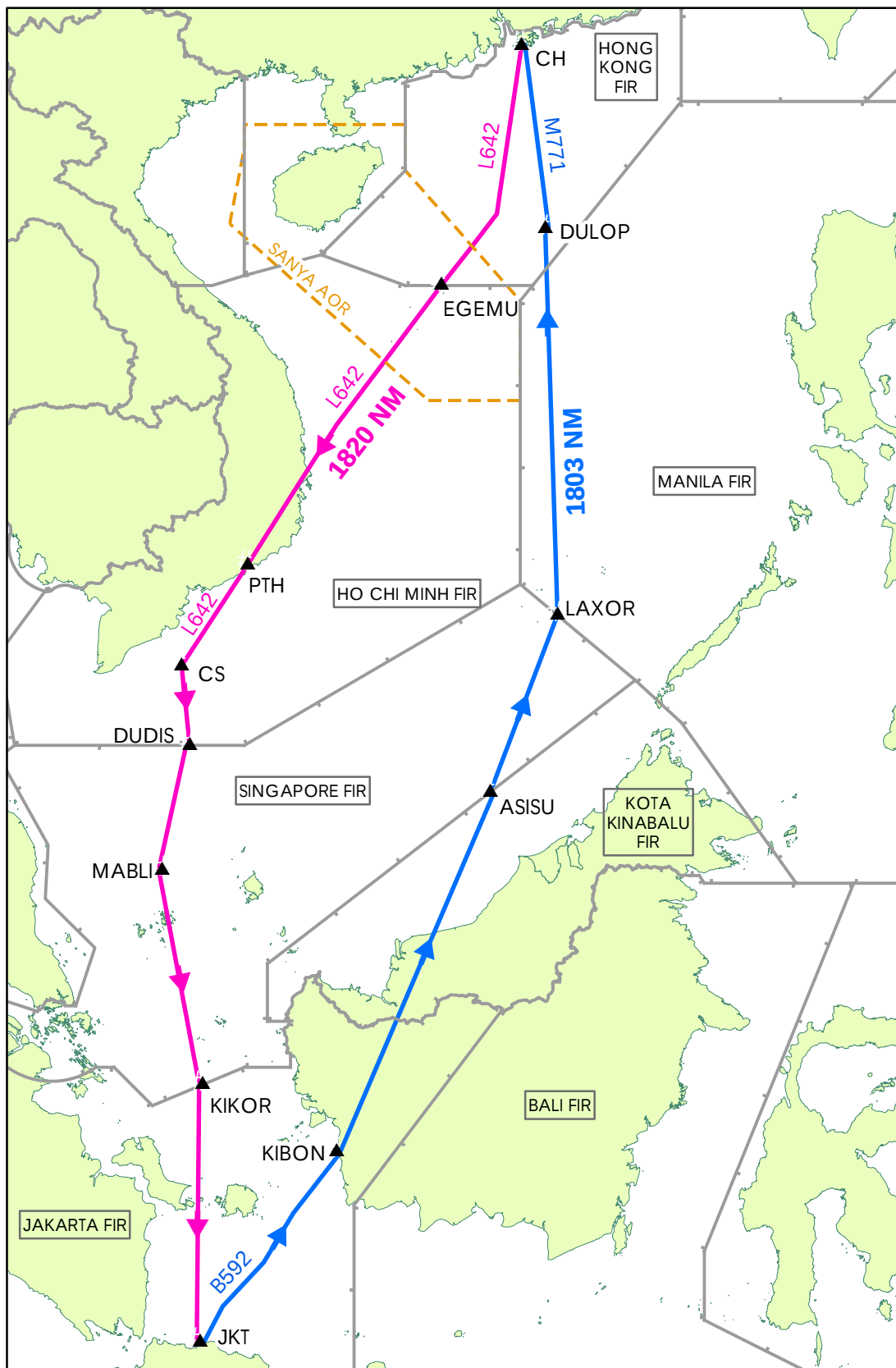
Explanation of the Table

Column

- | | |
|---|---|
| 1 | <u>Administration</u> – the name of the Administration, State or Organization responsible for management of the AIDC; |
| 2 | <u>Location of AIDC end system</u> – the location of the AIDC end system under the supervision of Administration identified in column 1; |
| 3 | <u>AIDC Pair</u> – the correspondent AIDC end system;

<u>Location</u> – location of the correspondent AIDC end system

<u>Administration</u> – the name of the administration, State or Organization responsible for management of the correspondent AIDC end system |
| 4 | <u>AIDC standard used</u> – the AIDC standard adopted for the AIDC connection between the corresponding AIDC pair, AFTN, AFTN/AMHS or ATN; |
| 5 | <u>Target Date of Implementation</u> – date of implementation of the AIDC end system; |
| 6 | <u>Remarks</u> – any additional information describing the AIDC end system or the AIDC service between the corresponding AIDC pair. |

Appendix B to the Report on Agenda Item 4
Proposed new routing Jakarta – Hong Kong

Agenda Item 5: Review progress of the Regional Airspace Safety Monitoring Advisory Group (RASMAG)

5.1 The first meeting of RASMAG was held on 26-30 April 2004 at the Regional Office. The RASMAG was established under APANPIRG/14 (Decision 14/48). The envisaged role of RASMAG should facilitate States implementing and operating safety management services required for the provision of ATS in accordance with ICAO SARPs. Whilst a primary task of the group would be 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 would also be taken into consideration.

5.2 RASMAG reviewed its TOR and was of the view that further clarification was required as to the extent to which the Group could make decisions without first obtaining approval or endorsement from APANPIRG as reflected by its status as an Advisory Group.

5.3 The Secretariat advised the meeting that where ICAO provisions, guidance material and policy already existed, RASMAG could endorse or approve adoption by the RMAs. In cases where regional agreements were required, such as establishing an RMA, publishing regional guidance material, or changing the terms of reference, then APANPIRG approval would be required.

5.4 RASMAG noted that the TORs inferred that its work was limited to reviewing only ADS and CPDLC applications of data link. However, one of the objectives for RASMAG as detailed in the TOR was to review regional and global airspace planning and developments in order to anticipate requirements for airspace safety monitoring and assessment activities. The meeting agreed that the task list should be amended to encompass other applications of data link as required.

Airspace safety management in the Asia/Pacific Region

5.5 RASMAG recognized that Annex 11 required States to implement systematic and appropriate ATS safety management programmes to ensure that safety was maintained in the provision of ATS within airspaces and at aerodromes. The RASMAG meeting reviewed the present structure and service providers for airspace safety monitoring and safety assessments for the international airspace in the Asia/Pacific Region and noted the following arrangements:

RVSM

- a) Pacific Approvals and Monitoring Organization (PARMO) operated by the United States FAA for the Pacific Region (previously included the Asia Region); and
- b) Monitoring Agency for the Asia Region (MAAR) operated by AEROTHAI of Thailand for the Asia Region (took over responsibility from APARMO for the Asia Region on 2 September 2003); and

RNP 10 operations and reduced lateral separation

South China Sea route system (RNP 10/60 NM lateral spacing)

- a) no monitoring group was established, however, for the initial implementation, the CAA Singapore collected and collated the safety data and Airservices Australia performed the safety assessment. CAAS continued to provide data collection services and presents the information to the ICAO Regional Office for further action;

- b) oversight of the safety arrangements for the South China Sea area is provided by SEACG; and
- c) formal arrangements to establish a safety monitoring group to carry out monitoring services and safety assessments for implementation and operation of reduced horizontal separation were required.

EMARSSH route structure including Bay of Bengal area (RNP 10/50 NM lateral spacing)

- a) no safety monitoring group is established. Airservices Australia carried out the safety assessment services for the implementation using safety data provided by States and coordinated by the Regional Office;
- b) oversight responsibility was transferred from the EMARSSH project team to BBACG; and
- c) formal arrangements to establish a safety monitoring group to carry out monitoring services and safety assessments for implementation and operation of reduced horizontal separation were required.

ADS/CPDLC services for the Bay of Bengal area

- a) the CRA for the assessment of data link system performance to be operated by Boeing on behalf of the Bay of Bengal States;
- b) oversight is provided by the FIT-BOB and BBACG; and
- c) formal arrangements to establish a safety monitoring group to carry out monitoring services and safety assessments for implementation and operation of reduced horizontal separation were required.

Airspace Safety Management in the Pacific Region

5.6 The RASMAG meeting reviewed the airspace safety monitoring services established by the States concerned under the IPACG for the North/Central Pacific and ISPACG for the South Pacific.

5.7 It was noted that the data link performance monitoring services, e.g. ADS and CPDLC were being provided by CRA Japan for the Tokyo FIR. For the remainder of the Pacific Region, Boeing operates the CRA. Airservices Australia provides RVSM monitoring and other airspace safety services for the Melbourne and Brisbane FIRs, and specifically RVSM monitoring and assessment for the international airspace over the Indian Ocean contained within those FIRs. ATS coordination activities in the Pacific Region are reported to APANPIRG.

5.8 The RASMAG meeting agreed that the work of IPACG and ISPACG in regard to the safety management programmes operated by these groups for the Pacific Region should be reviewed by RASMAG. Accordingly, the United States agreed to coordinate with IPACG and ISPACG to ensure that reports of their meetings, and reports from the CRAs and FITs operating under these groups, were provided to RASMAG.

Need for additional monitoring and safety assessment services

5.9 RASMAG considered the nomenclature used within ICAO and regional documentation to describe entities that carry out airspace safety services, e.g., monitoring for RVSM, RNP, data link services, and to perform safety assessments for the reduction in separation minima for international airspace. ICAO adopted the term regional monitoring agency (RMA) for RVSM, which was established by regional agreement. In the North Atlantic the term Central Monitoring Agency (CMA) was adopted for the body undertaking the safety work for the route structure, in both the horizontal and vertical dimensions. In regard to data link monitoring these were carried out by a Central Reporting Agencies (CRAs). For the South China Sea RNP 10 routes monitoring is carried out by a Monitoring Authority.

5.10 In regard to assigning service providers to perform safety services within sub-regions of the Asia/Pacific Region, RASMAG agreed that it was desirable to use a different term than that used for established groups described above. The traditional names would continue to be used for groups providing identical services. However, it was recognized that there was a need to appoint service providers on a sub-regional basis to provide safety services for reduction in separation based on RNP and data link services (data link technical performance monitoring and analysis are carried out by a CRA) that did not fall within the accepted roles of these other groups. Accordingly, the RASMAG meeting agreed to recommend to APANPIRG that the term Safety Monitoring Agency (SMA) be adopted for this purpose.

5.11 RASMAG agreed that it was necessary to establish safety monitoring groups to undertake safety management programmes for the application of RNP, data link services and related separation minima. 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/Pacific 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;
- c) RNP 10 routes from Southeast Asia to the Middle East – for the safety assessment and monitoring of the routes, reduced horizontal separation, and application of data link services;
- d) Melbourne/Brisbane FIRs covering the southern Indian Ocean – establishment of an RMA for RVSM and safety monitoring group for reduced horizontal separation and data link services (Airservices Australia providing the services but not designated as an RMA); and
- e) Some FIRs in the Pacific Region required further investigation to determine the safety services to be established.

5.12 The RASMAG meeting was informed that at the combined FIT-BOB/3 and BBACG/14, Thailand informed the meeting that AEROTHAI, with experience in operating the RVSM RMA since 2 September 2003, was in a position to carry out the safety assessment work in the Asia Region to support ADS/CPDLC operations involving a reduction in aircraft separation. To expand its work to include this task, MAAR would require funding. The meeting agreed that under its TORs, RASMAG could recommend to APANPIRG an appropriate service provider to provide safety monitoring services.

5.13 RASMAG noted the safety assessment services provided by Airservices Australia for the implementation of the South China Sea routes and the EMARSSH routes in the Asia Region. RASMAG considered establishing safety monitoring groups for the areas identified above and agreed that further information was required on the funding arrangements to operate the safety monitoring groups and details of the services to be provided. In this regard, it was agreed that the ATS providers concerned should prepare a detailed proposal for the operation of a safety monitoring group outlined above to be presented at the next meeting of the RASMAG on 4 – 8 October 2004.

5.14 In regard to the safety services provided by Airservices Australia, RASMAG agreed that they were already performing the function of an RMA and safety monitoring group, and should be formally appointed by APANPIRG to integrate their activities into the regional safety management programmes for international airspace. In this regard, the meeting made a recommendation to APANPIRG/15 to appoint Airservices Australia to be an SMA for the international airspace in the western part of the Melbourne and Brisbane FIRs.

ADS/CPDLC operational trial in the Bay of Bengal area

5.15 RASMAG reviewed the establishment of the CRA for the Bay of Bengal operational trial which commenced on 19 February 2004. It was noted that for ADS reporting some States were using high reporting intervals and this placed an unreasonable burden on operators. The meeting agreed that the States involved in the trial be requested to review their procedures for operating their ADS systems, and where applicable adjust the reporting rate in line with the procedures in the FOM.

5.16 In regard to the application of separation, the ADS reporting rate would be determined by the maximum reporting interval requirements applicable to the separation minima. For example, in the case of 50 NM longitudinal separation based on RNP 10, PANS-ATM, Doc 4444 requires the maximum reporting interval to be 27 minutes. RASMAG agreed that ADS reporting intervals should be set as necessary for the air traffic service being provided.

Review and Develop Requirements for Airspace Safety Monitoring

5.17 RASMAG noted the problems with altimetry system error (ASE) stability observed in aircraft height-keeping performance monitoring results from the North Atlantic and Europe. While it was noted that the magnitude of height-keeping errors observed through monitoring was not an immediate cause for concern, the lack of altimetry system error stability, evidenced as a gradual increase in error magnitude over time for a particular airframe, could eventually lead to height-keeping performance failing to comply with requirements. As a result, monitoring should continue at present levels until remedies for the lack of altimetry error stability were identified and shown to be effective.

5.18 In regard to the MMRs for implementing RVSM, guidance was provided in the ICAO Draft RMA Handbook prepared by SASP, which was in the process of being adopted by ICAO and expected to be published in 2005. The PARMO had adopted the MMR recommended in the Handbook, and it was agreed that this should be the MMR for the Region.

5.19 RASMAG reviewed the airspace safety performance in the international airspace of the Asia/Pacific Region and noted the work performed by MAAR for RVSM implementation in the WPAC/SCS area and the PARMO for the Pacific.

5.20 RASMAG noted the concern of MAAR and PARMO regarding States failing to report LHDs, and encouraged States to provide such reports to MAAR, PARMO and other RMAs in a timely manner.

5.21 The one-year review of safety oversight for the RVSM implementation in the Bay of Bengal would be presented to the RVSM/TF/24 meeting planned in November 2004.

5.22 The United States provided information on a periodic reporting process used by PARMO aimed at comparing actual performance to safety goals related to the RVSM implementation in Pacific airspace. Future reports would contain estimates of risk with increasing confidence as the PARMO expands the automated analysis tools used to estimate the collision risk model parameters.

Harmonization of the Modified Single Alternate FLOS with the Single Alternate FLOS

5.23 RASMAG noted the work of the RVSM/TF to harmonize the modified single alternate FLOS used for the SCS route structure with the single alternate FLOS used in adjacent RVSM airspace outside of the SCS area. It was considered by the Task Force that “ultimately a single alternate flight level orientation scheme should be adopted”, and studies would be made in preparation for any transition plan to a single alternate FLOS.

5.24 RASMAG was also advised that Japan and Korea were planning to implement RVSM in the Incheon, Naha and Tokyo FIRs on 9 June 2005 and this would have an impact on the traffic flows in the WPAC/SCS area. The matter would be raised at the SEACG/11 meeting on 24-28 May 2004. Also, the RVSM/TF was planning to hold a meeting to resolve this matter in September 2004. In this regard, RASMAG would review the issues concerned in due course following submission of the reports of these groups.

Review Regional and Global Airspace Planning and Implementation Developments Related to Requirements for Airspace Safety Monitoring Services

Regional planning

5.25 It was agreed that RASMAG would be kept informed of developments in the regional planning process by the Secretariat. Also, the Group would be kept informed of developments arising from the ICAO Global Aviation Safety Plan and other regional safety initiatives of interest to the Group.

5.26 In the near term, RASMAG noted that planning for implementation of 30 NM horizontal separation using ADS in the Pacific Region was underway and safety related issues would be brought to RASMAG for review through the reports of the ATS coordination groups responsible for implementation. Also, ADS-B was becoming a major implementation consideration, and SASP was presently developing separation minima to be applied using this system. RASMAG would be kept informed of developments.

AIDC services

5.27 RASMAG was informed of Japan's progress in implementing AIDC services, which began in 1998 between the Tokyo ACC and Oakland ARTCC. With increasing demand for implementation of AIDC services in many States in the world, Japan considered it was important to know how to evaluate the performance of AIDC operations between ATS facilities in an appropriate manner, in order to ensure safe application of the AIDC service. The meeting would be kept informed of developments.

Inter-Regional Coordination Arrangements and Practices

5.28 RASMAG noted that ad hoc inter-regional coordination arrangements were in place in the region, and meetings with adjacent regions were arranged as circumstances required. RASMAG would in the course of its work need to coordinate with similar groups in other regions, and review the

coordination activities between the RMAs and safety monitoring groups. It was recognized that harmonization of safety activities between the regions was an important consideration and it would be given appropriate priority.

Development of safety management systems in the region

5.29 In considering the elements to be taken into account in monitoring programmes and safety assessments, RASMAG recognized that considerable attention was given to the technical aspect of system performance, e.g. for RVSM operations, aircraft height-keeping performance was a key element and for RNP, aircraft navigation accuracy. The use of collision risk modeling provided a means to quantify technical risk in regard to a TLS, and this was relatively straightforward to calculate. However, in the case of air traffic service performance and in particular human factors, the meeting was of the view that this was much less developed and more difficult to quantify. To gain an overall assessment of the total risk present in the ATM system, it would be necessary to undertake a thorough risk analysis of all factors contributing to risk. The meeting noted work being carried out by ICAO to address total ATM system performance, and recognized that this was a very complex subject that required considerable further work to make use of this concept.

5.30 RASMAG expressed concern that, because the Annex 11 provision on safety management programmes 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.

5.31 RASMAG agreed that more attention needed to be given to education, and an ATS safety management workshop on the matters described above with an emphasis on practical hands-on experience was planned to coincide with its next meeting in October 2004.

5.32 RASMAG was of the opinion that ICAO should emphasize to States in the Asia/Pacific Region the importance of being cognizant of the provisions in Annex 11 regarding implementation of systematic and appropriate ATS safety management programmes. This was particularly important when implementing airspace changes involving requirements to conduct safety assessments and monitoring programmes, including follow-up activities. This information could be included in a letter to States.

Draft Guidance Material for End-To-End Safety and Performance Monitoring of Air Traffic Service (ATS) Data Link Systems in the Asia/Pacific Region

5.33 The United States presented a draft of Guidance Material for End-to-End Safety and Performance Monitoring of Air Traffic Service (ATS) Data Link Systems in the Asia/Pacific Region, developed by the APASM/TF. The guidance material was intended to provide a set of working principles for ATS data link system performance monitoring that would be applied by all States implementing these systems, as well as providing detailed guidance on the requirements for establishing and operating a FIT and CRA. It was intended that this guidance material would help promote a standardized approach for monitoring the performance of ATS data link systems within the Region.

5.34 RASMAG agreed to adopt and develop the guidance material, and to include information for ATS providers to monitor AIDC end-to-end performance. The meeting agreed that the guidance material would be brought to APANPIRG to be approved as regional guidance material when appropriate.

Reporting requirements

5.35 The United States presented to the meeting a prototype version of what was intended

to be quarterly safety monitoring reports from the PARMO relating to the ongoing oversight of RVSM in the Pacific. The meeting agreed to prepare a model format for the Asia/Pacific Region, and that all reports by the authorized groups related to safety management activities carried out for the international airspace of the Asia/Pacific Region should be made available to the RASMAG. A consolidated annual report would be presented to APANPIRG on the state of the safety of the international airspace in the region.

5.36 In regard to the above, RASMAG agreed that the ICAO Regional Office should inform RMAs, safety monitoring groups, CRAs and FITs in the Asia/Pacific Region to submit reports on their activities to RASMAG through the Regional Office, and to include information on the establishment of RASMAG and its role.

Airspace Safety Services in the Asia Region – AEROTHAI/Airservices Australia

5.37 The meeting was updated via a joint statement from AEROTHAI and Airservices Australia about positive discussions toward a cooperative approach between the two organizations in relation to the provision of airspace safety services on behalf of ICAO in defined international airspace within the Asia Region, in accordance with ICAO Annex provisions which were amended on 27 November 2003. The meeting was advised that although considerable progress had already been achieved in regard to this cooperative approach, further consultation between both parties is still required before presentation to ICAO for endorsement. AEROTHAI and Airservices Australia will provide an update to either the APANPIRG (August 2004) or RASMAG (October 2004) meetings.

Matters arising from the RASMAG/1 meeting

5.38 The ATM/AIS/SAR/ SG meeting noted the good progress made by RASMAG to establish its work programme and identify areas where further airspace safety management measures were required. With RASMAG oversight of the safety monitoring activities, this would strengthen and enhance the overall safety management of the international airspace in the region.

5.39 The Secretariat informed the meeting that China had advised the Regional Office of plans to host an ATM Safety management Seminar in Beijing in November 2004. In this regard it was anticipated that RASMAG would defer its planned workshop on the subject in October to avoid duplication.

Agenda Item 6: Deficiencies in the Air Navigation field

List of air navigation deficiencies

6.1 The Secretariat reminded the meeting that the Council of ICAO at the 164th Session on 30 November 2001, approved the definition of a deficiency as follows:

“A deficiency is a situation where a facility, service, or procedure does not comply with a regional air navigation plan approved by the Council, or with related ICAO Standards and Recommended Practices, and which situation has a negative impact on the safety, regularity and/or efficiency of international civil aviation.”

6.2 The Secretariat informed the meeting that AN-Conf/11 recalled efforts by ICAO, PIRGs and States in pursuing the elimination of deficiencies in the air navigation field and the implementation of all regional air navigation plans to further improve the existing levels of safety. The Conference noted that many deficiencies had continued to persist for a number of years, thus causing concern. Furthermore, the Conference noted that States should increase their efforts to overcome the delay in mitigating the air navigation deficiencies identified by the respective PIRG and resolve cases of non-implementation of regional plans.

The Asia/Pacific Supplement to the Uniform Methodology

6.3 The meeting recalled that APANPIRG/13 established the Deficiencies Review Task Force (DRTF) to develop detailed regional procedures as a supplement to the Uniform Methodology, for the Identification, Assessment and Reporting of Air navigation Deficiencies (Uniform Methodology). The DRTF/2 (May 2004) reviewed and finalized the draft Asia/Pacific Supplement to the Uniform Methodology and recommended that APANPIRG/15 adopt the Supplement. A copy of the Supplement is provided in **Appendix A** to the Report on Agenda Item 6.

6.4 The meeting noted that the Supplement provided detailed regional procedures intended to clearly specify what subjects or requirements, including SARPs, should be considered when PIRGs develop a list of deficiencies. Also, it provides more precise procedures for validation and assessment of the reported deficiencies as well as for monitoring corrective actions.

Reporting of information on deficiencies

6.5 The Secretariat advised the meeting that in order to enable APANPIRG and its Sub-Groups to make detailed assessments of deficiencies, States and appropriate organizations (including IATA, IFALPA and IFATCA) were expected to provide formal notification to the ICAO Asia/Pacific Regional Office for action as appropriate, including action at APANPIRG and Sub-Group meetings. The reporting and assessment of deficiencies should be undertaken in accordance with the requirements of the Uniform Methodology described in the APANPIRG Procedural Handbook.

6.6 It was noted that IFALPA had a long standing deficiencies reporting procedure and its list of deficiencies obtained from pilot reports was contained in the IFALAPA Annex 19 which was submitted to ICAO on a regular basis. This was the main source of obtaining user deficiencies presently available to ICAO. The other international organizations and users were encouraged to provide similar reports.

6.7 In regard to action to be taken by State and ATS providers, they should submit formal notification of the implementation/rectification of a deficiency to the Regional Office, to enable the list of air navigation deficiencies to be updated and maintained as an accurate record within APANPIRG.

6.8 The Secretariat highlighted differences in the usage of the term deficiency, in particular that in the ICAO sense, the term deficiency relates to defined parameters that qualify a circumstance for inclusion on the APANPIRG List of Deficiencies in the air navigation field as described in the Uniform Methodology.

Review of APANPIRG's List of Deficiencies

6.9 The meeting reviewed and updated the List of Deficiencies from APANPIRG/14 based on information provided to the Regional Office by States. **Appendix B** to the Report on Agenda Item 6 refers.

6.10 The meeting noted that APANPIRG/14 had expected that action to resolve the implementation of the many ATS routes on the list would be taken by the ARNR/TF. APANPIRG/14 decided to retain the deficiency Status listing until the Task Force completed its review.

6.11 The Secretariat informed the meeting that thirteen of the routes listed were subject to ANP amendment, and due to staffing constraints at the Regional Office, processing of the amendments had not been completed. This situation would rapidly improve with the ATM Section now at full strength.

6.12 IATA requested that no action should be taken to delete routes that were in the Asia/Pacific ANP and not previously agreed by APANPIRG for deletion until after the ARNR/TF had completed its review. The meeting agreed that it was intended that all ATS route matters concerning the ANP would be dealt with by the ARNR/TF.

IATA report on deficiencies

6.13 IATA provided information indicating that flights operating over Chennai, Dhaka, Kolkatta, Makassar, Mumbai and Yangon FIRs regularly experience difficulties in maintaining two-way communications with the respective ATC units. Reports related to the heavily trafficked Mumbai FIR include exceedingly congested and poor quality HF communications.

6.14 In the case of the Yangon FIR, the complexity of the transition from metric to CVSM to RVSM levels coupled with the communications difficulties had led to IATA introducing a non-ICAO In flight Broadcast Procedure (IFBP) requiring pilots to transmit their positions to each other on a separate frequency and a contingency procedure blocking conflicting levels in the opposite direction, allowing aircraft to transition from one flight level system to another if communications cannot be established.

6.15 In the above context, the meeting noted the work described elsewhere in this report regarding the proposal under consideration by China and Myanmar to introduce a single transition from metric to RVSM levels in this area. The meeting also noted the update from the Secretariat which described a number of approaches and missions by ICAO to Myanmar regarding the poor communications facilities and recent undertakings by Myanmar to procure appropriate equipment.

Non-standard phraseology

6.16 IATA noted many occasions when ATS communications did not utilize standard R/T phraseology. In addition, it was well understood that many ATS units in the region were not staffed by native English speakers. This made it all the more imperative for controllers to strictly adhere to standard R/T phraseology.

6.17 The meeting noted the language proficiency provisions in an amendment to the SARPs (described elsewhere in this report), which in the longer term should be a major factor in

improving language proficiency of controllers and pilots. The meeting noted that with the attention being focused on the new language proficiency provisions, there should now be a heightened sense of awareness on the importance of language proficiency. In this regard, States, ATS providers and users should renew their efforts to improve the operational use of the English language in radio communications.

ATC practices and procedures

6.18 IATA also raised concerns with regard to the reportedly regular practices by ATC of late delivery and fragmenting of ATC clearances. With the advent of the glass cockpit, clearances generally had to be entered into the FMS and, particularly in the case of routine route clearances, this was better achieved when the aircraft was stationary and preferably before pushback. It was also preferred that the full clearance, including the SID, be given together with the route clearance as these also had to be entered into the FMS. Sudden changes by ATC in the SID and level restrictions, at or near the take-off point were unhelpful.

Compliance with Annex 14 — Aerodromes requirements

6.19 As traffic grows in volume and aircraft size, IATA drew attention to the problem of many airports in the region experiencing difficulties in managing the increased flow, often because of inadequate space in the manoeuvring areas resulting in complex procedures, which in turn caused safety concerns. This situation would be exacerbated by the introduction of the Airbus 380, which was expected to enter service in the first quarter of 2006.

Compliance with Annex 15 — Aeronautical Information Services notification requirements

6.20 IATA informed the meeting that operator reports continued to highlight situations in which insufficient warning was given in regard to airspace and air route closures, changes to navigation procedures, etc. Although Annex 15 required “at least 7 days” notice, many cases occurred in which hardly any lead-time at all was given. IATA acknowledged that in some cases the ATS authority itself was not given any warning, but requested that the relevant ATS authority play a role in ensuring that this issue was understood by all concerned. In particular, publishing changes in approach procedures (for example) at an airport, without complying with Annex 15 requirements meant that operators would not be able to comply with the new procedures because the necessary charts and FMS data would not be available. Although the minimum requirement was at least one AIRAC cycle, two AIRAC cycles would ensure that all the necessary measures by charting agencies, operator dissemination of the information and training would be accomplished.

6.21 In this regard the meeting again noted the agreement reached during the meeting that issues associated with the lack of timely issuance of AIS be referred to the AIS Implementation Task Force (AITF) for further study and urged States to provide detailed information to the AITF in time for consideration at the AITF/1 meeting in November 2004.

ATS Incident Reporting

6.22 The meeting recalled that the ICAO *ATS Planning Manual*, Doc 9426, Part II, Chapter 3 required that reporting of air traffic incidents and ATS investigation procedures be established in order to ensure high standards of safety in the conduct and control of air traffic. Near collisions, serious difficulty caused by faulty procedures or lack of compliance with applicable procedures, and serious difficulty caused by failure of ground facilities were identified as air traffic incidents and were reportable.

6.23 IATA reminded the meeting that they routinely receive a large number of incident reports from operators that often contain an ATS related factor. In order to undertake appropriate investigation, information was required from the ATS provider in relation to the report, and the information was required in a timely manner to ensure the investigation could move forward and before the expiry of ATS records/recordings etc. In order to allow ATS providers to meet their investigation responsibilities, IATA was able to provide data to ATS providers to assist with their investigations.

6.24 IATA was disappointed in the lack of success in obtaining from the respective ATS providers suitable contact details of a person or position to which they could provide incident reports and discuss the circumstances relating to the incident. IATA wished to acknowledge Indonesia, who had provided an e-mail address for incident reports to be sent.

6.25 Although the meeting agreed that these activities were probably outside the scope of the meeting and more the responsibility of the operators and the respective regulatory authorities, the meeting urged States to consider providing details of a responsible contact person to which operators could send incident reports for investigation and resolution.

6.26 In light of the foregoing, the meeting formulated the following draft Conclusion:

Draft Conclusion 14/6 – State contact point for submission of ATS incident reports

That, States identify a responsible contact point to act as a focal point for safety related activities and in particular for the submission and coordination of ATS incident reports.

**ASIA/PACIFIC SUPPLEMENT
TO THE UNIFORM METHODOLOGY FOR THE IDENTIFICATION, ASSESSMENT AND
REPORTING OF AIR NAVIGATION DEFICIENCIES**

1. INTRODUCTION

1.1. Considerable attention is being given by ICAO to eradicate deficiencies in the air navigation field. At the thirteenth meeting of the Asia/Pacific Air Navigation Planning and Implementation Group (APANPIRG/13) held on September 2002, it was decided to establish a Deficiency Review Task Force to prepare an Asia/Pacific Supplement to the *Uniform Methodology for the Identification, Assessment and Reporting of Air Navigation Deficiencies* (hereinafter referred to as “Uniform Methodology”) approved by the Council of ICAO on 30 November 2001. The Uniform Methodology was developed by ICAO for the efficient identification, assessment and clear reporting of air navigation deficiencies. The Asia/Pacific Supplement provides more detailed procedures and a management tool to assist the APANPIRG in applying the Uniform Methodology (a copy of the Uniform Methodology contained in the APANPIRG Procedural Handbook is available on the ICAO website: www.icao.int/apac under the heading “E-documents”).

1.2. The ICAO Council in 2001 approved the following unified definition of a deficiency within the context of the Uniform Methodology, which replaces the previous term “shortcomings and deficiencies:”

A deficiency is a situation where a facility, service or procedure does not comply with a regional air navigation plan approved by the Council, or with related ICAO Standards and Recommended Practices (SARPs), and which situation has a negative impact on safety, regularity and/or efficiency of international civil aviation.

1.3. The Asia/Pacific Air Navigation Plan (ASIA/PAC ANP, Doc 9763) has been revised in the new ICAO format for regional plans, which is in two documents: the Basic Air Navigation Plan (Basic ANP) and the Facilities and Services Implementation Document (FASID). The first edition (2001) of the revised ASIA/PAC ANP is expected to be published by 2005 (an electronic copy is available on the ICAO secured website: www.icao.int/icaonet)

1.4. It should be noted that in certain areas, there may be deficiencies related to the organization, management and institutional aspects which affect the operation of civil aviation organizations. This has could have a direct impact on the provision of air navigation facilities, services and procedures, which are elements listed in the ICAO Regional Plans.

2.0 BACKGROUND

2.1 States, in recognition of their responsibilities under Article 28 of the Convention on International Civil Aviation for the provision of safe air navigation services, undertake to increase their efforts in the rectification and elimination of air navigation deficiencies identified by the various Users.

2.2 As required by APANPIRG, the ICAO Asia/Pacific Regional Office maintains a list of deficiencies that exist in the Asia/Pacific region and adopts the necessary procedures for the collection of information in order to identify, evaluate and classify deficiencies and priorities in accordance with the Uniform Methodology.

2.3 The purpose of this list of deficiencies is to assist States to define their implementation priorities and to indicate remedial action required. This information is provided to APANPIRG meetings for review under its terms of reference, *inter alia*, make detailed assessment of the safety impact of the deficiencies as listed and propose remedial action required by States for subsequent review by the Air Navigation Commission and Council.

2.4 The format of reporting of resolution of deficiencies by provider States is in accordance with the Uniform Methodology. Under the Corrective Action column, States are required to provide to the Regional Office, in a timely manner, an action plan comprising a detailed description of the actions taken for the expeditious rectification of the listed deficiencies.

2.5 The Regional Office submits the updated information to APANPIRG for further actions as deemed necessary, and coordinates with the provider States concerned on decisions taken by APANPIRG, the Council and Air Navigation Commission on the deficiencies.

2.6 APANPIRG and its respective Sub-Groups, as part of their TORs and Subject Tasks Lists, are intensifying their efforts in dealing with deficiencies with a higher focus on prioritization and monitoring of corrective action taken by States and other responsible bodies.

3.0 **OBJECTIVE**

3.1 The main objective of this Supplement to the Uniform Methodology is to provide for a systematic approach to the management of deficiencies in the Asia/Pacific region by detailing the procedures to be followed by the Users, States and the Asia/Pacific Regional Office in implementing the Uniform Methodology.

3.2 It is also the objective of this Supplement to provide clear definition of the responsibilities and obligations of the parties involved in the management of the deficiencies.

4.0 **REGIONAL PROCEDURES**

4.1 It has been recognized that the process of dealing with deficiencies involves a number of stages as follows:

- Identification
- Assessment, prioritization and verification against ICAO documents
- States' validation of deficiencies reported
- Development of action plans for rectification and elimination
- Monitoring of follow-up actions
- Rectification of deficiency and removal from list

4.2 The purpose of this section is to outline the procedures to be followed by the parties involved at each of the above stages to deal with the deficiencies. These procedures are presented in the form of a structured flow chart attached to this Supplement aimed at facilitating the actions required to eliminate the deficiencies.

Identification

4.3 In Appendix M to Assembly Resolution A33-14, Users of air navigation facilities and services are urged to report any serious problems encountered due to lack of implementation or unsatisfactory operation of air navigation facilities or services required by the air navigation plans.

States should act on such reports to resolve the problem and when remedial action is not taken, Users should inform ICAO, through the medium of an international organization where appropriate.

Notification/Sources

- Users
- States
- Regional Office (information from missions, meetings, accident/incident reports)

4.4 The deficiencies identified shall follow the SMART concept where the description of a deficiency will be:

- Specific – clear task on what needs to be done
- Measurable – precise requirements
- Achievable – task sensible in scope
- Realistic – task has deadlines and completion requirements
- Time-bounded – sensible guide for completion and imposes a schedule

Assessment, Prioritization and Verification against ICAO documents

4.5 An assessment is made by the Regional Office to determine whether the reported deficiency is non-compliant with the ASIA/PAC ANP or SARPs. If a deficiency exists, it is evaluated as to its effect on safety, efficiency and regularity, and under the Uniform Methodology, prioritized as follows:

- U - Urgent requirements having a direct impact on safety and requiring immediate corrective actions
- A - Top priority requirements necessary for air navigation safety
- B - Intermediate requirements necessary for air navigation regularity and efficiency

4.6 To facilitate the prioritization process, the Regional Office is guided by the principal that a deficiency with respect to an ICAO Standard is accorded a “U” status, to a Recommended Practice an “A” and to PANS as “B”.

Validation by States

4.7 The Regional Office, on determining that a reported deficiency exists and after assessment and prioritization, will inform the State involved of the full details of the report and results of the assessment. The State involved will be requested to acknowledge and validate the deficiency, and be informed that the deficiency will be recorded in the APANPIRG List of Deficiencies. States will be requested to develop an Action Plan with timelines based on the prioritization of the deficiency determined by the Regional Office.

4.8 In the event of serious cases of deficiencies, the Regional Office will notify the Air Navigation Commission as a matter of priority.

Development of action plans

4.9 States are required to develop action plans to rectify deficiencies in consultation with appropriate bodies with defined target dates based on the prioritization determined by the Regional Office. The following factors should be taken into account:

- deficiencies with “U” priority must be dealt with on a high priority basis
- in developing the action plan, advice may be sought from the Regional Office
- on completion, the action plan to be submitted to the Regional Office for review and recording
- APANPIRG to be informed of the action plans which will be reviewed by the contributing bodies to APANPIRG

Monitoring of follow-up actions

4.10 States should keep the Regional Office informed on progress with action taken to rectify deficiencies. The Regional Office may request updates as necessary to keep APANPIRG and its contributory bodies informed. Periodic annual updates should be made to the Regional Office no later than April each year.

4.11 The Regional Office will maintain regular contact with States and before the holding of APANPIRG and Sub-Group meetings, updates will be requested. An agenda item on deficiencies will be included on the Agenda of APANPIRG Sub-Groups and afforded a high priority by the meetings.

4.12 Users who reported deficiencies will be kept informed of progress and contacted before APANPIRG and Sub-Group meetings to seek their views on the status of deficiencies and any changes in circumstances.

Rectification of Deficiency & Removal from List

4.13 States, on reporting that a deficiency recorded on the APANPIRG List of Deficiency has been rectified, will submit in writing an official report to the Regional Office providing full details of the action taken. On receipt of a report, the Regional Office will validate the action taken with the User who made the report. In the event that the User does not agree with the action taken, the deficiency will remain open until confirmation has been gained by all concerned. Once confirmation is made, APANPIRG will be informed, the status of the deficiency reviewed and removed from the List.

5.0 **RESPONSIBILITIES**

Regional Office

5.1 The Regional Office, as a primary party in the management of deficiencies, will keep under review and record the implementation by States of the requirements ASIA/PAC Basic ANP and FASID. This information will also be used to identify possible non-compliance that should be further assessed against the definition of deficiency. Records will also be kept on the differences to SARPs filed by States and follow-up actions taken as appropriate.

5.2 All mission reports should include a section on identification of new deficiencies, actions taken on and status of existing deficiencies.

5.3 One of the primary functions of the Regional Office is to assist States to which it is accredited to comply with SARPs and implement the requirements of the ASIA/PAC ANP. Where deficiencies exist, all possible assistance should be provided to States to assist them to take remedial actions to correct air navigation deficiencies. In this regard Regional Office will, to the extent practicable, establish regular correspondences with and perform regular visits/missions to States to assist in the implementation of action plans for the rectification of deficiencies. These visits/missions would be results-oriented, and also used to identify other deficiencies.

States

5.4 Once deficiencies have been identified, evaluated and prioritized, the Regional Office will commence coordination with States in order to allow States to establish an action plan for resolving the deficiency.

5.5 Sufficient notification will be provided to States regarding the deficiencies as a first step towards establishing the corresponding coordinated action plan. This will be achieved primarily through such mechanisms as correspondences, review by APANPIRG sub-groups, working groups, task forces and other regional and sub-regional meetings.

5.6 States, upon receipt of the list of deficiencies, will review, validate and comment on, and where actions have already been taken, and provide the necessary details on the list of identified deficiencies, assessed and prioritized by the Regional Office for further action.

5.7 States are required to review and maintain their respective list of deficiencies and identify those that have not been resolved, formulate and forward an action plan to ICAO for review and allocate sufficient resources as required for elimination.

5.8 States are required to respond promptly to the list of deficiencies identified so that the necessary details can be provided to APANPIRG and its sub-groups, working groups and task forces for review and consideration of the necessary actions to be taken by States to eliminate the deficiencies. The final list of deficiencies will be presented as core material to every APANPIRG meeting in accordance with the Terms of Reference of APANPIRG.

5.9 Monitoring and reporting of corrective actions and progress towards the elimination of deficiencies forms an important part of the management of deficiencies. In this regard, it is vital that a reliable monitoring system exists to ensure a true reflection of those deficiencies that have been resolved.

5.10 States' action plans should include the corrective measures to be taken by the State and a date by which it is anticipated that the identified deficiencies will be eliminated. The information provided through this formal coordination process will include:

- a description of the deficiency
- risk assessment
- possible solutions
- time-lines
- responsible party including contact details of designated person/position
- financing source
- agreed action to be taken,

- report on actions already taken.

5.11 In accordance with the 11th Air Navigation Conference Recommendation 4/8, States are urged to identify areas of air navigation facilities and services where the establishment of multinational agreements or informal coordination groups may contribute to the resolution of deficiencies. This may be especially applicable to deficiencies which are region wide in nature and affecting a group of States thus lending themselves to general resolution at a regional or wider level.

Users

5.12 Appropriate international organizations, in their capacity as Users of air navigation facilities, should provide and update a list of deficiencies on a regular basis to the Regional Office for validation and action in accordance with Assembly Resolution A33-14 Appendix M. In addition to this, the Users should notify the Regional Office as soon as a new deficiency is identified.

5.13 International Organizations, as one of the user sources in highlighting deficiencies, should provide assistance in the independent verification of remedial actions taken by State(s). The 11th Air Navigation Conference Recommendation 4/8 encouraged Users of air navigation facilities and services to report to the Regional Office once they note that the remedial action on the deficiency they had reported has been taken.

APANPIRG

5.14 APANPIRG, as the only coordinating body in the Asia/Pacific Region for all activities conducted within ICAO concerning the air navigation systems, meets at regular intervals. Its terms of reference includes *inter alia*, to identify specific problems in the air navigation field and propose in appropriate form, actions aimed at solving these problems. The List of Deficiencies in the air navigation field form part of the core material reviewed by APANPIRG meetings and recommendations for remedial actions are developed.

5.15 In order to ensure that a support mechanism is in place to deal with deficiencies, States must be fully committed to taking follow-up actions on the outcome of APANPIRG meetings. A person or position should be nominated to with sufficient decision-making authority to coordinate and oversee the States' action plan for the elimination of deficiencies.

6 OTHER MECHANISMS

6.1 The Regional Office, in coordination with States, will utilize other mechanisms for establishing measures for the resolution of deficiencies.

6.2 The various APANPIRG sub-groups, working groups, task forces and other regional and sub-regional meetings and special implementation projects (SIPs) will be utilized to discuss the implementation of ICAO SARPs and the requirements of the ASIA/PAC ANP in order to eliminate deficiencies.

6.3 The Annual Conference of Directors General of Civil Aviation, are attended by State representatives in civil aviation at the highest level. Every opportunity should be taken at these conferences to address the need for political will to instill awareness and allocate appropriate and sufficient resources through effective plans of action that will eliminate deficiencies in a timely manner.

6.4 The International Financial Facility for Aviation Safety (IFFAS) has recently been established by the ICAO Council to assist States in financing aviation safety-related projects identified primarily through the ICAO Universal Safety Oversight Audit Programme (USOAP). The purpose of IFFAS is to provide financial assistance to States that need to apply corrective measures flowing from the USOAP audits but are unable to obtain the necessary funding through traditional means of financing. IFFAS will be operated in complete independence from ICAO's programme budget and is to be funded through voluntary contributions. The IFFAS mechanism will complement existing ICAO fund-raising mechanisms.

6.5 Other ICAO tools that may be used to address deficiencies include ICAO technical cooperation programmes, special implementation projects, seminars, workshops and training programmes.

6.6 Deficiencies identified during the USOAP audits will be dealt with under a separate programme in accordance with the Memorandum of Understanding between the Contracting State and ICAO. Until such time an appropriate mechanism is developed for the management of such deficiencies by the planning body, they shall not be included in this procedure.

- END -

PHASES

ROLES

IDENTIFI-
CATION

International Orgs,
User/Provider States,
Regional Office

ASSESSMENT
PRIORITIZATION & VERIFICATION

Regional Office

VALIDATION & ACTION PLAN

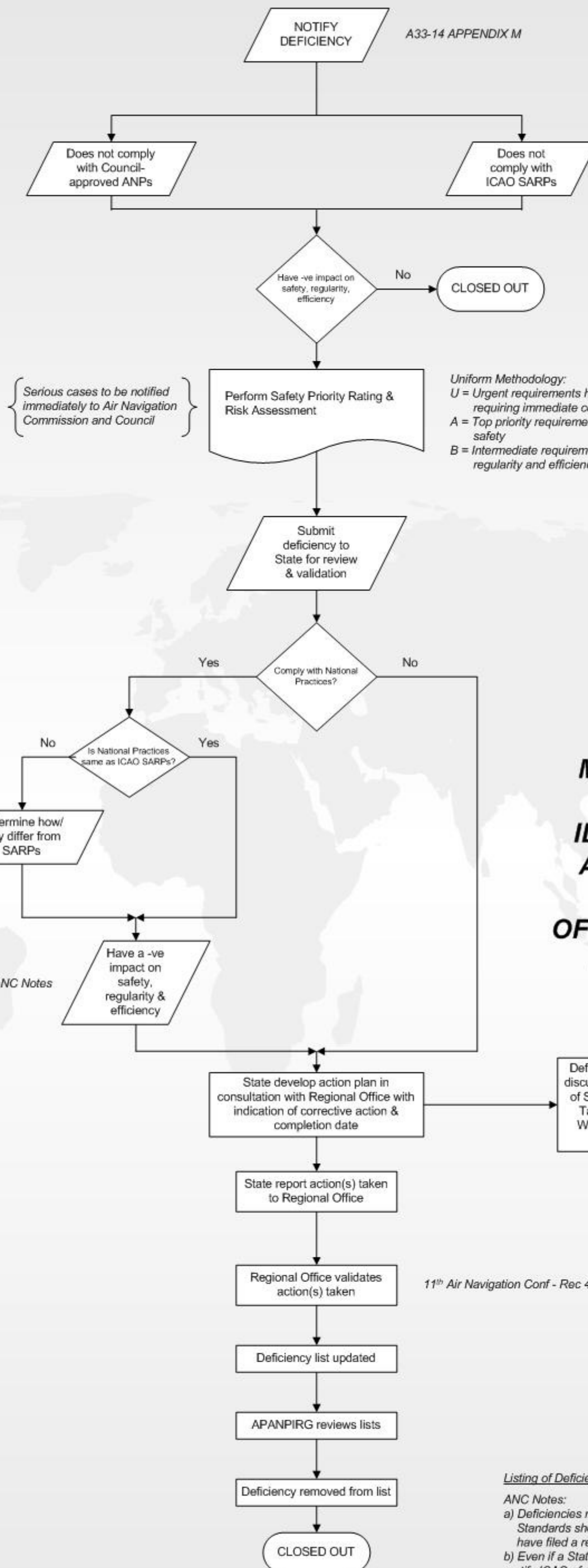
State

MONITORING

International Orgs,
Users,
Regional Office

RECTIFICATION &
REMOVAL FROM LIST

States,
International Orgs,
Users, Regional
Office



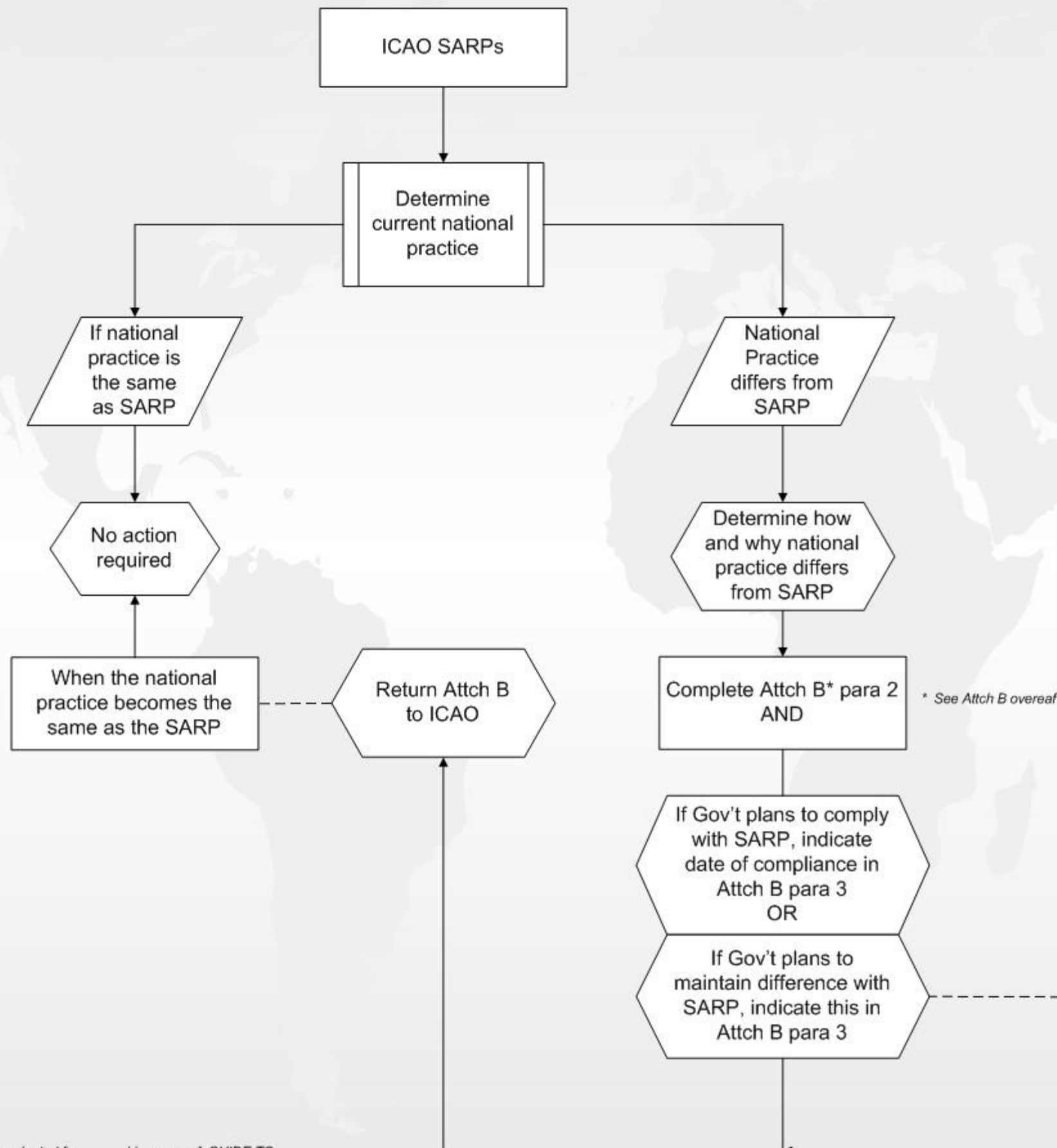
Listing of Deficiency with respect to a difference filed

ANC Notes:

- Deficiencies regarding compliance with particular Standards should be listed even if the State would have filed a related difference
- Even if a State is under obligation to promptly notify ICAO of differences from SARPs, the lack of implementation should not be considered or listed as a deficiency when there is no negative impact on safety, regularity and/or efficiency as assessed by a planning and implementation group (PIRG)

(Excerpts from a paper presented to the Air Navigation Commission AN-WP/7568 dated 9/11/00)

A GUIDE TO SUBMITTING DIFFERENCES TO ANNEXES



Note on the Notification of Differences

- This note is issued to facilitate the determination and reporting of such differences and state the primary purpose of such reporting.
- The primary purpose of reporting of differences is to promote safety and efficiency in air navigation by ensuring that governmental and other agencies, including operators, concerned with international civil aviation are made aware of all national rules and practices in so far as they differ from those prescribed in the ICAO Standards.
- Contracting States are therefore requested to give particular attention to the notification of differences with respect to Standards in the various Annexes. The Council has also invited Contracting States to extend the above consideration to Recommended Practices when the knowledge of such differences is important for the safety of air navigation.
- Guidance to Contracting States in reporting of differences can only be given in very general terms. Where national regulations of States call for compliance with procedures that are not identical but essentially the same as those contained in the Annexes, no difference should be reported since the details of the procedures existing are the subject of notification through the medium of aeronautical information publications.
- Broadly, the determination should be based on, *inter alia*, the following criteria in so far as they are applicable:
When the facilities or services provided by a State for international air navigation:
 - 1) impose any obligations or requirements for safety additional to any that may be imposed by the corresponding ICAO Standard;
 - 2) while not imposing an additional obligation, differ in principle, type or system from the corresponding ICAO Standard;
 - 3) are less protective than the corresponding ICAO Standard
- Differences may have been notified because the associated Standards were:
 - a) Not applicable in the circumstances of the State concerned;
 - b) Not implemented;
 - c) Subject to partial implementation, where a lower level of requirement has been provided
 - d) Subject to an alternative means of achieving the same intent and level of safety; or
 - e) Exceeded by the introduction of more stringent State rules than the requirements contained in an ICAO Standard. This is of particular importance where a State required a higher standard and sought to govern operators from other States.
- The notification of a difference does not necessarily indicate operation to a lesser level of safety. A difference may indicate inapplicability of the particular Standard, an equivalent level of safety achieved by alternative means, or that the level of safety implied by the Standard is exceeded.

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REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE ATM/AIS/SAR FIELDS IN THE ASIA/PACIFIC REGION

(Updated by ATM/AIS/SAR/SG/14 and changes shown in ~~strikeout~~ and <u>underlining</u>)								
Identification		Deficiencies			Corrective action			
Requirements	States/facilities	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action**
Requirements								
A202	Hong Kong, China/Japan	Partially implemented	24/11/93	Hong Kong-Bangkok segment was implemented on 1 November 2001. Japan considering implementation as a conditional route	Japan - co-ordinate Hong Kong, China	Hong Kong, China/ Japan	HongKong-Bangkok segment 1/11/2001; Hong Kong-Chitose segment TBD <u>Review by ARNR/TF</u>	B
A203	China/Hong Kong, China	Not implemented	24/11/93	China advises no international flight requirements.	China requested deletion and amendment to ANP	China/Hong Kong, China	Subject to ANP amendment	B
A211	Indonesia	Partially implemented	24/11/93	ICAO has requested Malaysia to co-ordinate the early implementation of A211 with States concerned. Malaysia has advised at SEACG/10 of the implementation of the route within Malaysia on 29 November 2001.	Indonesia - implement the missing segment ICAO- coordinate the implementation with Indonesia	Indonesia ICAO	29/11/2001 (by Malaysia) TBD by Indoensia <u>Review by ARNR/TF</u>	B

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Identification		Deficiencies			Corrective action			
Requirements	States/facilities	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action**
A218	China/Russian Federation	Partially implemented <u>in Russia and Alaska</u>	24/11/93	ICAO has taken action to co-ordinate with China/Russian Federation for implementation of Harbin-Ekimchan segment and to amend ANP. APAC 99/1-ATS was approved on 26/1/00. CAAC subsequently advises (14 Apr 03) that current route G212 meets the requirements and the proposed A218 is no longer required.	China requested deletion and amendment to ANP	China/Russian Federation ICAO	Subject to ANP amendment <u>Review by ARNR/TF</u>	B
A223	Japan	Not implemented	24/11/93	Japan has advised that a domestic route network covers the route.	Japan - consider implementation as a conditional route	Japan	TBD <u>Review by ARNR/TF</u>	B
A335	China/Mongolia/Russian Federation	<u>Partially</u> implemented	24/11/93	China and Mongolia advised that this segment is covered by other ATS routes properly; thus will has proposed its deletion from ANP. <u>China reported to APANPIRG/14 the portion between HOHHOH - TUMURTAI was implemented.</u>	China, Mongolia - propose ANP amendment	China/Mongolia	Deletion of A335 notified 9 Oct 01 Subject to ANP amendment	B

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE ATM/AIS/SAR FIELDS IN THE ASIA/PACIFIC REGION

Identification		Deficiencies			Corrective action			
Requirements	States/facilities	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action**
A341	Indonesia/Malaysia	Partially implemented	24/11/93	ICAO has requested Indonesia to co-ordinate implementation with Malaysia. Malaysia has advised that the existing route B584 fulfils sufficiently the requirement and would propose the deletion of the requirement for Syrabaya-Kota Kinabalu segment.	Indonesia/Malaysia - consider full implementation	Indonesia/Malaysia	12/2001 <u>Review by ARNR/TF</u>	B
A450	Indonesia/United States	Partially implemented	24/6/94	ICAO has requested Indonesia to co-ordinate implementation with United States. United States has agreed to the implementation, and a response from Indonesia is being awaited.	Indonesia/United States - consider full implementation	Indonesia/United States	TBD <u>by ARNR/TF</u> <u>Review</u>	B
A469	Viet Nam	Implemented as W9 before. As of 1 Nov 2001 implemented as L643.	19/8/94	ICAO has requested Viet Nam to implement as A469. Viet Nam advised that W9 was replaced with L643 on 1 November 2001.	Viet Nam - propose deletion of the requirement as A469 ICAO process ANP amendment	Viet Nam ICAO	<u>Subject to ANP amendment</u>	B
A473	India/Nepal	Not implemented	16/3/99	~~India and Nepal have advised that realignment is being co-ordinated and the route is to be implemented. A new proposal was submitted in mid 2003 by Nepal. This is being coordinated by AAI with defense authorities.~~	India/Nepal- implement the route	India/Nepal	~~Sep 2003~~ - TBD <u>Review by ARNR/TF</u>	B

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE ATM/AIS/SAR FIELDS IN THE ASIA/PACIFIC REGION

Identification		Deficiencies			Corrective action			
Requirements	States/facilities	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action**
A581	Thailand	Partially implemented	17/2/97	China, Lao PDR and Thailand proposed an amendment to ANP. ICAO processed APAC99/11 in co-ordination with China/Myanmar/Thailand. APAC99/1 was approved on 15 December 2000.	Thailand - implement accordingly.	Thailand	11/2002 <u>Review by ARNR/TF</u>	B
A584	United States	Partially implemented	24/6/94	ICAO has requested United States to implement the missing segment. United States has proposed deletion of the missing segment, and the proposal is under preparation.	ICAO - process an amendment in co-ordination with United States	United States ICAO	Subject to ANP amendment	B
B201	Fiji/New Zealand	Not implemented	24/11/93	Fiji/New Zealand have advised that they agreed to delete the requirement. ICAO will process ANP amendment as this was covered by routes B575, G457 and R327.	Fiji/New Zealand - propose an amendment to delete the requirement in ANP	Fiji/New Zealand ICAO	Subject to ANP amendment	B
B204	Maldives	The requirements for this route are not detailed in ANP	24/1/96		Maldives - propose an amendment to ANP to add the route	Maldives ICAO	Subject to ANP amendment	B
B212	Japan/Rep of Korea	Not implemented	24/11/93	Japan is considering implementation as a conditional route and will coordinate with Rep of Korea	Japan/Rep of Korea - consider implementation	Japan/Rep of Korea	12/2005 <u>Review by ARNR/TF</u>	B
~~B213~~	~~China~~	~~Not implemented~~	~~24/11/93~~	~~CAAC advises no international flight requirements - route H12 is available.~~	~~China - consider implementation~~ ~~China - propose deletion and amendment to ANP~~	~~China, ICAO~~	~~Subject to ANP amendment~~	~~B~~

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE ATM/AIS/SAR FIELDS IN THE ASIA/PACIFIC REGION

Identification		Deficiencies			Corrective action			
Requirements	States/facilities	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action**
B456	Papua New Guinea	Partially implemented	24/11/93	Papua New Guinea has advised that they will formally propose ANP amendment for deletion of the missing segment.	Papua New Guinea - propose an amendment to ANP. ICAO-process ANP amendment.	Papua New Guinea ICAO	<u>Subject to ANP amendment</u>	B
B591	China	Partially implemented	22/7/97	Co-ordination is in progress among States and ICAO	ICAO - continue on-going implementation co-ordination related to the Revised South China Sea route structure with States	China	TBD <u>Review by ARNR/TF</u>	B
G211	Malaysia	Not implemented	24/11/93	ICAO has requested Malaysia to implement G221. Malaysia has advised that G211 would be replaced with EMARSSH routes; thus would propose the deletion of the requirement when an ANP amendment relating to EMARSSH is prepared.	Malaysia - propose deletion ICAO- process ANP amendment	Malaysia ICAO	28/11/2002 Subject to ANP amendment	B
G461	Indonesia	Implemented with different route specification	24/11/93	ICAO co-ordinated with Indonesia to amend ANP requirement. APAC00/1-ATS was approved on 15 January 2001.	Indonesia-implement the requirement accordingly.	Indonesia	TBD <u>Review by ARNR/TF</u>	B
G473	Cambodia /Philippines Thailand/Viet Nam	Partially implemented	24/11/93	Co-ordination is in progress among States and ICAO	ICAO - continue ongoing implementation co-ordination related to the Revised South China Sea route structure with States	Cambodia /Philippines Thailand/Viet Nam	TBD <u>Review by ARNR/TF</u>	B
G589	DPR Korea/ Rep of Korea	Not implemented	24/11/93		B467 established instead of G589 April 1998	DPR Korea/ Rep of Korea	April 1998 Completed <u>Review requirement for G589 by ARNR/TF</u>	B

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Identification		Deficiencies			Corrective action			
Requirements	States/facilities	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action**
R216	China/Kazakhstan	Not implemented	24/11/93	CAAC advises current routes B215 KUQA, A460 REVKI to Alma Ata meets the requirements for traffic from Urumqi to Alma Ata and requests deletion of R216 from ANP (14 Apr 03)	CAAC proposed deletion	China/Kazakhstan ICAO	Subject to ANP amendment <u>Review by ARNR/TF</u>	B
~~R221~~	~~Russian Federation~~	~~R221 was implemented on 19 April 2001 in Malaysia in accordance with the requirement in ASIA/PAC ANP. The same route designator in use in Russian Federation~~	~~24/11/93~~	~~ICAO has requested Russian Federation to delete R221 and promulgate the route as R466 in AIP. Input from Russia is being awaited.~~	~~ICAO co-ordinate with Russian Federation to redesignate the route as R466 as already assigned as a matter of priority~~	~~Russian Federation~~	~~TBD~~	~~A~~
R333	China	Not implemented	24/11/93	China is considering future implementation	China co-ordinating with Hong Kong CAA	China	TBD <u>Review by ARNR/TF</u>	B
R335	China/Hong Kong, China	Not implemented	24/11/93	CAAC advises no international flight requirements and requests deletion from ANP (14 Apr 03)	China proposed deletion and amendment to ANP	China/Hong Kong, China ICAO	Subject to ANP amendment	B
R345	Cambodia/Lao PDR/Thailand	Not implemented	24/11/93	Cambodia has advised that the requirement is no longer valid and will propose the deletion of requirement in consultation with Lao PDR and Thailand.	ICAO - continue ongoing implementation co-ordination related to the Revised South China Sea route structure with States Camodia- coordinate the deletion with IATA as well as Lao PDR and Thailand	Cambodia/Lao PDR/ Thailand	TBD <u>Review by ARNR/TF</u>	B

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE ATM/AIS/SAR FIELDS IN THE ASIA/PACIFIC REGION

Identification		Deficiencies			Corrective action			
Requirements	States/facilities	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action**
R455	Indonesia	~~Partially implemented~~	24/11/93	ICAO has requested Malaysia to co-ordinate the implementation of R455 with States concerned. Malaysia has advised that R455 was implemented within Malaysia on 29 November 2001.	~~Indonesia - implement the requirement~~	Indonesia	29/11/2001 (by Malaysia) ~~TBD by Indonesia~~	~~B~~
R459	Indonesia	Implemented as W51 and W36	24/11/93	ICAO has requested Indonesia to implement as R459	Indonesia - consider promulgation of the route with designator R459 in AIP	Indonesia	TBD <u>Review by ARNR/TF</u>	B
R466	Russian Federation	Implemented as ~~R221~~ R446 in Russian Federation. Route requirement is listed in EUR/NAT ANP	24/11/93	ICAO has requested Russian Federation to delete R221 and promulgate the route as R466 in AIP. Implemented as R446.	~~ICAO - co-ordinate with Russian Federation to redesignate the route as R466 as already assigned as a matter of priority~~	Russian Federation ICAO	~~TBD~~ <u>Coordination with the Paris Office to amend ANP</u>	A
R579	Indonesia/Malaysia	Not implemented	24/11/93	ICAO has requested Malaysia to co-ordinate with Indonesia for implementation. Malaysia considered there was no longer requirement due to a low traffic movement; thus will propose the deletion.	Indonesia/Malaysia - consider implementation	Indonesia/Malaysia	12/2001 <u>Review by ARNR/TF</u>	B

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Identification		Deficiencies			Corrective action			
Requirements	States/facilities	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action**
R593	India/Oman	Not implemented	24/11/93	<u>India advised ATM/AIS/SAR/SG/14 that India and Oman had agreed to delete.</u>	~~India Oman are of the view that the proposed route is not considered as a requirements in view of availability of new ATS routes under EMARSSH project which provide connectivity from Mumbai and Oman. India and Oman suggested deletion of this item. India proposed deletion and amendment to ANP~~	~~India/Oman (SWACG) ICAO~~	Subject to ANP amendment	B
<u>WGS-84</u>								
WGS-84	Bhutan	Not implemented	2/7/1999	Data conversion completed, but not published		Bhutan	TBD	A
WGS-84	Cambodia	<u>Partially implemeted</u>	28/6/2001	~~Cambodia has previously informed ICAO that their WGS-84 conversion had been completed. Cambodia has now informed ICAO of flaws in their conversion and their intention to start all over again. Cambodia reported ICAO on 22 June 2004 that the WGS-84 coordinates has been implemented in international airports, airspace and international routing.~~		Cambodia	TBD	A

ATM/AIS/SAR/SG/14
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REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE ATM/AIS/SAR FIELDS IN THE ASIA/PACIFIC REGION

Identification		Deficiencies			Corrective action			
Requirements	States/facilities	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action**
WGS-84	China	Not implemented * implemented in the Sanya AOR as of 1 Nov 2001	2/7/1999	Differences to Annex 15 - <i>Aeronautical Information Services</i> are notified		China		A
WGS-84	DPR Korea	Not implemented				DPR Korea	~~TBD~~ 2004	A
~~WGS-84~~	~~French Polynesia~~	~~Implemented at main airports~~		~~in progress~~		~~French Polynesia~~	~~2003~~	~~A~~
WGS-84	Kiribati	Not implemented				Kiribati	TBD	A
~~WGS-84~~	~~Lao PDR~~	~~Partially implemented~~		<u>Notified by letter No.650 dated 29 June 2004</u>		~~Lao PDR~~	~~TBD~~	~~A~~
WGS-84	Malaysia	Partially implemented		In progress. Updated information received. Confirmation of completion date required.		Malaysia	December 2002	A
WGS-84	Nauru	Not implemented		Conferring with consultant		Nauru	TBD	A
WGS-84	Philippines	Implemented at main airports		on-going		Philippines	~~2003~~ 2004	A
WGS-84	Solomon Islands	Not implemented				Solomon Islands	1999	A
WGS-84	Vanuatu	Implemented at main airports	2/7/1999			Vanuatu	1999	A
<u>Type of ATS</u>								
Area Control Services	India	Some ATS route segments in part of Mumbai FIR are subject to Advisory Services	24/11/93	Co-ordination in progress through BBACG. HF radio being modernized and datalink being installed by ~~December 2003~~ .	India - implement Area Control Services	India	<u>Modernization of HF radio by the end of 2004</u> <u>CPDLC by the end of 2005</u>	A

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE ATM/AIS/SAR FIELDS IN THE ASIA/PACIFIC REGION

Identification		Deficiencies			Corrective action			
Requirements	States/facilities	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action**
Area Control Services	Sri Lanka	Several ATS route segments are subject to Advisory Services	24/11/93	Co-ordination in progress through BBACG	Sri Lanka – implement Area Control Services	Sri Lanka	Completed	A
<u>Airspace Classification</u>								
Airspace Classification	China	Not implemented	7/7/99		Difference to Annex 11 is published in AIP, China.	China		A
Airspace Classification	Cook Islands	Not implemented	7/7/99			Cook Islands	TBD	A
Airspace Classification	DPR Korea	Not implemented	7/7/99			DPR Korea	~~TBD~~ 2005	A
Airspace Classification	Japan	~~Not~~ Partially implemented	~~7/7/1999~~ 19/02/04		Implementation in oceanic airspace in progress, <u>domestic airspace complete</u>	Japan	~~2003~~ TBD Official confirmation pending	A
Airspace Classification	Kiribati	Not implemented	7/7/99			Kiribati	TBD	A
Airspace Classification	~~Lao PDR~~	~~Not implemented~~	~~7/7/99~~		~~Area, Approach and Tower control services est. 1 Nov~~	~~Lao PDR~~	~~Completed~~ Official confirmation required	~~A~~
Airspace Classification	Nauru	Not implemented	7/7/99			Nauru	TBD	A
Airspace Classification	Papua New Guinea	Not implemented	7/7/99			Papua New Guinea	mid 2001 Official confirmation pending	A
Airspace Classification	Republic of Korea	~~Not implemented~~	~~7/7/99~~		~~Implemented since 1 July 2001~~	Republic of Korea	1 July 2001 <u>Completed</u>	A
Airspace Classification	Samoa	Not implemented	7/7/99		CTR C and D Samoa Sector Class G	Samoa	Completed Official confirmation required	A
Airspace Classification	Solomon Islands	Not implemented	7/7/99			Solomon Islands	TBD	A
Airspace Classification	~~Sri Lanka~~	~~Not implemented~~	~~7/7/99~~			~~Sri Lanka~~	~~Completed 2003~~	~~A~~

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE ATM/AIS/SAR FIELDS IN THE ASIA/PACIFIC REGION

Identification		Deficiencies			Corrective action			
Requirements	States/facilities	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action**
Airspace-Classification	~~Tonga~~	~~Not implemented~~	~~7/7/99~~	<u>Notified by letter dated 9 July 2004</u>		~~Tonga~~	~~Completed, Official confirmation required.~~	~~A~~
Airspace Classification	Viet Nam	Not implemented	7/7/99			Viet Nam	2003/2004	A
<u>AIP Format</u>								
~~AIP Format~~	~~China~~	~~Not implemented~~	~~7/7/99~~	~~Implementation in progress~~	~~New AIP published 1 Oct 2002 with effective date 23 Jan~~	~~China~~	~~Completed~~	~~A~~
AIP Format	Cook Islands	Not implemented	7/7/99			Cook Islands	TBD	A
AIP Format	Fiji	Not implemented	7/7/99	<u>New Zealand is preparing AIP</u>		Fiji	~~Sep 2002-~~ (to be confirmed) 2004	A
AIP Format	Kiribati	Not implemented	7/7/99			Kiribati		A
AIP Format	Lao PDR	Not implemented	7/7/99			Lao PDR	<u>Sep 2003+H6</u>	A
AIP Format	Myanmar	Not implemented	7/7/99			Myanmar	Completed 2003 (To be published)	A
AIP Format	Nauru	Not implemented	7/7/99			Nauru	TBD	A
~~AIP Format~~	~~New Zealand~~	~~Not implemented~~	~~7/7/99~~	~~Differences to Annex 15—Aeronautical Information Services are notified~~		~~New Zealand~~	~~Revised format being prepared in line with ICAO requirements effective 4 Sep 03~~	~~A~~
AIP Format	Papua New Guinea	Not implemented	7/7/99	under development		Papua New Guinea	TBA	A
AIP Format	Samoa	Not implemented	7/7/99			Samoa	5/15/2003 (to be confirmed)	A
~~AIP Format~~	~~Sri Lanka~~	~~Not implemented~~	~~7/7/99~~			~~Sri Lanka~~	~~Completed—to be published end of 2003~~	~~A~~

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE ATM/AIS/SAR FIELDS IN THE ASIA/PACIFIC REGION

Identification		Deficiencies			Corrective action			
Requirements	States/facilities	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action**
AIP Format	Tonga	Not implemented	7/7/99		Under preparation	Tonga	2004	A
<u>SAR capability</u>								
SARPs in Annex 12	Cambodia	Annex 12 requirements not implemented. No agreements with adjacent States.	20/2/97		Cambodia - implement Annex 12 requirements and co-ordinate LOA with adjacent States ICAO - assist to develop SAR capability and to co-ordinate with adjacent States	Cambodia	TBD	U
SARPs in Annex 12	Cook Islands	Annex 12 requirements not implemented. No agreements with adjacent States.	31/1/95	SAR agreement with New Zealand under development	Cook Islands - implement Annex 12 requirements and co-ordinate LOA with adjacent States ICAO - assist to develop SAR capability and to co-ordinate with adjacent States	Cook Islands	2004	U
SARPs in Annex 12	Maldives	Annex 12 requirements not implemented. No agreements with adjacent States.	24/4/1997	SAR services and facilities provided (details to be confirmed). SAR agreements with neighbouring States under development	Maldives - implement Annex 12 requirements and co-ordinate LOA with adjacent States ICAO - assist to develop SAR capability and to co-ordinate with adjacent States	Maldives	2004	U

Agenda Item 7: Update the list of ATM/AIS/SAR Tasks together with priorities

Review of the Terms of Reference of the ATM/AIS/SAR/SG

7.1 The meeting reviewed its Terms of Reference (TORs) to ensure that the Sub-Group maintained a suitable focus for its work programme. It was recalled that at APANPIRG/14, it was considered timely in view of the wider area of interest of the ATM/AIS/SAR/SG, which included matters related to airspace management, airspace safety management and air traffic flow management, to revise the title to the ATM/AIS/SAR Sub-Group (APANPIRG Decision 14/11 refers) but the TORs were not updated.

7.2 The meeting recalled that APANPIRG/10 had established a Work Programme Review Task Force to review the role and function of the CNS/ATM/IC/SG. The Task Force concluded that the CNS/ATM/IC/SG had completed most of its tasks and future tasks related to these items could be handled by the two renamed Sub-Groups, ATM/AIS/SAR/SG and the CNS/MET/SG. In accordance with the APANPIRG Procedural Handbook, it was recommended that the CNS/ATM/IC/SG be dissolved. Accordingly, the Task Force recommended that the TORs of the other two Sub-Groups be revised to taking into account the tasks involved in CNS/ATM implementation to cover the TORs of the CNS/ATM/IC/SG.

7.3 Based on the recommendations of the Work Programme Review Task Force, APANPIRG/11 changed the name of the CSN/MET/NAV/SUR/SG to the CNS/MET Sub-Group and adopted the revised TORs. The ATS/AIS/SAR/SG had not recommended any change to its name or TORs as the CNS/ATM/IC/SG continued its work. At APANPIRG/14, in recognition of the expanded role of the ATS/AIS/SAR/SG in recent times to include air traffic management functions, the name of the Sub-Group was changed to the ATM/AIS/SAR/SG but the TORs were not changed. APANPIRG/14 established the Future Directions Task Force (FDTF) to review the effectiveness and efficiency of the APANPIRG contributory bodies in particular the Sub-Groups.

7.4 The FDTF, as reported under Agenda Item 8, recommended that the CNS/ATM/IC/SG be dissolved and this would be considered by APANPIRG/15. In light of this development, and in the event that APANPIRG/15 dissolves the CNS/ATM/IC/SG, its remaining tasks would need to be assigned to the ATM/AIS/SAR/SG and the CNS/MET/SG. However, irrespective of the future of the CNS/ATM/IC/SG, the meeting agreed that it was appropriate to revise the TORs of the ATM/AIS/SAR/SG to properly reflect its expanded role as shown in **Appendix A** to the Report on Agenda Item 7.

7.5 In light of the foregoing the meeting formulated the following draft Decision:

Draft Decision 14/7 – Amendment to the Terms of Reference of the ATM/AIS/SAR/SG

That, proposed amendments to the Terms of Reference of the ATM/AIS/SAR/SG as presented in Appendix A to the Report on Agenda Item 7 be adopted.

Updated Task List

7.6 The meeting reviewed the updated Task List approved by APANPIRG/14.

7.7 The meeting noted that the FDTF had made three recommendations to APANPIRG/15 to include additional items on the ATM/AIS/SAR/SG Task List as follows:

- a) review key priorities for implementation of CNS/ATM systems for the Asia/Pacific Region, identify new items as required and monitor implementation;
- b) make recommendation aimed at improving ATM and CNS support for Terminal Area and Airport Operations, respectively; and
- c) to study and take action to implement AN-Conf/11 Recommendations 1/1, 1/10, 1/13, 4/1, 4/2, 4/4, 6/11 and 7/1.

7.8 The meeting agreed with the FDTF recommendations and included the items on the Task List as Items 17, 18 and 19 respectively. The updated Task List is shown in **Appendix B** to the Report on Agenda Item 7.

7.9 The meeting noted that the APAC Regional Plan for the New CNS/ATM Systems was updated by the CNS/ATM/IC/SG and if the APANPIRG/15 dissolved the Sub-Group as recommended by FDTF, this task would need to be taken over by the ATM/AIS/SAR/SG. The Secretariat advised the meeting that the Regional Office was presently reviewing the CNS/ATM Plan with a view to amalgamating the document with the APAC ANP. IATA expressed an interest to ensure that the Tables on CNS/ATM requirements and the major traffic flows were kept up to date.

7.10 The meeting agreed that the agenda for the ATM/AIS/SAR/SG meeting should include items for CNS/ATM developments and a review of ATS Coordination Group meetings. The Secretariat would revise the agenda accordingly.

TERMS OF REFERENCE

**AIR TRAFFIC MANAGEMENT/AERONAUTICAL INFORMATION SERVICES
AND SEARCH AND RESCUE (ATM/AIS/SAR) SUB-GROUP OF APANPIRG**

1. Ensure the continuing and coherent development of the ASIA/PAC Regional Air Navigation Plan in the ASIA/PAC Regional Plan for the New CNS/ATM Systems in the ATM/AIS/SAR fields.
2. Review and identify deficiencies that impede the implementation or provision of efficient ATM/AIS/SAR services in the ASIA/PAC Region
3. Monitor CNS/ATM systems research and development, trials and demonstrations in the fields of ATM/AIS/SAR and facilitate the transfer of this information and expertise between States.
4. Make specific recommendations aimed at improving ATM/AIS/SAR services by the use of existing procedures and facilities and/or through the evolutionary implementation of CNS/ATM systems.
5. Review and identify inter-regional co-ordination issues in the fields of ATM/AIS/SAR and recommend actions to address those issues.

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SUBJECT/TASKS IN THE ATM/AIS/SAR FIELDS

The priorities assigned in the list have the following connotation:

A = Tasks of a high priority on which work should be expedited;

B = Tasks of a medium priority on which work should be undertaken as soon as possible but not to the detriment of Priority “A” tasks; and

C = Tasks of a medium priority on which work should be undertaken as time and resources permit but not to the detriment of Priority “A” & “B” tasks.

No.	Reference	Subject/Task	Priority	Action Proposed / In Progress	Action By	Target Date
1	RAN/3 C 6/9 R 14/22 APANPIRG C 2/22 C 3/24 C 4/4 C 4/5 C 5/2 C 5/3	Subject: Implementation of RNP Task: Implement RNP into the Asia Pacific Region b) Develop further SUPPS material by ISPACC for RNP4, 30NM longitudinal and lateral separation minima	A	a) ~~Sub Group to~~ Identify routes and areas where RNP implementation is required; and i) ~~SUPPS amendment required to extend area of applicability of RNP10 (50NM longitudinal and lateral separation minima) beyond Pacific~~ b) ~~Sub Group to~~ monitor progress	ATM/AIS/SAR/SG ICAO ICAO	On-going Completed Completed
2	APANPIRG C 3/22	Subject: Traffic congestion within the region Task: Suggest ways of reducing this congestion by means of appropriate traffic management d) ~~Develop revised ATS Route Structure – Southeast Asia to/from Europe/Middle East, South of the Himalayas~~	A	~~EMARSSH/TF established – commenced work~~	~~EMARSSH/TF~~	Ongoing 11/02
3	RAN/3 C 13/14 APANPIRG D 2/35	Subject: AIS Automation Task: Develop a Regional AIS Automation Plan	B	a) Develop AIS automation plan and introduction of AIS quality systems and AIS databases ~~ANP amendment proposal following AIS/MAP Divisional Meeting, April 1998~~ introduction of quality systems and AIS databases b) ~~Develop AIS Guidance Material for static data procedure~~ Decision 14/8 reactivated the AIS Automation Task Force and changed the name and role of the task force to the AIS Implementation Task Force (AITF). First meeting expected November 2004	~~AA/TF-AITF~~ ATM/AIS/SAR/SG ATM/AIS/SAR/SG AITF	On-going Completed On-going

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No.	Reference	Subject/Task	Priority	Action Proposed / In Progress	Action By	Target Date
4	APANPIRG C 2/31	Subject: Provision of AIS within the Region Task: Examine and comment on the provision of AIS and develop a programme to improve the provision of AIS within the region	B	a) Increase AIS support from the ICAO APAC Office b) Regional AIS seminars to be conducted periodically c) Review the use of Internet for aeronautical information taking into account results of the ICAO AUPJ Study Group and update Chapter 4 to the AIS Guidance Manual	APANPIRG ICAO ~~AATF~~ ATM/AIS/SAR/SG	On-going On-going ~~Dec. 2002~~ No update avbl to ATM/AIS/ SAR/SG/14 re internet
5	APANPIRG C 3/24 C 9/3 D 9/4	Subject: Implementation of RVSM in the Asia Pacific Region Task: Plan for and facilitate implementation of RVSM, as appropriate, in the Asia Pacific Region	A	a) Plan schedule and facilitate implementation of RVSM in the Asia Pacific Region	RVSM/TF	On-going South China Sea and Western Pacific (phase one 2/2002) (phase two 10/2002) Parts of Asia and MID Regions — EMARSSH (11/2003) North Asia - 2005
6	APANPIRG D 3/12 D 3/2 C 4/2	Subject: Inappropriate provision of SAR facilities, services and procedures within the Asia Pacific Region Task: a) Review SAR facilities, services and procedures in the region b) Assist States without SAR services to provide SAR coverage	A	a) Encourage States to delegate or negotiate SAR services b) Identify deficiencies	ICAO ATM/AIS/SAR/SG	On-going On-going

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No.	Reference	Subject/Task	Priority	Action Proposed / In Progress	Action By	Target Date
7	APANPIRG D 3/21 C 9/2	Subject: Transition to WGS-84 in the Asia Pacific Region Task: Monitor and facilitate the transition to WGS-84	A	a) Maintain status report of WGS-84 implementation within the Asia Pacific Region b) Identify States requiring assistance and where possible assist those States c) Identify deficiencies	ATM/AIS/SAR/SG States ICAO ATM/AIS/SAR/SG ATM/AIS/SAR/SG	On-going On-going On-going
8	RAN/3 R 14/13 APANPIRG C 5/12 D 6/21 C 9/8	Subject: Implementation of ATS route requirements Task: a) Identify ATS routes in the ANP which have not been implemented; and ~~b) Propose guidelines for the establishment of ATS routes using RNP and/or with ADS functions.~~	B	~~a) ATS routes identified as not implemented are considered by ATM/AIS/SAR/SG~~ b) ~~ATM/AIS/SAR/SG~~ Monitor progress c) Identify deficiencies Decision 14/4 created the ATS Route Network Review Task Force (ARNR/TF). ATM/AIS/SAR/SG/14 referred matters on the deficiencies list relating to ATS routes to the ARNR/TF for study. First meeting of ARNR/TF expected September 2004.	ATM/AIS/SAR/SG ATM/AIS/SAR/SG ATM/AIS/SAR/SG ARNR/TF	~~2004-2005~~ On-going On-going On-going
9	C 11/8	SAR Capability Matrix That, a) the "SAR Capability Matrix" be distributed to States for information and action as appropriate; and b) States provide information to ICAO by 30 April ~~2004~~ each year to permit the periodic update of the Matrix.	C	a) The SAR Matrix is reviewed by States at all ATM/AIS/SAR/SG Meetings b) States to update the Matrix by providing information to ICAO by 30 April each year	ATM/ASI/SAR/SG States ICAO	On-going On-going
10	RAN/3 R 7/18 APANPIRG C 8/9	Subject: SAR training and exercises Task: Facilitate SAR training and exercises	B	a) Co-ordinate SAR training available in the region b) Facilitate international participation in SAR exercises c) Bay of Bengal SAREX planned for second quarter 2005	ICAO States India	On-going ~~2003~~ On-going 2005
11	APANPIRG C 6/13	Subject: Appropriate SAR legislation, National SAR Plans and Amendments Task: Establish appropriate documentation and National SAR Committee	A	a) Implement appropriate legislation, establish National SAR Committees and Plans to support SAR operations b) Monitor developments of SAR Agreements between SAR organizations c) Establish and maintain a Register of SAR Agreements	States ATM/AIS/SAR/SG ICAO	On-going On-going On-going

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No.	Reference	Subject/Task	Priority	Action Proposed / In Progress	Action By	Target Date
12	APANPIRG C 9/9	Subject: Lack of consideration of Human Factors in the provision of ATS Task: Consider ways by which Human Factors aspects in the provision of ATS within the region could be improved	B	a) ~~States to~~ Provide input including lessons learned (ICAO to encourage States to submit reports) b) ICAO to conduct seminars	States ICAO ICAO	On-going ~~2004~~ On-going
13	APANPIRG D 8/	Subject: Maintenance of the CNS/ATM/GM for the Region Task: ~~Maintain the CNS/ATM/GM~~	B	a) Update the Guidance Material taking into account the ICAO Headquarter's review and coordinate with States responsible for the Pacific Operations Manual ~~b) Develop "Concept of Operations" for application in an initial ADS environment~~	ATM/AIS/SAR/SG States ~~ATS/AIS/SAR/SG~~ States	~~2003-2005~~ Completed
14	APANPIRG C 9/48	Subject: ~~Shortcomings &~~ Deficiencies in the field of air navigation Task: Develop and maintain ~~Shortcomings &~~ Deficiencies list	A	a) Identify unimplemented items in the ANP b) Review mission reports c) Analyze differences from SARPs d) Review accidents / incidents	ATM/AIS/SAR/SG ICAO ICAO ATM/AIS/SAR/SG ICAO ATM/AIS/SAR/SG	On-going On-going On-going On-going
15	APANPIRG/12	Subject: Lateral Offset Procedures	A	a) Review ICAO Guidelines on Lateral Offsets ~~b) Identify bodies developing offset procedures~~ c) Coordinate with all parties concerned d) Identify issues regarding route structures where offsets could be applied ~~e) Consider methodologies for safety assessment~~ f) Implement 2NM offsets in accordance with ICAO guidelines	ATM/AIS/SAR/SG States	On-going 2004/2005
16	APANPIRG/13 C12/6	Subject: Regional Contingency Planning Survey Task: That, ICAO survey States in the Asia/Pacific Region to determine the status of contingency planning and the extent to which contingency plans are exchanged between neighboring States.	C	a) States to complete their State Contingency Plans, using framework supplied in their Y2K CP b) Coordinate with neighboring States c) Send copy of their Contingency Plan to ICAO	ICAO/States	On-going On-going On-going

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No.	Reference	Subject/Task	Priority	Action Proposed / In Progress	Action By	Target Date
17	FDTF Draft Decision 1/3	Review key priorities for implementation of CNS/ATM systems for the ASIA/PAC region, identify new items as required and monitor implementation	A	a) Include new Agenda item on the Agenda of ATM/AIS/SAR/SG meetings - "Review CNS/ATM activities in the Asia Pacific Region"; b) Review key priorities and recommend appropriate actions	ICAO/States ATM/AIS/SAR/SG	On-going On-going
18	FDTF Draft Decision 1/3	Make recommendation aimed at improving ATM and CNS support for Terminal Area and Airport Operations, respectively.	B	a) Study operational problems being experienced; b) identify requirements/areas for improvement from States	ATM/AIS/SAR/SG States	On-going Ongoing
19	FDTF Draft Decision 1/2	That recommendations 1/1, 1/10, 1/13, 4/1, 4/2, 4/4, 6/11 and 7/1 of AN-Conf/11 be studied by the ATM/AIS/SAR/SG, and action be taken to implement them.	B	Review recommendations and take appropriate action to implement	ATM/AIS/SAR/SG	On-going

Agenda Item 8: Any other business

Outcomes of the APANPIRG Future Directions Task Force (FDTF)

8.1 APANPIRG/14 recognized that there was a need to undertake a major review of the Terms of Reference and work programme of the Sub-Groups of APANPIRG, taking into account the outcomes of the AN-Conf/11. In this context, the FDTF was formed by APANPIRG/14 and held its first meeting on 17-19 May 2004 at the Regional Office.

8.2 The FDTF was expected to make recommendations as to the changes that would be necessary in the operation of the contributory bodies of APANPIRG and to ensure that APANPIRG was fulfilling its mandate in line with the Procedural Handbook regarding the functioning of the Sub-Groups taking into account the results of AN-Conf/11.

Review of Terms of Reference and Related Task Lists of APANPIRG's Contributory Bodies

8.3 The FDTF carried out a thorough review of the terms of reference of the contributory bodies of APANPIRG and the coordination, effectiveness and efficiency of the ATM/AIS/SAR, CNS/MET and the CNS/ATM/IC Sub-Groups in achieving the APANPIRG objectives.

Terms of Reference of the ATM/AIS/SAR Sub-Group

8.4 The FDTF recognized that the ATM/AIS/SAR/SG was the principal Sub-Group of APANPIRG overseeing the planning and implementation of operational air traffic and airspace changes to the international airspace in accordance with the Asia/Pacific ANP and *Regional Plan for the New CNS/ATM Systems*. The FDTF considered that the TORs were appropriate for the present work programme of the Group. Also, it noted that there was significant overlap with the TORs of the CNS/ATM/IC/SG.

Terms of Reference of the CNS/MET Sub-Group

8.5 The FDTF reviewed the TORs of the CNS/MET Sub-Group and noted that the TORs were broad and covered all the important issues. The Sub-Group was previously the CNS/MET/NAV/SUR/SG renamed the CNS/MET Sub-Group and its current TORs based on the recommendation of the APANPIRG Sub-Group Work Programme Review Task Force were adopted by APANPIRG/11 in 2000. The Sub-Group addresses both the conventional and the new CNS systems. The FDTF noted that, of the 40 Tasks, the Sub-Group had completed 29 Tasks, and actions were taken on the remaining 11 tasks. The FDTF also noted that there was significant overlap with the TORs of the CNS/ATM/IC/SG.

Terms of Reference of the CNS/ATM Implementation Co-ordination Sub-Group (CNS/ATM/IC/SG)

8.6 The FDTF reviewed the TORs of the CNS/ATM/IC/SG and recalled that in 1992, APANPIRG/1 (Decision 1/1) established the CNS/ATM Sub-Group to address the planning and implementation of the new CNS and ATM Systems. The Sub-Group developed the *CNS/ATM Implementation Plan for the ASIA/PAC Region*, which was its primary task. The Plan adopted by APANPIRG/2, and endorsed by the RAN/3 meeting. In 1994, APANPIRG/4 agreed (Decision 4/40) that the Sub-Group had completed its assigned tasks and was dissolved.

8.7 APANPIRG/4 recognized that there was outstanding work on CNS/ATM matters to be completed, and in particular a need existed for coordination and linkage between State CNS/ATM programmes and APANPIRG, and a contributory body of APANPIRG was needed. Accordingly, under Decision 4/41, the CNS/ATM/IC/SG was established. In its subsequent work, the Sub-Group made a significant contribution to the work of APANPIRG by maintaining a focus and momentum to assist and encourage States to implement the CNS/ATM systems.

8.8 Since the mid-90's, the implementation of CNS/ATM applications such as data link, RNP, RNAV and associated reduced separation minima had been carried out by other dedicated groups on a project basis, such as EMARSSH, the SCS/TF, RVSM/TF, FITs in the Pacific Region, Bay of Bengal, and soon to be formed FIT for the South-East Asia area. The implementation and operational review and oversight were being performed by the ATM/AIS/SAR/SG, and this had led to a duplication of work with the CNS/ATM/IC/SG. Similarly, there was an overlap of work between the CNS/MET/SG and the CNS/ATM/IC/SG.

8.9 The FDTF noted that the role and function of the CNS/ATM/IC/SG had been the subject of considerable scrutiny and discussion since APANPIRG/10 (September 1999), which was of the opinion that the CNS/ATM/IC/SG was only meeting part of its charter. However, it was noted that the Sub-Group was providing a very important venue for the exchange of information and updates on activities within the region. APANPIRG/10 under Decision 10/45 established a Work Programme Review Task Force to review the APANPIRG Sub-Group work programmes.

8.10 The results of the Review Task Force were reported to APANPIRG/11. The Task Force was of the opinion that the CNS/ATM/IC/SG had completed most of its tasks and could be dissolved. However, APANPIRG/11 decided to defer a decision regarding the dissolution of the CNS/ATM/IC/SG and review this matter at APANPIRG/12. Accordingly, APANPIRG/12 under Decision 12/46, decided that the CNS/ATM/IC/SG should continue as an active Sub-Group of APANPIRG and revised the Terms of Reference.

8.11 The matter was raised again at APANPIRG/13, where it was recognized that while the CNS/ATM/IC/SG TORs had been expanded to include training, environmental issues and the use of business case studies, there was also a need for future discussions of the Group to be more directed towards implementation to realize full benefits of APANPIRG planning. The establishment of target dates for action items would also assist States in determining future work priorities. The TORs were further revised to include more specific requirements to address environmental issues.

8.12 The CNS/ATM/IC/SG/10 in July 2003 reviewed the issues raised by APANPIRG/13 concerning its effectiveness and continuation, and agreed that there was a need to undertake a major review of its TORs and work programme, and to develop a detailed task list, timelines taking into account the outcome AN-Conf/11. Due to the limited time available, it recommended to APANPIRG/14 that a task force be formed to undertake this review.

8.13 APANPIRG/14 discussed the continued existence of the CNS/ATM/IC/SG, taking into account the issues for and against that had been raised at earlier APANPIRG meetings. The meeting was aware of the changing role of the CNS/ATM/IC/SG and the overlapping of work with the other two Sub-Groups and there was a need to resolve this problem. Also, it was recognized that the CNS/ATM/IC/SG did not have a detailed task list and deliverables identified with timelines. Accordingly, the meeting decided that in view of the need to ensure that APANPIRG was fulfilling its mandate in line with the Procedural Handbook in the functioning of its Sub-Groups, and in light of the expected outcome of AN-Conf/11, the meeting agreed to establish the FDTF to address this issue.

Terms of Reference of the Regional Airspace Monitoring Advisory Group (RASMAG)

8.14 The FDTF reviewed the TORs RASMAG established by APANPIRG/14, which recognized that the RASMAG would provide a framework for airspace safety monitoring services at a time when further monitoring activities were being established for implementation of ADS and CPDLC in the Asia Region.

8.15 The FDTF meeting considered that the present TORs adequately provided for the work programme of the Group, and that RASMAG would report to APANPIRG and the ATM/AIS/SAR/SG.

Terms of Reference of other contributory bodies

8.16 The FDTF also reviewed the TORs of the contributory bodies below, however did not propose changes to the respective TORs:

- a) ATN Transition Task Force;
- b) ADS-B Study and Implementation Task Force;
- c) RVSM Task Force, and
- d) ATS Route Network Review Task Force

Outcome of the review of the APANPIRG Sub-Groups

8.17 On completing a thorough review of the TORs of the three APANPIRG Sub-Groups, the FDTF agreed that the TORs of the CNS/ATM/IC/SG were already covered or could be adequately covered by the other two Sub-Groups and the Regional Office.

8.18 Further, in consideration that the review of the TORs of the three Sub-Groups and RASMAG had identified substantial duplication of the TORs with the CNS/ATM/IC/SG, and taking into account the priority expressed by the States and users to concentrate the effort of APANPIRG and its contributory bodies on continued implementation of the ASIA/PAC ANP and Regional CNS/ATM Plan requirements, the FDTF was unanimous in agreement that the CNS/ATM/IC/SG should be dissolved and to recommend this course of action to APANPIRG/15.

8.19 Accordingly, the FDTF formulated the following draft Decision

Draft Decision 1/1 – Dissolution of the CNS/ATM Implementation Coordination Sub-Group

That, in consideration of optimizing the effectiveness and efficiency of the contributory bodies of APANPIRG and in accordance with the provisions of the APANPIRG Procedural Handbook, the CNS/ATM/IC/SG be dissolved.

8.20 The Secretariat informed the meeting that following the outcome of the FDTF and the recommendation to dissolve the CNS/ATM/IC/SG, the members of APANPIRG had been informed and agreed to postpone the CNS/ATM/IC/SG/11 meeting scheduled to be held at the Regional Office on 26-30 July 2004 until after APANPIRG/15 reviewed the report of the FDTF.

Review Outcome of the Eleventh Air Navigation Conference (AN-Conf/11) Relevant to the Asia/Pacific Region

8.21 The meeting considered the outcome of, and actions taken by the Council of ICAO on the recommendations of the AN-Conf/11 held in Montreal from 22 September to 3 October 2003. The proposed actions to be taken by PIRGs on the recommendations were reviewed by the ICAO Secretariat, who developed suggested recommendations to be adopted by APANPIRG.

8.22 The FDTF reviewed the suggested recommendations to be proposed to APANPIRG/15 and formulated the following draft Decision:

Draft Decision 1/2 – Implementation of AN-Conf/11 Recommendations by APANPIRG

That, the following recommendations of AN-Conf/11 be studied by the concerned Sub-Groups, and action be taken to implement them.

Recommendations 1/1, 1/10, 1/13, 4/1, 4/2,4/4, 6/11 and 7/1: ATM/AIS/SAR/SG

Recommendations 1/1, 1/10, 1/13, 4/1, 4/2, 6/11, 7/1 and 7/3: CNS/MET/SG

Recommendations 4/8: Deficiency Review Task Force (DRTF) (review completed as part of DRTF/2)

8.23 The meeting reviewed and supported Draft Decisions 1/2 of the FDTF to study the recommendations of the AN-Conf/11, in so far as it related to the ATM/AIS/SAR/SG. The relevant recommendations from the AN-Conf/11 are attached as **Appendix A** to the Report on Agenda Item 8.

8.24 Japan drew the attention of the meeting to recommendation 1/8 of AN-Conf/11, noting that this recommendation had not been included on the list for consideration by APANPIRG and its Sub Groups. Japan expressed strong concern that the critical importance of the electronic management of AIS in the Region had been overlooked in not referring recommendation 1/8 to APANPIRG.

1/8 Global aeronautical information management and data exchange model		
That ICAO:		ACTION/TASKS
a) when developing ATM requirements, define corresponding requirements for safe and efficient global aeronautical information management that would support a digital, real-time, accredited and secure aeronautical information environment;	ICAO	Requested the Air Traffic Management Concept Panel (ATMCP) to develop relevant proposals by the end of 2005.
b) urgently adopt a common aeronautical information exchange model, taking into account operational systems or concepts of data interchange, including specifically, AICM/AIXM, and their mutual interoperabilities; and	ICAO	Secretary General is taking appropriate action.
c) develop, as a matter of urgency, new specifications for Annexes 4 and 15 that would govern provision, electronic storage, on-line access to and maintenance of aeronautical information and charts.	ICAO	Secretary General to progress the work.

8.25 The Secretariat informed the meeting that recommendation 1/8 had been assigned by the Commission to the ATMCP and the Secretary General for action, recognizing the critical importance of these issues and their development in a global sense. The Secretariat noted that this did not preclude States in the Region from pursuing advances in the electronic management of AIS and

encouraged States to continue working on these issues whilst remaining aware that global interoperability of AIS systems would be required. The Secretariat urged States to keep the Regional Office up to date with their developments in order that the ATMCP and Secretary General could be kept abreast of progress in these matters.

Development of Recommendations to APANPIRG

8.26 Consequent to the review of the TORs of the CNS/ATM/IC/SG, the FDTF proposed to include a new item on the Subject/Task Lists of the ATM/AIS/SAR/SG and CNS/MET/SG: “to review key priorities for implementation of CNS/ATM systems for the ASIA/PAC region and identify new items, as required and monitor implementation”.

8.27 Viet Nam advised that APANPIRG and its Sub-Groups had not been addressing matters relating to the terminal area and airport operations, and consideration should be given to including these subjects on the work programme of the Sub-Groups. The FDTF recognized the importance of the terminal area and airport operations in the overall efficient operation of the ATM system and also proposed to include on the Subject/Tasks Lists of the ATM/AIS/SAR and CNS/MET Sub-Groups an item to “make recommendations aimed at improving ATM and CNS support for Terminal Area and Airport Operations”.

8.28 Accordingly, the FDTF formulated the following draft Decision:

Draft Decision 1/3 – Assignment of new Tasks to the ATM/AIS/SAR and CNS/MET Sub-Groups

That, the following tasks be included in the Subject/Tasks List of the ATM/AIS/SAR and CNS/MET Sub-Groups:

- 1) Review key priorities for implementation of CNS/ATM systems for the ASIA/PAC region, identify new items as required and monitor implementation; and*
- 2) Make recommendation aimed at improving ATM and CNS support for Terminal Area and Airport Operations, respectively.*

Review APANPIRG Key Priorities for Implementation of CNS/ATM Systems for the Asia/Pacific Region

8.29 The FDTF considered the key priorities of APANPIRG and agreed that these should be included as tasks on the work programme of the ATM/AIS/SAR/SG and the CNS/MET/SG, and be reviewed and kept up to date. In regard to updating the key priorities, the FDTF was of the view that the Chairpersons and Secretaries of the respective Sub-Groups should maintain close coordination to consider matters to be submitted to the Sub-Groups to be included on the list of key priorities.

8.30 The FDTF meeting agreed that as its work had been completed, the Task Force should be dissolved and raised a draft decision to this effect for consideration by APANPIRG/15

8.31 The meeting noted the outcome of the FDTF and agreed that the additional tasks recommended by the FDTF be included on the task list of the ATM/AIS/SAR/SG, in accordance with the discussion at paragraph 7.8 of this report.

ICAO language proficiency requirements

8.32 The meeting was informed by the Secretariat that Amendment 164 to ICAO Annex 1 – *Personnel Licensing*, Annex 6 – *Operation of Aircraft*, Annex 10 – *Aeronautical Telecommunications* and Annex 11 – *Air Traffic Services* was adopted by the Council of ICAO on 5 March 2003 providing language proficiency requirements that clarify and extend existing provisions. The amendment became applicable on 27 November 2003.

8.33 Prior to the adoption of the latest amendments, Annex 1 Standards already required that air traffic controllers “speak and understand the language used for radiotelephony communications” (paragraph 1.2.9.2). To strengthen this requirement, Amendment 164 of Annex 1 introduced language proficiency requirements, *inter alia*:

1.2.9.4 As of 5 March 2008, aeroplane and helicopter pilots, air traffic controllers and aeronautical station operators shall demonstrate the ability to speak and understand the language used for radio communications to the level specified in the language proficiency requirements in the Appendix.”

8.34 It was to any “language used for radio communications” in international operations that the language proficiency requirements apply. Therefore, controllers working international services were required to demonstrate language proficiency in English as well as in any other language(s) used by the station on the ground.

8.35 To meet the language proficiency requirements, a language proficiency rating scale would be used to assess an individual ability. The minimum operational language proficiency to be achieved was Level 4. The language requirements focus on the assessment of communicative proficiency, i.e., an individual’s speaking and listening skills only. In light of the aviation-specific requirement, testing was not intended to evaluate general English skills, the ICAO language proficiency requirements applied to native or non-native speakers alike.

8.36 The meeting recognized that recurrent testing of pilot and controller language skills was important for two reasons. Firstly, language skills taper off if people do not have the opportunity to use and practice them, and secondly, retesting was important because of the inexact nature of language proficiency assessment.

8.37 A three-day symposium on the new ICAO language proficiency requirements would be held at ICAO Headquarters, Montreal, Canada from 1 to 3 September 2004. The symposium would provide practical advice on how to comply with the ICAO standards. It was intended that language proficiency seminars would be organized in the ICAO regions after the Symposium. The first regional seminar planned for the Asia/Pacific Region would be held in Tokyo, Japan from 8 to 10 December 2004 hosted by the Japan Civil Aviation Bureau. Details on this seminar would be provided in due course by ICAO.

8.38 ICAO was preparing the *Manual on the Implementation of the ICAO Language Proficiency Requirements* – Doc 9835-AN/453, which would address various training and evaluation issues related to the implementation of ICAO language proficiency standards. The manual was expected to be published in September 2004.

8.39 The meeting noted the importance of using standard phraseologies, and the strengthening of the language requirements should have a significant impact on enhancing safety. IATA welcomed the new language provisions and recognized that this was a very ambitious step and there were many practical issues to overcome. The meeting was particularly interested in how language assessments would be carried out and whether there were any criteria for conducting assessments. Also, language and its use was a very complex matter, and it was likely that most civil

aviation administration and operators would need to acquire language expertise and develop formal training programmes to meet the ICAO requirements.

8.40 The meeting recognized that the participants had many questions on the subject but did not have the expertise to adequately address this subject. It was suggested that attending the ICAO Symposium would be an excellent opportunity to find out from the experts responsible for the ICAO provisions how they should be applied, and participants were encouraged to bring this to the attention of their administrations.

Altitude Reservations with the U.S. Pacific Military Altitude Reservation Function (PACMARF)

8.41 The United States briefed the meeting regarding some of the issues related to PACMARF altitude reservation (ALTRV) activities in the Pacific Region.

8.42 The meeting was reminded that PANS-ATM (Doc 4444, paragraph 16.1) addresses responsibilities in regard to military aircraft. Temporary airspace reservations, either stationary or mobile, may be established for the use of large formation flights or other military air operations. Arrangements for the reservation of such airspace were required to be accomplished by coordination between the user and the appropriate ATS authority. The coordination was required to be effected in accordance with the provisions of Annex 11 and completed early enough to permit timely promulgation of information in accordance with the provisions of Annex 15.

8.43 The U.S. military agency responsible for developing ALTRV in the Pacific is the PACMARF. An ALTRV is an authorization between PACMARF and the appropriate ATS provider, “for airspace utilization under prescribed conditions.” PACMARF is located in Hawaii and staffed by the U.S. Air Force. They have responsibility for coordinating all ALTRV requests in the Pacific Region where a memorandum of understanding (MOU) exists with the appropriate civil aviation authorities. The PACMARF has a counterpart in Europe for European and Atlantic ALTRV coordination. Within the U.S., this function is performed by the FAA Central Altitude Reservation Facility (CARF). Each organization performs the same function within its assigned area of responsibility.

8.44 The purpose of implementing ALTRV procedures was to provide a higher level of safety when a number of aircraft must be moved with less IFR separation between participating aircraft than was allowed by standard ATC criteria. It was also used when multiple aircraft must operate within prescribed altitudes, times, and/or areas. The objective of the ALTRV co-ordination was to achieve the best arrangement in order to avoid hazards to civil aircraft and minimize interference with the normal operation of military aircraft.

8.45 The United States advised that the U.S. Department of Defense (DOD) would like to partner with individual ATS units in providing an ALTRV co-ordination capability in their airspace/FIRs. The DOD currently has agreements that establish ALTRV procedures with ACCs in Japan, the Republic of Korea and the Philippines. The establishment of an MOU did not eliminate diplomatic clearance requirements, and the decision to approve any request would remain solely with the appropriate air traffic control authority.

8.46 The United States encouraged States to consider developing an MOU as a means to ease coordination and increase the level of safety for all airspace users. The outcome would be a formal process for States to receive ALTRV requests, transmit their decision on the ALTRV request, and operate ALTRVs within their appropriate FIRs. A sample MOU format was available from PACMARF on request. In the interim, appropriate ATS providers within the Asia/Pacific Region were requested to identify a point of contact to PACMARF for ALTRV requests and future discussions on this topic.

8.47 The contact details for PACMARF are as follows:

U.S. mailing address: PACMARF
900 Hangar Avenue
Hickam AFB, HI 96853-5426

ICAO AFTN address: PHIKYXYZ or PHIKYWYX

Commercial telephone number: 1.808.449.0883 (Primary) +1.808.448.7897
(STU-III)

FAX: Commercial number : +1.808.448.0177

8.48 The meeting appreciated the initiative taken by the U.S. DOD to encourage States to enter into MOUs to adopt the ALTRV procedures. The meeting supported this effort and urged States to enter into appropriate arrangements, which would greatly facilitate coordination and enhance safety.

Draft Guidance on RNP4 Oceanic and Remote Area Approval

8.49 The United States presented information on a DRAFT FAA Order on *Required Navigation Performance 4 (RNP 4) Oceanic and Remote Operational Approval* (**Appendix B** to the Report on Agenda Item 8 refers). This document would be subject to further editorial changes, but it was not expected that the criteria would change. However, the United States stressed that it was a DRAFT document and should only be utilized as such.

8.50 The meeting welcomed the development of this draft document which would enable the implementation of RNP 4 in oceanic airspace. Also, with States in the Pacific Region planning to implement 30 NM separation requiring RNP 4 to be specified, the FAA order would provide a basis for States to develop their operational approval documentation.

Establishment of an Air Traffic Management Centre in Japan

8.51 The JCAB reported to the meeting that, facing traffic growth in 1980s and the expected increase in 1990s, Japan decided to implement an ATFM and established the Air Traffic Flow Management Center (ATFMC) in 1994 at Fukuoka. The ATFMC was responsible for the ATFM Tokyo and Naha FIRs. JCAB decided to implement the ICAO ATM Concept by integrating the air space management function and some parts of ATS function into the ATFMC. The planned facility, provisionally named the Air Traffic Management Center (ATMC), was expected to commence its initial operations in October 2005.

8.52 The meeting was informed that, in considering the roles of the ATMC, JCAB had reviewed the role of the ATFMC and the four ACCs, Sapporo, Tokyo, Fukuoka and Naha, and decided to reorganize the overall structure. The table below shows the planned structure of FIRs/facilities/services. The ATMC will be responsible for ATFM, ASM and the oceanic ATC, and the four ACCs, Sapporo, Tokyo, Fukuoka and Naha would be responsible for ATC in the domestic airspace.

Planned structure		
FIR	Facility	Service
Single FIR	<u>ATMC</u> (Air Traffic Management Center)	<u>ATFM</u>
		<u>ASM</u>
		<u>Oceanic ATC</u>
	Sapporo ACC	Domestic ATC
	Tokyo ACC	
	Fukuoka ACC	
	Naha ACC	

8.53 JCAB reported that presently Tokyo and Naha ACCs provided the oceanic ATC service in Tokyo FIR and Naha FIR, respectively. For more efficient ATFM of international flights and for more efficient oceanic ATC service, the Tokyo FIR and the Naha FIR would be consolidated into a single FIR and the ATMC will take over the responsibility from the ACCs to provide the FIR with the oceanic ATC service. Data link applications, such as ADS and CPDLC, will be fully utilized for the efficient use of the airspace.

8.54 The meeting noted that the consolidation of Tokyo and Naha FIRs, and the relocation of the Flight Data Processing System (FDPS) and the AFTN station were planned on an AIRAC date of February 16, 2006, though the ATMC was expected to commence its initial operation in October 2005.

8.55 The meeting noted that amendment to the Asia and Pacific Region Basic ANP and FASID would be necessary. The amendment proposal would be submitted at a later date by JCAB to the Regional Office for circulation to States and international organizations for comments.

Development of ATS routes, AIS and SAR activities in Mongolia

8.56 Mongolia informed the meeting of activities of the Civil Aviation Authority of Mongolia (CAAM) in regard to ATS routes, AIS and SAR matters. Mongolia was located in the northern part of Central Asia and had 8 international air routes such as A575, A91, B330 (ASIA-1), M520, B480 (POLAR-2), G218 (POLAR-3), B339 and G588. Mongolia reported that work to utilize ADS-C and ADS-B capability was on-going and an ADS-B use for domestic operations had been approved. Twenty-two VSAT stations have been installed throughout Mongolia, which provides a total coverage of VHF communications. In addition, there was approximately 50 percent coverage of VHF Data-link for ADS/CPDLC.

8.57 Mongolia reported that the next step would be the establishment of some new ATS routes to support cross-polar operations. It was noted that the volume of over-flying traffic increased in the order of 4-6 percent annually. It was expected that the number of overflights would double during the Olympic Games in China in 2008.

8.58 Mongolia advised that they had also established an AIS section as a separate department, and work was on-going to increase the automation of activities in this area. In addition, a number of proposals were being considered to increase the number of routes using ground based navigation aids and to enhance radar systems in order to increase total airspace capacity.

8.59 The meeting was informed that in accordance with Annex 12, Mongolia had developed and proposed a draft agreement between the Mongolian and Russian governments on

mutual cooperation in the SAR sector. On receiving a final response from Russia, it was expected that this agreement would be signed soon. Mongolia also reported that they planned to commence discussions with China regarding a cooperation agreement with the SAR services of China.

Delayed ADS-C reports in Australian airspace

8.60 Australia reported to the meeting that a problem had been identified involving the receipt of delayed data link downlink messages from aircraft in Australian airspace. From ATC perspective, the use of ADS-C had greatly improved surveillance, provided improved alerting capabilities and facilitated the provision of enhanced services to data link equipped aircraft. Australia, however, reported that, in recent times, problems relating to the occasional delayed receipt of late ADS-C reports and/or CPDLC downlinks have been observed.

8.61 Australia advised that an analysis of ADS-C reports received by Brisbane and Melbourne Centres over a 6 month period had been conducted, and the purpose of this analysis had been to:

- a) gain an indication of the relative frequency of these 'delayed' ADS-C reports;
- b) identify any problem locations (if any) where delayed reports were more prevalent; and
- c) identify whether the problem was possibly related to a specific airline or aircraft type.

8.62 Australia reported that this analysis had involved determining the transmission delay for each ADS-C basic report. The transmission delay was defined to be the difference between the time stamp contained in the ADS-C report, and the time of receipt of the ADS-C report by TAAATS. ADS-C reports subject to minor (between 300 and 500 seconds) and major (greater than 500 seconds) delays had been stored, to allow later trend analysis. A sample of 27968 ADS-C reports was analyzed, of which 105 were classified as minor delay and 138 as major delay.

8.63 The aircraft registration was then extracted from these ADS-C reports which enabled the determination of the aircraft type and aircraft operator, by reference to a separate database. FIT and CRA analysis determined that there was certain equipment (Satellite Data Unit) from a specific avionics manufacturer that was common to the aircraft types suffering these problems. The manufacturer has been advised of the findings, however the time frame to implement a fix was unknown.

8.64 Australia reported that it appeared that the problem related to the transition of the aircraft from one satellite 'spot beam' to another. This problem causes the avionics to "buffer" data link downlink messages (ADS-C and CPDLC), and to transmit the contents of the buffer at a later time. It was noted that data link uplink messages appeared to be unaffected by this problem.

8.65 Australia had encouraged ATSU's and airline operators to implement procedures to ensure reporting of data link failures and idiosyncrasies. The collation of reports from a number of sources in a central location may be invaluable in identifying wide spread problems.

8.66 The meeting noted the problems encountered by Australia and agreed that States should be made aware of the problems outlined above when implementing data link systems or considering the use of ADS-C outside VHF data link coverage for the application of reduced separation standards.

8.67 The meeting appreciated the detailed work carried out by Australia and the information would be made available to the FIT-BOB, FIT-SEA and RASMAG meetings. Also, the

meeting wished to be kept informed of developments which would be of interest to ATS providers and users.

Report of the IFATCA 7th North East Asia Traffic Management meeting (NEAT/7)

8.68 IFATCA provided information on the NEAT/7 meeting held in Taipei, China on 29 August 2003. The meeting noted that the NEAT meetings were organised by IFATCA to address issues specific to the North-East Asia airspace.

8.69 The NEAT/7 meeting recalled that at the ATS/AIS/SAR/SG/13, IATA commented on the longitudinal spacing applied to traffic departing Hong Kong and Taipei routing via Tokyo for North American destinations. It was also noted that IATA requested the ATS/AIS/SAR/SG/13 meeting to examine ways by which the airspace capacity could be enhanced.

8.70 Accordingly, these issues were discussed during NEAT/7 with representatives from Hong Kong, China, Taipei, China and Naha, Japan. The meeting noted that the outcome of the NEAT/7 meeting was a reduction in the longitudinal separation minima for aircraft departing Hong Kong and the revision of the Hong Kong, China/Taipei, China LOA to standardize the separation minima on this route. IATA conveyed its appreciation of the work and outcomes achieved by IFATCA and the NEAT meeting process.

8.71 The next NEAT meeting was planned for September 2004 and would discuss issues associated with the implementation of RVSM in the North-East Asia area, co-ordination at the boundary of South China Sea RVSM airspace due to differences in the respective FLOSs, and the transfer of radar control and the disparity of en-route radar separation. The Secretariat requested that IFATCA note that the RVSM SCM on FLOS issues was scheduled for 20-24 September 2004.

Trends in Air Transport

8.72 The meeting reviewed information provided by the Regional Officer Air Transport, Bangkok Office summarizing recent trends in aviation industry activity and drawing attention to changing competitive positions within the industry that have the potential to affect traffic flows.

Asia Pacific Area Traffic Forecasting Group (APA-TFG)

8.73 Traffic forecasts serve an important function in anticipating facilities and services that would be required to meet the demand for air travel and in determining where and when airspace or airport congestion may occur. The forecasts also have a special role in planning the cost-effective implementation of CNS/ATM systems. In this context, the Council adopted a plan of action to establish traffic forecasting groups (TFGs) in all ICAO regions.

8.74 The APA-TFG was established in 1991 and has met on 11 occasions. At its most recent meeting in October 2002, the APA-TFG updated aircraft movement forecasts for the transpacific and intra-Asia/Pacific markets for the period 2000-2005 and developed five-year passenger forecasts for 41 major city-pair flows within, to and from the Asia/Pacific Region. The APA-TFG will hold its 12th Meeting from 23 to 30 July in Bangkok.

Recent Trends

8.75 Over the past decade, scheduled traffic of airlines registered in the Asia/Pacific Region grew at an average annual rate of 5.7 per cent compared to 4.4 per cent for the world. In 1993, the region's airlines performed 298.8 billion passenger-kilometres on international scheduled services and 139.2 billion passenger-kilometres on domestic services. The corresponding figures for 2003

were 497.3 billion and 261.8 billion, respectively. In three of the ten years, 1998, 2001 and 2003, the volume of international traffic declined – most significantly in 2003 when there was a 7.5 per cent reduction in the number of passenger-kilometres. Over the period 1993 to 2003, the volume of international freight tonne-kilometres performed by Asia/Pacific carriers almost doubled to 39.4 billion tonne-kilometres.

8.76 ICAO's most recent forecast of passenger-kilometres and freight tonne-kilometres for Asia/Pacific and the world will be available in the second half of 2004. In summary, the world's total passenger-kilometres were predicted to increase at an annual average rate of 4.4 percent over the period 2002 to 2015, while Asia/Pacific's average growth rate is predicted to be 6.1 percent. In 2002, Asia/Pacific's share of the world passenger kilometres was 26.7 percent, but it was expected that this would increase to 33.2 percent by 2015. It is notable that the number of jet aircraft in the fleets of airlines based in Asia/Pacific increased from 1,053 in 1993 to 1,625. Two-thirds of these aircraft were B737, B747, B777 or A320.

Airline Competition

8.77 Up until the mid-1980s airlines, particularly those engaged in longer haul travel markets, took maximum advantage of the economies of larger aircraft and concentrated on building up viable networks focused on major gateway hubs. As a result, it was common for average aircraft size to increase over time. Since the mid 1980's, however, average aircraft size has not increased while the volume of passenger traffic has more than doubled. In effect, airlines have served new destinations and have increased frequency and offered more direct flights. The result has been a process of filling in the network and increasing connectivity.

8.78 ICAO's Contracting States reaffirmed their commitment to the process of liberalization of international air transport at the Fifth Worldwide Air Transport Conference in Montreal in March 2003. Although the pace and direction of change will be determined by the States, the result was that airlines were gaining increased commercial freedom to enter (and depart) routes and to vary their capacity. Based on the evidence and the prospects for new technology, it was reasonable to conclude that increasing liberalization was a key feature of a new phase of development for Asia/Pacific's international air transport.

Low Cost Airlines

8.79 One manifestation of increased competition was the emergence of what might be described as "low-cost", "no-frills" or "budget" airlines. In North America and Europe, these types of carriers have been able to achieve average costs per seat mile up to 50 percent below the level of the established airlines. These airlines typically have an aggressive approach to reducing costs by paying less for their labour, airport services, and other inputs and by eliminating services that they believe were not valued by customers. They also derive advantages by specializing in short-haul markets where their focused approach ensures they extract maximum productivity out of their fleets and their crews.

8.80 These "low-cost" airlines have had a major impact on fare levels. For example, the United States Department of Transportation estimated that the average air fare on routes of under 750 miles fell by 36 percent (adjusted for inflation) from the beginning of deregulation in 1978 to 1997. However, on those short haul routes where the low-cost airlines were not present, the fares increased by 26 percent over the same period.

8.81 It is clear that the low-cost airlines have captured business from their established rivals. But low-cost airlines also claim that they stimulate market growth. The experience in the United States over the period between 1979 to 1997 was that passenger traffic grew by almost four-fold in those routes contested by low-cost airlines, whereas the increase was only 48 percent on other

short-haul routes.. The aggressive approach of the low-cost airlines has been a major factor in market growth occurring in North America and Europe.

8.82 In Asia Pacific, low-cost airlines have been emerging in recent years. A low-cost airline in Australia now has a major share of the domestic market and is venturing into international markets. Similarly, a domestic low-cost operator in Malaysia was in the process of building a pan-Asian operation while new entrants and major carriers were active in establishing new low-cost ventures across Asia. The competition in South-East Asia was becoming particularly intense. Experienced analysts have raised questions whether the region was about to undergo the same type of experiences seen in North America and Europe with significant expansion of the market, more point-to-point travel, and erosion of the market share held by the major airlines. These claims would be tested in the market over the coming years, but it remains to be seen how the particular conditions in Asia/Pacific influence the competition.

High Capacity Aircraft

8.83 Another significant competitive development was the impending introduction of the Airbus A380 into operation from 2006 onwards. The A380 promises to deliver a significant reduction in the cost of transporting passengers and would be particularly important in maximizing utilization of slots at congested airports. Major airports in the region were preparing for the introduction of these aircraft while orders have been placed by Korean Air (8), Malaysia Airlines (6), Qantas Airways (12) and Singapore Airlines (15). Notably, Emirates has ordered 43 A380s and has been expanding its network to take advantage of this fleet expansion. One of the variants of this model, the A380-100R would have a capacity of 555 passengers with a range of 16,200 km (8,750 NM); this capability may mean fewer stopovers at traditional Asian hub airports. In this context it was possible that traffic flows would begin to re-orient themselves from 2006 when the A380 enters service.

8.84 The meeting appreciated the information and noted that this would be valuable input to the ARNR/TF which would be carrying a through review of present and future route requirements in the Asia/Pacific Region.

Remarks by Jeppesen

8.85 The Jeppesen representative appreciated the opportunity to briefly address the meeting to express the good wishes of his colleague Mr. Chet Mason who was well known to many of the participants through his work in the region with the South China Sea Task Force and the EMARSSH Project. Mr. Mason would be shortly retiring from Jeppesen after many years in the industry. He had planned to be at this meeting but had to withdraw for personal reasons and wished to convey his gratitude to the many colleagues he had worked with especially in the AIS field.

8.86 On behalf of the meeting, Mr. Chao conveyed warm appreciation to Mr. Mason for his dedication and exemplary professional support and assistance, particularly in promoting AIS. He wished him a long and happy retirement

RECOMMENDATIONS OF AN-CONF/11
FOLLOW-UP ACTIONS BY ICAO/PIRGs/STATES/INTERNATIONAL ORGANIZATIONS (IOs)

RECOMMENDATION			ACTION	
#	ITEM	BY ICAO/PIRGs/ STATES/IOs	ACTION/TASKS	
AGENDA ITEM 1: INTRODUCTION AND ASSESSMENT OF A GLOBAL AIR TRAFFIC MANAGEMENT (ATM) OPERATIONAL CONCEPT				
1	1/1 Endorsement of the global ATM operational concept That: a) ICAO, States and planning and implementation regional groups (PIRGs), consider the global ATM operational concept as the common global framework to guide planning for implementation of ATM systems and to focus all ATM development work; b) the global ATM operational concept be used as guidance for development of ICAO CNS/ATM related provisions; c) States with the support of the other members of the ATM community undertake work to validate the seven components in the global ATM operational concept; d) ICAO, States and PIRGs develop transition strategies for implementation of ATM systems based on the global ATM operational concept; and e) ICAO align its technical work programme to facilitate future work related to the global ATM operational concept	PIRGs/States/ IOs <		

ATM/AIS/SAR/SG/14
Appendix A to the Report on Agenda Item 4

RECOMMENDATION			ACTION	
	#	ITEM	BY ICAO/PIRGs/ STATES/IOs	ACTION/TASKS
10	1/10	Status of the <i>Global Air Navigation Plan for CNS/ATM Systems</i> (Doc 9750) That States and planning and implementation regional groups (PIRGs) consider the <i>Global Air Navigation Plan for CNS/ATM Systems</i> (Doc 9750) as a catalyst for change, providing a global safety and interoperability framework while allowing regional or local adaptation to efficiently meet regional and local needs.	PIRGs/States/ IOs	To note the intent of the recommendation.
13	1/13	Harmonization of air navigation systems That ICAO and the ATM community explore the possibility of developing a mechanism for implementing the interregional interface applications with a view to facilitating the harmonized implementation of air navigation systems giving rise to a global ATM system in an evolutionary fashion.	PIRGs/States/ IOs	To identify interface issues and address them through appropriate interregional mechanism.
AGENDA ITEM 4: CAPACITY-ENHANCEMENT MEASURES				
29	4/1	Harmonization of air navigation systems between regions That ICAO: a) maintain, and develop further, a coordination mechanism between regions for planning and implementation of capacity-enhancing measures and ATM performance improvement between regions for a harmonized evolution aimed at enhancing aviation efficiency and safety; b) be systematically involved in any regional initiatives aiming at enhancing ATM capacity and performance; and c) urge States, who have not already done so, to establish national CNS/ATM coordination and implementation committees, with a point of contact to be made known to the respective ICAO Regional Office, so as to facilitate harmonized transition to CNS/ATM systems.	ICAO/PIRGs ICAO States	Develop further, a coordination mechanism between regions for a harmonized evolution aimed at enhancing aviation efficiency and safety. Noted. Establish national CNS/ATM coordination and implementation committees, with a point of contact to be made known to the respective ICAO Regional Office.

ATM/AIS/SAR/SG/14
Appendix A to the Report on Agenda Item 8

		RECOMMENDATION	ACTION	
	#	ITEM	BY ICAO/PIRGs/ STATES/IOs	ACTION/TASKS
30	4/2	Investigation of performance-driven planning and implementation methods That States study the approach to planning and implementation commonly adopted by European States, with a view to the possible application of its elements in their respective regions.	PIRGs/States	Study the approach to planning and implementation commonly adopted by European States, with a view to the possible application of its elements.
32	4/4	Investigation and analysis of the “Single European Sky” approach to global harmonization That ICAO follow the progress of the “Single European Sky” project for possible use in other homogeneous regions or at the global level.	ICAO/PIRGs	Follow the progress of the “Single European Sky” project for possible use in other homogeneous regions or at the global level.
AGENDA ITEM 6: AERONAUTICAL NAVIGATION ISSUES				
51	6/11	Amendment to the Global Plan — Navigation That: a) the <i>Global Air Navigation Plan for CNS/ATM Systems</i> (Doc 9750) be amended as shown in Appendix C to the report on Agenda Item 6; and b) updated CNS/ATM systems implementation time lines contained in Part II of the Global Plan be reviewed by the Regional Implementation Group and consolidated for incorporation in the next edition of the Global Plan.	ICAO PIRGs	Requested the Secretary General to take appropriate action. Update CNS/ATM systems implementation time lines contained in Part II of the Global Plan.

ORDER
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
GUIDANCE

**SUBJ: REQUIRED NAVIGATION PERFORMANCE 4 (RNP-4) OCEANIC AND
REMOTE OPERATIONAL APPROVAL**

1. PURPOSE.

The purpose of this order is to provide airworthiness requirements, continuing airworthiness requirements, policy and direction for obtaining operational approval of RNP-4 Oceanic and Remote area capability. This order enables an applicant to be approved as capable of meeting the Navigation Performance and Functional requirements for RNP-4 oceanic and remote areas. These requirements are specified in other documents such as Aeronautical Information Publications (AIP) and the International Civil Aviation Organization (ICAO) Regional Supplementary Procedures Document (DOC 7030). Additional Communication and Surveillance capabilities may be required.

2. DISTRIBUTION.

This order is distributed to the director level in Washington headquarters and the Centers; to all regional administrators; to the branch level in the Flight Standards Service, and Aircraft Certification Service; to the branch level in the regional Flight Standards divisions, and Aircraft Certification directorates; to all regional International Aviation Officers; to all Flight Standards, Aircraft Certification, and International Aviation field offices.

3. CANCELLATION.

4. BACKGROUND.

As part of a worldwide effort to implement the ICAO Air Navigation Plan for CNS/ATM systems (DOC 9750), separation standards are being reduced in Oceanic regions that will require a navigation standard of RNP-4. To support this effort, the Informal Pacific Air Traffic Service Coordination Group (IPACG) and the Informal South Pacific Air Traffic Service Coordination Group (ISPACG), are starting the development of plans to implement 30 Nautical Mile (NM) lateral and/or longitudinal separation on the South Pacific (SOPAC), North Pacific (NOPAC) and Central East Pacific (CEPAC) routes based on approval of an RNP-4 capability for the total route of the flight. In accordance with ICAO Annex 6, operators will be required to obtain RNP-4 operational approval. RNP-4 implementation will provide benefits in terms of efficient use of airspace, more optimum routings, reduced delay, increased traffic flow capacity, increased flexibility, reduced costs, reduced separation standards and increased safety.

5. RELATED PUBLICATIONS. (Current Version)

a. FAA Documents.

- (1) 14 CFR Part 121, Appendix G.
- (2) Advisory Circular (AC) 20-130A, Airworthiness Approval of Navigation or Flight Management Systems Integrating Multiple Navigation Sensors.
- (3) AC 20-138A, Airworthiness Approval of Global Navigation Satellite System (GNSS) Equipment.
- (4) FAA Order 7110.82, Monitoring of Navigation/Altitude Performance in Oceanic Airspace.
- (5) FAA Order 8400.10, Air Transportation Operations Inspector's Handbook.
- (6) FAA Order 8700.1, General Aviation Operations Inspector's Handbook.
- (7) Handbook Bulletin for Air Transportation (HBAT) 95-09, Guidelines for Operational Approval of Global Positioning System [GPS] to Provide the Primary Means of Class II Navigation in Oceanic and Remote Areas of Operation.

b. Other Documents.

- (1) Copies of the following may be obtained from Document Sales Unit, ICAO, 999 University Street, Montreal, Quebec, Canada H3C 5H7:
 - (a) Manual on Required Navigation Performance (RNP), ICAO DOC 9613-AN/937.
- (2) Copies of the following may be purchased from NOAA, N/ACC3, Distribution Division, Riverdale, MD 20737:
 - (a) United States Government Flight Information Publication - Chart Supplement - Alaska.
 - (b) United States Government Flight Information Publication - Chart Supplement - Pacific.
- (3) Copies of RTCA documents may be purchased from RTCA, Inc., 1828 L Street NW, Suite 805, Washington, DC 20036.
 - (a) DO 236A, Minimum Aviation System Performance Standards (MASPS): Required Navigation Performance for Area Navigation.
 - (b) DO 283, Minimum Operational Performance Standards for Required Navigation Performance for Area Navigation.
 - (c) DO 200A, Standards for Processing Aeronautical Data.

(4) Copies of Aeronautical Information Manual (AIM) may be purchased from the U.S. Government Printing Office, P.O. Box 371954, Pittsburgh, PA 15250-7954.

6. APPLICABILITY.

- a. This guidance applies to all operators conducting operations under Title 14 of the Code of Federal Regulations (14 CFR) parts 91, 121, 125 and 135.
- b. The requirements are consistent with 14 CFR part 91, sections 91.703(a)(1) and (a)(2), which require each certificate holder, operating a civil aircraft of U.S. registry outside of the United States, to comply with ICAO Annex 2 when over the high seas, and to comply with the regulations of a foreign country when operating within that country's airspace.

7. OPERATIONAL APPROVAL PROCESS.

Aircraft must be qualified, and the operator must be approved before conducting flight in RNP airspace or routes with reduced separation minima. To obtain operational approval, aircraft eligibility must be determined, appropriate flight-crew procedures for the navigation systems to be used must be identified by the applicant; database use and operating procedures must be evaluated. Appropriate operations specifications or a letter of authorization (LOA) may be issued, as applicable to the operator.

a. Pre-application Meeting. Operators will schedule a pre-application meeting with either the Certificate Holding District Office (CHDO) or the Flight Standards District Office (FSDO). At this meeting, the operator informs the FAA of its intentions to request RNP-4 Oceanic or Remote area approval. The FAA provides the operator with the requirements for this operational approval.

b. Operators seeking RNP-4 operational approval should contact FAA offices as follows:

(1) Parts 121, 125, and 135 Operators. Notify the Certificate Management Office (CMO) or CHDO which holds its operating certificate of its intent to request approval for RNP-4 operations. RNP-4 authorizations for air carriers will be addressed through issuance of approved operations specifications. The operations specifications will identify conditions or limitations (e.g., navigation systems or procedures required, routes or areas authorized). A sample letter of request is provided in Appendix 2, figure 1.

(2) Part 91 Operators. Contact their local FSDO to start the process for RNP-4 authorization. The responsible FSDO will issue the LOA, authorizing RNP-4 Oceanic or Remote Operations. The LOA will identify conditions or limitations (e.g., navigation systems or procedures required, routes or areas authorized). A sample letter of request is provided in Appendix 2, figure 2.

c. Determining Eligibility of Aircraft. Aircraft and navigation system types currently in use in oceanic or remote area operations may qualify for RNP-4 based on one or more provisions of existing certification criteria. Additional aircraft certification will be necessary if the operator chooses to claim additional performance beyond that originally certified or stated in the Airplane Flight Manual (AFM) and if the operator cannot

demonstrate the desired performance through data collection. Navigation performance must consider the navigation infrastructure used in original certification.

d. **Airworthiness Requirements.** RNP-4 operations require that the aircraft navigate with a cross-track navigation error no greater than +/- 7.4 km (+/- 4 NM) for 95 percent of the total flight time. This includes Position Estimation Error (PEE), Flight Technical Error (FTE), Path Definition Error (PDE) and Display System Error (DSE). The aircraft along-track positioning error must be no greater than +/- 7.4 km (+/- 4 NM) for 95 percent of the time.

8. APPLICATION.

a. Content

(1) Aircraft Eligibility Documents. AFM, AFM Supplement or suitable Aircraft Evaluation Group (AEG) documentation.

(2) Description of Aircraft Equipment. A configuration list detailing pertinent components and equipment.

(3) Operational Training Programs and Operating Practices and Procedures.

(a) Air carrier operators must submit training syllabi (e.g., initial, upgrade, recurrent) and other appropriate material to the FAA showing incorporation of operational practices and procedures. Training for other personnel must be included where appropriate (e.g., dispatchers, maintenance). Practices and procedures must be standardized using the guidelines of Chapter 12.

(b) Part 91 operators must confirm that they will operate using the practices and procedures identified in Chapter 12.

(4) Operational Manuals and Checklists.

(a) Part 121, 125, 135 Operators. The appropriate manuals and checklists must be revised to include information/guidance on standard operating procedures detailed in Chapter 12. Appropriate manuals must include navigation equipment operating instructions and any procedures established to operate in a specific area of operations (e.g., contingency procedures). Manuals and checklists should be submitted for review as part of the application process.

(b) Part 91 Operators. Submit appropriate documentation providing information/guidance on standard operating procedures detailed in Chapter 12.

(5) Past Performance. An operating history including any events or incidents related to Gross Navigation Errors (GNE) and any rectified by changes in training, procedures, maintenance, or the aircraft/navigation systems used.

(6) Minimum Equipment List (MEL). Those portions of the MEL required for operational approval must be reviewed and addressed.

(7) **Maintenance**. A maintenance program for approval in accordance with this Order.

b. **FAA Review of Application for Content**. When all the application requirements are met the FAA will accept the application and begin the evaluation process.

9. **FAA EVALUATION of PROPOSAL**

a. **Aircraft Eligibility Groups**.

(1) **Group 1**. Aircraft with formal certification and approval of RNP integration accounting for oceanic/remote operations in the AFM. The AFM will address demonstrated RNP levels and any related provisions applicable to its use (e.g., navaid sensor requirements).

(2) **Group 2**. Prior Navigation System Certification Aircraft are those that can equate their certified level of performance, under previous standards, to the RNP-4 criteria. The standards listed in subparagraphs (a) to (d), below, can be used to qualify an aircraft under Group 2. Other standards may also be used if they are sufficient to ensure that the RNP-4 requirements are met. If other standards are to be used, the FSDO or CMO should consult with AFS-400 to determine the appropriate operational approval and limitations

(a) **Global Navigation Satellite Systems (GNSS) As Primary Navigation**. Aircraft having GNSS as the **PRIMARY** Long Range Navigation System (LRNS) for oceanic and remote operations approval must meet performance requirements. AFM(s) should indicate if the GNSS system installation meets these requirements. Dual independent GNSS equipment is required and an approved dispatch fault detection and exclusion (FDE) availability prediction program must be used. The maximum allowable time for which FDE capability is projected to be unavailable is 25 minutes. Maximum outage times will be included as a condition of the operational approval. (See FAA Handbook Bulletin [HBB] for Air Transportation [HBAT], number HBAT 95-09, Guidelines for operational Approval of GPS to Provide the Primary Means of Class II Navigation in Oceanic and Remote Areas of Operation).

NOTE: If predictions indicate that the maximum allowable FDE outage will be exceeded, the operation must be rescheduled when FDE is available.

(b) **Multisensor Systems Integrating GPS**. GPS Integrity Provided by Receiver Autonomous Integrity Monitoring (RAIM). Multisensor systems integrating GPS with RAIM and FDE that are approved under AC 20-130A, Airworthiness Approval of Navigation or Flight Management Systems Integrating Multiple Navigation Sensors, or equivalent, providing +/- 4 NMI, 95% accuracy, meet performance requirements.

(c) **Aircraft Autonomous Integrity Monitoring (AAIM)**. AAIM uses the redundancy of position estimates from multiple sensors, including GNSS, to provide integrity performance that is at least equivalent to RAIM. These airborne augmentations may be certified in accordance with TSO C-115B. An example is

using an inertial navigation system or other navigation sensors as an integrity check on GPS data when RAIM is unavailable but GPS positioning information continues to be valid.

(3) **Group 3.** New Technology – Navigation systems meeting the performance requirements of this Order for operations in airspace designated as Oceanic/Remote Areas RNP-4

b. Maintenance Requirements. Aircraft in Group 1, Group 2, and Group 3 must have an established maintenance program for the individual navigation systems. For others installing navigation systems, the operator will submit those changes appropriate to their existing maintenance manual for review and acceptability.

c. MEL. The MEL must identify the necessary equipment for dispatch into the RNP-4 Oceanic/Remote environment, including two Long Range Navigation Systems (LRNS) and sufficient equipment to provide the performance and functionalities stipulated in paragraph d. and e.

d. Required Performance

(1) **Flight Technical Error (FTE).** The accuracy with which the aircraft is controlled as measured by the indicated aircraft position, with respect to the indicated command or desired position is the FTE. It does not include blunder errors

(2) **Path Definition Error.** This is the difference between the *defined path* and the *desired path* at a specific point and time.

(3) **Display System Error.** These errors may include error components contributed by any input, output or signal conversion equipment used by the display as it presents either aircraft position or guidance commands (e.g., course deviation or command heading) and by any course definition entry device employed. For systems in which charts are incorporated as integral parts of the display, the display system error necessarily includes charting errors to the extent that they actually result in errors in controlling the position of the aircraft relative to a desired path over the ground. To be consistent, in the case of symbolic displays not employing integral charts, any errors in waypoint definition, directly attributable to errors in the reference chart used in determining waypoint positions, should be included as a component of this error. This type of error is virtually impossible to handle and in general practice, highly accurate, published waypoint locations are used to the greatest extent possible in setting up such systems to avoid such errors and reduce workload.

(4) **Navigation System Error (NSE).** This is the root sum square of the ground station error contribution, the airborne receiver error and the display system contribution.

(5) **Total System Error (TSE).** This is system use error. $TSE = \sqrt{(NSE)^2 + (FTE)^2}$

(6) **Position Estimation Error.** This is the difference between true position and estimated position.

(7) Accuracy +/-7.4 km or +/- 4 NM. Each aircraft operating in RNP airspace shall have total system error components in the cross-track and along track directions that are less than the RNP value 95% of the flying time. Accuracy is defined relative to a geodesic path along the published route or defined procedure. The three error components that must be considered in complying with the accuracy requirement are the flight technical error (FTE), the position estimation error (PEE), and path definition error (PDE). The accuracy requirement must be met for the specific length of route.

(8) GNSS Monitor. The GNSS navigation system must detect the satellite failures before they cause the aircraft to exceed the defined airspace or obstacle clearance area. This requirement is derived from the overall effect of a GNSS failure, and applies to all navigational uses of GNSS. The probability of missed detection of satellite failures must be less than or equal to 10^{-3} , and the effective monitor limit for these failures on the navigation solution, known as the horizontal alert limit (HAL), must consider the other normal errors that may exist during a satellite fault, the latency of the alert, the crew reaction time to an alert and the aircraft response. An acceptable means of compliance is to use a horizontal alert limit (HAL) as follows: Oceanic (RNP 4): 4 NM

e. Required Functionalities

(1) *Progress Data.* *The following functionalities are mandatory:*

- CDI in pilot's "Field of View" (FOV)
- Track to Fix (TF)
- Direct to Fix (DF)
- Direct to Function
- Course to Fix (CF)
- Parallel Offset
- Fly-by Transition Criteria
- User Interface Displays
- Flight Planning Path Selection
- Flight Planning Fix Sequencing
- User Defined Course to Fix
- Path Steering
- Alerting Requirements
- Navigation Data Base Access
- WGS 84 geodetic reference system

f. Recommended Functionalities

(1) *Navigation Data.* *The following additional functionalities are recommended:*

- Display cross-track error on the CDU
- Display present position in distance/bearing to selected waypoints
- Provide time to waypoints on the CDU
- Along Track Distance

- Display Ground Speed
- Indicated track angle
- Provide automatic navigation aids selection
- Purge radio updates
- Manually inhibit a navaid facility
- Automatic selection and tuning of DME and/or VOR
- Estimate of position uncertainty
- Current RNP type
- Flight Plan Discontinuity
- Navigation Sensor in Use and display of de-graded navigation

g. Automatic Radio Position Updating. Automatic updating is considered to be any updating procedure that does not require crews to manually insert coordinates. Conditions under which Automatic Radio Position Updating may be considered as acceptable for flight in airspace where RNP-4 is required are listed below. Automatic updating may be considered acceptable for operations in airspace where RNP-4 is applied provided that:

- (1) Procedures for automatic updating are included in an operator's training program.
- (2) Crews are knowledgeable of the updating procedures and of the effect of the update on the navigation solution.

h. Investigation of Navigation Errors. Demonstrated navigation accuracy provides the basis for determining the lateral spacing and separation necessary for traffic operating on a given route. Accordingly, lateral and longitudinal navigation errors are investigated to prevent their reoccurrence. Radar observations of each aircraft's proximity to the centerline and altitude before coming into coverage of short-range navaids at the end of the oceanic route segment are typically noted by Air Traffic Service (ATS) facilities. If an observation indicates that an aircraft was not within an established limit, the reason(s) for the apparent deviation from centerline or altitude may need to be determined and steps taken to prevent a recurrence

i. Removal of RNP-4 Authorization. Oceanic Navigation Error Reports (ONER) and Oceanic Altitude Deviation Reports (OADR), for example, are established in FAA Order 7110.82, latest edition and in FAA Order 8700.1, chapter 223. When appropriate, the FAA may consider these reports in determining remedial action. Repeated ONER or OADR occurrences attributed to a specific piece of navigation equipment, may result in withdrawal of operations specifications or rescinding an LOA, for use of that equipment. Information that indicates the potential for repeated errors may require a modification of an operator's training program. Information that attributes multiple errors to a particular pilot crew may necessitate remedial qualifications or airmen certification review.

g. DEFINITIONS:

(1) CDI in pilot's Field of View (FOV): A course deviation indicator (CDI) located in the pilot's primary field of view along the forward flight path, enabling the pilot to

perform a natural crosscheck, is required. These displays must be visible to the pilot in the primary field of view. A scalable electronic map cannot substitute for a CDI. A fixed scale CDI is acceptable as long as the CDI demonstrates appropriate scaling and sensitivity for the intended RNP type. Differences in CDI scales from one RNP type to another may require operational procedures to check and affirm the CDI scale against the RNP type. With a scalable CDI, the scale shall derive from the selection of RNP, not from a separate selection of CDI scale. Alerting and annunciation limits must match scaling values. If the equipment uses default RNP types to describe the operational mode (e.g. en route, terminal area and approach), then displaying the operational mode is an acceptable means from which the flight crew may derive the CDI scale sensitivity. The course selector of the deviation display shall have a full-scale deflection required for the flight procedure and track keeping accuracy.

(2) Track to fix: TF leg is a geodesic path between two fixes. The first fix is either the previous leg termination or an IF leg. The termination fix is normally provided by the navigation database, but may also be a user-defined fix.

(3) Direct to fix: DF leg is a geodesic path starting near the area of initiation and terminating at a fix.

(4) Direct-to function: The Direct-To function shall be able to be activated at any time by the flight crew, when required. The Direct-To function shall be available to any fix. The system shall be capable of generating a geodesic path to the designated “To” fix. The aircraft shall capture this path without “S-turning” and without undue delay.

(5) Course to fix: CF leg is a geodesic path terminating at a fix with a specified course at that fix. The inbound course at the termination fix and the fix are provided by the navigation database. If the inbound course is defined as a magnetic course, the source of the magnetic variation needed to convert magnetic courses to true courses is required.

(6) Parallel Offset: The system shall have the capability to fly parallel tracks at a selected offset distance. When executing a parallel offset, the RNP type and all performance requirements of the original route in the active flight plan shall be applicable to the offset route. The system shall provide for entry of offset distances in increments of 1 nautical mile, left or right of course. The system shall be capable of offsets of at least 20 nautical miles. When in use, system offset mode operation shall be clearly indicated to the flight crew. When in offset mode, the system shall provide reference parameters (for example, cross-track deviation, distance-to-go, time-to-go) relative to the offset path and offset reference points. An offset shall not be propagated through route discontinuities, unreasonable path geometries, or beyond the initial approach fix. Annunciation shall be given to the flight crew prior to the end of the offset path, with sufficient time to return to the original path. Once a parallel offset is activated, the offset shall remain active for all flight plan route segments until removed automatically, until the flight crew enters a Direct-To routing, or until flight crew (manual) cancellation. Parallel offset function shall be available for en route TF and geodesic portion of DF leg types.

(7) Fly-by transition criteria: Navigation system shall be capable of accomplishing fly-by transitions. No predictable and repeatable path is specified, because the optimum path varies with airspeed and bank angle. However, predictable and repeatable boundaries of the transition area are defined. Path definition error is defined as the difference between the defined path and the theoretical transition area. If the path lies within the transition area, there is no path definition error. Fly-by transitions shall be the default transition when the transition type is not specified. The theoretical transition area requirements are applicable for the following assumptions:

- Course changes do not exceed 120 degrees for low altitude transitions (referred as when the aircraft barometric altitude is less than FL195); and
- Course changes do not exceed 70 degrees for high altitude transitions (referred as when the aircraft barometric altitude is equal to or greater than FL195).

(8) User interface displays: General user interface display features must provide for presentation of information, provide situational awareness and be designed and implemented to accommodate human factors considerations. Essential design considerations include:

- Minimizing reliance on flight crew memory for any system operating procedure or task;
- Developing a clear and unambiguous display of system modes/sub modes and navigational data with emphasis on enhanced situational awareness requirements for any automatic mode changes if provided
- Use of context sensitive help capability and error messages (for example, invalid inputs or invalid data entry messages should provide a simple means to determine how to enter “valid” data)
- Fault tolerant data entry methods rather than rigid rule based concepts
- Placing particular emphasis on the number of steps and minimizing the time required to accomplish flight plan modifications to accommodate ATS clearances, holding procedures, runway and instrument approach changes, missed approaches and diversions to alternate destinations
- Minimizing the number of nuisance alerts so the flight crew will recognize and react appropriately when required
- Displays and controls: Each display element used as a primary flight instrument in the guidance and control of the aircraft, for maneuver anticipation, or for failure/status/ integrity annunciation, shall be located where it is clearly visible to the pilot (in the pilot’s primary field of view) with the least practicable deviation from the pilot’s normal position and line of vision when looking forward along the flight path. For those aircraft meeting the requirements of FAR/JAR 25, it is intended that provisions of certification

documents such as AC 25-11, AMJ 25-11 and other applicable documents should be satisfied. All system displays, controls and annunciations shall be readable under normal cockpit conditions and expected ambient light conditions. Night lighting provisions shall be compatible with other cockpit lighting.

All displays and controls must be arranged to facilitate flight crew accessibility and usage. Controls that are normally adjusted in flight shall be readily accessible with standardized labeling as to their function. System controls and displays shall be designed to maximize operational suitability and minimize pilot workload. Controls intended for use during flight shall be designed to minimize errors, and when operated in all possible combinations and sequences, shall not result in a condition whose presence or continuation would be detrimental to the continued performance of the system. System controls shall be arranged to provide adequate protection against inadvertent system shutdown.

(9) Flight planning path selection: The system shall provide the capability for the crew to create, review and activate a flight plan. The system shall provide the capability for modification (for example, deletion and addition of fixes and creation of along-track fixes), review and user acceptance of changes to the flight plans. When this capability is exercised, guidance outputs shall not be affected until modification(s) is/are activated. Activation of any flight plan modification shall require positive action by the flight crew after input and verification by the flight crew.

(10) Flight planning fix sequencing: The system shall provide the capability for automatic sequencing of fixes.

(11) User-defined course to fix: The system shall provide the capability to define a user-defined course to a fix. The pilot must be able to intercept the user-defined course.

(12) Path steering: The system shall provide data to enable the generation of command signals for autopilot/flight director/CDI, as applicable. In all cases a Path Steering Error (PSE) shall be defined at the time of certification, which will meet the requirements of the desired RNP operation in combination with the other system errors. During the certification process, the ability of the crew to operate the aircraft within the specified PSE shall be demonstrated. Aircraft type, operating envelope, displays, autopilot performance, and leg transitioning guidance (specifically between arc legs) should be accounted for in the demonstration of PSE compliance. A measured value of PSE may be used to monitor system compliance to RNP requirements. For operation on all leg types, this value shall be the distance to the defined path. For cross-track containment compliance, any inaccuracies in the cross-track error computation (for example, resolution) shall be accounted for in the total system error.

(13) Alerting requirements: The system shall also provide an annunciation when the manually entered RNP type is larger than the RNP type associated with the current

airspace as defined in the navigation database. Any subsequent reduction of the RNP type shall reinstate this annunciation. When approaching RNP airspace from non-RNP airspace, alerting shall be enabled when the cross-track to the desired path is equal to or less than one-half (1/2) the RNP value and the aircraft has passed the first fix in the RNP airspace.

(14) Navigation database access: The navigation database shall provide access to navigation information in support of the navigation systems reference and flight planning features. Manual modification of the navigation database data shall not be possible. This requirement does not preclude the storage of "user defined data" within the equipment. When data are recalled from storage they shall also be retained in storage. The system shall provide a means to identify the navigation database version and valid operating period.

(15) WGS-84 geodetic reference system: WGS-84 or an equivalent earth reference model shall be the reference earth model for error determination. If WGS-84 is not employed, any differences between the selected earth model and the WGS-84 earth model must be included as part of the path definition error. Errors induced by data resolution must also be considered.

11. OPERATIONAL REQUIREMENTS.

a. **Navigational Performance.** All aircraft shall meet a track keeping accuracy equal to or better than +/- 7.4 km or ± 4 NM for 95% of the flight time in RNP-4 airspace.

b. **Navigation Equipage.** All RNP-4 operations in oceanic and remote areas shall have at least dual independent long range navigation systems of integrity such that the navigation system does not provide misleading information.

(1) Aircraft Incorporating GPS. AC 20-138() provides an acceptable means of compliance for aircraft that use GPS, but do not integrate the GPS with other sensors. AC 20-130A, describes an acceptable means of compliance for multi-sensor navigation systems that incorporate GPS. Aircraft that intend to use GPS as the only navigation system in RNP-4 airspace (e.g., no IRS or INS), must comply with AC 20-138(), FDE and specific GPS requirements described in this Order.

(2) The equipment configuration used to demonstrate the required accuracy must be supportable in RNP-4 oceanic and remote airspace. For example, the statistical benefit of estimating position using INS position data filtered with DME data will not be considered.

(3) The equipment configuration used to demonstrate the required accuracy must be identical to the configuration which is specified in the MEL.

c. **Flight Plan Designation.** Operators should use the appropriate FAA or ICAO flight plan designation specified for the RNP route flown. The letter "R" should be placed in Block 10 of the ICAO flight plan to indicate that the pilot has reviewed the planned route of flight to determine RNP requirements and the aircraft and operator have been approved by the FAA to operate in areas or on routes where RNP is a requirement for operation.

Additional information needs to be displayed in the remarks section that indicates the accuracy capability such as RNP-4 versus RNP-10. It is important to understand that additional requirements will have to be met for Operational Approval in RNP-4 airspace or routes. CPDLC and ADS will also be required when the separation standard is 30 NM lateral and /or longitudinal.

d. Availability of GNSS. At dispatch or during flight planning, the operator should ensure that adequate navigation capability is available en route to enable the aircraft to navigate to RNP-4.

e. Navigation Database. The standards for navigation databases are contained in RTCA document DO-200A and EUROCAE document DO-76. Given that not all current suppliers of navigation databases meet these standards, the operator, as a minimum, must implement navigation database integrity checks using appropriate software tools or approved manual procedures to verify data relating to all waypoints in the subject RNP-4 airspace or routes. These checks are in addition to any checks previously performed by the Aeronautical Information Services, unapproved navigation database suppliers, or navigation equipment manufacturers. The integrity checks need to identify any discrepancies between the navigation database and the published charts/procedures. An approved third party may perform integrity checks. Discrepancies that invalidate a procedure must be reported to the navigation database supplier and affected procedures must be prohibited by an operator's notice to its flight crew. Aircraft operators should consider the need to continue their own database checks even for products obtained from approved suppliers.

12. TRAINING PROGRAMS, OPERATING PRACTICES AND PROCEDURES

a. Introduction. The following items (detailed in paragraphs b. through e.) should be standardized and incorporated into training programs and operating practices and procedures. Certain items may already be adequately standardized in existing operator programs and procedures. New technologies may also eliminate the need for certain crew actions and if this is found to be the case, then the intent of this section has been met.

b. Flight Planning. During flight planning, the flight-crew should pay particular attention to conditions which may affect operations in RNP-4 airspace (or on RNP-4 routes). These include, but may not be limited to:

- (1) Verifying that the aircraft is approved for RNP-4 operations.
- (2) Verify that the letter “R” is annotated in Block 10 (Equipment) of the ICAO Flight Plan.
- (3) Requirements for GNSS, such as FDE, if appropriate for the operation.
- (4) Accounting for any operating restriction related to RNP-4 approval, if required for a specific navigation system.

c. Preflight Procedures At The Aircraft. The following actions should be completed during preflight:

- (1) Review maintenance logs and forms to ascertain the condition of equipment required for flight in RNP-4 airspace or on an RNP-4 route.
- (2) Ensure that maintenance action has been taken to correct defects to required equipment.
- (3) During the external inspection of aircraft, particular attention should be paid to the condition of navigation antenna and the condition of the fuselage skin in the vicinity of each antenna. A qualified and authorized person other than the pilot, e.g., a flight engineer or maintenance personnel, may accomplish this check.
- (4) Emergency procedures for operations in RNP-4 airspace or on RNP-4 routes are no different than normal oceanic emergency procedures with one exception, crews must be able to recognize and ATC must be advised when the aircraft is no longer able to navigate to its RNP-4 approved capability.

d. En Route.

- (1) At least, two independent Long Range Navigation systems capable of navigating to the RNP should be operational at the oceanic entry point. If this is not the case, then the pilot should consider an alternate routing or divert for repairs.
- (2) Operator in-flight operating procedures must include mandatory crosschecking procedures to identify navigation errors in sufficient time to prevent aircraft from an inadvertent deviation from ATC cleared routes.
- (3) Crews shall advise ATC of any deterioration or failure of the navigation equipment below the navigation performance requirements or of any deviations required for a contingency procedure.

e. Flight Crew Knowledge.

- (1)** Commercial Operators should ensure that crews have been trained and are knowledgeable on the subject matter contained in this order, limits of their RNP-4 navigation capabilities, and effects of updating and RNP-4 contingency procedures.
- (2)** Part 91 operators should show the FAA that pilots are knowledgeable on RNP-4 operations. For RNP-4 authorization, the applicant must show the FAA that crewmembers are knowledgeable on the material contained in this order. FAA Order 8700.1, General Aviation Inspector's Handbook, Chapter 222, addresses training for part 91 operators. It states that specific training is not required by 14 CFR or by Annex 2 to the ICAO Rules of the Air and gives inspectors latitude in determining pilot qualifications. It further states that on the LOA, the statement, "Crew training conducted by" can be completed with an entry of: none, self, company training or the name of a commercial training course. Training "acceptable" to the FAA is not a prerequisite for issuing an RNP-4 authorization. It is also not a requirement that a part 91 operator provide a certificate of training that says it is FAA approved. What can be considered as acceptable is for an operator to show that crews have adequate knowledge of the RNP-4 operating practices and procedures that are contained in this order.
- (3)** FAA inspectors may accept training center certificates without further evaluation.
- (4)** FAA inspectors may elect to evaluate a training course before accepting a training center certificate from a specific center.
- (5)** FAA inspectors may accept a statement in the operator's application for an RNP-4 LOA that the operator has and will ensure that crews are knowledgeable on RNP-4 operating practices and procedures contained in this order.
- (6)** FAA inspectors may accept a statement by the operator that it has conducted or will conduct an in-house RNP-4 training program.

James J. Ballough
Director, Flight Standards Service

APPENDIX 1.

AIRWORTHINESS OF IRU PERFORMANCE

1. IRU Accuracy and Reliability. IRU accuracy and reliability must be analyzed in conjunction with the flight management system interface. An analysis performed on a specific manufacturer's aircraft model is not necessarily applicable to other aircraft operating the same equipment. However, other aircraft may be analyzed using the same or equivalent methodology as proposed herein.

a. The Radial Navigation Error Distribution for IRU's is modeled by a Rayleigh Distribution. The 95% statistic of radial position error will be used when demonstrating compliance. It is assumed that cross-track and along-track errors are Gaussian, independent, and have equal variances.

b. The Radial Position Error will be evaluated for the Range of the Independent Time Variable (time in navigation), as certified for the IRU navigation maximum time (e.g., 18 hours).

c. Time-Dependent Position Error Data will be presented. Other non-inertial error sources will not be considered as part of IRU certification (i.e., flight technical error). Therefore, the maximum time duration of flight operations in RNP-4 airspace will be evaluated and determined as part of the operational approval.

d. The Assessment of Navigation Performance may Employ System Analysis, IRU Error Modeling (Covariance Analysis), and System Simulation. Analytical findings may be validated with empirical data from laboratory testing and aircraft flight testing, as applicable.

2. When credit is required for IRU performance that is superior to the original certification, the existing IRU specification control drawings for the IRU Type Designs should be revised to account for the new tighter tolerance system error budgets. If it has been determined that all IRU's for a given part number meet the minimum requirements of the new performance standard, then the IRU part number may remain the same. When only some of the IRU's for a given part number meet the minimum requirements of the new performance standard, then screening is required and part number updates will be required to identify the IRU's which are compliant to the new performance standard.

3. The AFM or AFM Supplement (AFMS) must be modified to reflect the certification of IRU's to tighter accuracy requirements, consistent with AC 25-4, Inertial Navigation System (INS), paragraph 5b(4). The AFM should provide sufficient time-dependent information so that the maximum time in RNP-4 airspace can be assessed as part of the operational approval.

4. In addition, production and field acceptance test procedures will require an update by the supplier, to ensure that the installed IRU meets the tighter accuracy tolerance required.

5. Operator maintenance procedures will require updating to ensure appropriate monitoring of IRU performance to the new requirements contained in this Order, and replacement of IRU's on aircraft that do not meet the navigation performance of this new criteria.

6. Procedures for flight operations should be identified and applied to ensure IRU alignment before extended range flights and time-in-navigation for the intended time duration of flight in RNP-4 airspace.

APPENDIX 2.

**DOCUMENTATION REQUIRED TO COMPLETE THE NAVIGATIONAL
APPROVAL PROCESS**

**FIGURE 1. SAMPLE LETTER OF REQUEST BY AN AIR CARRIER TO OBTAIN
RNP-4 OPERATIONAL APPROVAL**

SUBJECT: Request for Required Navigation Performance (RNP) - 4 Approval

TO: Appropriate POI

[Insert Airline Name] request that Operations Specifications approval be issued to conduct en route operations on RNP [insert number] of [insert number] hours between updates on designated routes.

The following [Insert Airline Name] aircraft meet the requirements and capabilities as defined/specified in Federal Aviation Administration Order [insert the number of this Order], dated [insert the date of this Order] for a RNP-4 qualification.

AIRCRAFT COMMUNICATIONS	RNP-4	NAVIGATION	
TYPE/SERIES	EQUIPMENT	EQUIPMENT	
B-747-400 by Name and	List Nav Equip by Name and Type/Manuf/Model Type/Manuf/Model	List Com Equip	
B-737-500 by Name and	List Nav Equip by Name and Type/Manuf/Model Type/Manuf/Model	List Com Equip	
MD-11 by Name and	List Nav Equip by Name and Type/Manuf/Model Type/Manuf/Model	List Com Equip	

Note: The above listed aircraft are samples only.

Training of flight-crews has been accomplished in accordance with applicable FAA regulations and guidance material.

* If unlimited time is requested, state: "Unl."

Sincerely,

[insert typed name and signature]

[insert title]

APPENDIX 2.

**DOCUMENTATION REQUIRED TO COMPLETE THE NAVIGATIONAL
APPROVAL PROCESS**

**FIGURE 2. SAMPLE LETTER OF REQUEST BY A GENERAL AVIATION
OPERATOR TO OBTAIN RNP-4 OPERATIONAL APPROVAL**

SUBJECT: Request for a Letter of Authorization (LOA) to conduct Required Navigation Performance (RNP)

TO: Appropriate Flight Standards District Office (FSDO)

Operators must submit requests by letter with a separate page containing the “Format for an LOA to Operate at RNP-4” as shown on the following page.

LOA's

Aviation safety inspectors (ASI) can administratively issue an LOA to any general aviation operator that has an aircraft-navigation system meeting the requirements of this Order. The procedure for the issuance of the LOA is identical to the procedure contained in FAA Order 8700.1, chapter 222, with the exception that the format for the LOA has been modified to meet the specific requirements of an RNP approval. The format to be used is contained on the following page and may be copied or retyped at the convenience of the operator. If the LOA is retyped, inspectors will ensure that every item appearing in the sample, is included in the operator's version.

APPENDIX 2.

**DOCUMENTATION REQUIRED TO COMPLETE THE NAVIGATIONAL
APPROVAL PROCESS**

FIGURE 3. FORMAT FOR AN LOA TO OPERATE AT RNP-4

This letter constitutes approval for the named aircraft to operate or to conduct oceanic/remote area flight on routes specified as RNP-4 routes at the level indicated by the authorized operator or crew listed under the conditions and limitations below.

Aircraft make and model _____ N-Number _____

Aircraft serial number _____ Aircraft color _____

—

NAVIGATION EQUIPMENT		RNP-4
TYPE/MANUFACTURER/MODEL	PART NUMBER	DATE
INSTALLED TIME LIMIT		

COMMUNICATION EQUIPMENT		
TYPE/MANUFACTURER/MODEL	PART NUMBER	DATE
INSTALLED		

Aircraft base of operations (city, state, zip) _____

Name of aircraft owner/operator _____

Crew training conducted by _____

Print name of person responsible for crew operations or agent for service (must be a U.S. citizen) _____

Signature of person responsible for crew operations or agent for service _____

Street address (cannot be a Post Office box) _____

City, state, and zip code _____

FOR FAA USE ONLY (To be completed by issuing office)

This approval is for: RNP-4 under the conditions typed on the back of this authorization.

Authorization Number _____

Aircraft limitations (if applicable) _____

Program Tracking and Reporting Subsystem (PTRS) tracking number _____

Date of Issuance _____ Expiration Date _____

This authorization is subject to the conditions that all operations conducted on an oceanic RNP route are in accordance with the flight rules contained in International Civil Aviation Organization (ICAO), Annex 2, and that all operations outside of the United States comply with section 91.703, and Annex 2. The person responsible for crew operations or agent for service must accept responsibility for complying with the stated regulations by signing this

document. This document is considered invalid until signed. If the person signing this document relinquishes responsibility, changes mailing address, or the aircraft changes ownership or base of operation, this letter becomes invalid and the signee should immediately notify the issuing office of the change. LOA's can be renewed via letter or fax request submitted at least 30 days before the expiration date, if no changes have been made. If any changes have been made, application for a new LOA must be made in the same manner as that required for the initial LOA.

Office Manager's Signature

APPENDIX 2.

**DOCUMENTATION REQUIRED TO COMPLETE THE NAVIGATIONAL
APPROVAL PROCESS**

FIGURE 4. INFORMATION TO BE INSERTED ON THE BACK OF THE LOA

PRE-FLIGHT SPECIAL REQUIREMENTS: *Note: Operators should list any procedures that are utilized which are pertinent to the accuracy and time limit of the navigation capability (e.g., an approved Fault Detection and Exclusion (FDE) program is required if GPS is to be used - if utilizing a procedure detailed in another FAA document, that document may be referenced and a copy attached to the application).*

**OTHER INFORMATION AS DEEMED NECESSARY BY THE ISSUING FLIGHT
STANDARDS DISTRICT OFFICE:**

APPENDIX 2.

**DOCUMENTATION REQUIRED TO COMPLETE THE NAVIGATIONAL
APPROVAL PROCESS**

FIGURE 5. FORMAT FOR LETTER TO RENEW LOA

FROM: *[person or department requesting LOA]*
[company name (if applicable)]
[street address] (P.O. Box not acceptable)
[city, state, zip code]

TO: Federal Aviation Administration (FAA)
Flight Standards District Office
[street address]
[city, state, zip]

Dear Inspector:

Enclosed is a copy of our LOA, which is due to expire within the next 60 days, and a completed form requesting a new LOA for operations in RNP-4 airspace or on RNP-4 routes.

I/we further certify that all authorized crews are qualified to operate in oceanic areas.

Sincerely,

[person's signature responsible for crew operations or agent for service]
[typed name of person responsible for crew operations or agent for service]
[title]
[date]

NOTE: The letter should be sent to the office that issued expired LOA.

APPENDIX 3.

CHECKLIST AND JOB AID FOR THE RNP-4 APPROVAL APPLICATION PROCESS

OPERATOR FUNCTIONS:

1. **OPERATOR PREPARES AN APPLICATION PACKAGE AS DESCRIBED IN PARAGRAPH 8 OF THIS ORDER.**

2. **OPERATOR SELF-EXAMINATION.** It is advisable that operators become familiar with paragraphs 8 and 9 of this order before contacting the FAA. These sections provide the criteria for approvals by placing aircraft/navigation systems in groups. Having a knowledge of these sections provides the operator with an indication of how much time might be required in obtaining an approval. Group I approvals are administrative and can be granted as quickly as district office workloads will permit. Group II approvals may be made quite rapidly or may take longer depending upon the aircraft/navigation system configurations. Group III approvals will usually involve an extended time for evaluation and an approval may or may not be granted.

3. **OPERATOR SCHEDULES A PREAPPLICATION MEETING.** The operator schedules a pre-application meeting with either CHDO for commercial operators, or FSDO for general aviation.

4. **OPERATOR SUBMITS A FORMAL APPLICATION FOR APPROVAL.** The operator submits a formal application for approval in accordance with the FAA expectations discussed in the pre-application meeting. The formal application should be made in writing in a manner similar to those shown in appendix 2.

- Figure 1 for Air Carriers
- Figure 2 for General Aviation

5. **OPERATOR TRAINS CREW.** An RNP-4 airspace or an RNP-4 route is a special airspace. There are no legal requirements for general aviation operators to have specific training for RNP-4 operations; however, ICAO Rules demand that States ensure that the crewmembers are qualified to operate in special airspace. Thus, general aviation operators will be required to satisfy the Administrator that they are qualified.

6. **OPERATORS RECEIVE OPERATION SPECIFICATIONS OR AN LOA.** The operators receive operation specifications or LOA to operate in an RNP-4 airspace or on an RNP-4 route.

7. **CREWS ARE AUTHORIZED TO PERFORM RNP-4 OPERATIONS.** Crews are authorized to perform RNP-4 operations for the time authorized within the parameters established for their navigation system configuration.

INSPECTOR FUNCTIONS:

See Job Aid on the next page.

INSPECTOR'S JOB AID

PTR S CO DE	APPLICANT _____	Para & Pg	INSP INIT.	DATE
	1. Inspector familiarization with the approval process			
1366	2. Set up applicant meeting date			
1366	3. Application meeting: Inspector _____ Applicant orientation to FAA Order 8400.XX Check of Documentation -Airworthiness documentation -Current Operation Specifications, if applicable -Current Letter of Authorization, if applicable -Copy of pertinent sections of the Airplane Flight Manual -List of number and type of Long Range Navigation Units (e.g., 3- Litton 92, INS) -Description of Long Range Navigation System integration. -Review of training program - RNP-4 Operations Issues - RNP-4 Contingency Procedures			
	3. Evaluate Operator's Long Range Navigation System - Determine Eligibility Group Choose one of the following as a means by which approval will be accomplished: -The operator has an Airplane Flight Manual (AFM) entry or other documentation from an FAA Aircraft Certification office granting certification approval for RNP-4 or better. (eligibility group 1) -Plan on approving the operator for unlimited RNP-4 navigation if either one or both of the required Long Range Navigation Systems is a GNSS and the unit(s) are integral to the primary steering instrument of the mandatory flightcrew. GPS approval guidance is contained in HBAT 95-09 and FAA Notice 8110.60 -Approve the operator for the RNP value and time specified in the AFM			
	3. Evaluate Operator's Long Range Navigation System (continued)			

PTR S CO DE	APPLICANT _____	Para & Pg	INSP INIT.	DATE
1442	4. Issue operation specifications or an LOA* to the operator			
1442	5. Complete a Program Tracking and Reporting System (PTRS) report noting the issuance of the RNP-4 authorization for a specified time -The National Use Field is a 9 space Alpha Numeric Field. The following entry must be made in the field: “ RNP-4” followed by 3 spaces.			

** **Note** FAA Order 8700.1, chapter 222, Guidance for the Issuance of a Letter of Authorization, provides the ASI with details relative to the issuance of an LOA*

Agenda Item 9: Date and venue for next meeting

9.1 The venue and date for the next ATM/AIS/SAR/ Sub-Group meeting will be advised after consideration by APANPIRG/15.

Closing remarks

9.2 The Chairman thanked the participants for their contribution to the successful completion of this meeting of the Sub Group, and their efforts in considering the many and varied tasks before it. The Chairman recalled that the Future Directions Task Force, during its review of the efficiency and effectiveness of APANPIRG's contributory bodies, had recognized that the ATM/AIS/SAR/SG was the principal Group of APANPIRG overseeing the planning and implementation of operational air traffic and airspace changes to the international airspace in accordance with the Asia/Pacific Regional Air Navigation Plan (ANP) and *Regional Plan for the New CNS/ATM Systems*.

9.3 The Chairman reminded the meeting that, due to his pending retirement, this was his last opportunity to work with the members of the Sub-Group. He thanked the participants and the Secretariat for their ongoing support during his tenure as the Chairman, and reflected on a few of the achievements of the Sub-Group including the EMARSSH project and the many RVSM and RNP implementations. The fact that these implementations now form an intrinsic part of the air navigation system in the Asia/Pacific Region is a credit to all members who have served the Sub-Group.

9.4 In stepping down, the Chairman felt there would be no loss of emphasis and momentum on the work of the Sub-Group and passed on his personal best wishes to the participants and whoever was selected as the incoming Chairman. On behalf of participants, he thanked the Regional Office for the excellent facilities and support for the meeting.

9.5 The Secretariat thanked the Chairman for his long association with the ICAO Regional Office and with this Sub-Group in particular. He thanked participants on behalf of the Asia/Pacific Regional Office for the successful outcome of this meeting.

9.6 IATA expressed appreciation to the Chairman for the many years he has served the ATM/AIS/SAR/SG as its Chairman and good wishes on his retirement.

— END —

ATM/AIS/SAR/SG/14
Attachment 1 to the Report

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LIST OF WORKING AND INFORMATION PAPERS

WORKING PAPERS

WP/No.	Agenda Item	Subject	Presented by
1	1	Provisional Agenda	Secretariat
2	2	APANPIRG/14 Report and ANC/Council Actions	Secretariat
3	2	Key Priorities for CNS/ATM Implementation in the Asia/Pacific Region	Secretariat
4	3	Implementation of ATS Routes	Secretariat
5	3	Update on the Revised ATS Route Structure – Asia to Middle East/Europe, South of the Himalayas (EMARSSH)	Secretariat
6	3	Review of Outstanding Conclusions and Decisions of APANPIRG	Secretariat
7	3	Implementation of Reduced Vertical Separation Minimum (RVSM) in the Asia/Pacific Region	Chairman of the ICAO RVSM TF
8	8	An Update to the RVSM Minimum Monitoring Requirements for the Asia/Pacific Region	United States
9	3	Guidance Material on CNS/ATM Operations – The FANS 1/A Operations Manual (FOM)	Secretariat
10	3	Implementation of Lateral Offsets in the Non-Radar Oceanic Airspace of Southeast Asia	Secretariat
11	3	AIS Implementation in Asia and Pacific Region	Secretariat
12	3	SAR Matters	Secretariat
13	4	Review of ATS Coordination Group Activities	Secretariat
14	4	FANS Implementation Team for the Bay of Bengal (FIT-BOB) and FANS Implementation Team for the South-East Asia Region (FIT-SEA)	Secretariat
15	4	Second Meeting of Automatic Dependent Surveillance – Broadcast (ADS-B) Study and Implementation Task Force	Secretariat
16	4	Results of the Eleventh Air Navigation Conference (AN-Conf/11) 2003 – Follow-up Action to be taken by APANPIRG	Secretariat
17	5	First Meeting of the Regional Airspace Safety Monitoring Advisory Group	Secretariat
18	6	List of Air Navigation Deficiencies	Secretariat
19	7	ATM/AIS/SAR Task List	Secretariat
20	4	Classification of Airspace in RVSM/RNP Airspace	Secretariat

ATM/AIS/SAR/SG/14
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WP/No.	Agenda Item	Subject	Presented by
21	3	Terms of Reference of ATM/AIS/SAR Sub-Group of APANPIRG	Secretariat
22	3	Carriage of ACAS II and Pressure-Altitude Reporting Transponders	Secretariat
23	4	Table CNS-1D – ATS Inter-Facility Data Communication (AIDC)	Secretariat
24	8	Outcomes of the APANPIRG Future Directions Task Force (FDTF)	Secretariat
25	8	Altitude Reservations	United States
26	4	Review of progress in the establishment of more efficient routing scheme between Jakarta and Hong Kong and the Pearl River Delta airports	IATA
27	8	Proposed Amendment to the ICAO Regional Supplementary Procedures, Doc 7030 – ATC Contingency Procedures during failure of Data Link System	Japan
28	4	Review of current air traffic management situation over the Bay of Bengal and Indian continental airspace	IATA
29	6	Deficiencies in the provision of Air Traffic Services in the Asia Pacific Region	IATA
30	8	Delayed ADS-C Reports in Australian Airspace	Australia

FLIMSIES

No.	Agenda Item	Subject	Presented by
1	4	ATM/AIS/SAR/SG/14 – WP/13 SEACG/11 - Gross Navigational Errors (GNE)	Secretariat
2	3	ATM/AIS/SAR/SG/14 – WP/10 Draft Revised Guidelines On The Use Of Lateral Offsets And The Effect On Airspace Safety	Secretariat
3	2	ATM/AIS/SAR/SG/14 – WP/18 Asia/Pacific Supplement to the Uniform Methodology for the Identification, Assessment and Reporting of Air Navigation Deficiencies	Secretariat
4	3	ATM/AIS/SAR/SG/14 – WP/10 Draft AIP Amendment Implementation of Lateral Offset Procedures	Secretariat

INFORMATION PAPERS

IP/No.	Agenda Item	Subject	Presented by
1	–	List of Tentative Working and Information Papers	Secretariat
2	3	Amendments to the ICAO Guidance Material on CNS/ATM Operations in the Asia/Pacific Region	Secretariat
3	3	Proposed RVSM Transition Procedures Kunming/Yangon FIRs	Secretariat
4	8	The establishment of Air Traffic Management Center in Japan	Japan
5	3	Language Proficiency	Secretariat
6	8	Trends in Air Transport	Secretariat
7	4	Implementation of 30NM lateral and 30NM longitudinal Separation in the South Pacific	New Zealand & Australia
8	8	Draft Guidance on RNP 4 Oceanic and Remote Operational Approval	United States
9	4	Final Report of the 18 th Meeting of the Informal South Pacific Air Traffic Services Coordinating Group (ISPACG/18)	United States
10	4	Concept for Oakland Air Route Traffic Control Center's Application of 50/50NM and 30/30NM Separation in a mixed Required Navigation Performance Environment	United States
11	4	Final Report of the 13 th Meeting of the Russian/American Coordinating Group for Air Traffic Control (RACGAT/13)	United States
12	3	RVSM Implementation Plan in the Tokyo and Naha FIRs	Japan
13	4	Status of Action Items from the 21 st Meeting of the Informal Pacific Air Traffic Control Coordination Group (IPACG/21)	United States
14	4	Development of ATS routes, AIS and SAR in Mongolia	Mongolia
15	8	Report on 7 th Meeting of the North East Asia Traffic Management Meeting (NEAT 7)	IFATCA