INTERNATIONAL CIVIL AVIATION ORGANIZATION

REPORT OF THE ELEVENTH MEETING OF THE ASIA/PACIFIC AIR NAVIGATION PLANNING AND IMPLEMENTATION REGIONAL GROUP (APANPIRG/11)

BANGKOK, THAILAND - 2 – 6 OCTOBER 2000

The views expressed in this Report should be taken as those of the APANPIRG and not of the Organization. This Report will be presented to the Air Navigation Commission/Council and any formal action taken will be published in due course as a supplement to the Report.

Approved by the Meeting
and published by the ICAO Asia and Pacific Office

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PART I - HISTORY OF THE MEETING

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1.1 Introduction

1.1.1 The Eleventh Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/11) was held in Bangkok, Thailand from 02 October to 06 October 2000 at ICAO Asia and Pacific Office.

1.2 Attendance

1.2.1 The meeting was attended by 70 participants from 14 Member States, 9 other Contracting States of the ASIA/PAC Regions and 3 International Organizations.

1.2.2 A list of participants is given at Attachment 1 to the Report.

1.3 Opening of the meeting

1.3.1 The ICAO Regional Director, Mr. L.B.Shah welcomed the newly nominated officials from the APANPIRG member States and acknowledged the participation of several other Contracting States of the region who are not members of APANPIRG, which demonstrated the interest generated in the region on the work being done by the Group.

1.3.2 Mr. Shah noted that APANPIRG/11 was very special in that it was the first meeting of the Group in the new millennium for the ASIA/PAC Region. He emphasised that the Group is essentially charged with ensuring the continuous and coherent development of the ASIA/PAC Regional Plan as a whole in relation to those of adjacent regions and identifying specific problems in the air navigation fields and proposing in appropriate form actions aimed at solving these problems. He added that whilst there appeared to be too heavy a focus on the planning process, too little emphasis was placed on the implementation process. There was urgent need for the Group to take a fresh look at things, in particular, the implementation process of air navigation matters.

1.3.3 He drew the attention of the meeting to some of the observations derived through a comparative analysis of regional developments in air navigation systems including CNS/ATM systems carried out by ICAO and of the tremendous room for improvement and operational enhancement in terms of safety, efficiency and economy in the current system

1.3.4 Mr Shah stressed on the high priority assigned to the identification, assessment and resolution of shortcomings and deficiencies in air navigation in the region. In this regard he called for the co-operation and support of all States in the region and the international organizations

1.3.5 He also touched on the need for more concerted effort and cooperation to protect aeronautical frequency spectrum beaing in mind WRC-2003, although WRC 2000 was successful in safeguarding ICAO's position.

1.3.6 Mr. Shah also highlighted some of the noteworthy developments in air navigation in the region including the establishment of COSCAP-SEA, Pacific Upper Airspace Study and the forthcoming Inter-Regional Coordination Meeting between the ICAO Regional Directors of the MID, EUR/NAT and ASIA/PAC.

1.3.7 Mr Shah took the opportunity to thank the Royal Thai Government, the host country of the Regional Office, for their generous support in the development of the new Conference Facility which is expected to commence by end of 2000.

1.3.8 The meeting was informed that the APANPIRG documentation was made available in the ICAO APAC website during the first week of September 2000. The meeting recognized that this initiative as extremely useful and expressed its deep appreciation for the commendable effort by the Regional Office.

1.3.9 The Chairperson, Mr. H. S. Khola in his opening remarks commended the excellent work done by APANPIRG. In particular, the Y2K roll-ever was a historic event which was handled very well by the ICAO Regional Office and the National Y2K ATM Centres. It demonstrated a sterling example of how a well planned and executed programme can help in resolving a complex multinational problem.

1.3.10 The implementation of RVSM in the Pacific Region is another important event which was introduced very satisfactorily. He also referred to the recent conference at ICAO Headquarters on Economics of Airports and Air Navigation Services (ANSConf 2000) which has made a number of recommendations which have relevant bearing on the working of the regional PIRGs.

1.3.11 Mr. Khola drew the attention of the meeting to the various challenges ahead such as the implementation of the conclusions and the resolution of shortcomings and deficiencies. He appreciated the contributions and co-operation of international organizations that are the prime users of the facilities and services provided by the States.

1.3.12 Mr. Khola sought meaningful contribution from all the participants so that not only all the items in the schedule for the meeting would be completed on time but would also enhance the productivity of the Group's meeting.

1.4 Officers and Secretariat

1.4.1 Mr. H.S. Khola, DGCA, India as Chairperson of the Group presided over the meeting. The last day of the meeting was presided by Mr. Chiang Hai Eng, Deputy DGCA, Singapore as Mr. Khola had to leave for urgent business. Mr. Lalit B. Shah, ICAO Regional Director, Asia and Pacific Office, was the Secretary of the meeting assisted by Mr. K. W. Cheong, Regional Officer/AGA from the ICAO Asia and Pacific Office.

1.4.2 The meeting was also assisted by Mr. Shaukat A. Ali, Deputy Regional Director, Mr. H.V. Sudharshan, Regional Affairs Officer, ICAO Headquarters, Dr. E. Lysakov, Regional Officer/MET, Mr. O. B. Dell, Regional Officer/ATM, Mr. J. E. Richardson, Regional Officer/ATM, Mr. K.P. Rimal, Regional Officer/CNS, Mr. Li Peng, Regional Officer/CNS and Mr. Hiroshi Inoguchi, Regional Officer/ATM from the ICAO Asia and Pacific Office.

1.5 Agenda of the meeting

1.5.1 The Agenda adopted by the meeting was as follows:

Agenda Item 1 Review of Council and ANC actions on APANPIRG/10 Report

Agenda Item 2 ASIA/PAC Air Navigation System and Related Activities

2.1 ATS/AIS/SAR Matters

2.2 COM/MET/NAV/SUR Matters

2.3 ATS Co-ordination Groups' Activities

2.4 Other Air Navigation Matters

Agenda Item 3 CNS/ATM Implementation and Related Activities

Agenda Item 4 Shortcomings and Deficiencies in the Air Navigation Field

Agenda Item 5 Review of Outstanding Conclusions and Decisions of APANPIRG

Agenda Item 6 Develop Future Work Programme

Agenda Item 7 Any other business

1.6 **Working Arrangements, Language and Documentation**

1.6.1 The Group met as a single body throughout the meeting. The working language of the meeting was English inclusive of all documentation and this Report. Information Papers (IPs) and Working Papers (WPs) presented at the meeting are listed in the Attachment 2 to this Report.

1.7 **Conclusions and Decisions - Definition**

1.7.1 The APANPIRG records its actions in the form of Conclusions and Decisions with the following significance:

1) Conclusions deal with matters which, in accordance with the Group-s Terms of Reference, require the attention of States or actions by ICAO in accordance with established procedures; and

2) Decisions deal with matters of concern only to the APANPIRG and its contributory bodies.

List of Conclusions and Decisions are given on page i-5 to i-7.

1.8 **Terms of Reference of APANPIRG**

1.8.1 The revised Terms of Reference of APANPIRG approved by the Council of ICAO (4th Meeting of its 159th Session on 28 February 2000) are as follows

The objectives of the Group are to:

a) ensure the continuous and coherent development of the plans for Asia/Pacific Regions and ensure harmonization with global plan and those of adjacent regions;

b) develop proposals for improvements in the implementation of the ASIA/PAC Air Navigation Plan on the basis of new technological developments;

c) identify specific problems in the air navigation field and propose in appropriate form, action aimed at solving these problems; and

d) develop, with due regard to the primacy of safety, business cases for various options taking into account the environmental benefits and the need to facilitate financing of preferred options in planning and implementation of air navigation facilities.

To meet these objectives the Group shall:

(a) keep under review, and propose when necessary target dates for implementation of facilities, services and procedures. This will ensure the co-ordinated development of the Air Navigation System in the Asia and Pacific Regions;

(b) assist the ICAO Regional Office providing services in the ASIA and PACIFIC Regions in its assigned task of fostering implementation of the ASIA/PAC Regional Air Navigation Plan;

(c) monitor developments in the air navigation field and develop proposals for consequential improvements in air navigation in the Asia and Pacific regions;

(d) review any shortcomings in the Asia and Pacific Regional Air Navigation System and develop recommendations for remedial action;

(e) originate, as necessary, in co-ordination with affected State, amendments to the Plan for the ASIA/PAC Regions;

(f) keep under review the Statement of Basic Operational Requirements and Planning Criteria. Recommend to the Air Navigation Commission such changes to them as may be required in the light of developments mentioned in (c); and

(g) use an appropriate mechanism to prepare cost/benefit analysis and business cases inclusive of environmental assessments and provide related guidance material in support of "prototype" sets of planned facilities and services. The Group may utilize the services of financial institutions, as required, on a consultative basis.

List of Conclusions

List of Conclusions (contd.)

List of Decisions

Decision 11/13	-	**ATS/AIS/SAR Subject/Task List**
Decision 11/17	-	**Revision of the Subject/Tasks List of ATN Transition Task Force**
Decision 11/34	-	**Amendments to the Title, Terms of Reference and Subject/Tasks List**

PART II - REPORT ON AGENDA ITEMS

AGENDA ITEM 1: REVIEW OF COUNCIL AND ANC ACTIONS ON APANPIRG/10 REPORT

AGENDA ITEM 1: REVIEW OF ACTION TAKEN BY ANC AND THE COUNCIL ON THE REPORT OF APANPIRG/10 MEETING

1.1 The meeting was presented with actions taken by the Air Navigation Commission and the Council during their review and approval of the Report of the Tenth Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) held in Bangkok, Thailand, from 30 August to 3 September 1999.The meeting noted the specific actions taken by the ANC, the Council and the follow-up by the States and Secretariat on Conclusions and Decisions of the meeting as contained in Appendix A to the Report on Agenda Item 1.

1.2 In relation to Conclusion 10/21(Internet access to the WAFS products and OPMET data), the group noted that ICAO was considering developing a uniform policy for the use of the Internet by States to obtain WAFS products and OPMET data, as well as for the dissemination of AIS products.

1.3 With regard to the notification of a difference in the implementation of the regional plan, specifically WGS-84, the group welcomed the action of ANC in requesting the Secretariat to study the matter in the context of addressing shortcomings and deficiencies and to present specific proposals on the subject to the Commission in due course.

1.4 The meeting thanked the Council and ANC for their valuable guidance on various activities of the group.

STATUS OF CONCLUSIONS/DECISIONS OF APANPIRG/10

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status*
C10/1		**Application for SSR Code Allotment** That States, which require additional SSR Codes, forward their application to the Regional Office, listing the required information and justification in accordance with paragraph 5.3 of the Asia/Pacific SSR Code Management Plan.	An earlier request from Myanmar is being co-ordinated with ICAO. There have been no requests from other States.	On-going
C10/2		**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
C10/3		**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. On-going consultation with provider States and users is continuing.	On-going

* On-going : Requiring further action(s)

Completed: Follow-up action(s) completed

Closed: Superceded/overtaken by other actions/events

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status*
C10/4		**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	1)	
		a) complete the upgrade of airspace from advisory and flight information services to area control service along ATS routes, as appropriate;	a) Implemented;	Completed
		b) complete the implementation of 10-minute longitudinal separation minima using Mach Number Technique; and	b) Implemented;	Completed
		c) identify ATS routes where 10-minute longitudinal separation minima for RNAV equipped aircraft without using MNT could be applied and implement such minima.	c) Not yet implemented	On-going
		2) That, Sub-regional ATS Co-ordination Groups concerned place a high priority on items 1) a) B c) above.	2) Implementation continues to be co-ordinated through the Bay of Bengal ATS Co-ordination Group (BBACG).	Closed
C 10/5	ANC	**Classification of Airspace** That, States promulgate their Classifications of Airspace as required by Annex 11 and Annex 15 as soon as possible. Noted the conclusion and requested the Secretary General to urge States to promulgate their classifications of airspace expeditiously as required by Annexes 11 and 15.	States, which have not classified airspace in accordance with Annex 11 and not promulgated their Classifications of Airspace as required by Annex 15 , were urged to do so as soon as possible. Non-implementation has been included on the list of Shortcomings and Deficiencies and therefore this Conclusion has been marked as closed.	Closed
C 10/6		**AIP Format** That, States which have not already done so, published their AIP in the Annex 15 format as soon as possible.	States, which have not published their AIP in a new form as required by Annex 15 , were urged to do so as soon as possible. Non-implementation has been included on the list of Shortcomings and Deficiencies and therefore this Conclusion has been marked as closed.	Closed

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status*
C 10/7	C	**Carriage of ACAS and Pressure-Altitude Reporting Transponders** That, a) ICAO survey States in the Asia Pacific Region and ascertain the implementation plans of States regarding the carriage of ACAS and pressure-altitude reporting transponders with respect to APAC-S 98/4 B ASIA/PAC RAC. b) Operators upgrade to ACAS as soon as possible. Noted the conclusion in relation to the worldwide implementation of ACAS II by January 2003 and requested the Secretary General to initiate a worldwide survey to ascertain the implementation plans of States for ACAS II.	a) ICAO conducted a survey on 22 October 1999, and information provided by States was compiled. In order to obtain additional and more specific information, ICAO will resurvey. b) ATS/AIS/SAR SG recognized a need to establish a transition period to allow operators to use TCAS versin 6.04 as an interim measurement before equipping their aircraft with ACAS II completely by 1 January 2002.	On-going On-going
C 10/8		**Amendment to the Guidance Material on the Implementation of a 300 m (1000 ft) Vertical Separation Minimum (VSM) for Application in the Airspace of the Pacific** That, the amendment to the Guidance Material on the Implementation of a 300 m (1000 ft) Vertical Separation Minimum (VSM) for Application in the Airspace of the Pacific be adopted.	The Amendment has been incorporate in the Guidance Material.	Completed
D 10/9		**Subjects/Tasks List** That, ATS/AIS/SAR Subjects/Tasks List as contained in Appendix F to the Report on Agenda Item 2.1 be adopted as the current work assignment for the ATS/AIS/SAR Sub-Group.	The revised ATS/AIS/SAR Subject/Task List was used as the work assignment for the ATS/AIS/SAR Sub-group.	Completed
D 10/10		**Revision of the Subject/Tasks List of ATN Transition Task Force** That, the Subject/Tasks List of the ATN Transition Task Force be amended as shown in Appendix A to the Report on Agenda Item 2.2	Second ATN Transition Task Force Meeting held in March 2000 was provided the updated Subject/Tasks List.	Completed

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status*
C 10/11	ANC	**Guidance Material for Ground Element in ATN Transition** That, the Guidance Material for Ground Element in ATN Transition be adopted and circulated to States. Noted the conclusion and requested the Secretary General to take into account in relation to the development of a consolidated and comprehensive ATN manual.	Guidance Material was circulated to States in February 2000.	Completed
C10/12		**Need to monitor AFTN circuit loading** That, States concerned closely monitor loading conditions on the following AFTN circuits and provide the results of monitoring and plans for upgrading of the circuits to ICAO. 1. Manila/Singapore 2. Nandi/Apia-Falecolo 3. Nandi/Noumea 4. Hong Kong/Manila 5. Kuala Lumpur/Madras	State letter was issued to urge concerned States to take appropriate action. States have conducted evaluation of loading conditions and have taken action to upgrade the circuits. The Nadi/Noumea circuit was upgraded to 2400 bps. Upgrading of the remaining circuits is expected to be completed by 2001.	On going
D 10/13		**Strategy for the Provision of Precision Approach and Landing Guidance Systems** That, the current Asia/Pacific Regional Strategy for the Provision of Precision Approach and Landing Guidance be reviewed and an updated strategy be developed, taking into account: the standardization of GBAS local area augmentation systems and SBAS wide area augmentation systems by ICAO; feasibility of GBAS systems to support category II and III operations; the development and deployment of multimode receivers; the definition of Required Navigation Performance for approach, landing and departure operations; and human, environmental and economic factors.	Included in the Subject/Tasks List of the COM/MET/NAV/SUR Sub-Group. This task has been completed by COM/MET/NAV/SUR SG/4 meeting.	Completed

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status*
D 10/14		**Strategy for the Provision of GNSS Augmentation in the ASIA/PAC Region** That, the Strategy for the Provision of GNSS Augmentation in the ASIA/PAC Region be amended and adopted as stated in Appendix B to the Report on Agenda Item 2.2; and a more general strategy for the implementation of GNSS navigation capability in the Asia/Pacific Region be developed, taking into account: Required Navigation Performance for all phases of flight; the standardization of GNSS by ICAO through published Standards, Recommended Practices, PANS and guidance material; the ability of aircraft to achieve RNP requirements through the use of on-board systems, and; human, environmental and economic factors.	Included in the Subject/Tasks List of the COM/MET/NAV/SUR Sub-Group. This task has been completed by COM/MET/NAV/SUR SG/4 meeting.	Completed
C10/15	C	**ICAO Position to World Radiocommunication Conference-200 (WRC-2000)** That, States, in preparing their national proposals to the ITU WRC-2000 include, to the maximum extent possible, the material contained in the ICAO position at the WRC-2000; 1) ensure, to the extent possible, that their delegations to the APT meetings and the WRC-2000 include representatives of their civil aviation administrations; and 2) be urged to present the current status of their preparation for WRC-2000 at the 35th DGCAs Conference. Noted the conclusion and requested the Secretary General to accord high priority to ICAO's role in safeguarding the aeronautical interest at WRC-2000.	- Follow up actions were taken at various stages. - AMCP WG-F Meeting was hosted. - 35th DGCA Conference formulated an action item 35/9 based on the paper presented by the Secretariat to provide necessary support to ICAO Position. - ICAO effectively participated at all the four preparatory meetings conducted by APT. - Almost all of the ICAO Positions were supported in the APT Position paper for the ASIA/PAC region presented at WRC-2000. - Outcome of the WRC-2000 fully satisfied ICAO Position.	Completed

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status*
C10/16		**SADIS operational focal point in user States** That, SADIS USER States nominate an operational person involved with day-to-day SADIS operations in that State, to act as the SADIS operational focal point, and to provide the person's name, official title and contact details. Note: - a) to assist States in nominating the appropriate officer, the request to States should indicate clearly that the SADIS operational focal point would be expected to be available to respond to queries and receive information from the SADIS provider State and Secretary, SADISOPSG on operational matters, and maintain contact with any other SADIS users in the State concerned; and b) On receipt of the information from States, the Secretary of the SADISOPSG should provide the information to the SADIS provider State, and include the list of the SADIS operational focal points in a future amendment to the SADIS User Guide.	The SADIS user States have been invited to nominate an operational person to act as the SADIS focal point. Nominations have been received from 14 out of 18 SADIS User States. The list of SADIS focal points has been forwarded to Secretary of the SADISOPSG.	On-going
D 10/17		**SADIS strategic assessment tables** That, the ASIA/PAC SADIS strategic assessment tables, as given in Appendix D to the report on Agenda Item 2.2, be adopted and the SADISOPSG be advised accordingly.	The ASIA/PAC SADIS strategic assessment tables, as adopted by APANPIRG, were forwarded to the SADIS provider State and Secretary of the SADISOPSG for further actions to be taken as required.	Completed

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status*
C 10/18		**ASIA/PAC requirements for WAFS products** That, a) tables MET 5 and MET 6 together with the associated explanatory notes, given in Appendices E and F to the report on the Agenda Item 2.2 replace the existing Tables MET 5 and MET 6 together with the associated explanatory notes, given in Appendices E and F to the report on the Agenda Item 2.2 replace the existing Tables MET 5 and MET 6 of the ASIA/PAC ANP (Doc 9673) and be used in the FASID; b) the relevant part of the regional meteorological procedures given in the introductory text to Part IV - Meteorology, of the ASIA/PAC ANP be amended as shown at Appendix G to the report on the Agenda item 2.2 and be used in the draft ASIA/pac Basic ANP; and c) the text for inclusion in Part VI -Meteorology, of the draft ASIA/PAC FASID be amended as shown in Appendix H to the report on the Agenda Item 2.2.	Draft ASIA/PAC Basic ANP and FASID have been amended accordingly.	Completed
C 10/19	C	**Future development of the WAFS** That, ICAO give consideration to the future development of the WAFS with a view of meeting the States = requirements for WAFS and non-WAFS products after transition to the final phase of WAFS and RAFCs cease to operate. Noted the conclusion and requested the Secretary General to arrange for a study on how to meet any non-WAFS requirements indicated by States, in response to the survey requested in Conclusion 10/20.	Proposal is being studied by the Secretariat with assistance of the WAFSSG. WAFSSG/7 (7 October 1999) considered the matter.	On-going

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status*
C10/20		**Survey on future requirements of States for the WAFS and non-WAFS products and services** That, States define their future requirements for the WAFS and non-WAFS products and services so that all requirements be met after transition to the final phase of the System.	It is expected that States will advise ICAO regarding their future requirements for the WAFS and non-WAFS products and services.	On-going
C 10/21	ANC	**Internet access to the WAFS products and OPMET data** That, ICAO consider developing the policy for use of the Internet by States to obtain the WAFS products and OPMET data for operational purposes. Noted the conclusion and its relationship to APIRG/12 conclusion 12/27 and requested the Secretary General to consider developing a uniform policy for the use of the Internet by States to botain WAFS products and OPMET data for operational purposes, as well as for the dissemination of AIS products.	The Uniform policy for the use of the Internet by States for operational purposes is being developed by the Secretariat as requested by the ANC.	On-going
C 10/22		**Dissemination of ASIA/PAC OPMET data to WAFC Washington** That, a) Tokyo ROBEX OPMET Data Bank forward ASIA/PAC METAR bulletins to the WAFC Washington; b) Brisbane and Nadi ROBEX OPMET Data Bank forward ASIA/PAC TAF bulletins to the WAFC Washington; and c) The operational procedures and the respective responsibilities of the data banks to facilitate distribution of the ASIA/PAC OPMET data to the WAFCs London and Washington be as shown in appendix I to the report on the Agenda Item 2.2.	a) The procedures have been implemented by the Tokyo ROBEX OPMET Data Bank. b) The operational procedures are to be fully implemented by the Brisbane and Nadi Data Banks. c) Action has been taken as required.	Completed On-going Completed

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status*
C 10/23		**Revision of the ROBEX Scheme** That, in order to facilitate distribution of the ASIA/PAC OPMET information to the WAFCs London and Washington for uplink to the satellite broadcasts, the ROBEX Scheme be revised as shown in appendix J to this report on Agenda Item 2.2.	The revised ROBEX Scheme is being implemented. The collection areas of some ROBEX Centres have been extended.	On-going
D 10/24		**Amendment to the Subject/Tasks List in the COM/MET/NAV/SUR fields** That, the updated Tasks List in the COM/MET/NAV/SUR fields presented in Appendix K to the report on Agenda Item 2.2 be adopted as the work programme of the Sub-Group.	Updated Subject/Tasks List was noted and reviewed by COM/MET/NAV/SUR SG/4 meeting.	Completed
C 10/25		**Implementation of RNAV Route UM501** That, States who have not already done so take urgent action to implement RNAV Route UM501 by 1 October 1999.	RNAV Route UM501 has been implemented and operational since September 1999.	Completed
C 10/26		**Updated statement of BORPC for regional air navigation planning** That, the updated Statement of BORPC for regional air navigation planning be incorporated into the Asia/Pacific Basic ANP.	The updated statement of BORPC was incorporated in the draft Basic ANP, which is currently in process.	Completed
C 10/27	 C	**ASIA/PAC Basic ANP and FASID** That, the draft ASIA/PAC Basic ANP and FASID be updated and processed in accordance with established procedures. Noted the conclusion and requested the Secretary General to arrange for the completion, approval and publication of the documents as a matterof priority, in accordance with established procedures.	Basic ANP and FASID were updated and a proposal for amendment to the plan was circulated. Comments received from States are being processed. Final documentation will be submitted to the Council for approval by the end of October 2000.	Completed On-going On-going

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status*
C 10/28	C	**APA TFG meeting in the year 2000** That, the Asia Pacific Area Traffic Forecasting Group be requested to schedule a meeting in the year 2000 to develop traffic forecasts for the nine major traffic flows concerned and possibly, to assist APANPIRG witt development of business cases for CNS/ATM implementation, if required. Noted the conclusion and requested the Secretary General to schedule a special meeting in the year 2000 in order to focus on the development of traffic forecasts for the nine major traffic flows of the Asia/Pacific Regions.	As requested by APANPIRG/10, the APA TFG held a special meeting at Bangkok from 22 to 26 May 2000. It developed preliminary traffic forecasts for the nine major traffic flows and a summary report will be presented to APANPIRG/11.	Completed
C 10/29	C	**CNS/ATM Training & Human Resource Development Strategy** That, the CNS/ATM Training & Human Resource Development Strategy contained at Appendix A to the Report on Agenda Item 3, be adopted as the CNS/ATM Training & Human Resource Development Strategy for the Asia Pacific Region. Noted the conclusion and requested the Secretary General to take action thereon in the context of ANC Task no. PEL-9601.	The Strategy has been adopted.	Completed
C 10/30	C	**Environmental benefits of CNS/ATM systems** That, States take the environmental benefits, among other considerations, into account in the development of business cases for the implementation of CNS/ATM systems. Noted the conclusion and requested the Secretary General to bring it to the attention of States in the development of business cases for the implementation of CNS/ATM systems.	The matter has been drawn to the attention of States as a factor to be considered in the development of Business Cases for the implementation of CNS/ATM system	Completed

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status*
C 10/31	C	**Development of final methodology for determining environmental benefits of CNS/ATM Systems** That, ICAO consider expediting the development of the final methodology for determining environmental benefits of CNS ATM Systems. Noted the conclusion and requested the CAEP to take it into account.	ICAO Headquarters is following up this matter.	On-going
C 10/32		**Key priorities for CNS/ATM Implementation** That, the updated Key Priorities at Appendix B to the Report on Agenda Item 3 be adopted as Key Priorities for CNS/ATM Implementation in the Asia Pacific Region.	All Sub-groups have further updated the Key Priorities in the year 2000 meeting cycle.	Completed
C 10/33	ANC	**Asia/Pacific Regional Plan for the New CNS/ATM Systems** That, the Revised Draft Asia/Pacific Regional Plan for the New CNS/ATM Systems, be adopted as the Asia/Pacific Regional Plan for the New CNS/ATM Systems and be circulated to States. Noted the conclusion and requested the Secretary General to take it into account in the global harmonization of CNS/ATM systems.	ATN Transition Guidance Materials were incorporated in Chapters 5 and 7 and updated document was circulated to States.	Completed
D 10/34		**Terms of Reference and Tasks for the CNS/ATM Systems Sub-group** That, the Terms of Reference and Work Programme, which are attached at Appendix C to the Report on Agenda Item 3, be adopted as the Terms of Reference and Work Programme of the CNS/ATM/IC Sub-Group.	The revised CNS/ATM/IC Sub-group Terms of Reference and Work Programme were used as the work assignment for the CNS/ATM/IC Sub-group.	Completed

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status*
C10/35		**Y2K readiness status** That, States, who have not provided status of Y2K readiness in accordance with action agreed at the Y2K Programme Managers Meeting held in New Delhi in 1998, be requested to urgently provide status of Y2K readiness to the ICAO Regional Office.	Y2K transition on 31 December 1999 and 28 February 2000 was accomplished successfully.	Completed
C 10/36	ANC	**Asia/Pacific Regional Y2K Contingency Plan** That, the Asia/Pacific Regional Y2K Contingency Plan, including Attachments and Annexes to the plan to be used during the Year 2000 change-over period, is endorsed.	Y2K transition on 31 December 1999 and 28 February 2000 was accomplished successfully.	Completed
C 10/37		**Development of general contingency plans** That, The Asia Pacific Regional and State Y2K Contingency Plans and SLOA's or MOUs be used to form the basis on which to develop general contingency arrangements which will permit the continuation of air traffic in the event of any significant degradation of air traffic services and systems.	States have agreed to revise their general contingency plans using their Y2k State Contingency Plans as a model. A target date for finalization of State Contingency Plans to be the end of 2001.	On-going
C 10/38		**Publication of Y2K related State AIP Supplements and Finlisation of State Plans and SOLAs** That, States who have not already done so as a matter of urgency; a) expedite finalization of State Y2K Contingency Plans; b) Expedite finalization of Supplementary Letters of Agreement with adjacent FIRs; and c) To ensure that international airlines receive the appropriate documentation at least 56 days in advance of the Year 2000 rollover period, publish their Y2K AIP Supplements no later than 8 September 1999.	All work required completed on time. Y2K transition on 31 December 1999 and 28 February 2000 was accomplished successfully.	Completed

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status*
C 10/39		**Reporting of Shortcomings and Deficiencies** That, States, Air Navigation Service Providers, Users and International Organizations cooperate fully in providing information on shortcomings and deficiencies in air navigation facilities and services and take action for their early resolution.	States, Air Navigation Service Providers, Users and International Organizations were urged to cooperate fully in providing information on shortcomings and deficiencies in air navigation facilities and services and take action for their early resolution.	Completed
C 10/40	C	**List of Shortcomings and Deficiencies** That, States take appropriate action to resolve the shortcomings and deficiencies shown in the list at Appendix A to the Report on Agenda Item 5 and report their action to ICAO Regional Office. Noted the conclusion and requested the Secretary General to pursue it actively and report the results through APANPIRG.	The list of air navigation shortcomings and deficiencies was updated based on information provided by States.	Completed
D 10/41		**Outstanding Conclusions and Decisions** That, the outstanding Conclusions and Decisions in the Appendix A to the Report on Agenda Item 6 be monitored and progress reported to next meeting of the APANPIRG.	The outstanding Conclusions were reviewed and updated.	Completed
C 10/42	C	**Revised Terms of Reference of APANPIRG** That, the Revised Terms of Reference of APANPIRG in Appendix A which includes financial considerations and environmental benefits in planning and implementation of air navigation facilities, with due regard to the primacy of safety, be adopted. Noted the conclusion and approved the revised terms of reference of APANPIRG.	The Revised Terms of Reference has been noted and included in the APANPIRG PROCEDURAL HANDBOOK.	Completed

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status*
C 10/43		**Preparation of Business Cases for CNS/ATM Implementation** That, ICAO, under its Technical Co-operation Programme and/or other suitable mechanism, be requested to undertake the preparation of business cases for various options for the implementation of CNS/ATM system in the region.	Technical cooperation in the process of preparing project documentation	On-going
	C	Noted the conclusion and requested the Secretary General to extend assistance, under established practices, in the development of cost/benefit analyses and subsequent business plans.		

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status*
D 10/44		**Business Case Task Force (BCTF)** That, a Business Case Task Force be established with the Terms of Reference and composition as mentioned below: Terms of Reference for the Task Force: The Task Force Shall a) develop a framework for the business case studies of various options in the implementation of air navigation facilities in the region based on the CNS/ATM Global Plan, Regional Plan, Homogenous ATM areas, major international traffic flows and other relevant material. b) develop methodology for the study and define the scope of work to be undertaken by ICAO under its Technical Co-operation Programme or other suitable mechanism. c) prioritize case studies based on the established traffic flows. Note: The Task Force shall carry out the above tasks within a period of six months to enable ICAO to undertake the studies as soon as possible and it may draw the resource expertise of Asia/Pacific Areas Traffic Forecasting Group. The results of the Task Force work shall be processed by correspondence with APANPIRG members. Composition of BCTF: Australia, China, Hong Kong China, Fiji, India, Indonesia, Japan, Mongolia, Singapore, Thailand, United States with participation of IATA and IFALPA.	The Task Force was established, and the first meeting of the Task Force was held in Bangkok 3-5 May 2000. The meeting was attended by experts from China, Hong Kong China, Indonesia, New Zealand, Singapore, Thailand, the United States, IATA, and IFALPA. Task Force's conclusions have been processed, and the results reviewed by APANPIRG/11.	Completed

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status*
D 10/45		**APANPIRG Sub-Group Work Programme Review Task Force** That, a Sub-Group Work Programme Review Task Force be established with the following Terms of Reference: a) recommend a consolidated action plan taking into consideration outcome of ALLPIRG meetings, Sub-Groups = Work, Tasks and Key Issues for the implementation of CNS/ATM in the Region; b) recommend an effective reporting process which identifies progress against key priorities and c) consider any other relevant issues such as intra and inter regional coordination requirements and recommend inclusion of appropriate tasks in the work programme. The Task Force should comprise the three Sub-Group meeting in 2000. The Task Force should meet early, i.e. well before the first Sub-Group meeting in 2000. The Task Force will report to the APANPIRG/11 Meeting .	The Task Force was established, and meetings took place in Bangkok, 20-22 March and 30 September 2000. Task Force's conclusions and recommendations presented to APANPIRG/11.	Completed

* On-going : Requiring further action(s)

Completed: Follow-up action(s) completed

Closed: Superceded/overtaken by other actions/events

AGENDA ITEM 2: ASIA/PAC AIR NAVIGATION SYSTEM AND RELATED ACTIVITIES

AGENDA ITEM 2.1: ATS/AIS/SAR MATTERS

Agenda Item 2: ASIA/PAC Air Navigation System and Related Activities

2.1 ATS/AIS/SAR Matters

2.1.1 The meeting reviewed the report of the Tenth Meeting of the Air Traffic Services/Aeronautical Information Services/Search and Rescue Sub-Group (ATS/AIS/SAR/SG/10) as well as working papers covering various ATS/AIS/SAR issues. The meeting expressed its appreciation for the work progressed by the Sub-Group.

RVSM Implementation

2.1.2 The meeting reviewed the work of the ICAO RVSM Implementation Task Force (RVSM/TF) and implementation of RVSM in the Asia Pacific Region and noted with pleasure that RVSM was successfully implemented in the airspace of the Pacific on 24 February 2000.

2.1.3 The RVSM/TF has met five times since APANPIRG/10:

TF/5 - Tokyo, 4-5 November 1999;
TF/5a - Honolulu, 20-22 January 2000;
TF/6 - Singapore, 10-14 April 2000;
TF/7 - Honolulu, 17-18 April 2000; and
TF/8 - Hong Kong, China, 28 August – 1 September 2000.

2.1.4 RVSM/TF meetings have had wide representation from States planning to implement RVSM, States considering implementing RVSM, operators, international organizations and industry groups.

Terms Of Reference

2.1.5 The meeting was advised that as the work of the RVSM/TF has progressed, it has become necessary to amend the original Terms of Reference to reflect the completion of the Pacific implementation, and the beginning of work towards implementation of RVSM in the Asia Region. Accordingly the meeting noted that the ATS/AIS/SAR Sub-group had reviewed and adopted the following revised Terms of Reference for the RVSM/TF:

Revised Terms of Reference for ICAO RVSM Implementation Task Force

i. To develop strategic, benefits-driven implementation plans (based on cost benefit studies), in concert with airspace users, for RVSM operations within selected areas and airspace of the Asia Pacific Region, ensuring inter-regional harmonization;

ii. To consider any amendments to RVSM guidance material that may be proposed by States and international organizations; and

iii. To address any other matters as appropriate and relevant to the implementation of RVSM.

iv. The Task Force will include participation from States and International Organizations that are considering or involved with the implementation of RVSM.

v. The Task Force will report to the ATS/AIS/SAR Sub-Group.

Pacific Implementation

2.1.6 The meeting recalled that RVSM was successfully implemented on 24 February 2000 at 0700 UTC between flight levels 290 and 390, inclusive, in the Tokyo, Naha, Anchorage, Oakland, Nadi, Tahiti, Honiara, Nauru, Auckland and Brisbane flight information regions (FIR). Due to communications problems, Port Moresby FIR delayed implementation until 13 April 2000 at 0700 UTC. All States agreed to use the single alternate flight level orientation scheme, in accordance with ICAO Annex 2, Appendix 3. Application of exclusive airspace varied between implementing States.

2.1.7 As part of the implementation process, procedures for the accommodation of certain unapproved ferry or maintenance flights into exclusionary RVSM airspace were agreed, as well as procedures for the accommodation of unapproved State aircraft into exclusionary RVSM airspace.

2.1.8 The RVSM/TF agreed that a mandatory pilot report upon reaching assigned altitude in other than radar or automatic dependent surveillance (ADS) coverage was necessary as an additional safeguard against pilots leveling at the wrong altitude. Wording was developed and incorporated into the appropriate aeronautical information publication (AIP) or chart supplement.

Issues relating to airworthiness and aircraft operations

2.1.9 Guidance was developed on contingencies during RVSM operations for use by aircraft dispatchers.

2.1.10 Procedures were developed and disseminated for aircraft found to be non-compliant through monitoring.

RVSM Safety Assessment

2.1.11 The meeting recalled that a Target Level of Safety (TLS) value of 5×10^{-9} fatal accidents per flying hour had been adopted as the safety goal to be satisfied as prerequisite for Pacific RVSM implementation. The TLS value of 5×10^{-9} fatal accidents per flying hour was the upper bound on the risk of collision in the vertical plane due to all causes after RVSM implementation. In addition to satisfying this overall TLS value, it was also be necessary that the risk of collision due to correctly established 1000-ft vertical separation not exceed 2.5×10^{-9} fatal accidents per flying hour. The term "technical risk" was adopted to describe this component of overall vertical collision risk, which is associated with the height keeping performance of State RVSM-approved aircraft. Based on experience with RVSM application in the North Atlantic, it was expected that the overall vertical collision risk would be strongly influenced by the frequency of operational errors in airspace where the RVSM would be applied.

2.1.12 The Asia Pacific Approvals Registry and Monitoring Organization (APARMO) assembled information from several sources in order to estimate both the technical and overall collision risk that would pertain after Pacific RVSM implementation, assessed monitoring results from the Pacific, and concluded that, as anticipated, they were consistent with those available from NAT RVSM application. As a result, both were used in assessing technical risk. In addition, Pacific reports of turbulence-induced large height deviations and vertical displacements due to TCAS resolution advisories were employed in developing an estimate of technical risk.

2.1.13 Estimation of overall collision risk associated with RVSM implementation was aided by archived reports of large height deviations provided by Australia, New Zealand and the United States. These States, as well as Fiji and Japan, informed the APARMO that there had been no instances of large height deviations since October 1999 in the portions of Pacific airspace under their respective control. The

APARMO also made use of information concerning Pacific large height deviations uncovered in several aviation safety databases.

2.1.14 The APARMO produced a single assessment of safety associated with Pacific RVSM implementation. In so doing, the APARMO made estimates of technical and overall risk for sub-regions of the Pacific and then combined them into single values. As an aid to this process, the APARMO examined traffic samples provided by ATS providers as part of the readiness assessment. The examination indicated that roughly 82 percent of Pacific flight time between FL290 and FL390 -- estimated to be about 1 million flight hours per year -- was accounted for by operations conducted in airspace north of Hawaii, with the remaining 18 percent to the south.

2.1.15 The risk attributable to aircraft technical height keeping performance - traceable to performance of aircraft altimetry and altitude keeping systems, as well as the effects of turbulence- and TCAS-induced large height deviations - fell below the TLS value agreed for safety assessment of this source of risk. The APARMO's composite-Pacific estimate of this risk was roughly 0.2×10^{-9} fatal accidents per flight hour, or about a factor of 15 less than the TLS value of 2.5×10^{-9} fatal accidents per flying hour agreed as the appropriate safety criterion. The RVSM/TF acknowledged the influence of large height deviations, particularly those resulting in sustained aircraft operation at other than cleared flight level, upon risk. The APARMO noted that such occurrences had considerable influence on its estimate of risk due to all causes. The APARMO informed the RVSM/TF that its estimate of overall risk due in the Pacific to all causes was 4.51×10^{-9} fatal accidents per flying hour, below the TLS value of 5×10^{-9} fatal accidents per flying hour agreed for use in assessing its acceptability. Both of these estimates demonstrated that the safety goal for technical risk had been met. Subsequent to the Task Force meeting, several States jointly reviewed the circumstances of the large height deviations which they reported in their airspaces. This resulted in a reallocation of times spent at other than cleared flight level within sub-regions of the Pacific. An estimation of risk based upon this reallocation also showed that the overall safety goal of 5×10^{-9} was still met.

2.1.16 The RVSM/TF considered concerns expressed by a representative of the International Federation of Air Line Pilots Associations (IFALPA) relating to aircraft flying on the same route in opposite directions at adjacent RVSM flight levels. Although IFALPA had not developed a formal position on the matter, concern was growing within its membership as the result of recent clarification of flight level orientation schemes to be used in some areas of the Pacific after RVSM implementation. The IFALPA concerns were based on the operational judgment that opposite-direction aircraft pairs at adjacent RVSM flight levels would present possible wake turbulence and TCAS alert threats to each other. Furthermore, any instance of an operational error involving such a pair would be less easily resolved due to the high relative speeds involved coupled with the lack of broad-area surveillance and rapid communication links. It was reported that the ICAO Review of the General Concept of Separation Panel (RGCSP) was working to formalize the use of lateral offsets as a strategic means of decreasing risk and related factors in RVSM airspace. The IFALPA representative noted this development with satisfaction and expressed the view that such offsets would likely mitigate the growing IFALPA concerns.

Post-Implementation Review

2.1.17 The RVSM/TF met on 17-18 April 2000 in Honolulu to review the Pacific implementation and address any problems that had been identified. In general, the implementation was successful and the use of RVSM was reported as being operationally beneficial.

2.1.18 Development of a post-implementation monitoring program is in progress.

Asia Implementation

2.1.19 The Sixth and Eighth Meetings of the RVSM/TF focused on plans for implementation of

RVSM in the Western Pacific/South China Sea. A target implementation date of 21 February 2002 has been developed.

Operational implementation

2.1.20 A provisional RVSM operational plan for the Western Pacific/South China Sea has been developed, as shown in Table 1 below:

Flight Information Region	Flight Levels	Flight Level Orientation Scheme (FLOS) (single alternate / double alternate)	Exclusive Airspace	Phased Implementation
Bangkok	290-410	Single alternate	Yes	21 Feb 2002
Hanoi	310-410[1]	Single alternate	Yes	21 Feb 2002
Ho Chi Minh	310-410[2]	Single alternate	Yes	21 Feb 2002
Hong Kong	310-410	Single alternate	Yes	21 Feb 2002
Jakarta	350-390[3] 310-390 290-410	Single alternate	Yes	21 Feb 2002
Kota Kinabalu	310-410	Single alternate	Yes	21 Feb 2002
Kuala Lumpur	310-410	Single alternate	Yes	21 Feb 2002
Manila	310-410	Single alternate	Yes	21 Feb 2002
Naha (Pacific Oceanic)	290-410	Single alternate	Yes	Yes[4]
Phnom-Penh	290-410	Single alternate	Yes	21 Feb 2002
Singapore	310-410	Single alternate	Yes	21 Feb 2002
Taegu				
Taipei				
Ujung Pandang	350-390[3] 310-390 290-410	Single alternate	Yes	21 Feb 2002
Vientiane	290-410[5]	Single alternate	Yes	21 Feb 2002
Note: "Exclusive" means non-approved aircraft may NOT flight plan into RVSM altitudes. Aircraft that have not received State RVSM approval may be cleared to operate in airspace where RVSM may be applied in accordance with policy and procedures established by the ATS Provider States provided that 2,000ft vertical separation is applied. Some States may choose to allow non-RVSM State aircraft to flight plan into RVSM airspace.				

Table 1 – RVSM Operational Implementation Plan – Western Pacific/South China Sea

[1] Apply RVSM on W10 only
[2] Apply RVSM on overseas airways only: R214, R203, R202, R471, G592, G463, G217, B219, B329
[3] Phased flight level implementation
[4] Phase 1: East of A590 (5 Oct 2000); Phase 2: A590 (Apr 2001); Phase 3: West of A590 (21 Feb 2002)
[5] ATS route A1; B202

Training

2.1.21 The need for air traffic controllers to be trained in advance of RVSM implementation was recognized and the meeting was advised that the RVSM Seminar, to be conducted in early 2001, should include elements on the training of controllers. To this end an additional 1-day ATC training programme would be included.

Minimum Monitoring Requirements

2.1.22 The RVSM/TF has revised the minimum monitoring requirements and these are contained at Appendix A to the Report on Agenda Item 2.1. These requirements were designed to be consistent with the North Atlantic (NAT) while simultaneously focusing on Pacific aircraft operators without prior RVSM experience. The RVSM/TF recognized that there were two monitoring goals – short and long-term. The short-term monitoring goal was designed to support the safe introduction of RVSM. The long-term monitoring goal was designed to ensure continued safe operation of the system.

2.1.23 In discussion of this issues and also the issue of State airworthiness and operational approval of aircraft, the meeting was of the opinion that standardization of this issues was required on a global basis. Accordingly the meeting developed the following Conclusions:

Conclusion 11/1 - RVSM Minimum Monitoring Requirements

That, ICAO be requested to develop globally applicable short and long-term RVSM minimum monitoring requirements for aircraft.

Conclusion 11/2 - State Approval of Aircraft for RVSM Operations

That, ICAO be requested to develop guidance for States regarding State approval of aircraft for RVSM operations with specific reference to:

i) airworthiness and continued airworthiness approval; and
ii) operational approval.

Safety and Airspace Monitoring

2.1.24 Two principal tasks will be required in connection with Western Pacific/South China Sea RVSM implementation: (1) an assessment of the readiness of operators and aircraft, as reflected in the proportion of operations which would be conducted by State-approved operators and aircraft in the airspace where RVSM will be introduced and (2) an assessment of the safety of RVSM implementation. In light of Pacific RVSM implementation experience, it would not be possible to conduct a readiness assessment until the date for RVSM implementation was more proximate.

2.1.25 The RVSM/TF noted the importance of information concerning large height deviations in conducting a comprehensive safety assessment. The ICAO Asia and Pacific Regional Office issued State Letter T 3/10.1.7-AP-ATM0586 on 23 September 1998, which requested that States, operators and flight crews report instances of large height deviations within Pacific airspace where the RVSM would be applied. A companion International NOTAM requested the same information. Both documents contained as an attachment a form that detailed the information required and specified the APARMO as its recipient.

Preliminary Assessment of the Readiness of Operators and Aircraft for RVSM in the

Western Pacific/South China Sea

2.1.26 The APARMO reported that it had used the sample of Western Pacific/South China Sea traffic movements in conjunction with its database of State RVSM approvals to carry out a preliminary assessment of the readiness of operators and aircraft for RVSM in the Western pacific/South China Sea. The summary results of the assessment indicated that about 53 percent of the flights in the sample were conducted by operators and aircraft with full State RVSM approval. In addition, the APARMO observed that some operations in the sample were conducted by operators which had some, but not all, of their airframes State approved. The APARMO reported that, because the traffic sample did not contain registration marks for individual flights, it was not possible to determine with certainty the percentage of such operations which were conducted by approved operators and aircraft. The APARMO arbitrarily assumed that half of these operations were associated with approved airframes, bringing the percentage of total operations in the sample conducted by approved operators and aircraft to 59 percent.

2.1.27 It was noted that this percentage was consistent with that estimated at a similar stage in the Pacific RVSM implementation process.

Preliminary Assessment of the Benefits and Costs of Western Pacific/South China Sea RVSM

2.1.28 It was noted that the APARMO had been directed to provide a preliminary examination of the benefits and costs associated with Western Pacific/South China Sea RVSM. The APARMO advised that it had used a recent listing of operator fleet compositions to estimate the number of airframes which would need to be brought into compliance with RVSM requirements for those operator/aircraft-type combinations identified in the readiness assessment as not RVSM approved. In so doing, the APARMO assumed that operators based in States within proximity of the South China Sea would bring all unapproved airframes into compliance, while those domiciled at greater distances would upgrade 5 percent of their airframes. Using this assumption and cost information developed from consultation with aircraft manufacturers and RVSM-experienced operators, the APARMO reported that the estimated cost to bring unapproved aircraft into compliance with RVSM requirements would be roughly USD 17.8 million. In addition, the APARMO estimated that operators would incur USD 0.5 million in costs to complete monitoring requirements associated with the State approval of these aircraft.

2.1.29 The APARMO informed that it had used a methodology developed for the North Atlantic Implementation Management Cost Effectiveness (NICE) study of North Atlantic separation standard options to estimate fuel-burn reductions associated with Western Pacific/South China Sea RVSM implementation. Application of the methodology resulted in an estimate of fuel-burn reduction attributable to Western Pacific/South China Sea RVSM of roughly 0.67 percent when compared to operations with the current 2000-foot vertical separation standard above FL290. The APARMO advised that this estimate was very consistent with results of estimating the effect of the RVSM in North Atlantic airspace.

2.1.30 It was agreed that the results of the cost and benefit estimates were consistent with similar estimates made during the Pacific RVSM implementation process and that these results provided the basis for concluding that Western Pacific/South China Sea RVSM implementation should be pursued. The cost benefit analysis did not quantify the benefit of reduced ground delays, which would be an additional benefit.

Update on APARMO Co-ordination with Other Regional Monitoring Agencies

2.1.31 The APARMO advised that it had met with the North Atlantic Central Monitoring Agency (CMA) and Eurocontrol to discuss matters of common interest relating to RVSM. The APARMO and the

CMA had agreed on a common set of monitoring requirements applicable to operators undergoing the State RVSM approval process. This common set of monitoring requirements is presented in Appendix B to the Report on Agenda Item 2.1.

2.1.32 The APARMO advised that it had transferred its database of State RVSM approvals to Eurocontrol in July. The APARMO reported further that it had met with Eurocontrol and had reached an agreement on procedures and formats for regular transfer of State approvals and monitoring results.

2.1.33 These events were noted with satisfaction and the APARMO was encouraged to continue the process of fostering the sharing of information and results among regional monitoring agencies.

RVSM Implementation Plan Status Report

2.1.34 The RVSM/TF continued to review the status of the RVSM Implementation Plan for the Asia Pacific Region. The updated Asia/Pacific Region RVSM Implementation Plans Status Report is shown in Appendix C to the Report on Agenda Item 2.1.

RVSM Implementation – Asia/Europe South of the Himalayas

2.1.35 It was recognized that the ideal situation for the extension of RVSM further westward would be a co-ordinated introduction of RVSM in the FIRs of the western part of the Asia/Pacific Region and the Middle East Region. This would not only maximize the benefits for operators, it would also reduce the number of areas where transitions to/from RVSM to conventional levels would be necessary. The MID Region had not yet set a firm date, but it was noted that there was a proposal that it should be some time in 2003.

2.1.36 IATA advised the meeting that it considered the implementation of RVSM in the Pacific to be a great success and that it hoped the implementation in Asia could be co-ordinated with the European implementation through the Middle East to provide an end-to-end Asia/Europe RVSM environment.

2.1.37 The Secretariat was requested to examine the possibility of appropriate MID States participating in the planned data collections, and also participating in at least some of the future meetings of the RVSM Implementation Task Force with the aim of achieving a co-ordinated implementation of RVSM for all the airspace involved in the major traffic flow from Asia to Europe south of the Himalayas.

Participation of States from the Middle East

2.1.38 In recognition of the possible extension of RVSM implementation westwards along the major traffic flow from Asia to Europe south of the Himalayas, it was agreed that an invitation to attend the RVSM Seminar planned for February/March 2001 be extended to States and operators in the Middle East Region.

RVSM Implementation Guidance Material

2.1.39 The meeting recalled that the *Guidance Material on the Implementation of a 300 m (1000 ft) Vertical Separation Minimum (VSM) for Application in the Airspace of the Pacific Region* was initially adopted by APANPIRG/9, with a subsequent amendment adopted by APANPIRG/10.

2.1.40 In light of the plans to progress the implementation of RVSM into Asia, the meeting was advised that the RVSM/TF had undertaken work to expand the existing Pacific guidance material to become applicable to the whole Asia Pacific Region.

2.1.41 In addition the opportunity was taken to update the guidance material to add a phraseology for use by the pilot to notify ATC of an equipment failure rendering the aircraft no longer capable of meeting the requirements for operation in airspace designated for RVSM operations.

2.1.42 The meeting developed the following Conclusion:

Conclusion 11/3 - Guidance Material on the Implementation of a 300 m (1000 ft) Vertical Separation Minimum (VSM) for Application in the Airspace of the Asia Pacific Region

That the *Guidance Material on the Implementation of a 300 m (1000 ft) Vertical Separation Minimum (VSM) for Application in the Airspace of the Asia Pacific Region* be adopted as RVSM implementation guidance material for the Asia Pacific Region.

2.1.43 The meeting recalled that the APARMO services continue to be provided by the United States FAA William J. Hughes Technical Center. The meeting expressed it appreciation for the considerable Asia Pacific RVSM implementation support given by the United States, with particular reference to the APARMO.

2.1.44 The meeting also passed its appreciation and thanks for the work carried out to date by the RVSM/TF.

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

2.1.45 The meeting was advised that the most recent meeting of the Informal South Pacific ATS Co-ordination Group (ISPACG), (Brisbane 6-10 December 1999), discussed the growing need within the Asia Pacific Region, due to the increasing number of participating ATS units and operators, for common CNS/ATM operational ATS and pilot documentation. ISPACG noted that the ICAO Guidance Material on CNS/ATM Operations in the Asia/Pacific Region (CNS/ATM/GM) was available as common guidance material but that it did not contain operational ATS and pilot procedures such as are detailed in the South Pacific Operations Manual (SPOM).

2.1.46 In the interests of standardization, it was suggested by ISPACG that the SPOM and the ICAO CNS/ATM/GM should be jointly reviewed with the objectives of:

a) re-aligning and updating the ICAO CNS/ATM/GM to provide core guidance material and a framework for State CNS/ATM Operations Manuals; and

b) re-issuing the SPOM as a joint South Pacific CNS/ATM Operations Manual.

2.1.47 Under this scenario, the ICAO CNS/ATM/GM would provide a base publication from

which States could publish operational ATS and pilot procedure supplements in accordance with their particular major geographic traffic flows. The reissued SPOM could also serve as a model State CNS/ATM Operations Manual for other groups of implementing States. Accordingly, ISPACG requested ICAO to facilitate a small group of experts to achieve this task. A meeting of a small group of experts took place 5-6 March in Melbourne following which work was undertaken by correspondence.

2.1.48 The meeting reviewed the revised CNS/ATM/GM and developed the following Conclusion:

Conclusion 11/4 – Guidance Material on CNS/ATM Operations in the Asia/Pacific Region

That, the revised Guidance Material on CNS/ATM Operations in the Asia/Pacific Region be adopted and circulated to States and appropriate International Organizations.

Implementation of WGS-84

2.1.49 The meeting recalled that amendments to Annex 4, Annex 11, Annex14 (Parts 1 & 2) and Annex 15, adopted in early 1994, introduced the World Geodetic System 1984 (WGS-84) as the world-wide common geodetic reference datum. The amendments to these Annexes required all States to publish their relevant aeronautical data in WGS-84 on (or before) 1 January 1998.

2.1.50 In order to maintain a current status of WGS-84 implementation in the Asia/Pacific Region, the meeting reviewed the updated WGS-84 Implementation Survey which is at Appendix D to the Report on Agenda Item 2.1.

2.1.51 The meeting was advised that similar status reports were being presented to various PIRG meetings, ALLPIRG, the ANC and the Council for their review. During such a review of the global implementation of WGS-84 held in June of this year by the ANC, it was noted that, although some progress had been made since the last report reviewed, the format of reporting was inadequate as it was not clear to what level the States have implemented WGS-84. It should be noted that a large part of the initial work has already been completed by most States; however, the reporting of WGS-84 implementation was not standard and it was therefore very difficult to assess the overall status of implementation.

2.1.52 In view of the above, the meeting was informed that the ANC, to ensure a global standard in reporting the status of implementation of WGS-84, called upon the States and PIRGs to develop respective standard tables that would reflect all the detailed information on WGS-84 implementation similar to that adopted by the CAR/SAM/3 RAN Meeting and to review them on a periodic basis. This in turn would facilitate the reporting of a detailed, up-to-date, global implementation of WGS-84 to ALLPIRG, the ANC and the Council.

2.1.53 The meeting reviewed the uniform format for the reporting of WGS-84 implementation presented by the Secretariat. After some discussion the meeting adopted the revised uniform format in Appendix E to the Report on Agenda item 2.1. Accordingly, the following conclusion was developed:

Conclusion 11/5 - Uniform format for the reporting of WGS-84 implementation

That States adopt the table available at the Appendix E as an uniform format for reporting of WGS-84 implementation

2.1.54 The meeting also noted that States should clearly indicate in their AIP if the transformation to WGS-84 has been undertaken, and once transformation is completed, States need to pay careful attention to protecting the information by the establishment of a data management system. It was also noted that many airlines required this information prior to being able to navigate by GNSS.

2.1.55 It was advised that IATA considered the full implementation of WGS-84 to be a high priority. Given the criticality of data in the aerodrome environment every effort should be taken to ensure the accuracy of the date used, including a full resurvey if any doubt exists. However, in the en-route environment where terrain is not a factor, a declaration of the current co-ordinates as WGS-84 would suffice for jet airways and boundaries.

2.1.56 Furthermore, it was noted that should any State be experiencing difficulties with the transformation to WGS-84 there were many places that assistance could be sought, including ICAO technical assistance.

Implementation of ATS Routes

2.1.57 The meeting reviewed an updated list of ATS routes which had not been implemented, including ATS routes which had been implemented, but not in accordance with air navigation plan (ANP) requirements.

2.1.58 In reviewing the above list, the meeting identified shortcomings and deficiencies related to ATS route network in the Asia/Pacific Region, and included those non-implemented ATS routes as shortcomings in the list of air navigation shortcomings and deficiencies.

2.1.59 The meeting noted that only a small number of States in the Region had provided information regarding implemented, re-aligned or deleted ATS routes to ICAO since APANPIRG/10. Therefore, the importance of APANPIRG Conclusion 9/8– ATS Route Amendments which specifies: *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* was re-emphasized.

AIS Automation

2.1.60 The meeting was informed that the Sixth Meeting of the ATS/AIS/SAR Sub-Group's AIS Automation Task Force (AATF/6) was conducted at the ICAO Regional Office between 28 and 30 March 2000.

2.1.61 Among various works of the AATF/6, the following were highlighted:

a) the meeting reviewed the previous work of the Task Force, given that a period of some three years had elapsed since the last meeting in June 1996, and identified the work that had been completed, was still in progress, or that required further work to be done;

b) the meeting considered in some detail, outcomes flowing from the AISMAP

Divisional Meeting held in Montreal in March/April 1998, noting that work associated with the development of an aeronautical data exchange model resides with the Aeronautical Data Modeling Study Group (ADMSG) of the Air Navigation Commission (ANC) at the ICAO Headquarters; thus it was outside the scope of work to be undertaken by the AATF;

c) the meeting determined the update requirements for the Guidance Material for Common Operating Procedures for the Asia/Pacific Region Automated AIS System, and considered the need of an overall review of the material review in light of the work undertaken by Eurocontrol and the movement away from the national AIS system centre/regional AIS system centre (NASC/RASC) concept;

d) the meeting felt that the level of automation of AIS systems in the Region also needed to be determined to enable assistance to be provided to States where a need was identified. The Secretariat was tasked to re-survey States to determine where and what assistance might be necessary;

e) the meeting noted the efforts being made by China in developing an automated AIS system, the China Automatic AIS System (CAISS). Such information enabled participants to gain an important insight into the achievements that had been made towards an integrated automated AIS system;

f) the meeting noted with particular interest issues associated with the use of XML (e**X**tensible **M**arkup **L**anguage) in relation to information transfers using Internet technology which were addressed by Japan. Because of the somewhat technical nature of the matters, it was decided that further consideration should be given to the information in conjunction with experts in the States;

g) the meeting discussed the concept of a Joint Aeronautical Database for the management of aeronautical data in the Region following the model being developed by Eurocontrol in the form of the European AIS Database (EAD) Project, with a view to promoting uniformity in the collection and dissemination of aeronautical information in the interests of safety, quality, efficiency and economy, and to improving the overall efficiency of AIS, in terms of speed, accuracy and cost effectiveness, and the increased use of automation;

h) most importantly, the meeting reviewed the existing Terms of Reference for the AATF so that those items could be deleted where work is considered to have been completed, and the other elements considered for inclusion by ATS/AIS/SAR/SG/9 be inserted. As a result, Rvised Terms of Reference and Work Programme were developed for the consideration and approval by ATS/AIS/SAR/SG/10.

2.1.62 The meeting noted that ATS/AIS/SAR/SG/10 revised Terms of Reference for the AATF as follows:

The Task Force shall:

a) Using Doc 8126-AN/872 Chapter 8 as a guide:

   i) Describe the integrated Regional Automated AIS System as it relates to the Asia/Pacific Region;

   ii) Recommend distribution and fall-back procedures;

iii) In consultation with the COM/MET/NAV/SUR Sub-Group, recommend the communications network requirements for Asia/Pacific Automated AIS Systems;

iv) Recommend provisions to meet reliability and redundancy requirements;

and

v) Recommend common AIS query procedures;

b) Develop procedures and standard formats for the exchange of information both within the Region and with other Regions ensuring that the procedures and standard formats are consistent with those developed by the ADS Panel for datalink communications;

c) Co-ordinate with the CNS/ATM Implementation Coordination Sub-Group to examine methods of disseminating new information to aircraft in flight;

d) Prepare an amendment to the relevant Regional Air Navigation Plan or the Facilities and Services Implementation Document (FASID) as appropriate;
and

e) Consider:

i) Outcomes from AISMAP98 in terms of data models;

ii) Changing technology in terms of the Internet for the distribution of aeronautical information;

iii) Determination of update requirements for the Guidance Material;

and

iv) Updating and incorporation of information (where appropriate) from Appendices A, B and C from the State letter originated by the ICAO Regional Office dated 24 April 1997 relating to the Guidance Material.

2.1.63 The meeting also noted the following Work Programme of AATF associated with the Revised Terms of Reference:

WORK PROGRAMME

The Task Force shall meet in plenary session as work is progressed and finalized, but not less than once per year. Work in the intervening period being conducted by correspondence;

The tasks allocated in the Terms of Reference shall be concluded within 3 years;

The Task Force shall report formally to the ATS/AIS/SAR Sub-group at each Sub-group meeting;

aimed at

a) Producing Guidance Materials, including Common Operating Procedures for Automated AIS Systems, Quality Systems, Training for AIS personnel, and use of the Internet for information transfer;

and

b) Providing assistance to States, where required, in the Region for advancement of Automated AIS Systems.

2.1.64 The meeting noted that because of the global nature of the airspace asset, particularly in terms of the movement towards a CNS/ATM environment, that the dependence on accurate and timely aeronautical data to the automated systems that are used to manage air operations is of primary importance.

Carriage and operation of ACAS II and Pressure-Altitude Reporting Transponders

2.1.65 The meeting recalled that on 12 January 2000 the President on behalf of the ICAO Council approved an amendment to the Regional Supplementary Procedures (Doc 7030) (Serial No. APAC-S 98/4 - ASIA/PAC RAC) relating to the carriage of pressure-altitude reporting transponders and ACAS II. The provisions of Doc 7030 became applicable on 23 March 2000 and were incorporated into Amendment No. 196 (13 February 2000) to the MID/ASIA and PAC Regional Supplementary Procedures.

2.1.66 Paragraph 8.1.1 a) of the PAC and MID/ASIA Regional Supplementary Procedures calls for specified aircraft to be equipped with ACAS II by 1 January 2000. It states that turbine-powered aircraft that have a take-off mass of more than 15,000 kg (33,000 pounds) or that are authorized to carry more than 30 passengers shall be equipped by that date.

2.1.67 The meeting was advised that the vast majority of aircraft that are equipped with a "traffic alert and collision avoidance system" (TCAS) are currently equipped with TCAS Version 6.04. To be considered fully compliant with ICAO SARP functionality for ACAS II, TCAS must be upgraded to TCAS Version 7. The avionics manufacturers were not able to make the Version 7 modification package available to operators until the first quarter of this year. Only a small percentage of aircraft that are required to be ACAS II equipped are currently equipped with the Version 7.

2.1.68 In discussing this issue, the meeting noted the critical importance of aircraft not equipped with a pressure-altitude reporting transponders not being permitted to share airspace used by aircraft equipped with airborne collision avoidance systems. The performance of ACAS II is totally dependent on all aircraft in the vicinity being equipped with pressure-altitude reporting transponders, in order to detect conflicting traffic and offer resolution advisories. Therefore the meeting saw an urgent need to bring to the attention of States the need to implement regulations for the mandatory carriage and operation of pressure-altitude reporting transponders without any further delay. Accordingly the meeting developed the following Conclusion:

Conclusion 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.

2.1.69 The meeting recalled again that the lack of availability of ACAS II equipment has made the Doc7030 provisions impossible to implement on time. Furthermore it is apparent that some States in the Asia/Pacific Region are not planning to mandate the carriage of ACAS II until the globally agreed date of 1 January 2003.

2.1.70 Noting the need to encourage the carriage and operation of ACAS II by aircraft operating in the Asia/Pacific Region, the meeting developed the following Conclusion:

Conclusion 11/7 – Implementation of ACAS II

That States;

a) promulgate their implementation plans mandating the carriage and operation of ACAS II; and

b) Where this is in advance of the globally agreed date of 1 January 2003, provide for the continuing use of TCAS with Version 6.04A logic with a transition plan to phase out systems with Version 6.04A logic by 1 January 2002.

2.1.71 The meeting recalled that APANPRG/10 Conclusion 10/7 - Carriage of ACAS and Pressure-Altitude Reporting Transponders, which states:

a) ICAO survey States in the Asia Pacific Region and ascertain the implementation plans of States regarding the carriage of ACAS and pressure-altitude reporting transponders with respect to APAC-S 98/4 – ASIA/PAC RAC.

b) operators upgrade to ACAS II as soon as possible.

2.1.72 It was advised that as a follow-up of this Conclusion, the ICAO Asia/Pacific Office distributed State Letter AP-ATM0808 dated 22 October 1999 for the purpose of carrying out a survey on States' implementation plans of mandatory carriage of ACAS II and pressure-altitude reporting transponders. Subsequently, a table showing the results of the survey was distributed to all States in the Region as well as international organizations concerned under AP-ATM0060 dated 20 January 2000.

2.1.73 The meeting was informed that ATS/AIS/SAR/SG/10 reviewed a revised table of States' implementation plans for the mandatory carriage of ACAS II and pressure-altitude reporting transponders which incorporated additional and updated information received from States after AP-ATM0060 was distributed.

2.1.74 In reviewing the revised table, the Sub-group recognized a need for more detailed information clearly differentiating between the implementation plans for the carriage and operation of pressure-altitude reporting transponders and those of ACAS II. This was considered to be of more benefit to the airspace users in arranging their fleet modification and approval programmes to coincide with State implementation plans.

2.1.75 In the light of discussions at the ATS/AIS/SAR/SG/10 Meeting, a 2nd survey was requested to obtain additional and more specific information that identifies:

a) those States who have already mandated the carriage and operation of pressure-altitude reporting transponders;

b) those States who plan to mandate the carriage and operation of pressure-altitude reporting transponders and the planned date of implementation;

c) those States who have already mandated the carriage and operation of ACAS II, and who have accepted TCAS Version 6.04 as fulfilling their interim requirements until the full implementation of ACAS II compliant TCAS Version 7; and

d) those States who plan to mandate the carriage and operation of ACAS II, and the planned date of implementation.

2.1.76 Accordingly, the Regional Office distributed a 2nd survey under AP-ATM0551 to Asia/Pacific States on 17 August 2000, and the survey results were presented to the meeting.

2.1.77 The meeting reviewed a table developed solely based on the information provided by fifteen (15) States and Territories, and noted that:

a) eight (8) States have mandated the carriage and operation of **pressure-altitude reporting transponders**;

b) six (6) States have an implementation plan of the carriage and operation of **pressure-altitude reporting transponders**;

c) one (1) State indicates that there is no implementation plan of the carriage and operation of **pressure-altitude reporting transponders**;

d) six (6) States have mandated the carriage and operation of **ACAS**;

e) five (5) States have an implementation plan of the carriage and operation of **ACAS** before 2003 while three (3) States have a plan at and after 1 January 2003;

f) one (1) State indicates that there is no implementation plan of the carriage and operation of **ACAS**; and

g) twenty-six (26) States and Territories have not replied.

2.1.78 Additional information was provided at the meeting, and the table was further updated as shown at Appendix F to the Report on Agenda Item 2.1.

2.1.79 The meeting was reminded that when States are planning the implementation of ACAS II with respect to specific portions of airspace, consideration should be given to the needs of State aircraft.

AIP Format

2.1.80 The Meeting recalled that Amendment 28 to Annex 15 requires States to publish their AIP in the new reconstructed format as of 25 April 1996.

2.1.81 In addition, the Meeting recalled that in pursuant to this amendment APANPIRG/10 developed Conclusion 10/6 which states: *States which have not already done so, publish their AIP in the Annex 15 format as soon as possible.*

2.1.82 In an effort to monitor implementation of the amendment, based on Aeronautical Information materials available at the Regional Office, the Secretariat provided the following information for consideration by the Meeting:

a) eighteen (18) States and Territories have published their AIP in the new format in accordance with Annex 15;

b) seventeen (17) States, including two (2) States which have notified ICAO that *no differences exist,* have not published their AIP in the new format in accordance with Annex 15;

c) information from the following 5 Contracting States in the Region is not available;

Bhutan	Marshal Islands	Micronesia, Federated States of
Palau	Vanuatu	

2.1.83 The meeting was advised that New Zealand notified ICAO of its significant differences to the provision concerning AIP format. In this regard, the meeting recalled that whether such notification of differences from SARPs to ICAO would be considered to justify removing an entry from the list of air navigation shortcomings and deficiencies was raised at APANPIRG/10. The Secretariat advised the meeting that ICAO HQ has been examining the issue from legal point of views and guidance would be provided in due course.

2.1.84 It was also noted that on behalf of Cook Islands, Fiji, Kiribati, Nauru, Samoa, Tonga and other Pacific States, Airways Corporation of New Zealand published a Pacific AIP in July 1999 and has a plan to redevelop the document to be in line with Annex 15 requirements in 2000.

2.1.85 The Meeting agreed to include non-implementation of the new AIP format as required by Annex 15 as a deficiency in the list of air navigation shortcomings and deficiencies.

Search and Rescue Matters

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

2.1.86 The meeting reviewed the table titled Analysis of SAR Capability of ICAO States in the ASIA/PAC Region. The meeting noted that although States were required to provide information to ICAO by 30 April of each year to permit periodic update, there has been little response to this request.

2.1.87 The meeting therefore formed the following conclusion:

Conclusion 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 2001 to permit the periodic update of the Matrix.

Provision of SAR and SAR Agreements

2.1.88 The meeting noted that APANPIRG/6 Conclusion 6/13 on SAR Agreements stated:

a) States are encouraged to develop formal SAR agreements on bi-lateral or multi-lateral basis; and,

b) ICAO establish and maintain a register of SAR agreements between States.

2.1.89 The meeting noted that very few of the States, which have established such SAR agreements, have forwarded material to ICAO and as such, the register has not yet been established.

2.1.90 In order to achieve a co-ordinated response to search and rescue situations, the following conclusion was formed:

Conclusion 11/9 - 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.

2.1.91 The meeting was advised that where other State organizations or agencies had agreed to provide all or part of the search and rescue function of that particular State, there were sometimes difficulties in ensuring that co-ordination and SAR responsibilities and procedures are either established or maintained. The meeting was reminded that under the Convention on International Civil Aviation, it was the States' responsibility to ensure that Annexes to the Convention on International Civil Aviation are followed and adhered to.

SAR Exercises

2.1.92 The meeting was advised that some States hold regular joint SAR exercises (SAREXs) with their neighbours which have proved to be productive in the standardization of their procedures. States were encouraged to continue this practice or where these joint SAREXs are not presently taking place, make appropriate arrangements to develop and initiate these exercises. The meeting was also advised that many States hold regular local SAREXs. They were also encouraged to continue this procedure to build confidence in their SAR system.

2.1.93 The meeting noted that it is proposed to hold an International Search and Rescue Seminar and SAREX involving some States of the Bay of Bengal area in the first quarter of 2001. This seminar and SAREX was initially planned for last year but due to the work associated with the Y2K programme, it was necessary to defer this initiative. All ASIA/PAC States and concerned aviation organizations will be invited to this International SAR Seminar and SAREX.

Search and Rescue Training

2.1.94 The meeting was advised that ICAO, in partnership with the International Maritime Organization (IMO), has developed an International Aeronautical and Maritime Search and Rescue Manual (Doc 9731-AN/958). The first edition of this Manual, which is in three volumes was distributed to all States in 1999.

2.1.95 The manuals give a comprehensive explanation of search and rescue responsibilities and requirements and are designed to assist States in meeting their own search and rescue needs and the obligation they accepted under the Convention on International Civil Aviation, the International Convention on Maritime Search and Rescue and the International Convention for the Safety of Life at Sea (SOLAS) These volumes provide guidelines for a common aviation and maritime approach to organizing and providing SAR services.

2.1.96 Using these guidelines, States are encouraged to develop and improve their SAR services, cooperate with neighbouring States and to consider their SAR services to be part of a global system.

2.1.97 Of particular interest regarding the training of SAR personnel, the meeting noted that Chapter 3 of the Manual considered the use of training, qualification and certification processes to develop professionally competent SAR personnel. A number of aspects of training and of exercises used for training, are examined in detail in the manual.

SSR Code Management in Asia/Pacific

2.1.98 The meeting was advised that the Australian automated ATS system was working towards enhanced international harmonization with respect to Mode3/A SSR code management. As a result of this action, the Australian system will be able to retain and use the SSR code assigned by the relevant ATS unit at the departure point to international flights inbound or planning to overfly the Australian FIR.

2.1.99 The meeting noted that the retention of the SSR code assigned at the point of departure for the duration of the flight is consistent with ICAO principles contained in the Regional Supplementary Procedures, Doc 7030/4. Code changes should only be undertaken to meet the essential needs of ATC in the receiving FIR. In this regard, Regional code allotments had been chosen in such a way as to maximize uniqueness that will support retention.

2.1.100 The meeting was also advised that, in respect of SSR code management, other issues had arisen that were not compliant with the requirements of Doc 7030/4 and PANS-RAC Doc 4444. These issues related to the absence of SSR codes in DEP messages sent from some States, and an apparent practice of having flights change to code 2000 when leaving a FIR.

2.1.101 The meeting noted that States had agreed for the assigned SSR code to be included in all departure messages for international flights. It was also agreed by States that where possible to do so, international flights would retain and use the SSR code assigned on departure for the duration of the flight, in accordance with PANS-RAC and the Regional SSR Code Management Plan.

2.1.102 ICAO advised that they would continue to facilitate timely advice to States regarding changes to the Regional SSR code allotments.

2.1.103 A further matter was noted relating to the management of SSR codes in the Asia/Pacific Region. This was associated with the early notification of changes to the allocation of codes in the Region. Automation of ATC systems across the Region means that timely notification of changes to the allocation of SSR code blocks is essential so that States can make any alterations to their systems before the changes are introduced and thus avoid any conflicts with codes that might have been allocated for use elsewhere within the Region, for example domestic operations.

2.1.104 The meeting recognized the inherent dangers of code duplication, or the unnecessary assignment of code 2000 for flights exiting a FIR.

2.1.105 With regard to the Asia/Pacific SSR Code Management Plan (CMP), the Code Allotment Table has been included as Part V – ATM of the draft FASID, however, editorial amendments to the CMP (paragraphs 4.3 and 5.3) have not yet been incorporated. The meeting was advised that ICAO will take appropriate action to amend the draft before the new ASIA/PAC Basic ANP and FASID is formally published.

2.1.106 An amendment to paragraph 4.3.1 of the CMP will also be included to better describe international flights:

For the purpose of the CMP, a flight from one FIR to another within the boundaries of the same State should not be described as international flight.

Mach Number Technique (MNT) and Required Navigation Performance (RNP)

2.1.107 The meeting noted the current application of Mach Number Technique (MNT) and the intended implementation of Required Navigation Performance (RNP) in Asia. Many States in the South China Sea area have, for quite a few years, adopted the Australian AUSEP criteria as the means to identify those aircraft that have area navigation systems that meet the requirements for the application of reduced longitudinal separation based on MNT. It was recognized that the use of AUSEP creates confusion with some pilots who are not familiar with this criteria.

2.1.108 The meeting saw benefit in removing the use of AUSEP and moving to an implementation of RNP-10. This would, apart from continuing to provide a suitable means to identify aircraft for the application of MNT, provide additional air traffic management enhancements. It was recognized that further work, on a sub-regional basis, would need to be undertaken regarding this matter.

50 NM Lateral/Longitudinal Separation

2.1.109 The meeting noted the progress of proposals for amendment of the ICAO Regional Supplementary Procedures (SUPPs) - Doc 7030, Serial nos. APAC-S 98/11 & 98/12 relating to 50 NM lateral and 50 NM longitudinal separation. The subject proposals had been sent to ICAO Headquarters for approval on 24 March 2000. Subsequently an objection to the proposals had been received from IATA and following examination by ICAO Headquarters and in light of results from RGCSP/10 the SUPPs proposals are being reviewed. It is anticipated that APAC-S 98/11 and 98/12 may need revision following RGCSP WG/A meeting which is scheduled to be held in November 2000.

Inclusion of SIGMET in VOLMET broadcasts in the Asia/Pacific Region

2.1.110 The meeting recalled that at APANPIRG/10, IATA advised that a majority of airlines concerned supported the inclusion of SIGMET in VOLMET broadcasts. Airlines who did not lend support to the inclusion of SIGMET in VOLMET broadcasts were either airlines with MET datalink service through SITA or airlines who were concerned that including SIGMET in VOLMET broadcasts would relieve ATS of its obligations under PANS-RAC.

2.1.111 IFALPA also supported the inclusion of SIGMET in VOLMET broadcasts, provided that the inclusion of all SIGMET would not disrupt the VOLMET broadcast schedule.

2.1.112 Advice was provided to the meeting that ICAO Annex 3-*Meteorological Services for International Air Navigation*, Section 11 recommends that SIGMET messages should be included in scheduled VOLMET broadcasts if determined by regional air navigation agreement. Where this is done the SIGMET message or an indication of a "NIL SIGMET" should be transmitted at the beginning of the broadcast within the five-minute time block.

2.1.113 The meeting also recalled that APANPIRG/10 considered the information provided by IATA and IFALPA, and formulated Conclusion 10/3 - ANP Amendment Proposal to include SIGMET in VOLMET Broadcasts (ASIA), which specifies: *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.*

2.1.114 Subsequently, ICAO drafted an amendment proposal to the Asia/Pacific ANP (Serial number APAC 99/9-ATS). The draft proposal was forwarded to concerned States whose facility and

services will be significantly affected by the proposal, for comments before it would be formally circulated to all concerned.

2.1.115 The meeting noted that notwithstanding the above, some States with very large FIRs would have difficulty in transmitting the relevant SIGMET information as well as other required Meteorological information in the allocated time interval of 5 minutes.

2.1.116 The meeting was advised by IATA that notwithstanding these difficulties they were still strongly of the view that SIGMET information should be part of the VOLMET broadcast in accordance with the recommendation in ICAO Annex 3- *Meteorological Services for International Air Navigation*, Section 11. IATA advised the meeting that they will go back to their member airlines with the objective of identifying a solution to this problem.

Airspace Classification

2.1.117 The Meeting recalled the outstanding Conclusion C2/28 which specifies: *States to classify airspace in accordance with SARPs and update AIPs, provide area control service on appropriate ATS routes and ensure AIPs reflect correct ATS provision.*

2.1.118 It was also noted that non-implementation will be included on the list of air navigation shortcomings and deficiencies.

2.1.119 In addition, the Meeting recalled that APANPIRG/10 developed Conclusion 10/5 which states: *States should promulgate their classifications of airspace as required by Annex 11 and Annex 15 as soon as possible.*

2.1.120 In accordance with Annex 15 - *Aeronautical Information Services*, Appendix 1, airspace classification should be listed in AIPs for each individual segment of airspace, *i.e.* FIRs, UIRs, TMAs and ATS routes, and differences, if any, to this provision of Annex 15 should also be listed in AIPs and notified to ICAO.

2.1.121 The meeting was advised that a survey was carried out by the ICAO Regional office which found that more than half of the Asia/Pacific States had not listed their airspace classifications in their AIPs, although some States have advised that they are in the process of doing so in the near future.

2.1.122 The Meeting agreed to include the non-implementation of airspace classifications as a deficiency in the list of air navigation shortcomings and deficiencies.

Report On Bay Of Bengal Task Force Progress

2.1.123 The meeting recalled that the first meeting of the Bay of Bengal Task Force took place at the ICAO Regional Office in Bangkok on 3-5 November 1997. The purpose of the meeting was to review the current Bay of Bengal ATS route structure, develop proposals for a new route structure and develop an implementation plan for the revised route structure in the area.

2.1.124 The Task Force was of the view that the basic ATS route structure across the Bay of Bengal was reasonable, but required a few modifications and additions to improve the overall traffic flow expected over the next few years.

2.1.125 The meeting further recalled that a second Task Force meeting was scheduled for 3-5 August 1998, however due to a poor response from States, it was cancelled.

2.1.126 In the light of new initiatives being undertaken to develop a Revised ATS routes structure over the Bay of Bengal and extending westwards to Europe and the Middle East, the meeting decided that the Bay of Bengal Task Force be dissolved.

Revised ATS route structure - Asia to/from Europe/Middle East, South of the Himalayas

2.1.127 The meeting noted that historically, the present route structure from Asia to Europe/Middle East was developed to cater for short/medium haul piston engine aircraft who were in operation during the 1950-60 period. These aircraft were required to make several re-fueling stops travelling to/from Asia - Europe/Middle East. Ground-based navigation aids were put in place to to assist aircraft navigation requirements. Although there has been some changes to the route system over the past 20 years or so, the route development methodology has, by and large, remained the same.

2.1.128 Today the situation has changed considerably to the point where most aircraft planning from Asia to/from Europe fly nonstop to their destination in a 12-14 hour time period, using the latest CNS/ATM navigational technology enhancements. Their need to use ground based aids is minimal. By creating a route structure which will avoid the majority of choke points during their operation, will be a benefit, not only to the user, but also to the air traffic service provider.

2.1.129 The meeting noted that with the introduction of Required Navigation Performance (RNP), Area Navigation (RNAV) and Reduced Vertical Separation (RVSM) into the Asia Pacific region, it was timely to give consideration in using these CNS/ATM enhancements to provide a more efficient ATS route Structure in the Asia/Pacific Region.

2.1.130 The meeting noted the proposal put forward by the 12th Meeting of the Bay of Bengal ATS Coordination Group (BBACG/12) and endorsed by the APANPIRG ATS/AIS/SAR Sub-Group regarding the development of a revised ATS route structure - Asia to/from Europe and the Middle East, South of the Himalayas to gain the benefits of existing aircraft capabilities and the new CNS/ATM enhancements.

2.1.131 The meeting recalled that the Bay of Bengal airspace was just the starting point for aircraft departing Southeast Asia for Europe or Middle East destinations and should not be looked at in isolation. When considering at changes to the overall route structure, it would be necessary to focus on the whole flight from departure to destination. It would therefore be prudent to involve both the ICAO Middle East and European regions in any changes to the ATS route structure as was the case during the Y2K period.

2.1.132 During discussions on this proposal, the meeting noted that it was necessary to take into account the avoidance of choke points over major airports enroute.

2.1.133 The meeting recalled that BBACG/12 considered the methodology in planning and implementing a change to this important Traffic flow. The following items were considered necessary to achieve the success of the project

a) development of a set of principles for restructuring the routes;
b) development of a project plan;
c) form a small project or core team to initiate, develop and work through the project;
d) plan a number of sub-regional meetings to progress the work; and,
e) full co-ordination with adjacent regions with regard to the development of the route structure and procedures to be maintained.

2.1.134 The meeting was advised that Principles for the establishment of the revised route structure were created which are as follows:

PRINCIPLES TO BE USED IN THE DEVELOPMENT OF THE ROUTE NETWORK

1. That, using the advantages of CNS/ATM implementation, a revised ATS trunk route structure between Southeast Asia and Europe/Middle East will be developed. The planning of these routes structures should take advantage of existing and on-going CNS/ATM technologies in order to provide safe and efficient air traffic management with the least impact to environmental concerns;

2. that, these ATS trunk routes be developed primarily for international long-haul and medium-haul flights, however they may also be used where necessary for other regional and domestic operations;

3. that, as much as possible, planning of ATS trunk routes will be on the basis that each route is laterally separated from each other;

4. that, the development of these route structures will be fully co-ordinated amongst the involved Asia/Pacific ATS Providers and airlines. Also due to the length of these trunk routes, harmonisation is required with both MID and EUR Regions; and

5. that co-operation is required between all concerned states and the aviation industry to ensure an efficient flow of international aircraft operations between Asia, Europe and the Middle East.

2.1.135 The meeting also noted that sub-regional meetings would be held to advance this project in a timely manner and that AIRAC 11 July 2002 would be used as a target date for implementation. The meeting also agreed that a small Core or Project team would be established, similar to the Core Team used in the Y2K project to lead this initiative through to implementation.

2.1.136 In consideration of the above, the meeting formed the following Conclusions:

Conclusion 11/10 - Development of a Revised ATS route structure - Asia to/from Europe/Middle East, South of the Himalayas

That,

Taking into account the introduction of Required Navigation Performance (RNP), Area Navigation (RNAV) and Reduced Vertical Separation (RVSM) into the Asia Pacific region, States, ICAO and IATA develop a revised ATS route structure - Asia to/from Europe and the Middle East south of the Himalayas, to gain the benefits of existing aircraft capabilities together with CNS/ATM enhancements.

Conclusion 11/11 - Planning and Implementation Strategy

That, to achieve the success of the project, the following Strategy will be used:

a) development of a set of principles for restructuring the routes;
b) development of a project plan;
c) form a small project or core team to initiate, develop and lead the project through to implementation;
d) plan a number of sub-regional meetings to progress the work; and,
e) full co-ordination with adjacent regions with regard to the development of the route

structure and procedures to be maintained.

Conclusion 11/12 - Principles to be used in the development of the route network

That, the following Principles will be used in developing this route structure:

1. That, using the advantages of CNS/ATM implementation, a revised ATS trunk route structure between Southeast Asia and Europe/Middle East will be developed. The planning of these routes structures should take advantage of existing and on-going CNS/ATM technologies in order to provide safe and efficient air traffic management with the least impact to environmental concerns;

2. that, these ATS trunk routes be developed primarily for international long-haul and medium-haul flights, however they may also be used where necessary for other regional and domestic operations;

3. that, as much as possible, planning of ATS trunk routes will be on the basis that each route is laterally separated from each other;

4. that, the development of these route structures will be fully co-ordinated amongst the involved Asia/Pacific ATS Providers and airlines. Also, due to the length of these trunk routes, harmonisation is required with both MID and EUR Regions; and

5. that co-operation is required between all concerned states and the aviation industry to ensure an efficient flow of international aircraft operations between Asia, Europe and the Middle East.

2.1.137 The meeting was advised that there were many other issues to be considered in the development of this revised route structure.

2.1.138 With regard to aircraft statistical data, account should be taken of RNAV/RNP approved population, numbers of aircraft on the present route system, and peak traffic periods eastbound and westbound along the present route structure, both in the Asia/Pacific region as well as adjacent regions.

2.1.139 Other issues presented to the meeting which were considered to be important in development of the project were the effect on controller workload, the possible simultaneous introduction of RVSM in the area under consideration and the possibility of extending the project to include the Australia/New Zealand to the Southeast Asia route system.

Interim changes to the ATS route structure over the Bay of Bengal

2.1.140 The meeting noted that interim airspace enhancements in the Bay of Bengal with regard to the realignment of R325 and B579 had been agreed to by States concerned, so that these routes would be laterally separated westbound from UM501. This would increase the availability of laterally separated routes to international airlines who are presently suffering from delays of up to 2 hours out of Southeast Asia airports when planning for European and Middle East destinations.

2.1.141 It was also noted by the meeting that India had agreed to add Domestic ATS routes, W49 and W33 as routing available off UM501 for international flights to proceed via Delhi or TIGER to/from Europe. This would offer immediate relief from westbound departure delays and flight level restrictions for flights to Europe and the Middle East.

Y2K Contingency Planning for the Asia/Pacific Region

2.1.142 The meeting was advised that, by its nature, the work achieved by all concerned in the contingency planning process, and the activation of the Regional and State Contingency Plans, could be described as unique in the history of the Asia/Pacific region and indeed in aviation throughout the world. A co-ordinated and harmonised approach by all concerned was achieved and contributed to the plan being a success. The plan was activated at the prescribed times with all parties positively co-operating.

2.1.143 It was agreed by the meeting that a similar methodology could be used in other future projects. Y2K initiatives which were considered important included items such as the Core Team approach, sub-regional meetings where necessary, setting a target date for implementation and the involvement of other regions and their States at an early stage where the task would require inter-regional co-ordination and agreement.

2.1.144 The meeting congratulated all States, the aviation industry and international organizations concerned for the dedicated and professional manner in handling this potentially catastrophic event. In the absence of further work, the Task Force was dissolved.

Update the list of ATS/AIS/SAR Subject/Tasks together with priorities

2.1.145 The meeting reviewed and updated the List of Tasks allocated to the Sub Group by APANPIRG/10. A copy of this list is contained in Appendix G to the Report on Agenda Item 2.1. The meeting developed the following Decision:

Decision 11/13 - ATS/AIS/SAR Subject/Task List

That,

The ATS/AIS/SAR Subject/Tasks List as contained in Appendix G to the Report on Agenda Item 2.1 be adopted as the current work assignment for the ATS/AIS/SAR Sub-Group replacing the current Subject/Tasks List assigned by APANPIRG/10.

ASIA/PACIFIC RVSM MINIMUM MONITORING REQUIREMENTS:

AS OF: 30 AUGUST 2000

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 co-ordinated 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 co-ordinated 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 Asia/Pacific Approvals Registry and Monitoring Organization (APARMO), which is responsible for administering the Asia/Pacific monitoring program, has access to monitoring data from other regions and will co-ordinate 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 RVSM 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:

www.faa.gov/ats/ato/rvsm1.htm

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 APARMO 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.

ASIA/PACIFIC APPROVALS REGISTRY AND MONITORING ORGANIZATION

EFFECTIVE AS OF: 30 AUGUST 2000

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 AND 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, B717, [B721, B722] [B733, B734, B735] [B736, B737/BBJ, B738, B739] [B741, B742, B743, B74S] B744, [B752, B753], [B762, B763], B764 [B772, B773], DC10, MD11, MD80, L101 CL60, GLEX, GLF3, GLF4, GLF5 [F900, F900EX] FA50, FA50EX, F2TH, 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. ** Note. For the purposes of the minimum monitoring requirement, aircraft within parenthesis [ ] may be considered as the same type.*
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 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.

ASIA PACIFIC REGION RVSM IMPLEMENTATION PLANS STATUS REPORT

FIR	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	21 Feb 2002	
Bangkok	21 Feb 2002	
Beijing		
Brisbane	24 Feb 2000	Oceanic East of Australia 24 Feb 2000 Remainder of FIR March 2001
Calcutta		Initial readiness assessment being undertaken
Chennai		Initial readiness assessment being undertaken
Colombo		Initial readiness assessment being undertaken
Delhi		Initial readiness assessment being undertaken
Dhaka		
Guangzhou		
Hanoi	21 Feb 2002	
Ho-Chi-Minh	21 Feb 2002	
Hong Kong	21 Feb 2002	
Honiara	24 Feb 2000	
Jakarta	21 Feb 2002	
Karachi		
Kathmandu		
Kota Kinabalu	21 Feb 2002	
Kuala Lumpur	21 Feb 2002	
Kunming		
Lahore		
Lanzhou		
Male		
Manila	21 Feb 2002	
Melbourne	March 2001	
Mumbai		Initial readiness assessment being undertaken
Nadi	24 Feb 2000	

Naha	24 Feb 2000	Pacific Oceanic (non-exclusive RVSM airspace) Further phased implementation planned
Nauru	24 Feb 2000	
New Zealand (Domestic)	13 July 2000	Non-exclusive
Oakland Oceanic	24 Feb 2000	
Phnom Penh	21 Feb 2002	
Port Moresby	13 Apr 2000	
Pyongyang		
Shanghai		
Shenyang		
Singapore	21 Feb 2002	
Taegu		
Tahiti	24 Feb 2000	Non-exclusive RVSM airspace
Taibei		
Tokyo	24 Feb 2000	Oceanic
Ujung Pandang	21 Feb 2002	
Ulan Bator		
Urumqi		
Vientiane	21 Feb 2002	
Wuhan		
Yangon		

ICAO Asia/Pacific Regional Office WGS-84 Implementation Survey								
			If Conversion Completed			If Conversion Not Completed		ICAO
State	Conversion Completed		Is Data Published ?			Planned	Planned	SIP
	Yes	No	Yes	No	Effective	Transformation	Publication	Participant
					Date	Date	Date	
Australia	Yes		Yes		17-Jul-97			
Bangladesh	Yes		Yes		12-Aug-99			Yes
Bhutan	Yes			No	n/a	n/a	to be decided	
Brunei	Yes		Yes		1-Jan-98			
Cambodia	Yes		Yes		1-May-97			Yes
China		No				not adopted	not adopted	
Cook Islands	Yes		Yes		24-Apr-97			
DPR Korea		No					to be advised	Yes
Fiji	Yes		Yes		25-May-95			
French Polynesia	Yes main apts		Yes		1-Jan-98			
Hong Kong, China	Yes		Yes		25-Apr-96			
India	Yes		Yes		1-Jan-99			
Indonesia	Yes		Yes		1-Jan-99			
Japan	Yes		Yes		1-Jan-98			
Kiribati		No		No		Jun-99	to be advised	
Lao PDR	Yes partial						to be decided	Yes
Macau	Yes		Yes		2-Jan-97			
Malaysia	KUL FIR - partial; KK FIR - on-going							
Maldives	Yes		Yes		22-May-97			Yes
Marshall Islands	Yes		Yes		Unknown			
Micronesia	Yes		Yes		Unknown			
Mongolia	Yes		Yes		Aug-97			Yes

ICAO Asia/Pacific Regional Office WGS-84 Implementation Survey								
			If Conversion Completed			If Conversion Not Completed		ICAO
State	Conversion Completed		Is Data Published ?			Planned	Planned	SIP
	Yes	No	Yes	No	Effective	Transformation	Publication	Participant
					Date	Date	Date	
Myanmar	Yes		Yes		1-Jan-98			Yes
Nauru		No		No		asap after conferring with consultant		
Nepal	Yes		Yes		15-Jan-98			
New Zealand	Yes		Yes		27-Feb-97			
New Caledonia	Yes		Yes		26-Feb-98			
Pakistan		No				31-Jul-02	31-Jul-02	
Palau	Yes		Yes		4-Sep-97			
Papua New Guinea	Yes		Yes		13-Jul-00			
Philippines	Yes partial							
Rep of Korea	Yes		Yes		1-Jan-98			
Samoa	Yes		Yes		Dec-99			
American Samoa Completed								
Singapore	Yes		Yes		1-Jan-98			
Solomon Islands		No		No		31-Mar-99	1-May-99	
Sri Lanka	Yes		Yes		30-Apr-98			Yes
Thailand	Yes		Yes		1-Jan-98			
Tonga	Yes		Yes		9-Oct-97			
United States	Yes		Yes		15-Oct-92			
Vanuatu	Yes (main apts)		Yes		25-Mar-99			
Viet Nam	Yes		Yes		1-Jan-98			

STATUS OF WGS-84 IMPLEMENTATION

EXPLANATION OF THE TABLE

Column

1 Name of the State, territory or aerodrome for which WGS-84 coordinates are required with the designation of the aerodrome use:

RS - international scheduled air transport, regular use
RNS - international non-scheduled air transport, regular use
RG - international general aviation, regular use
AS - international scheduled air transport, alternate use

2 Runway designation numbers

3 Type of each of the runways to be provided. The types of runways, as defined in Annex 14, Volume 1, Chapter I, are:

NINST - non-instrument runway;
NPA - non-precision approach runway
PA1 - precision approach runway, Category I;
PA2 - precision approach runway, Category II;
PA3 - precision approach runway, Category III.

4 Requirement for the WGS-84 coordinates for FIR, indicated by the expected date of implementation or an "X" if already implemented.

5 Requirement for the WGS-84 coordinates for Enroute points, indicated by the expected date of implementation or an "X" if already implemented.

6 Requirement for the WGS-84 coordinates for the Terminal Area, indicated by the expected date of implementation or an "X" if already implemented.

7 Requirement for the WGS-84 coordinates for the Approach points, indicated by the expected date of implementation or an "X" if already implemented.

8 Requirement for the WGS-84 coordinates for runways, indicated by the expected date of implementation or an "X" if already implemented.

9 Requirement for the WGS-84 coordinates for Aerodrome/Heliport points (e.g. aerodrome/heliport reference point, taxiway, parking position, etc.), indicated by the expected date of implementation or an "X" if already implemented.

10 Requirement for geoid undulation indicated by the expected date of implementation or an "X" if already implemented.

11 Requirement for the WGS-84 Quality System, indicated by the expected date of implementation or an "X" if already implemented.

12 Requirement for publication of WGS-84 coordinates in the AIP indicated by the expected date of publication or an "X" if already published.

13 Remarks

STATE, TERRITORY OR AERODROME FOR WHICH WGS-84 IS REQUIRED			WGS-84 IMPLEMENTATION									REMARKS
CITY/AERODROME/	RWY No	RWY TYPE	FIR	ENR	TMA CTA CTZ	APP	RWY	AD/ HEL	GUND	QUALITY SYSTEM	AIP	
1	2	3	4	5	6	7	8	9	10	11	12	13

- END -

2nd Survey on Carriage and Operation of ACAS and Pressure-Altitude Reporting Transponders

(AP-ATM0551 dated 17 August 2000)

Pressure-Altitude Reporting Transponders

State/Territory	Effective date	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						
Bangladesh						
Bhutan						
Brunei Darussalam	1-Jul-01	Brunei terminal control area	YES	YES	YES	
			* State aircraft as well			
Cambodia	No Plan					
China						
Hong Kong,China	1-Jan-00	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	Jul-98					
Indonesia						
Japan	10-Oct-75	Within airspace defined by Minister of Transportation	YES	YES	YES	AIP dated 1 Oct 1975
Kiribati						
Lao PDR						
Malaysia						
Maldives	2002	Defined portion	YES	YES	YES	
Marshal Islands						
Micronesia, Federated States of						

2nd Survey on Carriage and Operation of ACAS and Pressure-Altitude Reporting Transponders

(AP-ATM0551 dated 17 August 2000)

Pressure-Altitude Reporting Transponders

State/Territory	Effective date	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	
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						
New Zealand						
Pakistan	1-Jul-01	All airspace within FIR	YES			AIP
Palau						
Papua New Guinea						
Philippines						
Republic of Korea	30-Nov-94	All airspace within FIR	YES	YES	NO	Aviation Law
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						
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	
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						
Viet Nam						

Note: Blank indicates that no information has been provided.

SUBJECT/TASKS IN THE ATS/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	Subject: Implementation of RNP	A	a) i) SUPPS amendment required to extend area of applicability of RNP10 (50NM longitudinal and lateral separation minima) beyond Pacific	ICAO	12/00
	APANPIRG C 2/22 C 3/24 C 4/4	Task: a) Implement RNP into the Asia Pacific Region		~~ii) Review & update RNP Guidance Material. Incorporate ISPACG Operations Manual outlining requirements for RNP10 operational approval of aircraft and operators~~	~~CNS/ATM/GM/TF~~	~~Completed~~
	C 4/5 C 5/2 C 5/3	b) Develop further SUPPS material by ISPACG for RNP4, 30NM longitudinal and lateral separation minima		b) Sub-group to monitor progress	ICAO	12/00
		~~c) Review table of navigation aids in conjunction with States~~		c) ~~Table of required navigation aids to be reviewed~~	~~ATS/AIS/SAR/SG/9~~	~~Completed~~
2	APANPIRG C 2/8 D 3/20 C 4/6	Subject: The SSR Code Assignment System for the Asia Region as specified in the Mid/ASIA ANP may not be as efficient as it could be	B			
	C 4/7 D 4/8 C 4/9 C 4/10 C 9/5	Task: ~~a) Define and document a Regional SSR Code Management Plan and review MID/ASIA Table 3~~		~~a) Sub-group to monitor progress~~	~~ATS/AIS/SAR/SG/9~~	~~Completed~~
				~~- SSR Code Assignment Working Group to convene and establish an SSR Code Management Plan and review MID/ASIA Table 3~~	~~SSRCA/WG~~	~~Completed~~
		~~b) Prepare Regional SSR Code Management Plan for Asia Pacific FASID~~		~~b) Progress in conjunction with SSR Code Assignment Working Group~~	~~SSRCA/WG~~	~~Completed~~
		c) Monitor and modify as required the Regional SSR Code Management Plan for the Asia Pacific Region		c) SSR Code Management Task Force to meet as required by Sub-group	ATS/AIS/SAR/SG	On-going

No.	Reference	Subject/Task	Priority	Action Proposed / In Progress	Action By	Target Date
3	~~RAN/3 R 14/20~~ ~~APANPIRG C 3/6~~	~~Subject: Insufficient co-ordination in the provision and implementation of radar facilities within the region~~ ~~Task: a) Identify why there is insufficient co-ordination and develop proposals to ensure sufficient co-ordination exists in the future~~	A	~~a) ICAO to survey States on current and proposed radar facilities~~ ~~b) Radar Facilities Table in the ANP to be reviewed based on the survey results~~ ~~c) Develop proposal to enhance co-ordination in the exchange of radar information~~	~~ICAO~~ ~~ATS/AIS/SAR/SG/9~~ ~~ATS/AIS/SAR/SG/10~~	~~Completed~~ ~~Completed~~ ~~Completed~~
4	APANPIRG C 3/22	Subject: Traffic congestion within the region Task: Suggest ways of reducing this congestion by means of appropriate traffic management ~~a) Review South China Sea ATS routes~~ ~~b) In-Trail Climb using ACAS distance based information in OCA / remote airspace~~ ~~c) Review Bay of Bengal ATS route structure~~ d) Develop revised ATS Route Structure - Southeast Asia to/from Europe/Middle East, South of the Himalayas	A	~~a) Review complete~~ ~~b) Monitor work undertaken in the United States. The United States to inform the Sub-group on progress of work~~ ~~c) Bay of Bengal Task Force (BB/TF) established. Report to ATS/AIS/SAR/SG/10~~ d) Establish a Project Team to develop a plan for a revised ATS route structure taking into consideration aircraft capabilities and the new CNS/ATM enhancements.	~~SCS/TF~~ ~~United States~~ ~~BB/TF~~	~~Completed~~ ~~Completed~~ ~~Completed~~ 7/02

No.	Reference	Subject/Task	Priority	Action Proposed / In Progress	Action By	Target Date
5	RAN/3 C 13/14 APANPIRG D 2/35	Subject: AIS Automation Task: Develop a Regional AIS Automation Plan	B	~~a) Information on AIS automation to be collected and reviewed~~ ~~b) Survey questionnaire concerning details of automated AIS systems developed by ATS/AIS/SG/4 to be distributed to States~~ ~~c) Review of survey results~~ d) Develop AIS automation plan and ANP amendment proposal following AIS/MAP Divisional Meeting, April 1998	~~ICAO~~ ~~ICAO~~ ~~AA/TF~~ AA/TF ATS/AIS/SAR/SG	~~Completed~~ ~~Completed~~ ~~Completed~~ On-going
6	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) Increased AIS support from the ICAO APAC Office ~~b) Update Part 6 of Doc 8700 and 8755 (ANPs for the Asia pacific Region)~~ c) Regional AIS seminars to be conducted	APANPIRG ICAO ~~ICAO~~ ICAO	On-going ~~Completed~~ 8/01
~~7~~	~~APANPIRG D 4/40~~	~~Subject: Lack of inclusion of CNS/ATM requirements in regional plans~~ ~~Task: a) Ensure regional plans include CNS/ATM requirements for the provision of ATS~~ ~~b) Develop "Concept of Operations" for application in an initial ADS environment~~	~~A~~	~~a) Monitor implementation of new CNS/ATM in the ATS/AIS field~~ ~~b) Australia to present Working Paper to ATS/AIS/SAR/SG/8~~	~~ATS/AIS/SAR/SG~~ ~~Australia~~	~~Completed~~ ~~Completed~~

No.	Reference	Subject/Task	Priority	Action Proposed / In Progress	Action By	Target Date
8	RAN/3 C 6/5	~~Subject: Lack of procedures and guidelines for the introduction of reduced vertical separation minima (RVSM) above FL290 in the region~~ ~~Task: Develop appropriate procedures, guidelines and implementation plans for the introduction of RVSM and evaluate benefits~~	A	~~a) Progress of IPACG / ISPACG work on RVSM being monitored~~ ~~b) United States to provide update on RVSM plan for Central and North Pacific to ATS/AIS/SAR/SG/8~~	~~ATS/AIS/SAR/SG~~ ~~United States~~	~~Completed~~ ~~Completed~~
	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) Form Asia Pacific RVSM Implementation Task Force~~ b) Plan schedule and facilitate implementation of RVSM in the Asia Pacific Region	~~ATS/AIS/SAR/SG~~ RVSM/TF	~~Completed~~ On-going
~~9~~	~~RAN/3 R 14/3~~	~~Subject: Inappropriate structure of regional Air Navigation Plan and untimely amendment process~~ ~~Task: Develop detailed contents for the Asia Pacific FASID~~	~~A~~	~~a) Develop detailed content for the Facilities and Services Implementation Document (FASID) as a matter of priority~~ ~~b) Prepare draft outline for the Asia pacific FASID~~	~~ATS/AIS/SAR/SG~~ ~~ATS/AIS/SAR/SG~~	~~Completed~~ ~~Completed~~
10	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) Review the SAR system of States in the Asia Region and advise ATS/AIS/SG~~ ~~b) Analyse and review the results collected~~ c) ~~Monitor the implementation of the PAC SAR SIP recommendations~~ d) Encourage States to delegate or negotiate SAR services e) Identify shortcomings and deficiencies	~~States~~ ~~ICAO~~ ~~ATS/AIS/SAR/SG~~ ~~ATS/AIS/SAR/SG~~ ICAO ATS/AIS/SAR/SG	~~Completed~~ ~~Completed~~ ~~Completed~~ On-going On-going

No.	Reference	Subject/Task	Priority	Action Proposed / In Progress	Action By	Target Date
11	APANPIRG D 3/21 C 9/2	Subject: Transition to WGS-84 in the Asia Pacific Region	A			
		~~Task: Develop a plan and assist with the transition to WGS-84~~		~~a) Information for planning to be provided by States~~	~~States~~	~~Completed~~
				~~b) Information to be collated for presentation to ATS/AIS/SG~~	~~ICAO~~	~~Completed~~
				~~c) Transition plan and assistance to States to be considered~~	~~ICAO~~	~~Completed~~
		Task: Monitor and facilitate the transition to WGS-84		a) Maintain status report of WGS-84 implementation within the Asia Pacific Region	ATS/AIS/SAR/SG	On-going
				b) Identify States requiring assistance and where possible assist those States	States ICAO ATS/AIS/SAR/SG	On-going
				c) Identify shortcomings and deficiencies	ATS/AIS/SAR/SG	On-going
12	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 b) Propose guidelines for the establishment of ATS routes using RNP and/or with ADS functions	A	a) ATS routes identified as not implemented are consider by ATS/AIS/SAR/SG	ATS/AIS/SAR/SG	On-going
				b) ATS/AIS/SAR/SG to monitor progress	ATS/AIS/SAR/SG	On-going
				c) Identify shortcomings and deficiencies	ATS/AIS/SAR/SG	On-going
~~13~~	~~APANPIRG C 2/33 C 6/19~~	~~Subject: Access to Japan Area "G"~~	~~A~~	~~Secretariat to follow up and report progress. No further action possible by ATS/AIS/SAR/SG~~	~~ICAO~~	~~On-going~~
14	~~APANPIRG C 2/33 C 7/7~~	~~Subject: NOTAM System of GPS RAIM outages~~ ~~Task: Develop a position for dealing with notification~~	B	~~a) Develop a position at ATS/AIS/SAR/SG/6~~	~~ATS/AIS/SAR/SG/6~~	~~Completed~~
				~~b) Develop implementation plan~~ ~~(overtaken by technology enhancements)~~	~~ATS/AIS/SAR/SG~~	~~Completed~~

No.	Reference	Subject/Task	Priority	Action Proposed / In Progress	Action By	Target Date
15	RAN/3 R 7/18 APANPIRG C 8/9	Subject: SAR training and exercises Task: Facilitate SAR training and exercises	B	~~a) Follow-up action on RAN/3 Recommendation 7/18~~ b) Co-ordinate SAR training available in the region c) Facilitate international participation in SAR exercises ~~d) Australia to organise an international SAREX~~	~~ICAO~~ ICAO States ~~Australia~~	~~Completed~~ On-going 4/01 ~~Completed~~
16	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 ATS/AIS/SAR/SG ICAO	On-going On-going On-going
~~17~~		~~Subject: Need for development of standardised ATS Letters of Agreement (LOA)~~ ~~Task: Develop a suitable LOA for Asia Pacific Region wide use~~	~~A~~	~~a) Review draft LOAs as contained in Part II, Chapter 2 of the ATS Planning Manual (Doc 9426) and WP/22 presented to ATS/AIS/SAR/SG/5~~ ~~b) Provide comments to the Regional Office before the next meeting~~ ~~c) Guidance material promulgated by ICAO for use by States~~	~~ATS/AIS/SAR/SG~~ ~~States~~ ~~ICAO~~	~~Completed~~ ~~Completed~~ ~~Completed~~
18	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 are not receiving reports from States) b) ICAO to conduct seminars	States ICAO	On-going 10/00
19	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 as required b) Develop “Concept of Operations” for application in an initial ADS environment	ATS/AIS/SAR/SG States ATS/AIS/SAR/SG States	On-going 12/00

No.	Reference	Subject/Task	Priority	Action Proposed / In Progress	Action By	Target Date
20	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) Analyse differences from SARPs d) Review accidents / incidents	ATS/AIS/SAR/SG ICAO ICAO ATS/AIS/SAR/SG ICAO ATS/AIS/SAR/SG	On-going On-going On-going On-going

AGENDA ITEM 2.2: COM/MET/NAV/SUR MATTERS

2.2 COM/MET/NAV/SUR Matters

2.2.1 The meeting reviewed the report of the Fourth Meeting of the COM/MET/NAV/SUR Sub Group of APANPIRG, which was held in Bangkok from 17 to 21 July 2000. The content of the report of the Sub Group was noted with appreciation and the following actions were taken on the Conclusions and Decisions formulated by the Sub Group.

Aeronautical Fixed Service Communication Improvements

2.2.2 The meeting noted that substantial progress was made during 1999 and early 2000 in implementing and upgrading AFTN and ATS direct speech circuits in the ASIA/PAC region. Capacity of the ten AFTN circuits were upgraded and six ATS direct speech circuits were implemented, in most cases using VSAT links. In addition, automatic message switching systems were replaced with more advanced systems at three AFTN COM centers.

AFTN circuits

- Hong Kong/Taibei circuit was upgraded from dual 75 baud to 4800 bps using X.25 protocol since 15 June 1999;

-Bangkok/Hong Kong circuit was upgraded to 2400 bps from 1200 bps using X.25 protocol since 5 July 1999;

-The Bangkok/Dhaka circuit was upgraded from 50 baud to 300 baud using VSAT link since 15 October 1999;

-Tokyo/Seoul circuit was upgraded from 1200 bps to 9600 bps since 20 October 1999;

-Tokyo/Naha circuit was upgraded to 9600 bps from 2400 bps since 20 October 1999;

-Bangkok/Mumbai circuit was upgraded from 300 baud to 2400 bps using X.25 protocol since 7 December 1999;

-Bangkok/Singapore circuit was upgraded to 1200 bps using X.25 protocol since 1 February 1999;

-Tokyo/Khabarovsk circuit was upgraded from 200 baud to 2400 bps since 13 April 2000;

-Ho Chi Minh/Vientiane circuit was upgraded to 9600 bps using VSAT by the end of 1999.

- Nadi/Noumea circuit was upgraded from 75 baud to 2400 bps in June 2000.

AFTN stations and COM Centres

- A new Automatic Message Switching System (AMSS) MESSIR supporting X.25 protocol was put into operation at Colombo, Sri Lanka on 6 April 2000;

- New AMSS MESSIR Proliaut1000 was implemented at Dhaka, Bangladesh in 1999;

- New AMSS – ECIL was implemented at Kathmandu, Nepal since 12 July 2000.

ATS Direct Speech Circuits

- Hanoi/Vientiane circuit was implemented during the end of 1999;
- Ho Chi Minh/Vientiane circuit was implemented during the end of 1999;
- Ho Chi Minh/Phnom Penh circuit was implemented during the end of 1999;
- Dhaka/Yangon circuit was implemented using VSAT in October 1999;
- Kunming/Vientiane circuit was implemented using VSAT in May 1999.
- Japan/U.S.A circuits was established in March 1999 using PSS1 signalling system and expanded in March 2000.

2.2.3 It was also noted that nine AFTN circuits are planned to be upgraded by the end of 2000. It was also noted that due to the increase in traffic volume DCA Malaysia and CAA Vietnam had agreed to upgrade the existing IDD circuit between Ho-Chi-Minh and Kuala Lumpur to a dedicated direct speech and data circuits using VSAT link. The circuits are scheduled to be established by the end of 2000.

Improvement of Backbone Circuits

2.2.4 The meeting noted that a dedicated Frame Relay network was put into operation in March 2000 in China. This network at its first stage introduced 16 nodes interconnected by trunk lines provided with satellite and DDN circuits at speed of 64 kbps. The network supports several communication protocols including Frame Relay and X.25 and provides AFS communication for larger and medium-sized airports in China. It will be used as the backbone internet communication service for the ground- to- ground element of ATN in China.

2.2.5 It was also noted that Japan introduced PSS1 signalling system in March 1999. The system was expanded in March 2000 in accordance with Asia/Pacific Regional Interface Control Document (ICD) for ATS digital speech signalling system and connected with Air Traffic Flow Management Centre (ATFMC). This 64 kbps circuit use compressed technology and provides, at present, one D channel and three B channels for ATS voice communications between ACC centres of States. The advantages for using PSS1 signalling system are failure detection/automatic detour; routing by dial number and caller number identification.

2.2.6 Based on the information provided on available and emerging digital circuits or networks implemented in the ASIA/PAC region and also in the adjacent region it was considered desirable to recommend the use of digital communication network or circuits to support AFS communications requirements. The meeting, therefore, adopted the conclusion as follows:

Conclusion 11/14 - Use of digital circuits

That, States consider implementing digital communication networks or circuits in a co-ordinated manner in order to meet current and future AFS communication requirements for data/voice communications and to facilitate the introduction of ATN.

2.2.7 The meeting noted that in order to provide reliable aeronautical mobile service communication to the new ATS route B330, Remote Control Air-Ground Extended Range (RCAGER) VHF station has been installed in the southern part of Mongolia. The extended range VHF provides coverage to all the existing and new ATS routes passing through Mongolian airspace from China.

2.2.8 It was noted that VSAT is one of reliable means of communications employed by several States in the Region to support AFS communication. However, spare parts for critical modules and elements such as redundant channel cards, RF unit should be readily available for replacement to ensure rapid restoration during breakdown. A reliable power supply system was considered as an essential facility to be provided. It was however recognized that for those VSAT stations providing both ATS direct speech and critical AFTN circuits without the provision of an alternate routing between States, an alternative communication link should be provided in order to assure required reliability. In light of above consideration, the meeting adopted the conclusion as follows:

Conclusion 11/15 - Alternative arrangements for VSAT

That, States consider the provision of an alternative communication links for:

a) critical AFS communications which are supported by a single VSAT system between States; and

b) remote control air-ground (RCAG) VHF stations supported by a single VSAT link.

Communication Circuit Performance

2.2.9 The meeting noted that the AFTN circuit loading statistics are regularly reviewed and analysed and plans are formulated to upgrade the circuits in a timely manner.

2.2.10 The meeting was informed that the VSAT link used for ATS direct speech circuit between Kunming and Yangon had been out of order due to technical and other problems at Yangon site and an IDD service is used temporarily. The meeting urged States concerned to take urgent actions to reactivate the speech circuit and implement the AFTN circuit between Kunming and Yangon as agreed at the 12th Bay of Bengal ATS Co-ordination Group meeting.

Amendment to the AFTN entry/exit Points

2.2.11 The meeting noted a proposal made by New Zealand to review and amend the entry/exit points between ASIA/PAC regions and adjacent regions. The entry/exit points between ASIA and PAC specified in the ASIA/PAC ANP should be deleted as the ASIA and PAC regions are considered as single ASIA/PAC region for AFTN operation. In addition, Tokyo is functioning as an entry/exit point between ASIA/PAC and NAM regions, it is, therefore, required to add Tokyo as an entry/exit point. The meeting endorsed the proposal presented for an amendment to ASIA/PAC ANP to delete entry/exit points between ASIA and PAC regions. In addition, in Chart COM 1 in ASIA/PAC ANP, the entry/exit point between ASIA/PAC and NAM, CAR is shown via USA (Honolulu). Since the routing is via Salt Lake City or Atlanta, Georgia, it was mentioned USA in the Chart instead of a specific location of the AFTN COM Centre. It is, therefore, proposed to delete reference to Honolulu in Chart COM 1. In view of the foregoing, the meeting adopted the conclusion as follows:

Conclusion 11/16 - Amendment to ASIA/PAC ANP

That, the ASIA/PAC ANP be amended as follows:

1) the entry/exit points:

a) between ASIA/PAC and AFI should be Mumbai and Brisbane;

b) between ASIA/PAC and EUR should be Bangkok, Singapore and Tokyo;

c) between ASIA/PAC and MID should be Mumbai, Singapore and Karachi;

d) between ASIA/PAC and NAM should be Nadi, Brisbane and Tokyo;

e) between ASIA/PAC and SAM should be Brisbane.

2) delete reference to Honolulu in Chart COM 1

ATN Transition Planning

2.2.12 The meeting noted the result of the Second Meeting of the ATN Transition Task Force held in Chiang Mai, Thailand from 6 to 10 March 2000.

2.2.13 The meeting noted that the Task No. 5, relating to "Integrated Digital Voice/Data Transmission Network to Support ATM" required development of a connectivity plan for integrated voice/data trunk circuits. This Task was identified to address problem associated with implementation of dedicated low speed AFTN circuits and ATS direct speech circuits by introducing higher speed and multiplexing technique. As States were carrying out this Task, where required, on a bilateral basis, it was not considered necessary to develop a connectivity plan for the region. In view of this, the meeting supported the recommendation made by the Task Force to delete item 5 from the Task List.

2.2.14 The meeting also updated the Subject/Tasks List in light of the amendment proposed above and renumbered the items in the Tasks List and adopted the following decision.

Decision 11/17 - Revision of the Subject/Tasks List of ATN Transition Task Force

That, the updated Subject/Tasks List of the ATN Transition Task Force be adopted as shown in Appendix A to the Report on Agenda Item 2.2

Development of Regional ATN Planning Documents

2.2.15 The meeting noted that the ATN Transition Task Force had established Working Group A to deal with the task to develop the ATN planning documents which will be completed for presentation to the third meeting of the Task Force in March 2001.

2.2.16 It was also noted that in accordance with the Tasks List, the Task Force had established a Working Group B to develop the following documents.

ATN Ground Transition Plan including air-ground aspects, and
ATN Technical Document (s) on
- Security
- Performance
- System Management

2.2.17 The result of the Working Group A and B will also be presented to the third meeting of the Task Force in 2001.

Amendment to the Guidance Material for Ground-Ground Elements in ATN Transition

2.2.18 The meeting noted that a proposal was developed by the expert from Japan to update the Guidance Material for Ground Elements in ATN Transition to conform to the changes made to the core SARPs and Edition 3 of ICAO DOC 9705 (Manual for Technical Provisions of ATN).

2.2.19 The proposed changes were also reviewed by the ATN Transition Task Force. The COM/MET/NAV/SUR Sub-Group endorsed the updated documents and recommended that Issue 2 of the Guidance Material incorporating agreed changes be published. In view of the foregoing, the meeting endorsed the conclusion as follows:

Conclusion 11/18 - Amendments to the Guidance Material for Ground Elements in ATN Transition

That, the updated Guidance Material for Ground Elements in ATN Transition be published as Issue 2.

Review Outcome of ATNP/3 Meeting

2.2.20 The meeting noted the outcome of the Third Meeting of the ATN Panel, which was held in Montreal from 7 to 18 February 2000. The main points that were outlined included the provisional acceptance of Edition 3 of DOC 9705 that provides new provisions for ATN Security, Systems Management and Directory Services. Other changes noted were the deletion of the ATN Pass-Through service and the inclusion of the CIDIN/AFTN gateway application. The meeting also noted that CPDLC and AMHS were identified as two ATN applications, which would yield significant operational benefits both in air and ground domains, when implemented on a global or at least regional scale.

Problem in Implementation of Low Speed Telegraph Circuits

2.2.21 It was also noted that some States in the Pacific Islands had been experiencing difficulties in retaining AFTN telegraph circuits as the common carrier agencies no longer provide low speed telegraph circuit. The lowest bandwidth available of the leased channel was 64 kbps. Consequently, the Christchurch/Niue 300 baud AFTN circuit had to be withdrawn and FAX was used to exchange operational messages as there was no other option or alternative communication means available.

2.2.22 The meeting recognized that as an alternative means SITA service should be utilized as was done for Brisbane/Port-Vila circuit. Where SITA/ARINC services are not available, dial-up communication means could be considered.

2.2.23 As requested by the Sub Group, SITA investigated the possibility of supporting the low speed AFTN circuits in the PAC region and confirmed availability of their service. It was noted that SITA will be in a position to provide the communication links, where required. It was, however, Stated

that the communication cost was considered as too expensive. In view of the above it was agreed that States concerned should be encouraged to implement AFTN using SITA services where common carrier agencies are unable to provide low speed telegraph circuits.

ATN Seminar

2.2.24 The meeting recognized the need to generate more awareness of the ATN in the region in order to facilitate early implementation and proposed to conduct an ATN Seminar for two days ahead of the third meeting of the ATN Transition Task Force. It was noted that the proposal was in line with Task List No.36 of the Sub-Group and the key priorities, which call for convening of workshops and seminars to keep all States informed on developments on trail and demonstrations. It was expected that States, where elements of ATN are implemented or are being implemented, would be able to provide speakers to the Seminar. The ICAO Regional Office was requested to issue invitation letters to all States in the Asia and Pacific regions and concerned States in the adjacent region to attend the Seminar. In view of the above, the meeting adopted the following conclusion:

Conclusion 11/19 – ATN Seminar

That,

a) ATN Seminar be conducted by ICAO prior to the Third ATN Transition Task Force meeting in 2001;

b) Invitation be extended to all the States in the ASIA/PAC region and States in the adjacent Region to attend the Seminar; and

c) States, in a position to do so, provide speakers to the Seminar.

2.2.25 The meeting was pleased to note the offer made by Singapore to host the Seminar and the third meeting of the Task Force during March 2001.

2.2.26 The meeting noted that the Republic of Korea has launched an AMHS project in December 1999 and it will be completed by the end of 2001. Their program involves integrating their AFTN and AIS automation systems by using Frame Relay as a wide area network throughout the country. Domestic AMHS testing is planned for September 2001 with normal operations to begin after a three-month trial period.

2.2.27 The meeting noted AMHS development and implementation programme in Japan, A number of tests had already been conducted between JCAB and Australia during November 1999 through to May 2000. AMHS trials with Hong Kong China, the Republic of Korea and the USA are also planned in 2001 through to 2003.

2.2.28 It was also noted that the delivery of AMHS trial equipment to Hong Kong, China, is expected in March 2001 and a test with JCAB is expected to commence as early as May 2001.

Frequency congestion problem on MWARA SEA-3 network

2.2.29 The meeting was informed that congestion problem on SEA-3 MWARA Network frequency 11396 kHz was reported. Co-ordination was carried out by the Secretariat with States concerned to explore the possibility of alleviating congestion problem by introducing frequency 11297 kHz in SEA-2 network, where feasible, and designating 11396 kHz as secondary frequency in that network. In view of the suitability of the frequency, it was agreed to use 11297 kHz as a primary

frequency and 11396 kHz as one of the secondary frequencies in the SEA- 2 MWARA network by all stations with immediate effect. The changes were implemented, consequently, the congestion problem was alleviated.

Transition from ACARS to ATN

2.2.30 The meeting noted that SITA had developed a transition plan from the existing ACARS service to new data link services. This transition is to support ATS applications in addition to enhancing the performance of airline communications. The transition will see a two steps process with the interim step being the use of ACARS over Aviation VHF Link Control (AVLC) before the full ATN implementation.

2.2.31 Initial deployment will see the upgrading of existing ACARS sites with priority determined by the user community. Coverage expected at the end of 2001 and the expanded coverage expected by the end of 2003 were illustrated on world coverage maps.

VDL Research and Development

2.2.32 The meeting noted planning and research and development activities carried out by Japan in the field of VHF Digital Link (VDL) applications. Planning of ATN implementation is being undertaken jointly by JCAB and Air Traffic Service Research Institute (ATSRI). The aim is to ensure consistent implementation of the ATN including VDL.

2.2.33 Research and development is being undertaken by the Electronic Navigation Research Institute (ENRI). ENRI has previously researched VDL Mode 2 and vocoders for Mode 3. Starting in the 2000 fiscal year ENRI will undertake a five-year programme looking at VDL Mode 3. This will involve testing a two voice/two data channels implementation with ground stations, aircraft station and ground vehicle. Performance to be evaluated will include bit error rates, transfer delays, data throughput and voice quality.

Strategy for the provision of Precision Approach and Landing Guidance Systems and GNSS Implementation Strategy

GNSS Developments

2.2.34 The meeting reviewed available information on GNSS developments in order to undertake the review of the strategy for the provision of Precision Approach and Landing Guidance Systems and the GNSS strategy.

2.2.35 The meeting noted that GNSS SARPs, with the exception of the GLONASS augmentation elements, have now been fully validated and will be reviewed by the Air Navigation Commission in October 2000 and adopted by the ICAO Council in March 2001. The SARPs will become applicable on 1 November 2001.

2.2.36 The modernization of the United States' GPS was described to the Sub-Group including the addition of the L2 frequency for civil use on Block IIF satellites being launched from 2003 and an L5 frequency on launches from 2005. The US Wide Area Augmentation System (WAAS) Phase 1 is expected to be operational in 2002.

2.2.37 The improved performance of the GPS after the discontinuation of Selective Availability (SA) was noted. The meeting considered that, in presenting GPS accuracy values, the inclusion of Horizontal, Vertical and Position Dilution of Precision (HDOP, VDOP, PDOP) values would be useful when comparing accuracy values between States. In discussion of the performance

results, the meeting considered it would be advantageous to conduct a measurement program of GPS performance throughout the region. The meeting, in view of the work carried out by Singapore in this regard invited Singapore to develop and coordinate a measurement programme by States within the Region and formulated the following conclusion:

Conclusion 11/20 - Regional GPS Measurement Campaign

That:

a) Singapore develop and coordinate a GPS measurement campaign, based on the documentation and practices reported, to determine normal and peak excursion of GPS performance; and
b) States in a position to do so participate in the conduct of the measurement campaign.

2.2.38 The meeting noted that report on the measurement campaign would provide a useful reference for the revised system performance specification being prepared by the United States for submission to ICAO.

Strategy for the provision of Precision Approach and Landing Guidance System

2.2.39 The meeting noted the strategies adopted in other regions and reviewed the proposed revised Strategies for the Provision of Precision Approach and Landing Guidance Systems and GNSS implementation in the Asia and Pacific regions.

2.2.40 The meeting in considering the proposal to adopt revised strategy for the precision approach and landing guidance sought to clarify the preferred system for implementation and revised the proposed strategy. In this regard, it was agreed to indicate that MLS should only be implemented when an operational requirement cannot be satisfied by the continuation of ILS or the implementation of GNSS. The revised strategy was adopted and the following conclusion was formulated.

Conclusion 11/21 - Strategy for the Provision of Precision Approach and Landing Guidance System

That, the Strategy for the Provision for the Precision Approach and Landing Guidance System provided in Appendix B to the Report of the Agenda Item 2.2 be adopted.

Strategy for the Implementation of GNSS

2.2.41 The meeting reviewed the proposed strategy developed by the Sub-Group. In discussion, the need to review the strategy on a regular basis was highlighted to take into account continuing development of new SARPs and GNSS and associated systems such as flight management systems. The meeting also took note of information provided by Japan on the feasibility of the Multifunctional Transport Satellite (MTSAT) providing SBAS capability in the Asia/Pacific Region. This capability is known as MTSAT Satellite Augmentation System (MSAS).

2.2.42 The meeting also recalled that APANPIRG/4 had formulated Conclusion 4/43 advising States to establish National CNS/ATM Committees comprising of representatives from all concerned agencies and organizations from within their State to plan and implement CNS /ATM systems. In this regard it was noted that the multidisciplinary GNSS implementation team mentioned in item 11 of the strategy should be a core team of experts of the National CNS/ATM Committees which will be tasked

to perform the specific work of implementation of GNSS. This arrangement is required to avoid proliferation of groups formed by States for implementation of the CNS/ATM systems.

2.2.43 The meeting, after an extensive discussions, agreed to add a note in the strategy to indicate available SBAS systems with MSAS having feasibility of providing augmentation systems in the ASIA/PAC Region.

2.2.44 In view of the foregoing, the meeting adopted the following conclusion:

Conclusion 11/22 - Strategy for the Implementation of GNSS Navigation Capability in the ASIA/PAC Region

That, the Strategy for the Implementation of GNSS Navigation Capabiity in the ASIA/PAC Region provided in Appendix C to the Report of the Agenda Item 2.2 be adopted.

2.2.45 The meeting noted that both of these strategies are 'living' documents and the Sub-Group should continue to review both on a periodic basis and propose appropriate amendments. To further this aim the meeting supported the Sub-Group's proposal that an invitation should be extended to an expert of the European Galileo program to brief the next Sub-Group meeting on development of the program.

2.2.46 It was noted that the Sub-Group had also developed a draft "checklist" to assist States in the initial application of GPS for enroute and non-precision approach. It was suggested that the checklist would serve as the basis of a workshop to assist States in initial implementation. Australia and Singapore had indicated that such a workshop would be supported by the provision of experts. The United States assured the meeting that it would provide full support convening the workshop under the auspices of ICAO. The meeting recognized that in order to assist States in the development and early implementation of GNSS procedure for en-route and non-precision approach it is required to conduct a GNSS Implementation Workshop. The format of the workshop was discussed with consideration being given to the advantages of series of in-country workshops versus a single regional workshop. The aim of the workshop is to enable States to prepare necessary regulatory and operational provisions for GNSS implementation. The meeting agreed that the best advantage would be obtained by core teams of specialist from a number of States participating in a regional level workshop. In view of the foregoing, the meeting formulated the following conclusion:

Conclusion 11/23 - GNSS Implementation Workshop

That, ICAO, with the support of experts, conduct a workshop to assist States in the development and implementation of GPS procedures for enroute and non-precision approach navigation. The workshop should draw on ICAO SARPs, PANS-OPS and other publications together with the practical experience of States gained through implementation of GPS applications.

Results of the ITU World Radiocommunication Conference -2000 (WRC-2000)

2.2.47 The meeting noted an overview of the results of WRC-2000 on main items of interest to civil aviation.

2.2.48 In general, the conference results satisfied the ICAO position. A significant element in the ICAO preparatory activities for this conference was the early awareness and involvement of Contracting States in the development of the ICAO position. Major factors contributing to this achievement were:

a) the implementation of: Assembly Resolution A32-13; 35th ASIA/PAC DGCA Conference Action Item 35/9 and APANPIRG/10 Conclusion 10/15. Active participation by civil aviation representatives during development of States position and at APT meetings and the WRC-2000 greatly contributed to the successful outcome of the meeting;

b) higher profile of spectrum management issues in ICAO through the actions of the governing bodies and personal actions by the President of the Council and the Secretary General (letters to Ministers and CAA'S) and participation in WRC- 2000 work; and

c) The involvement of the ICAO Asia and Pacific Office at several regional preparatory meetings proved important in supporting the development of regional proposals to the conference that were satisfactory for civil aviation.

2.2.49 The meeting appreciated the work done by the Secretariat at the regional level to secure support for the ICAO position at the Asia-Pacific Telecommunity (APT) forums and at WRC-2000 by States in the ASIA/PAC Region. The meeting also thanked all the ASIA/PAC States for the support provided at APT meetings and at WRC-2000, which resulted in satisfactory outcome.

2.2.50 The next World Radiocommunication Conference is currently scheduled for 2003. It was noted that the preliminary ICAO position developed by the AMCP WG F was presented to the First APT Conference Preparatory Meeting for WRC 2003 held in Bangkok from 4 to 6 September 2000 for information.

2.2.51 As the spectrum issue enables us to achieve future modes in CNS/ATM environment, the Sub-Group should have a standard agenda on spectrum. It is important to secure strong support from States at the regional forums, which should be attended by a larger number of aviation representatives. In order to achieve success at WRC 2003, aviation representatives should actively participate in the development of State position at the national level, participate at regional level Conference Preparatory Group meetings conducted by APT and attend WRCs. In order to initiate action in this regard, it was considered highly desirable to designate a person in each administration responsible for preparation for WRC 2003 and undertake preparatory action in co-ordination with respective telecommunication regulatory authorities. In view of the foregoing, the meeting formulated the following conclusion:

Conclusion 11/24 - Protection of Aeronautical Frequency Spectrum

That States,

a) assign high priority to the aeronautical spectrum management;

b) participate in the development of States' position for WRCs at the national level to ensure support to ICAO position;

c) ensure to the extent possible aviation representatives are included in States delegation to the APT Conference Preparatory Group meetings and at WRCs.

d) designate a focal point contact person responsible for the preparation of WRC-2003 issues and provide notification of appointment to the ICAO Regional Office.

Inter - Regional Coordination

2.2.52 The meeting was informed that the first inter-regional coordination meeting (IRCM) of the ICAO Secretariat from ASIA/PAC, Middle East, European Regions and ICAO Headquarters will be held in Bangkok from 11 to 13 October 2000. The meeting will focus primarily on matters concerning the Asia-Europe traffic flow which is of significant interest and which concerns the three Regional Offices, Bangkok, Cairo and Paris.

The objective and scope of the meeting will be as follows:

a) to develop terms of reference;
b) to develop a procedural model as guidance for the future IRCM;
c) to identify and develop an inventory of specific areas requiring inter regional coordination; and
d) to develop result–oriented action items with target dates for completion.

2.2.53 The meeting also noted the proposed agenda of the meeting covered various fields such as Harmonization of CNS/ATM activity, ATM matters, CNS matters and other inter-regional issues for discussion

2.2.54 The initial meeting will be confined to the ICAO Secretariat and its expansion will be considered in due course, as necessary. It is proposed to discuss the several issues requiring inter-regional coordination and develop a procedure and mechanism for execution of the coordination activities.

Demonstration of ATN Gateway and Message Handling System application

2.2.55 All the participants attending the meeting witnessed the demonstration organized with the assistance of Aerothai and observed operation of the message handling system application and the ATN Gateway installed at the CNS/ATM theme hall located at the third floor of the Regional Office.

Progress in implementation of the ISCS and SADIS by States

2.2.56 Under this item the meeting examined the current status of implementation of the International Satellite Communication System (ISCS/2) provided by the United States of America and the Satellite Distribution System for information relating to air navigation (SADIS) provided by the United Kingdom as integral part of the ICAO aeronautical fixed service (AFS). The information concerning implementation of the ISCS/2 and SADIS as provided by States, WAFCs, available with the Secretariat and updated during the meeting was summarized as presented in Appendix D to the report on Agenda Item 2.2.

2.2.57 The meeting noted that the use of the ISCS/2 and SADIS broadcasts by ASIA/PAC States had continued to grow and further expansion is expected. However, it was recalled that the APANPIRG/10 noted that a number of States in the PAC Region do not intend to install VSATs. In this context, the meeting agreed with the views expressed by the WAFSSG (1999) that it had always been a fundamental precept of the WAFS final phase that the WAFS data would be provided by global satellite broadcasts, and it was up to each State to decide whether it wished to avail itself of this facility

to obtain the WAFS data required. With reference to the difficulties to be experienced by the PAC States in obtaining the required MET products, it was noted that 19 Pacific countries have installed the Emergency Manager Weather Information Network (EMWIN) receiving equipment, as developed by the United States, and additional installation is planned in the near future. The products being broadcast to the PAC Region include warnings, country and area forecasts, various satellite images and graphical products, aviation data and others. Some States receive WAFS products via the Internet.

SADIS strategic assessment tables

2.2.58 The meeting reviewed the SADIS strategic assessment tables with entries regarding the current and projected OPMET data volumes, T4 facsimile charts, BUFR data volumes, two-way VSATs and AIS data volumes for the period of 2000-2004. The meeting confirmed the views expressed by the APANPIRG/10 that, in the absence of an operational requirement specifying the type of AIS information which might be disseminated via SADIS broadcast, the projected AIS data volumes should not be included in the table. In this context, the meeting formulated the following conclusion.

Conclusion 11/25 - SADIS strategic assessment tables

That, the ASIA/PAC SADIS strategic assessment tables, as given in Appendix E to the report, be adopted and forwarded to the SADISOPSG for planning the future SADIS bandwidth requirements.

Allocation of the SADIS two-way VSAT

2.2.59 It was noted that the fifth meeting of the SADIS Operations Group (SADISOPSG/5) had considered implementation of the SADIS enhanced two-way VSAT test programme. It had originally been envisaged that five enhanced two-way VSATs would be needed for the trial. However, the offer to take part in the trial had been declined by Singapore, Thailand (Bangkok) and the Russian Federation (Moscow), and, so far, it had not been possible to a State willing to support the installation and commissioning of the fifth enhanced two-way VSAT as part of the trials. In this regard the SADISOPSG developed its Conclusion 5/14 inviting the PIRGs to consider if they could advise a site for the installation of the fifth enhanced SADIS two-way VSAT for use operationally following the trial.

2.2.60 The meeting noted that the Conclusion 5/14 formulated by the SADISOPSG had been considered by the COM/MET/NAV/SUR SG/4. During the discussions, the observer from IATA reiterated views expressed by the ASIA/PAC IATA Regional Office earlier that there is no requirement for deployment of the SADIS two-way VSAT in the region. Having discussed the proposal made by the SADISOPSG/5, the meeting found that no offer was made for the installation of the enhanced SADIS two-way VSAT in the ASIA/PAC Regions.

Access to the global WAFS products

2.2.61 The meeting supported the views expressed by the COM/MET/NAV/SUR SG/4 that with increased long-range flight operations, often managed by centralized operation control, there is a need for the global WAFS products be made available at many locations of the ASIA/PAC Regions. In particular, it was pointed out that, with some exception, most of the locations within the area of responsibility of one WAFC do not have access to the products of another WAFC.

2.2.62 In light of the above, the meeting noted in particular, that products produced by the WAFC Washington are distributed through ISCS with all the graphical products being made available on the Aviation Weather Centre's (AWC) Internet site and on the International Flight Folder site. The

WAFS products from the WAFC London are not available via the Internet. From this point of view, the meeting felt that availability of global WAFS products via the Internet could solve the problem.

2.2.63 The attention of the meeting was drawn to the APANPIRG Conclusion 10/21 calling for ICAO to consider developing the policy for use of the Internet by States to obtain the WAFS products and OPMET data for operational purposes. It was pointed out that the Air Navigation Commission noted the Conclusion and requested the Secretary General to consider developing a uniform policy in this regards.

2.2.64 The meeting agreed that the WAFCs be invited to consider the possibility of providing their products via the Internet to support the long-range flight operations with centralized operation control and to ensure arrangements for obtaining WAFS products in the event of the ISCS or SADIS failure. Having noted the clarification provided by the Secretariat regarding the authorized access to the ISCS and SADIS satellite broadcasts, the meeting also agreed that measures may be taken to introduce a restriction to prevent access by unauthorized users. The following conclusion was formulated by the meeting.

Conclusion 11/26 - Authorized access to the global WAFS graphical products via the Internet

That, ISCS and SADIS provider States consider the possibility of providing global availability of WAFS products via the Internet, to the authorized ISCS and SADIS users.

Status report on implementation of transition to the final phase of WAFS

2.2.65 The meeting noted the information on a survey undertaken by the ASIA/PAC WAFS Transition Task Force to assess the level of preparedness of States in the region for the transfer of responsibility for SIGWX from RAFCs to the WAFCs London and Washington. It was noted that, all responding States are of the opinion that the SIGWX charts produced by the WAFCs are of acceptable quality. There was general agreement that the WAFCs should continue their efforts to further improve the quality of the charts. The meeting was pleased to note that all responding States are ready for the transfer of responsibility from RAFCs to WAFCs. A number of significant issues relating to the implementation of the final phase of WAFS were reviewed by the meeting, such as collaboration between WAFCs and States, and the provision of SIGWX advisories.

2.2.66 Information was provided to the meeting regarding evaluation of the SIGWX charts produced by the WAFCs, including feedback from airline operators. In particular, it was noted that, feedback had been received from operators, that the WAFS high level significant weather chart (SWH) chart for Area I (Northern Pacific) in polar stereographic projection covered too big an area and as a result the chart information in the poleward direction became overly cluttered. It was agreed with a proposal by the COM/MET/NAV/SUR/4 to add a new SWH area with the same coverage, scale and map projection as the existing SWH chart from RAFC Tokyo (PBNE10RJTD). The meeting formulated the following conclusion:

Conclusion 11/27 - Issuance of SWH chart by WAFC Washington

That, the United States be invited to consider issuing a SWH chart by WAFC Washington with the same coverage, scale and map projection as the current chart produced by RAFC Tokyo.

2.2.67 The meeting noted that the Japan Meteorological Agency plans to terminate the HF radio broadcast for aviation (JMJ) on 28 February 2001.

Requirements for medium level significant weather charts (SWM)

2.2.68 It was noted that a survey undertaken by the Task Force had identified a need for additional SWM within the region. The meeting concluded that IATA be requested to consider the requirement for a SWM covering the area as shown in Appendix F to the report on Agenda Item 2.2

Conclusion 11/28 - Requirements for WAFS SWM charts

That, IATA be requested to urgently confirm the requirement(s) for SWM chart(s) in the ASIA/PAC Regions.

WAFS Transition Plan and Procedures

2.2.69 The meeting reviewed the ASIA/PAC Transition Plan and Procedures, as drafted by the WAFS Transition Task Force in coordination with RAFCs and WAFCs concerned including a timetable for achieving the final phase of WAFS in the region. The meeting adopted the Plan and formulated the following conclusion.

Conclusion 11/29 - Amended ASIA/PAC WAFS Transition Plan and Procedures

That, the ASIA/PAC WAFS Transition Plan and Procedures for the transfer of responsibilities from RAFCs to the WAFCs London and Washington be amended as shown in Appendix G to the report on Agenda Item 2.2

2.2.70 The meeting agreed with a proposal by the COM/MET/NAV/SUR SG/4 that the new task relating to implementation of the transition to the final phase of WAFS should be included in the Subject/Tasks List in the COM/MET/NAV/SUR fields.

Transfer of responsibility for production of SIGWX charts from RAFCs to WAFCs and closure of RAFCs

2.2.71 Having noted an evaluation of the SIGWX charts produced by the WAFCs London and Washington and the ASIA/PAC status report on implementation by the RAFCs and States of transition to the final phase of WAFS, the meeting agreed that the ASIA/PAC Transition Plan and Procedures are being successfully implemented. In this context, the meeting formulated the following conclusions:

Conclusion 11/30 - Transfer of production of SIGWX charts to WAFCs and closure of RAFCs New Delhi, Melbourne and Wellington

That,

a) responsibilities for production of SWM and SWH charts (area D and Asia South) from RAFC New Delhi be transferred to WAFC London;

b) responsibilities for production of SWH charts (areas E and F) from RAFC Melbourne be transferred to WAFCs London and Washington;

c) responsibilities for production of SWH charts (areas J and F) from RAFC Wellington be transferred to WAFC Washington;

d) WAFCs London and Washington assume their responsibilities effective 1 September 2000; and

e) Following successful implementation of the transfer, RAFCs New Delhi, Melbourne and Wellington be closed on 1 March 2001.

Conclusion 11/31 - Transfer of production of SIGWX charts to WAFCs and closure of RAFC Tokyo

That,

a) responsibility for production of SWH charts (areas I, E and G) from RAFC Tokyo be transferred to WAFCs London and Washington effective 1 March 2001; and

b) RAFC Tokyo be closed on 1 March 2001.

Review of WAFS Tables MET 5 and MET 6 of the ASIA/ANP (FASID)

2.2.72 As a follow up of the above discussions regarding transfer of production of SIGWX charts to WAFCs and closure of RAFCs, the meeting agreed to amend the WAFS Tables MET 5 and 6 of the ASIA/PAC ANP (FASID) to reflect progress made to transition to the final phase of WAFS. Some changes of editorial nature and those as suggested by the WAFSSG/7 were noted by the meeting. The meeting formulated the following conclusion.

Conclusion 11/32 - WAFS Tables MET 5 and 6 of the ASIA/PAC ANP (FASID)

That, Tables MET 5 and 6 of the ASIA/PAC ANP (FASID) be amended as shown in Appendices H and I to the report

Future Work Programme for the WAFS Transition Task Force

2.2.73 The meeting noted appreciation expressed by the COM/MET/NAV/SUR SG/4 to the ASIA/PAC WAFS Transition Task Force for the work done and the requirements for the Task Force to continue its work until the final phase of the WAFS is implemented in the Regions. The future work programme for the Task Force, as presented in Appendix J to the report on Agenda Item 2.2, was also noted by the meeting.

Implementation of the ROBEX Scheme

2.2.74 Under this item, the meeting first took note of implementation of the ROBEX Scheme. The meeting was advised that after the 11th edition of the ROBEX Handbook is published in August 1998, a number of amendments to the ROBEX Scheme arising from changes in operational requirements for OPMET data exchanges had been co-ordinated with the States concerned and implemented. All the changes made were incorporated into draft Amendment No. 1 to the ROBEX Handbook, which would be published in due course.

2.2.75 The meeting noted the information regarding relocation of the ROBEX Centre from Auckland to Wellington in New Zealand and establishment of the new Inchon Aviation Weather Centre in the Republic of Korea. It was agreed that the ASIA/PAC ANP (FASID) and the ROBEX Scheme be amended accordingly.

OPMET data exchange for support of the ISCS and SADIS broadcasts

2.2.76 The meeting noted that the procedures to facilitate distribution of OPMET data to the WAFCs, as adopted by APANPIRG in its Conclusion 9/29 and 10/22, have been fully implemented by the Bangkok, Singapore and Tokyo ROBEX OPMET Data Banks. It was agreed that, as a matter of urgency, actions required to be taken for implementation of the procedures by Brisbane and Nadi ROBEX OPMET Data Banks to facilitate distribution of data to WAFC Washington for uplink to the ISCS broadcasts.

2.2.77 The meeting also agreed that actions should be taken by the ROBEX MCCs/TCCs for implementation of the revised ROBEX Scheme to extend the collection areas and compile additional bulletins as recommended by APANPIRG in its Conclusion 10/23, calling for inclusion in the ROBEX Scheme of all international aerodromes listed in Table MET 1 of the ASIA/PAC ANP (FASID).

Status of implementation of international airways volcano watch

2.2.78 The meeting noted the status of implementation of the international airways volcano watch (IAVW) in the ASIA/PAC Regions. It was noted that the volcanic ash advisory centres (VAACs), namely Anchorage, Darwin, Tokyo, Washington and Wellington, designated to provide the advisory service in the ASIA/PAC Regions have been fully implemented. It was also noted that various formal and informal arrangements between the VAACs and volcanological and civil aviation authorities are working satisfactorily in most cases. It was agreed that further actions should be taken to fully implement the IAVW operational procedures.

Extension of VAAC areas of responsibility

2.2.79 The meeting noted with appreciation the following developments, which had eliminated the main outstanding areas for which coverage had been required:

a) The United States, through WMO, agreed to extend the area of responsibility of the Anchorage VAAC westwards to 150ºE (north of 60ºN) in order to cover the easternmost new polar air routes across Siberia;

b) Australia agreed to extend the area of responsibility of the Darwin VAAC westwards to 75ºE to cover Area B in the IAVW, and informed WMO accordingly. It was noted that, this would provide formal monitoring of eruptive events at Barren Is. in the Andamans; and

c) China and Japan reached agreement for the Tokyo VAAC to extend the western boundary of its area of responsibility to 90ºE to provide improved coverage of the volcanoes in China.

2.2.80 It was agreed that the relevant amendments to the ASIA/PAC ANP (FASID) should be made in due course to reflect changes in the VAACs areas of responsibility.

Deficiencies in implementation of IAVW

2.2.81 The meeting noted with some concern apparent inadequacies in the issue of SIGMETs in the ASIA/PAC Regions, particularly with regard to volcanic ash. It was felt that the inadequacies were probably due to a number of factors including problems with communications, the training and skills of staff at some MWOs and some unfamiliarity with procedures for issuing SIGMETs. It was

concluded that urgent consideration should be given to the establishment of a Special Implementation Project to address the inadequacies. In this context, the meeting formulated the following conclusion.

Conclusion 11/33 - SIGMET Special Implementation Project

That, ICAO urgently consider a proposal for the ASIA/PAC Special Implementation Project be established with the primary objective to improve implementation of SIGMET procedures.

2.2.82 Having formulated the above draft conclusion, the meeting agreed that the inadequate implementation of the SIGMET procedures be included in the list of air navigation shortcomings and deficiencies in the MET field in the ASIA/PAC Regions.

Volcanic Ash Working Group

2.2.83 The meeting noted appreciation expressed by the COM/MET/NAV/SUR SG/5 to the Volcanic Ash Working Group (WG) for its valuable contribution by continuing to assist the Sub-group in monitoring implementation of the IAVW and developing recommendations for improvement of the IAVW operational procedures. It was noted that the WG had been requested to assist with the development of the proposed ASIA/PAC SIGMET Special Implementation Project and its implementation**.**

MET Chapter in the ASIA/PAC Regional Plan for CNS/ATM Systems

2.2.84 The meeting noted that the COM/MET/NAV/SUR SG/4 had agreed to develop the new MET Chapter in the ASIA/PAC Regional Plan for the new CNS/ATM Systems. In order to complete a draft material for the new Chapter the Sub-group established a MET Working Group consisting of experts from Australia, Hong Kong, China and United States. It was also noted that the expert from Hong Kong, China would act as a Rapporteur of the Working Group.

Terms of Reference and Subject /Tasks List of the COM/MET/NAV/SUR Sub-Group

2.2.85 The meeting reviewed the proposed changes to the Title, Terms of Reference (TOR) and an updated Subject/Tasks List of the COM/MET/NAV/SUR Sub-Group. It was noted that of the 35 Tasks, 25 Tasks were completed and two Tasks: one in the CNS and one in MET fields were added. The proposed amendments to the Title and the TOR of the Sub-Group were agreed. In view of the foregoing, the meeting adopted the decision as follows:

Decision 11/34 - Amendments to the Title, Terms of Reference and Subject/Tasks List

That, proposed amendments to the Title, Terms of Reference and the updated Subject/Tasks List of the COM/MET/NAV/SUR Sub-Group presented in Appendix K to the Report on the Agenda Item 2.2 was adopted.

TITLE AND TERMS OF REFERENCE

TITLE: ATN Transition Task Force

TERMS OF REFERENCE:

Plan for implementation of the Aeronautical Telecommunication Network (ATN) in the ASIA/PAC region to meet performance and capacity requirements of CNS/ATM Systems. The planning also addresses the ongoing development of the AFS including digital speech communication.

Subject/Tasks List of the ATN Transition Task Force

No.	Ref.	Task	Priority	Action Proposed/In Progress	Target
1	RAN/3 C 10/12 C 10/11d	Subject: ATN Transition Guidance Material Task: Develop Regional ATN Transition Guidance Material.		1) Development of detailed guidance material.	Completed
2	RAN/3 C 10/11d	Subject: ATN Transition Plan Task: Develop an ATN Transition Plan to provide seamless transition to ATN.	A	1) Develop Ground Transition Plan taking into account Air-to-Ground aspects. 2) Develop a set of planning documents covering: i)ATN Regional Routing Architecture ii)ATN Naming and Addressing Conventions, and iii) Documentation of the Assigned ATN Names and Addresses.	2001
3		Subject: ATN major elements. Task: Provide performance and functional requirements of ATN.	A	1) Develop ATN Technical Documents. - *Security* - *Performance* - *System Management*	2002
4	RAN/3 C 10/11b	Subject: AFTN related issues Task: Review operation of AFTN.	B	1) Evaluate and review the effect of increases or decreases in capacity and network changes, on circuit loading. 2) Plan network changes for support of OPMET and AIS databases, automated VOLMET broadcast.	On going 2003
5		Subject: Planning and implementation information in ANP. Task: Develop G/G part of the CNS FASID.	A	1) Development of detail description for the existing tables and Charts for the G/G part of the CNS FASID.	2001

STRATEGY FOR THE PROVISION OF PRECISION APPROACH AND LANDING GUIDANCE SYSTEMS

Considering:

a) that, in the ASIA/PAC Region, ILS is capable of meeting the majority of requirements for precision approach and landing;

b) that, requirements for terrestrial based provision of non-precision and precision approach and landing navigation facilities has been implemented in most cases;

c) that, the availability of a proven and standardized MLS to meet all weather operations requirements;

d) the projected availability of ICAO GNSS SARPs and guidance material;

e) feasibility of GBAS systems to support category II and III operations in 2005;

f) the development and deployment of multimode receivers;

g) the definition of Required Navigation Performance for approach, landing and departure operations;

h) the knowledge that GNSS without augmentation can support non-precision approaches and the augmented GNSS based systems will be available to support Category I operations from the year 2002;

i) the need to maintain aircraft interoperability both within the region and between the ASIA/PAC region and other ICAO regions and to provide flexibility for future capability.

The revised strategy for ASIA/PAC Region in the provision of precision approach and landing guidance is:

a) ILS be retained as an ICAO standard system for as long as it is operationally acceptable and economically beneficial;

b) Implement GNSS, with such ground based local or regional augmentation to support Category I operations where appropriate;

c) Conduct studies for the implementation of GNSS local ground based augmentation systems and GNSS avionics equipment for Category II and III operations;

d) Implement the Required Navigation Performance (RNP) for approach, landing and departure operations in accordance with ICAO provisions when and where applicable;

e) Conduct necessary on-going education and training for operational personnel in using GNSS to ensure safe operations.

f) Implement MLS where operational requirements cannot be satisfied by implementation of ILS or GNSS.

STRATEGY FOR THE IMPLEMENTATION OF GNSS NAVIGATION CAPABILITY IN THE ASIA/PACIFIC REGION

Considering that:

1) Safety is the highest priority;

2) Elements of Global Air Navigation Plan for CNS/ATM system on GNSS and requirements for the GNSS implementation have been incorporated into the CNS part of FASID;

3) GNSS Standards and Recommended Practices (SARPs), PANS and guidance material for GNSS implementation are available;

4) The availability of avionics including limitations of some receiver designs; the ability of aircraft to achieve RNP requirements and the level of user equipage;

5) Development of GNSS systems including satellite constellations and improvement in accuracy;

6) Airworthiness and operational approvals allowing the current GNSS to be applied for en-route and non precision approach phases of flight without the need for augmentation services external to the aircraft;

7) Development status of aircraft based augmentation system and regional augmentation systems include both satellite-based and ground-based systems;

8) Human, environmental and economic factors will affect the implementation of GNSS.

The general strategy for the implementation of GNSS in the Asia/Pacific Region is detailed below. This strategy is based on the regional navigation requirements of :

(a) RNP10 for en-route in remote/oceanic areas;
(b) RNP4 for en-route and terminal phases of flight;
(c) NPA/APV for approaches and departures; and
(d) Precision approaches at selected airports.

1) There should be an examination of the extent to which the GNSS system accessible in the Region can meet the navigational requirements of ATM service providers and aircraft operators in the Region;

2) Evolutionary introduction of GNSS Navigation Capability should be consistent with the Global Plan Air Navigation Plan for CNS/ATM System;

3) Implementation shall be in full compliance with ICAO Standards and Recommended Practices and PANS;

4) Introduce the use of GNSS as primary means of navigation in remote/oceanic areas without conventional terrestrial based navigation aids;

5) Introduce the use of GNSS as a supplementary means of en-route navigation and non-precision approach;

6) Any external augmentation system deemed necessary for the implementation of GNSS for a particular flight phase in an area under consideration (SBAS/GBAS including ground based regional augmentation system) should be implemented in full compliance with ICAO SARPs;

7) To the extent possible, States should work co-operatively on a multinational basis to implement GNSS augmentation systems in order to facilitate seamless and inter-operable systems;

8) States consider segregating traffic according to navigation capability and granting preferred routes to aircraft with better navigation performance with the exception of State aircraft;

9) States undertake a co-ordinated R & D programme on GNSS implementation and operation;

10) ICAO and States should undertake education and training to provide necessary knowledge in GNSS theory and operational application, and

11) States establish multidisciplinary GNSS implementation teams, using section 6.10.2 of ICAO Circular 267, Guidelines for the Introduction and Operational Approval of the GNSS , as a guide.

Note: Identified SBAS systems are EGNOS, MSAS and WAAS. The MSAS is expected to be available for providing augmentation for the Asia/Pacific regions.

IMPLEMENTATION OF THE ISCS/2 AND SADIS IN THE ASIA/PAC REGIONS

International Satellite Communication System (ISCS/2)

State/Territory	WAFS User	Location of VSAT	Access Approved	Equipment Installed	Equipment Operational
American Samoa (United States)		Information received from the US NWS, Honolulu via a dedicated circuit			
Australia	Bureau of Meteorology	Melbourne	X	X	X
China	China Meteorological Administration (CMA) Civil Aviation Administration Civil Aviation Administration Hong Kong Observatory Chinese Aeronautical Meteorology Association	National MET Centre, Beijing Beijing Intl. Airport Shanghai Intl. Airport Hong Kong Intl. Airport Taibei	X X X X X	 X X X	 X X X
Cook I	Meteorological Service				
Fiji	Meteorological Service	Nadi Intl. Airport	X	being installed	
French Polynesia (France)	Meteo France	Information received from France via satellite	X		
Guam (United States)			X		
Indonesia	Meteorological and Geophisical Agency	Soekarno - Hatta International Airport	X	X	X
Japan	Japan Meteorological Agency	Kokusai Denshin Denwa Co.,	X	X	X
Kiribati					
Mongolia	Civil Aviation Authority	Ulaanbaatar	X		
Nauru					
New Caledonia (France)	Meteo France		X	X	X
New Zealand	MET Service of New Zealand, Ltd	Auckland Wellington	X X	back up only X	 X
Niue					

International Satellite Communication System (ISCS/2)

State/Territory	WAFS User	Location of VSAT	Access Approved	Equipment Installed	Equipment Operational
Papua New Guinea	Meteorological Department	Port Moresby Intl. Airport	X		
Philippines	Department of Meteorology	Manila	X		
Republic of Korea	Meteorological Services	Seoul Intl. Airport	X	X	X
Samoa					
Singapore	Singapore MET Service	Singapore/Changi Intl. Airport	X	X	X
Thailand	Meteorological Department	Bangkok Intl. Airport	X		
Tonga					
Tuvalu					
Vanuatu	Meteorological Service	Port Vila	X		
Viet Nam	Meteorological Service	Hanoi City	X	X	X
United States	National Weather Service	Guam Hawaii	X X	 X	 X
Wallis I. (France)	Meteo France	Wallis	X	X	X

Satellite Distribution System (SADIS)					
State/Territory	**WAFS User**	**Location of VSAT**	**Access Approved**	**Equipment Installed**	**Equipment Operational**
Australia	Bureau of Meteorology	Perth	X	X	
Bangladesh	Department of Meteorology	Dhaka	X	X	X
Brunei	Department of Civil Aviation	Brunei Intl. Airport	X	X	X
China	China Meteorological Administration (CMA)	National MET Centre, Beijing	X		
	Civil Aviation Administration	Beijing Intl. Airport	X	X	X
	Civil Aviation Administration	Guangzhou Intl. Airport	X	X	X
	Hong Kong Observatory	Hong Kong Observatory	X	X	X
	Chinese Aeronautical Meteorology Association	Taibei	X		
	Civil Aviation Administration	Macau Intl. Airport	X	X	X
DPR of Korea	General Administration of Civil Aviation	Pyongyang Intl. Airport	X	X	X
India	Meteorological Department	New Delhi	X	X	X
Indonesia	Meteorological and Geophysical Agency	Headquarters	X	X	
Lao PDR	Department of Meteorology	Vientiane, Wattay	X	X	
Malaysia	Department of Meteorology	Kuala Lumpur Intl. Airport	X	X	X
Maldives	Department of Meteorology	Male Intl. Airport	X	X	X
Mongolia	Civil Aviation Authority	Ulaanbaatar Intl. Airport	X	X	X
Nepal	Department of Meteorology	Kathmandu Intl. Airport	X	X	X
Singapore	Meteorological Service	Singapore/Changi Intl. Airport	X	X	X
Sri Lanka	Department of Meteorology	Colombo	X	X	X
Thailand	Thai Meteorological Department	Bangkok Intl. Airport	X	X	X
Vietnam	Civil Aviation Administration	Gialam Airport, Hanoi	X	X	X
	Civil Aviation Administration	Tan-Son-Nhat Intl. Airport, Ho Chi Minh	X	X	

SADIS STRATEGIC ASSESSMENT TABLES
CURRENT AND PROJECTED OPMET DATA VOLUMES 2000-2004

TABLE 1

ICAO REGION: ASIA
MAIN ROUTING(S): AFTN, Two-Way, Direct Line (GTS)

(E.G CAPSIN AND AFTN/GTS/SADIS TWO-WAY)

	CURRENT 2000	Projected 2001	Projected 2002	Projected 2003	Projected 2004
ALPHNUMERIC OPMET DATA					
Number of **FC bulletins** issued per day	33	35	40	40	40
Average number of stations per FC bulletin	6	6	6	6	6
Number of **FT bulletins** issued per day**	205	275	300	300	300
Average number of stations per FT bulletin	6	6	6	6	6
Number of **SA bulletins** issued per day	726	900	950	1000	1050
Average number of stations per SA bulletin	6	6	6	6	6
Number of **SP bulletins** issued per day	0	10	25	50	50
Number of **SIGMET bulletins** issued per day	24	75	100	125	125
(WS<WV and WC) for relevant FIRS					
OTHER OPMET DATA					
Number of other bulletins issued per day					
(please specify header(s))					
Average number of stations per bulletin					
TOTALS					
Total number of OPMET bulletins per day	**995**	**1295**	**1415**	**1515**	**1565**
Average size of OPMET bulletin (bytes)	**0.35**	**0.35**	**0.35**	**0.35**	**0.35**
TOTAL ESTIMATED OPMET DATA VOLUME PER DAY (BYTES)	**348K**	**453K**	**495K**	**530K**	**548K**

CURRENT AND PROJECTED T4 FACSIMILE CHART VOLUMES 2000-2004

TABLE 2

ICAO REGION: ASIA
MAIN ROUTING(S): GTS

(E.G CAPSIN AND AFTN/GTS/SADIS TWO-WAY)

T4 FACSIMILE CHART INVENTORY	CURRENT 2000	Projected 2001	Projected 2002	Projected 2003	Projected 2004
Head number/Chart name					
Time of issue of chart (UTC)	No requirement	No Requirement	No Requirement	No Requirement	No Requirement
Average size of chart (bytes)					
Chart type (e.g. wind/temp/SIGWX)					
Chart level (FL range or medium/high level)					
Validity time of chart VT (UTC)					
High number/Chart name					
Time of issue of chart (UTC)					
Average size of chart (bytes)					
Chart ape (e.g. wind/temp/SIGWX)					
Chart level (FL range or medium/high level)					
Validity time of chart VT (UTC)					
TOTALS					
Total number of T4 charts issued per day					
Average size of each chart (bytes)					
TOTAL ESTIMATED T4 CHART DATA VOLUME PER DAY (BYTES)					

(Levels : medium FL 100-240, high FL250-630)
(*1 octet = 8 byte = 1 character)

CURRENT AND PROJECTED BUFR DATA VOLUMES 2000-2004

ICAO REGION: ASIA **TABLE 3**
MAIN ROUTING(S): Two-Way, GTS

(E.G CAPSIN AND AFTN/GTS/SADIS TWO-WAY)

BUFR SIGWX MESSAGES	CURRENT 2000	Projected 2001	Projected 2002	Projected 2003	Projected 2004
WMO Header			One site	+2 other sites	+2 other site
Time(s) of issue of data (UTC)	No Requirement	No Requirement	No Requirement	0700, 1300, 1900, 0100	0700, 1300, 1900, 0100
Average size of message (bytes)			15K	15K	15K
Data level (e.g. FL range or low/medium/high level)			SWL/SWM*	SWL/SWM*	SWL/SWM*
Validity time(s) of data VT (UTC)			1200, 1800, 000, 0600	1200, 1800, 0000, 0600	1200, 1800, 0000, 0600
WMO Header					
Time(s) of issue of data (UTC)			0700, 1300, 1900, 0100	0700, 1300, 1900, 0100	0700, 1300, 1900, 0100
Average size of message (bytes)			15K	15K	15K
Data level (e.g. FL range or low/medium/high level)			SWL/SWM*	SWL/SWM*	SWL/SWM*
Validity time(s) of data VT (UTC)			1200, 1800, 000, 0600	1200, 1800, 0000, 0600	1200, 1800, 0000, 0600
WMO Header					
Time(s) of issue of data (UTC)			0700, 1300, 1900, 0100	0700, 1300, 1900, 0100	0700, 1300, 1900, 0100
Average size of message (bytes)			15K	15K	15K
Data level (e.g. FL range or low/medium/high level)			SWL/SWM*	SWL/SWM*	SWL/SWM*
Validity time(s) of data VT (UTC)			1200, 1800, 000, 0600	1200, 1800, 0000, 0600	
TOTALS					
Total number of BUFR messages per day			**12**	**36**	**60**
Average size of messages (bytes*)			**15K**	**15K**	**15K**
TOTAL ESTIMATED VOLUME OF BUFR MESSAGES PER DAY (BYTES)			**180K**	**540K**	**900K**

(* 1 octet = 8 byte = 1 character) (low level<100, medium level : FL100-240, high level. FL 250-630)

CURRENT AND PROJECTED AIS DATA VOLUMES 2000-2004
(Subject to statement of an operational requirement)

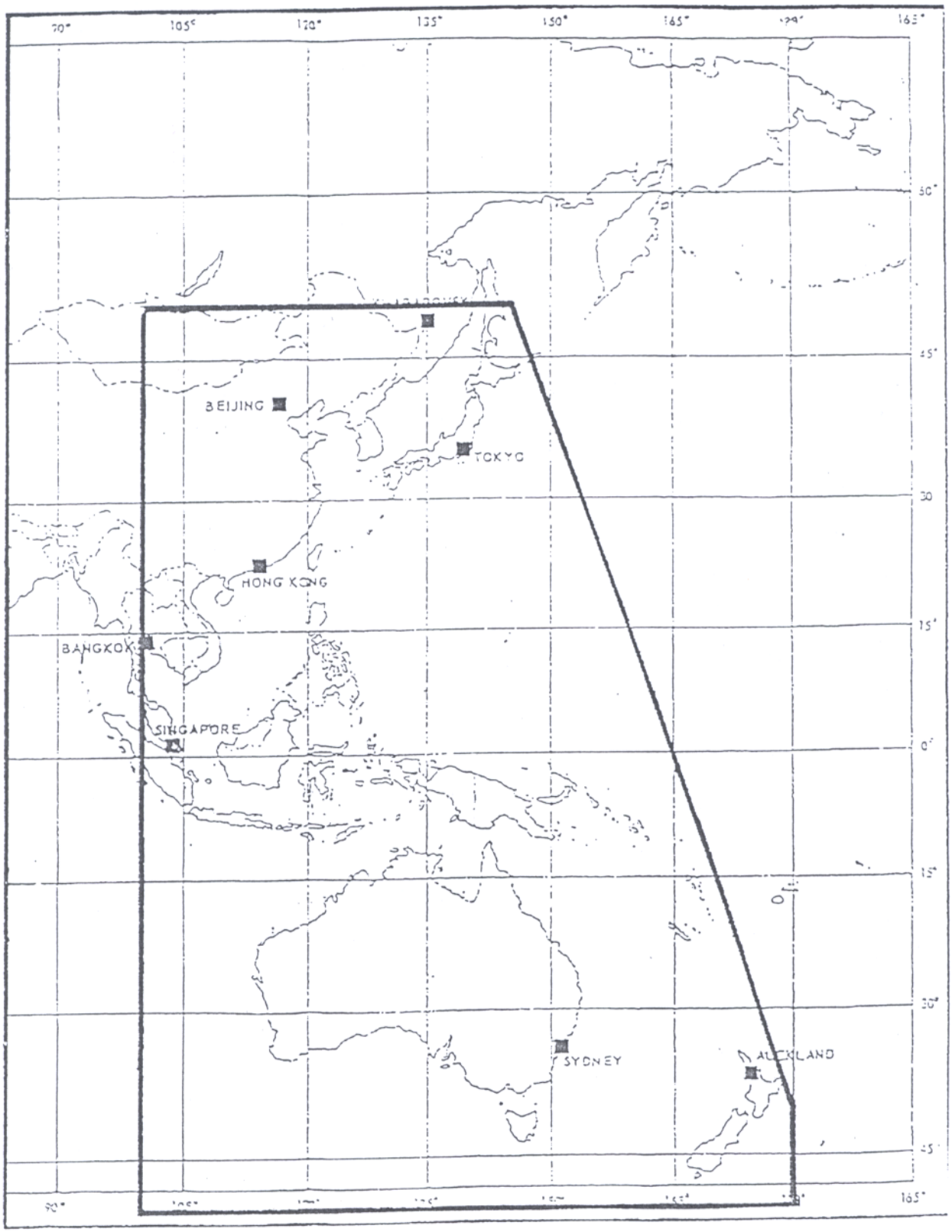
ICAO REGION: ASIA **TABLE 4**
MAIN ROUTING(S): Two-Way, AFTN

(E.G CAPSIN AND AFTN/GTS/SADIS TWO-WAY)

AIS (Subject to statement of an operational requirement)	**CURRENT 2000**	**Projected 2001**	**Projected 2002**	**Projected 2003**	**Projected 2004**
ALPHANUMERIC AIS DATA (e.g. NOTAMs)		**From Two-Way site**			
Bulletin type :	No requirement	No requirement	No requirement	No requirement	No requirement
Number of bulletins issued per day					
Average size of each bulletin (byte*)					
Bulletin type :					
Number of bulletins issued per day					
Average size of each bulletin (byte*)					
CHART AIS DATA (e.g. AIP CHARTS)					
Header number/Chart type (e.g. AIP)					
Time(S) of issue of chart (UTC)					
Average size of chart (bytes*)					
Validity time of chart VT (UTC)					
Header number/Chart type (e.g. AIP)					
Time(S) of issue of chart (UTC)					
Average size of chart (bytes*)					
Validity time of chart VT (UTC)					
TOTALS					
Total number of AIS bulletins per day					
Average size of AIS bulletin (bytes)					
Total number of AIS charts issued per day					
Average size of AIS chart (bytes)					
TOTAL ESTIMATED VOLUME OF AIS DATA PER DAY (bytes)					

(*1 octet = 8 byte = 1 character)

Proposed Coverage of Additional SWM Chart(s) for ASIA/PAC



Draft
ASIA/PAC WAFS Transition Plan and Procedures

3rd Edition - July 2000

ASIA/PAC WAFS Transition Plan and Procedures

3rd Edition - July 2000

Introduction

1. The ICAO Asia/Pacific WAFS Transition Plan and Procedures has been revised to take account of progress already made and in recognition of the impact of the final phase of WAFS.

The Final Phase of WAFS

2. This plan is based on the understanding that the Final Phase of WAFS, as it will apply to the Asia/Pacific Region, involves:

a. Production and dissemination by the WAFCs of global forecast winds, temperatures and humidity in GRIB format. The wind and temperature forecasts are now operational. **Note**: Humidity and forecast information for FL140 is expected to be introduced in November 2001 in response to user requirements, especially for ETOPS operations.

b The transfer of responsibility for the production for SWH from RAFCs to the two WAFCs, and hence the closing down of the RAFCs.

c The implementation of a communication system/s for the distribution of WAFS products in the Asia/Pacific Region, to all the States that require the products in support of international air navigation. The final phase envisages this will be achieved via satellite broadcast (SADIS and ISCS/2). Some States may need to use an alternative distribution system.

d The production and distribution (via satellite broadcast) by the WAFCs, of Global, quality controlled SWH (FL 250 - 630) in BUFR format, and Global SWM in BUFR format (in raw form, i.e. not quality controlled)

e The capability of States to convert BUFR and GRIB messages to graphical products on an operational basis.

SIGWX Charts

3. The transfer of responsibilities for the production of high level SIGWX forecasts from the RAFCs to the WAFCs is the decision of the ICAO Regional Planning groups. As the quality and accuracy of the SIGWX forecasts are evaluated as acceptable for flight planning purposes, coordination is taking place for the transition of the Asia/Pacific RAFC responsibilities for SIGWX charts to the two WAFCs.

4. The sequence of events to transfer SWH responsibility from the RAFCs Melbourne, Tokyo and Wellington to the WAFC Washington and London as appropriate, and high/medium level SIGWX charts from

the RAFC New Delhi to the WAFC London is shown below. The table below shows the status of the introduction of SIGWX charts.

Chart area & responsible WAFC	Status
G London (SWH)	Operational
K London (SWH)	Operational
D London (SWH)	Operational
Asia South medium & high	Operational
J Washington (SWH)	Operational
E London (SWH)	Operational
F Washington (SWH)	Operational
I Washington (SWH)	Operational

5. There will be an ongoing requirement for NMSs to monitor the quality of WAFC produced SIGWX charts, at least until the Final Phase of WAFS, that is beyond the date of transfer of responsibility for SIGWX.

6. Action required to be taken by States to adhere to the provision of Annex 3 to ensure the relevant advisories for tropical cyclones, volcanic ash, the release of radio active material and SIGMETS are made available to the WAFCs in a timely manner.

7. The table below shows the dates when SIGWX charts were considered operational by the Region:

RAFC	Chart area	Date when SIGWX chart considered operational
New Delhi	D and Asia South	July 1999
Tokyo	I, E and G	February 2000
Wellington	J and F	April 2000
Melbourne	E, F and K	July 2000

8. The SIGWX charts produced by WAFC Washington are also available on the US NWS Aviation Weather Center Internet site at:

http://www.awc-kc.noaa.gov/awc/hilvl.html

9. States are encouraged to send comments to the WAFCs about the quality and accuracy of SIGWX on a frequent and regular basis during the transition period to the Final Phase. Contact details for comments are:

i. NWS/Aviation Weather Centre
Attention Mr Ronald Olson
7220 NW 101st Terrace
Kansas City, Missouri
USA 64153-2371

ii E-mail addressed to: ronald.olson@noaa.gov

iii Fax number: 1 816 880 0650

i. The UK Met. Office
Attention : Mr. Neil Halsey
Aviation Branch
Sutton House
London Road Bracknell
Berkshire RG12 2SY, United Kingdom

ii E-mail addressed to: nhalsey@meto.gov.uk

iii Fax number: +44 (1344) 854 156

10 An evaluation form to help focus the assessment comments is provided at Attachment 2.

11 SIGWX charts produced by the WAFCs for the respective areas of responsibility of the RAFCs Melbourne, New Delhi, Tokyo and Wellington have been evaluated as being of satisfactory quality and accuracy. Coordination, has been initiated for the transfer of responsibility from the RAFCs to the respective WAFCs.

Distribution of WAFS Products

12. Initially most States in the Asia/Pacific Region will receive wind, temperature (and humidity in November 2001) forecasts in GRIB, and SIGWX in T4 facsimile format from the two WAFCs by VSAT,

either SADIS or ISCS/2. A range of WAFS products may be available via the Internet or where possible through bilateral arrangements with neighbouring national meteorological services.

13. In the final phase of WAFS the two WAFCs will distribute by satellite broadcast Global quality controlled, SWH, and Global SWM in raw form. (i.e. not quality controlled) Once suitable decoding software is made available to States in the Asia/Pacific Region, to provide them with the ability to operationally construct graphical SIGWX from the BUFR messages, and graphical products from the GRIB messages, the T4 facsimile format charts will be eliminated from the satellite broadcasts.

The Production of Regional SWM Charts

14. The WAFCs may, where there is a regional requirement, ~~to~~ produce as an interim arrangement (prior to the production of Global SWM in BUFR) SWM charts for limited areas of coverage. The requirement for the production by the WAFCs of a SWM chart within the Asia/Pacific Region will be investigated in coordination with States and IATA.

The Production of National SWM Charts

15. The production and exchange of SIGWX in BUFR (i.e. when the final phase of WAFS is achieved) will add to the benefits derived from the WAFS by the States within the Asia/Pacific Region.

Indicative Timetable for Achieving the Final Phase of WAFS

16. The table given in Attachment 1 provides an indicative timetable for the implementation of the Final Phase of WAFS within the Asia /Pacific Region.

Volcanic Ash Advisory Centres (VAACs)

17. The VAACs will have an ongoing role of monitoring WAFS SIGWX charts that cover their areas of responsibility, and advising the appropriate WAFC to ensure the accurate inclusion of the volcanic ash symbol.

Tropical Cyclone Advisory Centres (TCAC)

18. The TCACs will have an ongoing role of monitoring WAFS SIGWX charts that cover their areas of responsibility, and advising the appropriate WAFC to ensure the accurate inclusion of the tropical cyclone symbol.

ASIA/PAC WAFS Transition Plan and Procedures

Attachment 1

Indicative Timetable for achieving the Final Phase of WAFS

Item	Task/Stage of Implementation of WAFS	Anticipated Date
1	Transfer of responsibility from RAFCs to the WAFCs for the production of SWH, RAFCs Melbourne, Wellington and New Delhi RAFC Tokyo for the production SWM, RAFC New Delhi	September 2000 March 2001 September 2000
2	The closing down of the RAFCs Melbourne, New Delhi, Tokyo and Wellington	March 2001
3	The establishment of back-up distribution arrangements for WAFS products.	to be determined
4	Consideration of the requirements for SWM.	July 2001
5	The provision to States in the region of suitable BUFR decoding software, and the States having the ability to operate the decoding software to convert BUFR SIGWX messages into graphical format.	Late 2001
6	The satellite distribution by the two WAFCs of global SWH and SWM in BUFR format.	early 2002
7	Removal of T4 Facsimile products from the satellite broadcast	2003/4
8	Implementation of the Final Phase of WAFS	2004

ASIA/PAC WAFS Transition Plan and Procedures

Attachment 2

Evaluation of WAFC SWH Products

by _____

Chart from **WAFC London / Washington** Valid .....UTC on...../...../200.....

No	Elements	Comments (mark appropriate box with a V)
1	Jet Streams	1.1 Position - Fully acceptable 9 Mostly OK 9 Not acceptable 9 1.2 Strength - Fully acceptable 9 Mostly OK 9 Not acceptable 9 Comments:
2	Turbulence Areas	2.1 Position - Fully acceptable 9 Mostly OK 9 Not acceptable 9 2.2 Strength - Fully acceptable 9 Mostly OK 9 Not acceptable 9 2.3 Areas - Fully acceptable 9 Mostly OK 9 Not acceptable 9 Comments:
3	Embedded Cb	4.1 Position - Fully acceptable 9 Mostly OK 9 Not acceptable 9 4.2 Height - Fully acceptable 9 Mostly OK 9 Not acceptable 9 4.3 Areas - Fully acceptable 9 Mostly OK 9 Not acceptable 9
4	Surface fronts	Fully acceptable 9 Mostly OK 9 Not acceptable 9
5	Tropopause Heights	Fully acceptable 9 Mostly OK 9 Not acceptable 9
6	Tropical Cyclones	Fully acceptable 9 Mostly OK 9 Not acceptable 9
7	Navigation Information	Sufficient points 9 Mostly OK 9 Not sufficient 9
8	Overall Acceptability	Fully acceptable 9 Mostly OK 9 Not acceptable 9 Comments:

Evaluation by: _____ Date: ...../...../.....

ASIA/PAC ANP (FASID)

TABLE MET 5 - REQUIREMENTS FOR WAFS PRODUCTS

EXPLANATION OF THE TABLE

PRODUCT REQUIRED

W/T Chart	=	Wind and temperature chart
~~SWL~~	=	~~Low level significant weather chart (<FL 100) should be provided outside the WAFS~~
SWM	=	Medium level significant weather chart (FL 100 - 240)
SWH	=	High level significant weather chart (FL 250 - ~~450~~ 630)

CHART COVERAGE REQUIRED

D, E, F, G, H, I, J, K=Maximum area of coverage required (see Charts MET 2, 3 and 4 attached to Table MET 6)

TABLE MET 5 - REQUIREMENTS FOR WAFS PRODUCTS

PRODUCT REQUIRED	AREAS REQUIRED
W/T CHART > FL 390	D, E, F, G, I, J
A @ A @ FL 390	D, E, F, G, I, J
A @ A @ FL 340	D, E, F, G, I, J
A @ A @ FL 300	D, E, F, G, I, J
A @ A @ FL 240	D, E, F, G, I, J
A @ A @ FL 180	D, E, F, G, I, J
A @ A @ FL 100	D, E, F, G, I, J
A @ A @ FL 50	D, E, F, G, I, J
~~SWL CHART~~	
SWM (FL 100 - ~~240~~ 450)	D
SWH CHART (~~above~~ FL 250 - 630)	D, E, F, G, I, J, K
GRIB data	GLOBAL
~~WINTEM and~~ Amendment to SIGWX forecasts in abbreviated plain language	D, E, F, G, I, J, K

~~*Note : - SWL charts should be provided outside the WAFS.*~~

ASIA/PAC ANP (FASID)

TABLE MET 6 - RESPONSIBILITIES OF THE WORLD AREA FORECAST CENTRES

EXPLANATION OF THE TABLE

Column

1 Name of the world area forecast centre (WAFC).

2 Area of responsibility for the preparation of significant weather (SIGWX) forecasts by the WAFC in Column 1.

3 Area of coverage of the SIGWX charts prepared or relayed by the WAFC in Column 1.

4 Area of coverage of the upper-wind and temperature charts prepared by the WAFC in Column 1.

5 Area of coverage of the GRIB data prepared by the WAFC in Column 1.

TABLE MET 6 B RESPONSIBILITIES OF THE WORLD AREA FORECAST CENTRES

WAFC	SIGWX		Upper wind and temperature	
	Area of responsibility	**Areas of coverage of SIGWX**	**Areas of charts coverage**	**GRIB data**
London	global[1]	D[2], ASIA SOUTH MEDIUM[32], E[4],G[5], K	D, E, G	global
Washington	global[1]	F[6], I[7], J[8]	F, I, ~~J~~	global

Note : All SIGWX charts are for FL250 – 630 ~~and above~~, except for ASIA SOUTH

[1] For back-up purposes

[2] ~~Currently also produced by RAFC New Delhi~~

[32] Special medium level chart (FL100 - ~~240~~ 450)

[4] ~~Currently produced by RAFCs Tokyo and Melbourne and relayed to London for uplink on SADIS~~

[5] ~~Currently produced by RAFC Tokyo and relayed to London for uplink on SADIS~~

[6] ~~Currently produced by RAFCs Melbourne and Wellington and relayed to Washington for uplink on ISCS~~

[7] ~~Currently produced by RAFC Tokyo and relayed to Washington for uplink on ISCS~~

[8] ~~Currently produced by RAFC Wellington and relayed to Washington for uplink on ISCS~~

Future Work Programme for the ASIA/PAC WAFS Transition Task Force

The issue to be addressed by the ASIA/PAC WAFS Transition Task Force include :

- Development of guidelines for the use of BUFR and GRIB codes for the production of WAFS products.
- Planning and coordinating the transfer of SIGWX and WIND/TEMP charts from the current T4 facsimile format to BUFR and GRIB format.
- Development of a regional training programme for the operational use of BUFR and GRIB.
- Participate in the development and implementation of an adequate WAFS back-up system for dissemination of WAFS products in the Asia/Pacific Regions.

COMMUNICATIONS, NAVIGATION, SURVEILLANCE/METEOROLOGY (CNS/MET) SUB-GROUP OF APANPIRG

TERMS OF REFERENCE

1. Ensure the continuing and coherent development of the *ASIA/PAC Regional Air Navigation Plan* and the *ASIA/PAC Regional Plan for the New CNS/ATM Systems* in the CNS/MET fields.

2. Review and identify shortcomings and deficiencies that impede the implementation or provision of efficient CNS/MET services in the ASIA/PAC Region.

3. Monitor CNS/ATM systems research and development, trials and demonstrations in the fields of CNS/MET and facilitate the transfer of this information and expertise between States.

4. Make specific recommendations aimed at improving CNS/MET 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 CNS/MET and recommend actions to address those issues.

SUBJECT/TASKS LIST IN THE COM/MET/NAV/SUR 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 medium priority on which work should be under taken as soon as possible but not to the detriment of Priority "A tasks; and
C = Tasks of medium priority on which work should be undertaken as time and resources permit but not to the the detriment of priority "A" and "B" tasks.
TOR = Terms of Reference of the Sub-Group

No	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
1	RAN/3 C.8/6	Subject: Shortcomings in volcanic ash colour codes Task: Aviation volcanic ash color code		Study proposal by IFALPA to modify the aviation volcanic ash code.	COM/MET IFALPA	Completed
2	RAN/3 C.14/24	Subject: Relevance of the content of the table of navigation and surveillance services Task: a) To provide information for the update of the ANP taking into account required additions and deletions. b) Provide the above information in an informal document that can also be used as a planning instrument for action o other tasks.		a) Undertake a comprehensive review of the table of radionavigation aids at appropriate intervals in consultation with States and international organisations b) Develop a document to indicate the current ANP requirements, the implementation status of those requirements and future planning requirements Task completed: Review completed On-going review mechanism established	NAV/SUR	Completed
3	RAN/3 R.9/3b)	Subject: Procedures for exchange of METARS between regions Task: Exchange of METARS to support operations between ASIA/PAC and other regions.		Establish procedures for exchange of METARS between ASIA/PAC and other regions with a view of developing appropriate proposals to amend the ANP.	COM/MET	Completed
4	RAN/3 R.9/4	Subject: Designation of International OPMET data banks Task: Designation of international OPMET data bank to serve the Asia and Pacific Regions.		Recommend an international OPMET data bank or banks to be designated to serve the ASIA/PAC region.	COM/MET	Completed

No	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
5	RAN/3 C.10/12	Subject: Standard Protocols Task: Harmonization of ground-ground data links.		Consider harmonization of ground-ground data link protocols and procedures that will be inter-operable with the ATN.	COM/MET AFTN Mgmt. TF	Completed
6	RAN/3 R.10/18	Subject: WAFS satellite coverage in Asia Region Task: Areas to be covered by World Area Forecast System (WAFS) satellite broadcast.		Co-ordination with WAFS satellite broadcast provider States to ensure access for States in western part of Asia/Pac Region completed.	ICAO WAFS provider State	Completed
7	RAN/3 C.10/20	Subject: Alpha numeric data on WAFS satellite broadcast Task: Inclusion of alphanumeric data on ASIA/PAC World Area Forecast System (WAFS) satellite broadcast.		Consider inclusion of alphanumeric format OPMET and AIS messages on WAFS satellite broadcast.	COM/MET WAFS provider States	Completed
8	RAN/3 C.11/9	Expansion of Communication Tables Legends.		Develop terminology and legends to represent elements used in ATN.	COM/MET	Completed
9	APANPIR G C.2/27	Subject: Frequency congestion on SEA-1 network Task: Aeromobile Communications Improvements - resolution of deficiencies		Identify aeromobile communications deficiencies in the region and develop appropriate solutions	ICAO States	Completed
10	APANPIRG C. 3/15	Subject: Regional radar data exchange Task: Standardize radar data formats		1) Gather information on formats used in the Region 2) Encourage the use of standardized and automated exchange of radar cross FIR boundaries 3) Consult with Eurocontrol on the use of ASTRIX 4) Consider ATN/ADS compatability issues	NAV/SUR ICAO US	Completed
11	RAN 3 C. 12/1	Minimum value of field strength for NDB's		Action on this subject completed.	NAV/SUR C.2/2	Completed
12	RAN/3 C. 12/6	Subject: Provision of cost effective and operationally acceptable approach and landing guidance Task: 1) ILS/MLS transition planning		Develop an ILS/MLS transition plan taking into account; 1) cost benefit studies conducted by states in the Region 2) studies and trials on MLS development and other relevant systems 3) progress achieved on technical and operation issues on MLS 4) progress in ILS/MLS transition planning in other regions 5) current plans of individual States in the Region on ILS/MLS an	NAV/SUR	Completed

No	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
		2) Action on the outcome of the Spec. om/Ops		6) outcome of the COM/OPS Div 95 Meeting. Task completed: ILS/MLS transition issues resolved by outcome of Spec. Com/Ops Div95 Meeting. Regional strategy review completed.		

No.	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
13	APANPIRG D.7/28	Subject: Non-implementation of carriage of ACAS in ASIA/PAC region Task: To examine the application of ACAS in the ASIA/PAC region and to develop a time-table for implementation		Review the benefits to be gained through carriage of ACAS in the region and develop a programme of implementation of carriage of ACAS	COM/MET/NAV/SUR	Completed
14	RAN/3 C.14/4 RAN/3 C.5/2 (TOR 1)	Development of detailed description for the contents of the ASIA/PAC Facilities and Services Implementation Document (FASID) Ensure harmonised Regional Com/Met/Nav/Sur plan development		Develop detailed format and content for the COM/MET/NAV/SUR part of the Facilities and Services Implementation Document (FASID) as a matter of priority. Take into account global CNS/ATM plans as adopted by APANPIRG.	COM/MET/NAV/SUR AFS MGT TF NAV/SUR TF	Completed
15	RAN/3 C.8/17 (TOR 3)	Subject: Lack of WAFS data for long-haul operations Task: WAFS support to long-haul operations		1) Study the development of interim arrangements to provide WAFS support to long haul operations. 2) India to rebroadcast WAFS charts received from Tokyo RAFC. 3) WAFC Washington provide wind/temp charts for 36 hours range.	COM/MET USA	Completed Completed Completed
16	APANPIRG D. 9/31	Problem : Revision of GNSS RAS Task : Development of an alternative strategy for the provision of GNSS RAS	A	Review the existing strategy and an alternative strategy be developed with a view to focus on ensuring appropriate service provision from the space-based system and alternative technology available	COM/MET/NAV/ SUR SG	Completed
17	RAN/3 C.14/19 (TOR 3)	Subject: Lack of AIDC procedures Task: Development of on-line data interchange procedures and table for use in the Region	B	1) Develop on-line data-interchange procedures to support CNS/ATM applications. (AFTN AIDC) 2) Develop a logical connectivity table for the exchange of flight data information using the ATN. (ATN AIDC Table)	ICD Task Force COM/MET/NAV/SUR (ATN Trans. T/F)	Completed Completed

No.	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
18	APANPIRG D. 4/46 RAN/3 C.12/3 APANPIRG 5/33 (TOR 3)	Subject: Provision of adequate COM/NAV/SUR services Task: Monitor the development and implement new com/nav/sur services eg ATN,GNSS, ADS with minimal transitional impact	A	1) Encourage States to conduct R&D, Trials & demonstrations of new com/nav/sur services eg. ATN, GNSS, ADS 2) Monitor global developments that may have beneficial impact on regional planning activities eg. ATN, WADGNSS, LADGNSS 3) Consolidate information on new capabilities in the CNS/ATM system, eg. FANS 1 avionics package, oceanic display systems etc. for the Sub-Groups review and action 4) Serve as a focal point for review of ongoing work of Regional formal and informal working groups that is relevant to Com/Nav/Sur eg RNP compatibility 5) Provide for co-ordinated training/seminars to keep all States informed on developments of trials and demonstrations 6) Establish a GNSS Task Force to develop a Regional Strategy for GNSS augmentation 7) Develop transition planning consistent with Regional requirements	COM/MET/NAV/SUR	Completed Completed Completed
19	RAN/3 C.9/7 (TOR 3)	Subject: Lack of adequate procedures for Exchange of OPMET data between regions Task: Exchange of OPMET data between the ASIA/PAC and other Regions.	A	1) Develop procedures and delivery scheme for exchange of OPMET data between ASIA and EUR regions Via Singapore ODREP. 2) Develop a draft proposal for amendment of the ANP and arrange amendment of the ROBEX handbook to reflect the new arrangements. 3) To develop procedure to make OPMET information available at Washington and London.	COM/MET/NAV/SUR OPMET WG	Completed Completed Completed

20	C.9/12 (TOR 3)	Subject: The need for SIGWX charts to be available in London and Washington for WAFS dissemination Task: Exchange of WAFS SIGWX charts.	A	1) Plan for the exchange of SIGWX charts between all relevant RAFCs and the London and Washington WAFC. 2) Develop transition plan for transfer of responsibilities from the RAFCs to WAFCs. 3) Coordination between RAFCs and the respective WAFCs be effected to meet time table for production of test high level SIGWX forecasts and the dates when the charts are expected to be considered operational	COM/MET/NAV/SUR WAFS Task Force States	Completed Completed Completed
No.	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
21	RAN/3 R.10/19 (TOR 3)	Subject: Technical data not available for WAFS satellite broadcast implementation Task: Dissemination of World Area Forecast System (WAFS) products by satellite broadcast.	A	1) WAFS satellite broadcast provider States to advise ICAO of VSAT receiving equipment details. 2) ICAO to relay information to States in the region. 3) Develop draft proposal to amend the ANP as necessary. 4) States to install WAFS satellite receivers.	UK & US ICAO COM/MET States	Completed Completed Completed Completed
22	COM/MET /NAV/SUR/ SG (TOR 2)	Subject: Protection of radio frequency spectrum to ensure safety and efficiency of aeronautical services. Task: Take steps to protect the aeromobile spectrum from unauthorised interference. Task: Suppport ICAO posistion on various Agenda at WRC including protecting GNSS spectrum for aeronautical use.	A	1) Encourage States to monitor and co-operatively resolve unauthorised intrusion into aeronautical HF bands, 2) Work actively with State Telecommunications Authorities to ensure ICAO position are supported and aviation views are included in WRC deliberations.	ICAO States	Completed Completed

23	APANPIRG D. 10/13	Problem : Revision of Strategy for PA Landing System Task : Development of an up-dated strategy	A	Review the current strategy and develop an up-dated strategy taking into account : 1) standardized GBAS and SBAS 2) feasibility of GBAS to support CAT II and III operations 3) development and deployment of MMR 4) the definition of RNP for approach, landing and departure operations and 5)human, environmental and economic factors.	COM/MET/NAV/ SUR SG	Completed
24	APANPIRG D. 10/14	Problem : Lack of a general strategy for implementation of GNSS Task : Development of a more general strategy for implementation of GNSS.	A	A more general strategy for the implementation of GNSS navigation capability in the ASIA/PAC region taking into account : 1) RNP for all phases of flight 2) standardization of GNSS by ICAO through SARPs, PANS-OPS guidance material 3) human, environmental and economic factors.	COM/MET/NAV/ SUR SG	Completed
No.	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
25	APANPIRG C. 8/21	Problem : Transition to the final phase of WAFS Task : Planning for transfer of responsibilities of the RAFCs to the WAFCs London and Washington.		Develop WAFS Transition Plan and Procedures and planning for Implementation of transfer of the RAFCs responsibilities to the WAFCs London and Washington.	COM/MET/NAV/ SUR SG WAFS Transition TF	Completed

No.	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
26	APANPIRG C. 9/29	Problem : Lack of procedures for OPMET exchange to support the ISCS and SADIS broadcasts. Task : Planning for dissemination of ASIA/PAC OPMET data to the WAFCs London and Washington	A	Develop procedures for dissemination of OPMET data to the WAFCs for uplink on the satellite broadcasts. Planning for implementation of the procedures for OPMET exchange to support the ISCS and SADIS broadcasts.	COM/MET/NAV/ SUR SG OPMET WG	Completed 2001
27	RAN/3 C.10/11 (TOR 3)	Subject: Inadequate Ground-ground data coms. Task: Aeronautical Fixed Telecommunications Network (AFTN) management.	A	1) Develop procedures for the establishment operation and management of databases. 2) Review AFTN loading, develop possible circuit improvements and routing changes. 3) Develop alternate routing coordination procedures to take into account address stripping procedures. 4) Plan changes to the AFTN with due account to transition to ATN.	COM/MET/NAV/SUR ATN Trans. T/F COM/MET/NAV/SUR	Completed On going Completed Completed
28	RAN/3 C.11/8 (TOR 1)	Subject: Planning of ground-ground communications required for implementation of ATN Task: Integration of ground -ground communications necessary for the implementation of the aeronautical telecommunication network.	B	Plan ground to ground communications for implementation of ATN, taking into account the work of the ATNP. 1) Development of ATN Routing architecture 2) Transition Plan	ATN Trans. T/F	2001
29	RAN/3 C.11/10 (TOR 1)	Subject: Ensure effective transition to sat. coms. Task: Planning for the implementation of satellite communications.	B	In planning for the implementation of CNS/ATM take into account: 1) Requirements for an effective transition, 2) Time frame for implementing changes, 3) HF requirements after implementation of satellite communications, 4) Human factors (staffing, retraining).	COM/MET/NAV/SUR COM/MET/NAV/SUR	On-going

No.	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
30	RAN/3 C.11/11 (TOR 1)	Subject: Lack of com facilities to support aircraft access to Met Data-bank(s) Task: Communications facilities to support aircraft access to a MET data bank(s) and automation of meteorological information for aircraft in flight (VOLMET) broadcasts.	B	In planning CNS/ATM implementation consider com facilities to support direct access to OPMET data bank(s) and automation of VOLMET broadcast.	COM/MET/NAV/SUR	2003
31	APANPIRG C.2/23 (TOR 2)	Subject: Lack of implementation of ATS voice circuits Task: Aeronautical Fixed Service (AFS) - resolution of deficiencies	A	Identify AFS deficiencies in the region and develop appropriate solution	COM/MET/NAV/SUR States concerned	On-going On-going
32	RAN/3 C.8/14 (TOR 3)	Subject: Inadequate implementation of procedures for advising aircraft on volcanic ash Task: Regional planning for implementation of international airways volcano watch (IAVW)	A	Plan implementation of IAVW procedures to ensure provision of timely information on volcanic ash to aircraft.	COM/MET/NAV/SUR WG on Volcanic Ash	On going
33	APANPIRG D. 9/21	Problem : SADIS strategic assessment Task: SADIS strategic assessment of data/information to be included in the satellite broadcast.		Review requirements for SADIS broadcasts and maintain the SADIS strategic assessment tables.	COM/MET/NAV/ SUR SG	On-going
34	APANPIRG (TOR 3)	Subject: Lack of procedure for application of MET data in ADS messages Task: Use of MET data from ADS messages	A	1) Review MET information transmitted with ADS messages 2) Develop procedures for utilization of the available MET data by operational units, MET offices and WAFCs	COM/MET/NAV/SUR COM/MET/NAV/SUR	2001 2001

No.	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
35	(TOR 3)	Subject: To facilitate regional implementation of CNS/ATM Tasks: a) coordinate training/workshops to allow States to develop and implement new CNS/ATM procedures b) encourage States to participate in the evaluation and training of new CNS/ATM systems c) progress the adoption of WGS-84 co-ordinate system and introduction of high integrity systems for the management of the co-ordinate data d) co-ordination and resolution of issues commonly faced by States in the	A	1) identify topics for training, develop syllabi and plan training programme 2) encourage States in the evaluation and training of new CNS/ATM systems 3) co-ordinate with States and monitor progress 4) collect information and suggest methods of resolving problems commonly faced by States 5) analyse proposals for placement of monitoring stations in the region	COM/MET/NAV/ SUR SG CNS/ATM IC SG	On-going On-going On-going On-going On-going
36	APANPIRG D. 4/46 RAN/3 C.12/3 APANPIRG 5/3 (TOR 3)	Subject: Provision of adequate CNS/MET services Task: Monitor CNS/ATM systems research and development, trials and demonstrations in the fields of CNS/MET and facilitate the transfer of this information and expertise between St ates.	A	• Encourage States to conduct R&D, trials & demonstrations of new CNS/Met services • Monitor global developments that may have beneficial consequences on regional planning activities • Consolidate information on new capabilities in the CNS/ATM system, for the Sub-Groups review and action • Serve as a focal point for review of ongoing work of Regional formal and informal working groups that is relevant to CNS/MET • Provide for coordinated training/seminars to keep all States informed on developments of trials and demonstrations	COM/MET/NAV/SUR SG	On-going
37		Subject : Transition to the final phase of WAFS Task : Implementation of the transition to the final phase of WAFS	A	1) Development of guidelines for the use of BUFR and GRIB codes for the production of WAFS products. 2) Planning and coordinating the transfer of SIGWX and WIND/TEMP charts from the current T4 facsimile format to BUFR and GRIB format. 3) Development of a regional training programme for the operational use of BUFR and GRIB. 4) Participate in the development and implementation of an adequate WAFS back-up system for dissemination of WAFS products in the Asia/Pacific Regions.	COM/MET/NAV/SUR SG WAFS Transition Task Force	2002 2004 2003 2004

AGENDA ITEM 2.3: ATS CO-ORDINATION GROUPS: ACTIVITIES

2.3 ATS Co-ordination Groups' Activities

2.3.1 The meeting noted the commendable work done by the various Co-ordination Group meetings. It was also noted that these Co-ordination Group meetings continue to address CNS/ATM implementation issues within their areas of responsibility, which is in accordance with APANPIRG Conclusion 8/32. A summary of these meetings is in Appendix A to the Report on Agenda Item 2.3.

2.3.2 The meeting was advised that both the 8th South-East Asia ATS Co-ordination Group (SEACG/8) Meeting and the 12th Bay of Bengal ATS Co-ordination (BBACG/12) Meeting considered that the methodology used to put the Y2K plan in place as well as the work done on a mutual basis in its activation, could also be used in many future planning and implementation initiatives. Both co-ordination groups agreed that the key item which motivated all concerned in the establishment and activation of the Y2K plan, was the Core Team approach which developed the strategy for planning and initiating this event.

2.3.3 The meeting was advised that a Revised ATS Route Structure from Asia to Europe/Middle East South of the Himalayas using the benefits of CNS/ATM enhancements was agreed to by the BBACG/12. This proposal was also discussed at the ATS/AIS/SAR/SG/10 meeting and is detailed in Agenda Item 2.1 of this Report.

2.3.4 Due to the proposed work connected with the Revised ATS Route Structure mentioned above, it was decided to dissolve the Bay of Bengal ATS Route Structure Task Force (BBARS/TF) as this area will be covered by work required in the planning and implementation of the revised route structure.

2.3.5 The meeting noted that follow-up meetings involving China and Viet Nam have been held under the auspices of ICAO in relation to the revised South China Sea airspace. Consultations are continuing in order to reach an agreed solution.

2.3.6 The meeting was briefed regarding the Informal Pacific ATC Co-ordination Group (IPACG), the Informal South Pacific ATS Co-ordination Group (ISPACG) and the Russian/American Co-ordinating Group for Air Traffic Control (RACGAT) work programme. The meeting recalled that each of these groups was responsible for implementing ATM operational enhancements along one or more of the major traffic flows of the Asia Pacific Region in full support of the activities of APANPIRG and ICAO. It was also recalled that the RACGAT forum was actively contributing to the work of the ICAO Informal Trans Asia/Trans Siberia/Cross Polar Routes High Level Steering Group (ITASPS), which is co-ordinating the implementation of ATS routes across Russia and surrounding States.

1. ***The Eighth South-East Asia ATS Co-ordination Group Meeting (SEACG/8)*** held in Manila, Philippines under the auspices of the ICAO Asia and Pacific Office took place on 27-31 March, 2000. 9 States and 3 International Organizations attended with issues of major significance summarized below.

1.1 *Implementation of 10 minute longitudinal separation using Mach Number Technique (MNT)*

1.1.1 There was general agreement for the implementation of 10-minute longitudinal separation using Mach Number Technique (MNT) where a 15-minute separation standard was presently being used. States agreed to review and amend LOAs to support the reduction to a 10 minute standard (or 80 NM) using MNT, if applicable, or less, in accordance with ICAO provisions, wherever possible. ICAO advised that they will amend and circulate a Doc 7030 amendment proposal to include the Ho Chi Minh FIR and further clarify this initiative.

1.2 *New initiatives by States including CNS/ATM implementation*

1.2.2 At the initiative of the Chairman, all States present at the meeting gave an overview of work currently taking place or planned, primarily with regard to CNS/ATM implementation.

1.3 *Actions Agreed*

1.3.1 The meeting noted that six Actions Agreed items were developed by the SEACG/8 meeting, namely:

- Implementation of the Revised South China Sea Route Structure;
- Implementation of a 10 minute, or less, longitudinal separation standard;
- The implementation of CNS/ATM Routes within the airspace of China;
- The examination of the possibility of expanding a State SAR exercise to encompass both a Seminar and exercise, with participation from the wider SEACG area;
- The change from the AUSEP navigation accuracy criteria to RNP within the SEACG area of responsibility;
- Measures to ensure GNSS Frequency Protection

2. ***The Twelfth Bay of Bengal ATS Co-ordination Group (BBACG/12) Meeting*** was held at the ICAO Regional Office, Bangkok, Thailand, under the auspices of ICAO on 5-9 June, 2000. The meeting was attended by 9 States and 4 International Organizations with issues of major significance summarized below.

2.1 *Madras/Colombo FIR boundary*

2.1.1 The meeting noted that a bi-lateral meeting to resolve the issues had been held in Colombo in 1999. It was recognised that there are two different issues in relation to the airspace in question, *i.e.* airspace delegated to Sri Lanka and FIR boundary re-alignment.

2.2 *Search and Rescue Arrangements between States*

2.2.1 The meeting was advised that an International Search and Rescue Exercise (SAREX) combined with a SAR Seminar is proposed to take place early next year, focussing on the Bay of Bengal and involving applicable States of the area. Other States of the Asia Pacific Region will also be invited to attend.

2.3 *VSAT project linking Yangon, Bangkok and Calcutta Bangladesh and India*

2.3.1 The meeting noted that Bangladesh have now implemented a VSAT System at Zia International Airport, Dhaka to support the Dhaka/Bangkok AFTN circuit and the Dhaka/Yangon ATS DSC via Bangkok. Unfortunately the use of VSAT link with Calcutta using Thaicom satellite to upgrade both AFTN and ATS DSC was not feasible at the moment due to telecommunication regulatory restrictions in India. As an immediate term solution, it was agreed to upgrade the HF RTT circuit to LTT using the existing common carrier service (Bangladesh-India microwave link) and implement IDD Hotline for the ATS DSC.

2.4 *Revised ATS route structure Southeast Asia to/from Europe/Middle East south of the Himalayas*

2.4.1 The meeting was advised that a proposal to develop a revised ATS route structure, Asia to/from Europe/Middle East south of the Himalayas was fully supported with a target date for implementation of July, 2002. A Project or Core Team would be established to lead this project, sub-regional meetings would take place and coordination arranged with adjacent ICAO regions. The meeting noted that this item is also covered in Agenda Item 2.1 of this Report.

2.5 *Interim changes to the ATS route structure over the Bay of Bengal*

2.5.1 The meeting was advised that due to significant delays to departing aircraft from Southeast Asian airports for aircraft proceding to Europe and the Middle East, as an interim measure, it was decided to pursue realignment of R325 and B579 so that both routes were laterally separated westbound from UM501. This would allow all three ATS routes to be used and consequently reducing confliction problems.

2.5.2 In addition, India agreed to add ATS route W49 and W33 as routing available off UM501 for international flights proceeding via Delhi or TIGER to/from Europe. It was agreed that these initiatives would be implemented on AIRAC 2 November, 2000. This would offer immediate relief to westbound departures to Europe and Middle East destinations.

2.6 *Review of action items arising from the ATS Co-ordination Meeting held in Kuala Lumpur from 14-16 December 1999*

2.6.1 The meeting was informed that a working group was formed to discuss action items arising from the above meeting in Kuala Lumpur. Agreement was reached on the following important operational items:

a) The use of MNT and No Pre-departure clearance (PDC) procedures on ATS Route R325;

b) aircraft on ATS route R325 shall have priority of cruising levels over those using A349;

c) a level restriction of either FL 260 or FL 390 will be imposed between time 1400 UTC to 2000 UTC daily, on westbound traffic operating on ATS Route G465;

d) MNT entry/exit point on ATS Route R325 will be changed from LINPO to UTHAI;

e) Procedures will be put in place to improve co-ordination between Kuala Lumpur and Bangkok ACCs. Letters of Agreement (LOA) will be updated;

f) LOA between India and Malaysia to be finalized; and,

g) Radar Separation procedures are implementaed on a trial basis between Malaysia and Thailand on two important ATS routes.

2.7 *AFTN Improvements*

2.7.1 The meeting noted with satisfaction that there had been several upgrades to AFTN circuits and switches over the past 12 months. Upgraded lines from Bangkok to Dhaka, Mumbai and Singapore using either VSAT or X.25 protocol are now in place as well as a new AFTN Automatic Message Switching System (AMSS) implemented in Dhaka.

2.8 *ATS Direct Speech Circuits*

2.8.1 The meeting was also advised that several improvements had either been implemented or proposed concerning ATS Direct Speech Circuits within the area under consideration. Amongst these were circuits between Calcutta/Dhaka and Colombo/Trivandrum.

2.9 *CNS/ATM Implementation*

2.9.1 The meeting noted that a review was undertaken on the current performance of CNS/ATM systems, specifically Controller Pilot Datalink Communications (CPDLC) and Automatic Dependent Surveillance (ADS) over the Bay of Bengal. Given the limited amount of available performance data and also considering some airline reports of performance difficulties, it was decided to form a FANS Action Team for the Bay of Bengal (FAT-BOB). Members of this Team included:

a) Bay of Bengal States with CNS/ATM Workstations;
b) Datalink Service Providers (DSPs) ARINC, SITA & INMARSAT;
c) Aircraft manufactures, Boeing & Airbus;
d) ICAO & IATA; and,
e) Representatives of participating airlines.

2.9.2 The meeting was advised that performance data would be intensively collected from 1-14 July 2000 on all routes in the Bangkok (Bay of Bengal side), Calcutta and Yangon FIRs. A review of the data collected was undertaken at the CNS/ATM/IC/SG Meeting held in Singapore on 21-25 August 2000. The results of the review are mentioned in Agenda Item xx.xx to this Report.

2.10 *Actions Agreed*

2.10.1 The meeting noted that the BBACG/12 meeting developed 21 Actions Agreed items. Notable amongst these items were:

a) tripartite meeting between India, Malaysia and Myanmar to discuss Yangon/Madras FIR boundary;

b) States to develop contingency plans based on methodology of the Y2K contingency plan;

c) ICAO investigate the possibility of conducting an International SAREX for Bay of Bengal;

d) Development of a revised ATS route structure, Southeast Asia to/from Europe/Middle East, south of the Himalayas;

e) Realignment of present ATS routes R325/B579 to provide lateral separation from UM501 westbound; and,

f) Upgrading of AFTN and ATS direct speech circuits between Bangladesh and India.

3. ***China/Viet Nam ATS Co-ordination Meetings on the South China Sea***

3.1 The meeting was advised that as part of the on-going discussions on the revised South China Sea airspace concerning China and Viet Nam, *A ICAO/Viet Nam Follow-Up Meeting* was held in the ICAO Asia/Pacific Regional Office on 14-15 June, 2000. As a follow-up to this meeting, a meeting between China and ICAO took place in Beijing on 9-10 August, 2000. A further meeting took place between China and Viet Nam in the ICAO Asia/Pacific Regional Office on 26-27 September, 2000. Progress on this issue is continuing.

4. ***Special South Pacific ATS Co-ordination Meeting***

4.1 The meeting noted that a Special South Pacific ATS Co-ordination meeting between Fiji, New Zealand, Samoa, Tonga under the auspices of ICAO took place at the ICAO Regional Office, Bangkok on 8-9 May 2000, to discuss issues relating to the proposal for amendment to the Aukland/Nadi FIR Boundary.

4.2 A further meeting took place in Wellington, New Zealand on 25-27 July 2000 in an endeavour to reach consensus on the amendment proposal. Unfortunately this was not achieved. As a consequence, and due to the importance of this proposal, all details have been documented and sent to ICAO HQ, to be placed on the work programme of the Air Navigation Council for their deliberations.

5. ***ICAO involvement in East Timor***

5.1 The meeting was advised that in response to a request from the United Nations Transitional Administration in East Timor (UNTAET), a multi-disciplinary mission from ICAO Asia and Pacific Office visited East Timor on 23-27 January 2000. The Mission comprised ICAO Regional Officers in the fields of AGA, ATM, CNS and Technical Co-operation.

5.2 The purpose of the Mission was to access the present situation of civil aviation infrastructure, facilities and services and recommend various actions required for the rehabilitation of civil aviation in East Timor.

5.3 A Report of the Mission was compiled with recommendations and despatched to UNTAET for their advice and action as required.

6. ***The Informal Pacific ATC Co-ordination Group (IPACG)***

6.1 Two meetings of the Informal Pacific Air Traffic Control Coordinating Group have been held since APANPIRG/10, IPACG/14 (24-28 January 2000 in Honolulu) and IPACG/15 (31 July - 4 August 2000) in Tokyo. The IPACG forum allows Japanese and United States air traffic service (ATS) providers and users to informally meet together and explore solutions to near term ATC problems that limit the capacity or efficiency within the Anchorage, Oakland, and Tokyo Oceanic Flight Information Regions (FIRs) comprising the major traffic flow from Asia to North America via the central and north Pacific.

6.2 The following major items are being progressed by IPACG:

- Operational trials on PACOTS tracks 14/15 serving the city pairs of Hong Kong/Taipei and Los Angeles/San Francisco;
- Evaluation of the PACOTS structure post-RVSM implementation;
- 10-minute Longitudinal Separation without Mach Number Technique (MNT);
- Review of NOPAC Altitude Structure;
- Expansion of Russian routes and the effect on NOPAC;
- Reduction of Longitudinal Separation Minima using Satellite Systems;
- Implementation of RNP-10 in the Japan/Hawaii PACOTS;
- Dynamic Airborne Route planning (DARP);
- Weather deviation procedures;
- Expansion of RVSM from FL290 to FL410;
- CPDLC testing between Oakland and Tokyo;
- Development of Contingency Plans;
- North/Central Pacific Operations Manual;
- Proposed CTA between Oakland, Tokyo and Naha;

6.3 IPACG has established a FANS Interoperability Team (FIT) to analyze data link performance for the North and Central Pacific. The essential component of the FIT is the establishment of a central reporting agency (CRA) with the technical expertise to identify the source of the problems, both from an airline manufacturer's viewpoint as well as procedural issues. Both the FAA and JCAB have established CRAs and close co-ordination has been initiated between the two organizations.

6.4 IPACG has placed a priority on work associated with the implementation of CNS/ATM, particularly ADS/CPDLC and AIDC systems.

7. ***The Informal South Pacific ATS Co-ordination Group (ISPACG)***

7.1 The Fourteenth meeting of the Informal South Pacific Air Traffic Services (ATS) Co-ordination Group (ISPACG/14) was held in Brisbane, Australia, during the period 6-10 December 1999. The ISPACG forum allows air traffic service providers of the South Pacific and users to informally meet together and explore solutions to near term ATC problems that limit the capacity or efficiency within the FIRs of the South Pacific which comprise the major traffic flow from Australia/New Zealand to North America via the south Pacific.

7.2 The ISPACG work program has been largely focused on CNS/ATM deliverables for the past few years. The ISPACG charter focuses on all users however, and now that the CNS/ATM programme is well underway, it was suggested that ISPACG needs to consider wider issues of benefit

to all airspace users. The commitment to delivering CNS/ATM benefits remains. An agreement to restructure ISPACG to reflect a desire to be more task focused was reached.

7.3 ISPACG/14 established task forces to address the following tasks:

- Deriving from the Y2K contingency planning activity, development of a South Pacific ATS contingency plan, to support a regional contingency plan;
- Development of automatic dependent surveillance (ADS) guidance material and air traffic control (ATC) procedures for inclusion in the South Pacific Operations Manual;
- Review and redevelopment of the South Pacific Operations Manual and the Communication, Navigation, Surveillance and Air Traffic Management (CNS/ATM) Guidance Material;
- Review of the financial and structural arrangements for the Central Reporting Agency (CRA); and
- Implementation of user preferred routes (UPR).

7.4 ISPACG/14 also reached agreement on the following:

- An amendment to the weather deviation procedures; and
- that future implementation initiatives should be justified on the basis of business case principles.

7.5 ISPACG/14 reviewed the action item list outstanding from ISPACG/13 and agreed that a number of the action items had either been completed, or superseded by a change in emphasis in implementation plans (e.g., Dynamic Air Route Planning (DARP) versus UPR). The remaining actions were absorbed into the work of the newly established task forces.

8. ***The Russian/American Co-ordinating Group For Air Traffic Control (RACGAT)***

8.1 RACGAT is concerned with the major geographic traffic flow between North America and Asia via the Russian Far East (RFE) and the Arctic Ocean (cross-polar routes). Although the intersecting routes between Europe and Asia are considered in RACGAT, the planning of such routes are not within the scope of RACGAT. As well as the Russian Federation and the United States, China, DPR Korea, Japan and Mongolia normally participate in RACGAT meetings. RACGAT has been tasked by the ICAO Informal Trans-Asia/Trans-Siberia/Cross-Polar Routes High Level Steering Group (ITASPS) with the development of the Cross-Polar routes.

8.2 One meeting of RACGAT has taken place since APANPIRG/10 (MiniRACGAT/4, Moscow, 29 - 31 March 2000).

8.3 The following major items are being progressed by RACGAT:

- Development of cross-polar routes between North America and Asia
- Development of routes between North America and Asia via the Russian Far East

- Emergency Airports - International air carriers have access to airport information and instrument procedures for international airports only. Russia is studying the possibility of publishing in the Russian AIP all aerodromes that can be used for emergency landings by international air carriers.

- Common Altitude Structure - Russia uses a 500 M separation criteria above 29,000 feet and the United States adheres to the ICAO separation criteria of 600 M. This creates a problem requiring controller intervention for altitude changes at the common FIR boundary. Russia is currently reviewing this problem.

- Volcano Alerting Services There are approximately 40 active volcanoes on the Russian Kamchatka Peninsula and the Kurile Islands. Any significant eruption will produce volcanic ash clouds, not only in the RFE but also over the densely travelled NOPAC routes. Depending on location, most explosive eruptions could have ash entering the NOPAC tracks from 30 minutes to two hours. The Kamchatka Volcano Eruption Response Team (KVERT) monitors these volcanoes and provides valuable precursor and actual eruption information to the ATS Providers and the Volcano Ash Advisories Centres.

AGENDA ITEM 2.4: OTHER AIR NAVIGATION MATTERS

Agenda Item 2.4 Other Air Navigation Matters

Status of Asia/Pacific Basic ANP and FASID

2.4.1 It may be recalled that the APANPIRG/10 formulated Conclusion 10/27 calling for the draft ASIA/PAC Basic ANP and FASID to be updated and processed in accordance with established procedures.

2.4.2 The meeting noted that a State letter AP-AGA0054 dated 23 May 2000 was issued for the amendment of the air navigation plan to replace the existing ASIA/PAC ANP Doc. 9763 with the new ASIA/PAC Basic ANP and FASID.

2.4.3 The meeting took note that all the responses received, in principle, indicate agreement or no objection to the proposal.

2.4.4 The meeting was advised that the documents will be finalized before the end of October 2000 for submission to the Council for approval.

Report of Special Meeting of Asia/Pacific Area Traffic Forecasting Group (APA TFG)

2.4.5 The meeting noted that in accordance with APANPIRG/10 Conclusion 10/28, the Asia/Pacific Area Traffic Forecasting Group (APA TFG) arranged a special meeting which was held at Bangkok from 22 to 26 May 2000.

2.4.6 It reviewed the summary of traffic forecasts developed by APA TFG for the nine major traffic flows across the Asia and Pacific regions and expressed its appreciation for the work done and for the series of forecasts for the period 1999 to 2010.

2.4.7 The meeting also noted that the final report of the APA TFG will contain traffic forecasts for the top 25 city-pairs in each of the nine major traffic flows. It noted that the forecasts were based on scheduled traffic and that the APA TFG intended to obtain traffic movement information from major area control centres and that future forecasts could be based on actual traffic flow data instead of scheduled traffic information from the OAG.

2.4.8 The meeting further noted that the next meeting of APA TFG is planned to be held in May 2001 to review and update traffic forecasts developed in 1999 for the Trans-Pacific and intra-Asia/Pacific.

AGENDA ITEM 3: CNS/ATM IMPLEMENTATION AND RELATED ACTIVITIES

Agenda Item 3: CNS/ATM Implementation and Related Activities

Japan MTSAT Functions and Current Status

3.1 The meeting was advised of Japan's developments relating to the Multi-functional Transport Satellite (MTSAT), which is capable of providing services throughout the Asia/Pacific Region. MTSAT has two missions, one is meteorological and other is aeronautical. The MTSAT system will not only be capable of handling oceanic ATS communications within the Japanese FIRs, but will also be offered to the civil aviation community in the Asia/Pacific Region as an aviation infrastructure. The MTSAT system will provide DCPC in voice (SAT voice) and data (CPDLC), GPS augmentation information, and ADS capability. The MTSAT system, including both the satellite elements and ground systems, will be maintained in a dual configuration by JCAB. MTSAT Satellite-based Augmentation System (MSAS) will provide three types of GPS augmentation information, namely an integrity function, a ranging function and a differential correction function, similar to the United States WAAS and European EGNOS.

3.2 MSAS has been designed to be interoperable with WAAS and EGNOS at the signal-in-space level and therefore users will not require additional on-board avionics for navigation. In its initial stage, MSAS could provide non-precision approach capabilities, and subsequently, when two MTSATs become operational, it is expected that precision approach capabilities would be available.

3.3 The new MTSAT-1 and MTSAT-2 will be launched in early 2003 and in the summer of 2004 respectively. In order to maintain a dual operation, additional MTSATs will be launched at regular interval to replace existing MTSATs. The MTSAT Aeronautical Mobile Satellite Services (AMSS) functions will become operational within Japanese fiscal year (FY) 2003. The MSAS will commence its initial operation in Japanese FY 2004.

3.4 The meeting noted Japan's offer of the use of the MTSAT to Asia/Pacific States on a non-profit basis, and that it does not intend to seek economic profit from MTSAT services.

Plan for Decommission of Navigation Aids in Japan

3.5 The meeting noted Japan's plans for decommissioning NDBs associated with the implementation of MSAS. Japan has decided to decommission NDBs commencing after 2001 and to be concluded by 2015. This will be achieved in phases according to the life cycle of the NDBs. After 2015 decommission of VOR/DMEs will gradually commence.

ADS/CPDLC at Magadan ACC

3.6 The meeting noted information from the Russian Federation that during the period from 22 April to 31 June 1999 sixteen flights were made on international ATS A218 in the Russian Far East within the framework of the first phase of the experimental operation of an air traffic controller workstation with ADS/CPDLC functions installed at the Magadan ACC.

3.7 During the period under review, the Magadan ADS/CPDLC workstation software worked steadily and no malfunctions were recorded. At the same time there were several failures of the leased Magadan-Anchorage data link circuit. The instability of the circuit operation was caused by technical reasons such as low elevation angle of “Statsionar-16” satellite for the ground earth station in Anchorage which resulted in mitigation of the signal in the troposphere. For this reason a number of flights using CNS/ATM technology originally planned for A218 route were cancelled.

3.8 At present the Magadan-Anchorage data circuit is implemented. A VSAT station is installed in Magadan and a Magadan-Seattle circuit using Intelsat satellite is operational. It is linked

to Annapolis through a telecommunication provider. By the end of the year all trials will be completed and the workstation will be put into regular operation. It will be used to provide CNS/ATM ATS on cross-polar routes, bridging North America and South-East Asia.

Russian Federation Application of Non-precision Approaches using GNSS

3.9 Since 1998 the Russian Federation has carried out experimental non-precision approach (NPA) operations using GNSS. The operations were conducted in Samara at Kurumoch international airport with the participation of Lufthansa and Samara Airlines.

3.10 Over 30 approaches have been made by Lufthansa A-310 and A-320 aircraft with FMS on board, which proved the validity of the developed schemes, approach accuracy for the airport minimum requirements and the developed procedures for controller and crew interaction.

3.11 After the GNSS approaches for Kurumoch are made public in the AIP the Russian Federation is planning to start experimental operation of TU-154M aircraft with an Allied Signal KLN-90B receiver on board as well as implementation of NPAs with vertical guidance (NPV-1 and NPV-2). After trials and certification of ICAO SARPs compliant GBAS are completed experimental CAT-I approaches using GNSS will be started. GNSS-based approaches will be used at alternative and emergency aerodromes along cross-polar routes.

ADS–B Implementation in Russia

3.12 The meeting noted that the Russian Federation considers that ADS-B will be one of the main surveillance methods for the ATM system of Russia. A project to operate ADS-B experimentally by "Tyumenaerocontrol" regional state enterprise for ATC and airspace use has been prepared and is to be implemented in the following two years aimed at establishing surveillance and ATC in the ACC, aerodrome control and local control centres. The purpose of the projects is to assess advantages which ADS-B gives to ATM system, airlines and respectively equipped aircraft.

3.13 As part of the project it is planned to assess the ATC technology and the operational procedures for aircraft crews using ADS-B as an additional means of air traffic control as well as to finalise the equipment certification procedures. An important part of the project is assessing the application of ADS-B for the purpose of supporting helicopters operations in areas with no ATC radar coverage. According to FAAR plans, system installation is to begin in late 2000 – early 2001 followed by operation tests.

ATC Upgrade Project in Afghanistan

3.14 The meeting noted information from IATA relating to an ATC upgrade project, which is currently taking place in Afghanistan. IATA has been assisting Afghanistan with the project, which will establish a platform for provision of air traffic management utilising a satellite based communications network and VSAT technology within the Kabul FIR and additionally provide transition capability to a CNS/ATN environment including the establishment of a regional ATN capability. The project will also provide complete VHF coverage over the Kabul FIR.

Asia/Pacific Regional Plan for the New CNS/ATM Systems

3.15 The meeting recalled that the Asia/Pacific Regional Plan for the New CNS/ATM Systems contains, at Chapter 10, Tables of ATM operational enhancements for each of the major Geographic Traffic Flows. The Tables contain details of the aircraft and ground systems required to effect each ATM operational enhancement. The meeting noted that the CNS/ATM/IC Sub-Group had considered the Tables and was of the opinion that updating and enhancement was required. Accordingly the Sub-Group had decided to form a Task Force to review and update the Tables for each of the major Geographic Traffic Flows. Specifically the Task Force shall:

i) Review and update the existing content of the Tables;

ii) Develop Section 6 (ATM) of the Generic Table to form part of appropriate Traffic Flow Tables;

iii) Develop a Generic Table for Terminal Operations;

iv) Develop one sample Terminal Operations Table based on a suitable location in the Asia/Pacific Region, and;

v) Examine the feasibility of refocussing the Tables from the current statements of position to enable a more proactive planning oriented focus.

3.16 The Task Force will co-ordinate this work with the ATS/AIS/SAR Sub-Group and report to the next meeting of the CNS/ATM/IC Sub-Group in the form of a draft amendment to the Asia/Pacific Regional Plan for the New CNS/ATM Systems. The Task Force will comprise participation from Australia, China, Fiji, Hong Kong, China, India, Japan, Mongolia, Singapore, Thailand, United States, IATA and SITA.

Amendments to the Asia/Pacific Regional Plan for the New CNS/ATM Systems

3.17 The meeting noted that the third meeting of the ATN Panel (ATNP/3) had proposed to delete the provision of Pass-Through service (AFTN/ATN Gateway) from the SARPs. Based on the outcome of ATNP/3, a proposal was developed by the second meeting of ATN Transition Task Force held in March 2000 to update the information contained in Chapter 5 and Chapter 7 of the Asia/Pacific Regional Plan for the New CNS/ATM Systems. The COM/MET/NAV/SUR SG/4 meeting endorsed the proposal made by the Task Force to reflect the changes in the plan based on the result of ATNP/3 and subsequent actions thereon by ANC and Council. The meeting reviewed the amendments proposed to Chapter 5 and Chapter 7 of the regional plan and endorsed the proposed amendment to the regional plan as shown in Appendix A to the Report on Agenda Item 3.

3.18 The meeting also reviewed and updated the status of CNS/ATM system transition tables contained in Chapters 6 to 9 and proposed to amend the plan to incorporate the updated tables shown in Appendix B to the Report on Agenda Item 3. In view of the foregoing the meeting formulated the following draft Conclusion:

Conclusion 11/35 - Amendments to the Asia/Pacific Regional Plan for the New CNS/ATM Systems

That,

a) the amendments proposed to Chapters 5 & 7 and to the CNS/ATM system transition tables of the Asia/Pacific Regional Plan for the New CNS/ATM Systems be adopted and incorporated in the plan; and

b) ICAO issue a new edition of the Asia/Pacific Regional Plan for the New CNS/ATM Systems.

Key Priorities for CNS/ATM Implementation

3.19 The meeting reviewed and updated the Key Priorities for CNS/ATM Implementation in the Asia/Pacific Region. The meeting also recognized that, where possible, items entered, as Key Priorities should have definitive target dates and avoid the use of the term "on-going". In addition target dates should be realistic. Accordingly the meeting developed the following Conclusion:

Conclusion 11/36 – Key Priorities for CNS/ATM Implementation

That, the updated Key Priorities for CNS/ATM Implementation at Appendix C to the Report on Agenda Item 3, be adopted.

Aviation Environment Management

3.20 The meeting was advised that Airservices Australia has developed a nationally networked database to assist in the implementation of an environment management system. The system assesses risks from noise, emissions and ground operations such as fuel storage and was developed in alignment with International Standard ISO 14001.

3.21 The system is structured on the principles of due diligence, that is, risk identification, risk management and documentation of risk identification and risk management. A major feature of the system is that it has the capacity to assess business risk associated with an actual or potential environmental impact. The system is about to be used for the business risk and environmental assessment of the noise and emissions impacts resulting from changes in air route and airspace design.

3.22 The meeting was advised that Australia is placing both safety and the environment before commercial considerations.

3.23 IATA advised the meeting that in its opinion, environmental issues will become a significant agenda item in the future. Through the use of existing aircraft technology, such as FMS arrival and departure procedures, it was possible to mitigate environmental effects to some extent. FMS arrival procedures, for example, allowed a controlled idle descent along a precise flight path with noise and fuel at an absolute minimum.

IFR GPS Approvals

3.24 The meeting was advised of Australia's approach to authorizing the use of GPS for IFR operations. The current approvals have been based on the use of the US FAA Technical Service Order C-129 (TSO C-129) receiver design. With the issue of the next generation TSO for GNSS based operations, additional approvals are being investigated.

3.25 The TSO C129 receiver contains a receiver autonomous integrity algorithm (RAIM) to ensure integrity of the GPS signals as well as a prediction program to determine if sufficient satellites are available to support the RAIM requirements. The RAIM algorithm in the C-129 receiver is limited to fault detection (FD) and does not provide fault detection and exclusion (FDE).

3.26 As a consequence of the limitations of the TSO C129 receiver design, any approvals for the use of GPS for non precision approaches using this receiver require the use of conventional aids for any alternate approach requirement.

3.27 Australia now has some 140 GPS non precision approaches in place with an ongoing design program adding some 30-40 approaches per year. These straight in approaches overcome the safety concerns associated with existing circling designs.

3.28 Using the TSO C129 receiver, Australia has developed a primary means domestic enroute approval to provide GPS navigation in domestic airspace.

3.29 Post implementation reviews of the GPS standards have not revealed any safety issues with the standards nor with the basic GPS service provided by the US. However some human factor and compliance concerns have been noted. These include the use of unapproved GPS receivers, poor installation and the deskilling of pilots due to over reliance on GPS. Also noted has been the need for ongoing education to ensure proper use of GPS.

First Combined Pacific Oceanic Airspace FANS Interoperability Teams Report

3.30 The meeting was presented with data gathered by the FANS Interoperability Teams (FIT) regarding the current usage of controller-to-pilot data link communication (CPDLC) and automatic dependent surveillance (ADS) in the Pacific.

3.31 The South Pacific (SOPAC) FANS Interoperability Team was established as a sub-group of the Informal South Pacific ATS Coordinating Group (ISPACG) to monitor end-to-end performance of data link systems, and to recommend operational enhancements that provide benefits to FANS-1/A-equipped aircraft. The success of the SOPAC FIT during its first three years of operation led to the formation of a separate FIT, which is a sub-group of the Informal Pacific ATC Coordinating Group (IPACG). Boeing continues to act as the Central Reporting Agency (CRA) for the SOPAC FIT and has begun to fill this role for the United States FAA element of the IPACG FIT.

3.32 When the ADS/CPDLC operational trial commenced in 1997 within the Tokyo FIR, the Japan Civil Aviation Bureau (JCAB) established a data link operations review group to monitor data link operations within Japanese airspace and to enhance the operation. The JCAB will upgrade their data link operations review group to a CRA. The JCAB CRA will be responsible for providing the CRA functions for aircraft flying in Japanese airspace and will liaise closely with CRA personnel at Boeing.

3.33 Some operational and technical problems continue to be experienced in the SOPAC Flight Information Regions, but the rate of receipt of problems has fallen. End-to-end system performance is high and relatively stable; monitoring continues.

3.34 Ground system enhancements have enabled operational use of Automatic Dependent Surveillance (ADS). The South Pacific Operations Manual has been amended to reflect the operational use of ADS in a procedural environment.

3.35 Significant operating benefits continue to be slow to evolve. Dynamic airborne rerouting on receipt of updated wind data has been used little in the SOPAC owing to the increases in dispatcher workload. User-preferred routing from entry of oceanic airspace offers increased benefits and trials are under way in the SOPAC. Full implementation of these procedures is scheduled to occur in October 2000. It is hoped that similar procedures will prove to be beneficial in other FANS 1/A operations areas. The SOPAC Central and North Pacific FITs are also working on reduction of

separation minima based on ADS/CPDLC equipage.

3.36 As of 27 July 2000, the status of problems reported to the CRA by FANS-1/A operators in the north, central and south Pacific is as follows:

- 317 Problem Reports have been received by the CRA.
- 43 Problem Reports remain open (2 with analysis in progress, and 5 with analysis complete and waiting for information)
- 249 Problem Reports have been closed (including some that were duplicates).
- 25 Problem Reports have been defined as "Lessons Learned". Some of these were closed (but are not included in the "closed" total above) while others cannot be dealt with economically or practically.
- All Problem Reports are now assigned a category "Procedural", "Technical" or "Other". Of the 309 submitted reports which were not duplicates, 70 have been classified "Procedural", 222 "Technical", and 17 "Other". These categories will assist in clarifying the root cause of the problem and will allow easier analysis of data for trend identification.

3.37 However, some variability in performance continues and the need for close monitoring and reporting of the data continues.

Bay Of Bengal ADS/CPDLC Trial

3.38 The meeting noted the results of information collected from airlines, SITA and Boeing following a recent two-week ADS/CPDLC trial (1-14 July 2000) over the Bay of Bengal. The airspace designated for this data collection exercise was for all routes west of Bangkok in the Bangkok FIR and the Calcutta and Yangon FIRs. The data submitted by airlines to IATA, which did not represent the total data available, showed a log-on success rate of approximately 42%. Information from SITA showed 105 total problems of which ATS Provider problems accounted for 104 and aircraft problems for one. Boeing had advised that an initial analysis of the data submitted by ATS providers and airlines had failed to identify any new problems and that it would take time to work through the issues identified so far.

3.39 In reviewing the data the meeting was advised that in implementation programs such as this there was an absolute need for some form of central reporting agency. It was also necessary to have a system for collecting data, a continuous collection of data and the definition of system performance criteria against which the data could be compared. The States from the Bay of Bengal area had recently formed a FANS Action Team for the Bay of Bengal (FAT-BOB) to facilitate these tasks. Boeing had advised that they had offered to undertake CRA responsibilities for this team subject to approval of their higher management. The FAT-BOB has developed Terms of Reference and an initial Work Programme. The CRA will facilitate the analysis of existing problems and the next stage of this implementation.

Civil/Military Co-ordination

3.40 The meeting noted advice from the United States that due to design limitations of certain aircraft, some State aircraft cannot meet RVSM or CNS/ATM requirements. Military authorities should therefore be encouraged to make those aircraft that are capable, compliant with applicable minimum aircraft system performance specifications (MASPS) as far as practicable. Some States may be equipping or planning to equip State aircraft to meet CNS/ATM requirements,

but due to sheer numbers of aircraft and budget constraints, it may take longer than those experienced by the airlines.

3.41 In order to achieve the optimum joint use of airspace, The United States considered that all users should be given access based on a "flexible use of airspace" concept, rather than on a system based on the strict segregation of airspace. Airspace requirements of State aircraft (e.g., for the training of military operational traffic or humanitarian flights) should be accommodated to the greatest extent possible. Close co-ordination between civil and military airspace users is a fundamental requisite for a flexible use of airspace.

3.42 The United States requested that States take into consideration the capabilities of State aircraft and provide exemptions, as necessary, to permit their safe operation within international airspace.

CNS/ATM Implementation Plan in the Philippines

3.43 The Philippines with assistance from the Japanese Government, recently developed a Master Plan for CNS/ATM systems. High priority projects were identified, and project implementation is expected to be completed in 2006.

3.44 Under the Master Plan the Manila ATM Center will combine the Manila ACC, Mactan Sub-ACC and all Approach Control Units. It will provide airspace management functions, air traffic management functions, search and rescue coordination, weather forecast functions, and system maintenance functions.

3.45 The ATM automation system will be an integrated system consisting of data processing sub-systems, data acquisition sub-systems, consoles, displays, etc. The ATM automation system will include such functions as Air Traffic Management Functions, Safety Measure Function, Weather Information Functions and Data Recording. The communications system will utilise the ATN, D-ATIS, AMHS and VSAT. The navigation system will utilise SBAS and GBAS while the surveillance system will utilise ADS and three new SSR radars.

CNS/ATM Implementation Plan in Brunei Darussalam

3.46 The meeting noted Brunei Darussalam's main initiatives leading towards full implementation of CNS/ATM. These include an Airspace Transition Plan to the CNS/ATM requirements for a busy TMA, an Advanced Air Traffic System, an Airspace Classification System, WGS-84 Implementation, ATN, Co-ordination with Malaysia sharing the common FIR with Brunei Darussalam and Human Resource Development & Human Factors studies.

APEC Transportation Working Group

3.47 The meeting was advised that the APEC Group of Experts on GNSS implementation held its first meeting in Singapore 17 and 18 August 2000 to progress the implementation of GNSS within APEC economies.

3.48 The meeting was informed that the Group noted the GNSS strategies developed by APANPIRG and agreed that its task would complement the work carried out by APANPIRG.

3.49 It was also noted that the Group of Experts agreed that in order to progress the implementation of GNSS work on APEC Economies, the first initiative was to implement GNSS as a supplementing means of navigation for en-route, terminal and non-precision approaches during 2001.

To assist the Economies, the Group endorsed the need to conduct a five-day workshop on GNSS implementation in February 2001.

Progress of CNS/ATM Study & Trials in Hong Kong, China

3.50 The meeting noted information from Hong Kong, China regarding the current progress of the satellite-based CNS/ATM study and trials carried out by Hong Kong, China. Hong Kong will implement the project in three phases. Phase 1 comprises of System Study & Analysis (now-2004), Phase 2 comprises of CNS/ATM Trials & Evaluation (2000-07) and Phase 3 will comprise of CNS/ATM Implementation & Transition (2003-16).

3.51 Studies have been initiated on the latest CNS/ATM developments and systems available for trials and evaluation under different Hong Kong, China operational scenarios. Major CNS/ATM systems manufacturers have been invited to present their CNS/ATM systems including Human Machine Interface (HMI) demonstrations.

3.52 To facilitate the progress of the project, a Hong Kong China CNS/ATM Committee was set up in March 2000. The Committee meets every two months to discuss and coordinate issues relating to the study, trials and subsequent implementation of the CNS/ATM Systems for Hong Kong, China.

3.53 So far, trials have been organised for ADS/CPDLC, Digital-ATIS (D-ATIS) and Digital-VOLMET (D-VOLMET). Favourable comments and responses have been received from the airlines. Subject to further data integrity checks, the D-ATIS and D-VOLMET will be declared for operational use to enhance service to the airlines. In addition, Hong Kong China is now working closely with the equipment suppliers and plan to launch a Pre-Departure Clearance (PDC) trial using datalink in October this year. Next trial systems will include SSR Mode S, ATN, AMHS, etc.

The Implementation of CNS/ATM in Mongolia

3.54 The meeting was advised of the situation pertaining in Mongolia with reference to the implementation of CNS/ATM. Under the National Air Navigation Development Project of Mongolia the first phase of modernization of the ATS system was implemented. A decision was made to adopt the ICAO CNS/ATM implementation plan which included the preparation of a domestic GPS route structure; the equipping of the domestic fleet with GPS; the introduction of GPS non-precision approaches at the regional airports to supplement NDB only guidance; the construction of a new Area Control Centre and Control Tower; the provision of ADS workstations capable of utilising CPDLC; and an extensive network of RCAG and VSAT stations around the country to provide the necessary communications and coordination facilities.

3.55 Most of this work is now complete, ADS workstations are operational with the flight progress of all suitably equipped aircraft monitored; CPDLC has been trialed and is tested on a regular basis; the use of GPS as a primary means of navigation has been approved by the CAA and is in full operation on the domestic network; GPS procedures are being drafted for Ulaanbaatar International airport and the regional airports and will be approved on completion of flight-testing; en-route controllers have received training in ADS procedures; and a simulator has been commissioned which will enable advanced training in the CNS/ATM field to be implemented. In addition to this work Mongolia is taking part in a large regional project to evaluate the use of ADS-B.

3.56 Mongolia advised that what it requires now is further guidance and leadership from ICAO in the implementation of its facilities in a practical, operational, sense. Standards and Recommended Practices are urgently required covering the operational use of ADS and CPDLC.

ADS based separation standards are required, as a matter of urgency, to be incorporated into ICAO provisions.

3.57 The meeting also noted that Mongolia requires assistance, in the regional sense, to assist it in implementing a better, more flexible, regional route structure which implementation of the new technology will make feasible.

CNS/ATM Implementation in Vanuatu

3.58 The meeting was advised that Vanuatu was investigating the implementation of new ground/ground communication systems and ADS. Cost was a significant factor but every effort was being made to implement appropriate CNS/ATM systems.

ATN Developments in Australia

3.59 The meeting was provided with an update from Australia on the current development and research activities that have been carried out in Australia on the ATN. These activities have been managed through a Research and Development program called Investigation of Networked CNS/ATM Applications (INCA). The INCA project is a collaborative agreement between Airservices Australia and Airsys ATM Pty Ltd. The aim of the project is to continue trials and acquire reliable information about the deployment of (CNS/ATM) applications and associated data communication network services in Australia. This is to be achieved through the continued operation and extension of Airservices' ATN Validation Platform and the development of a detailed cost benefit analysis study.

3.60 One of the activities involved investigating the issues associated with the AMHS and the AMHS/AFTN gateway services. A detail report on the results of the AMHS was produced by the project. In summary the major findings from the report showed that the AMHS provides a reliable fault tolerant message delivery system. Tests were conducted in an attempt to lose, corrupt and duplicate messages traveling within the AMHS. The AMHS recovery procedure automatically recovered all messages without messages or data being lost, corrupted or duplicated. Also higher capacity circuits are required to obtain the full benefit from the AMHS functionality. This is due to the additional message overhead, which provides the high reliability of message integrity within the AMHS, that higher capacity circuits are required to convey the same amount of user data as that currently transmitted via the AFTN.

Australian ATM Strategic Planning

3.61 ATM Strategic planning within Australia is being re-focussed to adopt a 'benefits and application' approach to define 'WHAT' is required in terms of ATM services to effect air traffic management in the near, mid, and long-term. All key ATM stakeholders within Australia are collaborating in the development of an Australian ATM Strategic Plan that defines the development path for ATM within the Australia FIRs in terms of ATM services. The determination of what capabilities are needed to delivery the new and/or enhanced ATM services will define the CNS/ATM technologies and associated procedures and practices required.

3.62 The Australian ATM Strategic Plan will determine any input Australia has into the Asia/Pacific Regional Plan for the New CNS/ATM System.

CNS/ATM implementation in Sri Lanka

3.63 The installation of CNS/ATM systems at Colombo ACC, Sri Lanka was commenced in May 2000 and completed in mid July 2000. Site Acceptance Tests in respect of ADS/CPDLC systems and RDP/FDP systems were successfully completed in August 2000. The Sri Lanka ACC now has the capability of providing services using ADS, CPDLC, Flight Plan Air Situation Display and Flight Data Processing.

3.64 Since mid July 2000, several trials have been carried out and Colombo Area Control Centre continues to carryout "trials" with aircraft able to log-on between 1600 – 2100 UTC daily.

3.65 The system is expected to be fully operational by September 2000 and ADS/CPDLC facilities will be available on 24-hour basis from 1st November 2000. Sri Lanka requested all FANS 1/A equipped aircraft to "log-on" with Colombo Area Control Centre (Address: VCCC) when overflying Colombo airspace.

CNS/ATM Implementation Plan in Indonesia

3.66 The meeting was advised that, in Indonesia, the period 1999-2003 was scheduled for development of CNS/ATM systems, while the period 2004-2010 was scheduled for the implementation of CNS/ATM systems. Within the longer term the Indonesian airspace will be reorganised from four to two FIRs and will be controlled by Jakarta and Ujung Pandang (Makassar) ACCs.

3.67 In 2002, ADS/CPDLC will be implemented in phases, especially for international routes within the Jakarta FIR. Ujung Pandang (Makassar) ACC is scheduled to be in operation in 2004.

CNS/ATM Implementation in Malaysia

3.68 Malaysia is focusing on the implementation of ADS/CPDLC in the Bay of Bengal and South China Sea areas where there is no radar coverage. Malaysia has undertaken ADS/CPDLC trials in 1997 but there was no activity from 1998 until the middle of 2000 due to the economic recession, Y2K and air traffic services privatization issues.

3.69 An ADS/CPDLC pre-operational system trial and evaluation will take place from October 2000 – December 2001. Following that ADS/CPDLC system integration will take place from January 2002 – December 2003.

Status of CNS/ATM Implementation in Tahiti

3.70 The meeting was advised that French Polynesia, as an active member of the Informal South pacific ATS Co-ordination Group (ISPACG) and of the ISPACG FANS Interoperability Team (FIT), the SEAC PF (Service d'Etat de l'Aviation Civile en Polynesie Francaise) is continuing CNS/ATM implementation in conjunction with its South Pacific partners.

3.71 Flextracks between Los Angeles and Sydney and Los Angeles and Auckland have been implemented in 1995. This first step led to the installation of VIVO 1, which was the traffic situation display. The second step, VIVO 2, with CPDLC implementation took place in March 1996, in view of the dynamic airborne re-routing programme (DARPS) phase 1 that was implemented in July 1998. ADS was implemented with VIVO 3 installation in March 1999 and RVSM was implemented on February 24th, 2000. Implementation of a limited subset of AIDC messages set is still under discussion with neighbouring FIRs.

CNS/ATM Implementation Planning Matrix

3.72 The meeting noted advice from IATA that it felt it might be beneficial to develop a planning matrix for the Asia/Pacific Region, which showed the state of implementation of various major CNS/ATM elements on an FIR-by-FIR basis. This could include elements such as ADS, CPDLC, GNSS (enroute and approach), etc. Accordingly the meeting developed the following Conclusion:

Conclusion 11/37 - CNS/ATM Implementation Planning Matrix

That, the Secretariat be requested to develop and maintain a matrix listing all Asia/Pacific FIRs and the associated status of implementation of various major CNS/ATM elements.

ADS/CPDLC Implementation in Singapore

3.73 The meeting noted an update from Singapore regarding its ADS/CPDLC implementation, which commenced operations in February 1997. In February 1999 ADS/CPDLC was integrated with the Singapore ATC system and in July 2000 was upgraded to work with B777 aircraft in addition to the current B744 aircraft.

ADS/CPDLC Operations in Japan

3.74 The meeting was provided with information from Japan regarding the current status of ADS/CPDLC operations being conducted at Tokyo ACC. The datalink operation (ADS/CPDLC) within the Tokyo FIR commenced in October 1997 using the ODP-2.5 system. This was upgraded to a new system (ODP-3) which became operational in June 2000. The ODP-3 system includes an electronic strip display and conflict probe functions. CPDLC is currently the primary means of communications within the Tokyo oceanic airspace with HF as a back-up. Some 15 airlines and some 60 datalink capable aircraft per day use ADS/CPDLC. Japan intends to apply 50 NM longitudinal separation for RNP-10 or better certified aircraft at cruise, when the new MTSAT-1 becomes operational.

3.75 The Air Traffic Flow Management Center in Fukuoka will be upgraded to an air traffic management center in 2005. The new ATM Center will expand its function to include management of both domestic and international traffic flows within the Tokyo and Naha FIRs. Management of military training airspace, currently co-ordinated through individual ACCs, will also be provided by the new ATM Center. Oceanic control, presently being provided by Tokyo and Naha oceanic sectors, will be transferred to the new ATM Center.

Use of ADS/CPDLC by Pilots and Controllers

3.76 In discussing the operation of ADS/CPDLC particularly with respect to the training of pilots and controllers, the meeting was advised that China recommended the use of simulation and had previously made use of simulation facilities available at avionics manufacturers and airlines for training purposes.

3.77 IFALPA advised that there was no reluctance from pilots to participate in trials, but that the existence of and conditions for trials needed to be clearly communicated to pilots by way of NOTAM/AIP Supplements. IFALPA also advised that the issue of standardization, from a pilot perspective, across the Airbus and Boeing fleets was important as pilots routinely move from one aircraft type to another and their training therefore needed to be transferable.

Safety Management System in Australia

3.78 Airservice Australia's Safety Management System can be defined as the management actions necessary to secure and demonstrate high standards of safety within the systems that Air Navigation Service (ANS) providers plan, provide and operate. As such, safety management affects all parts of an ANS provider's organization.

3.79 The Airservices Safety Management System has the following key components:

- Policy
- Accountabilities
- System Requirements
- Procedures
- Measurement of Success.

3.80 Successful implementation of the Airservices Safety Management System and the development of a safety culture throughout Airservices required, and has been given, demonstrable support from senior managers. For a safety management system to be effective it must be based on the **culture** of an organization. Only when it is instinctive, will safety seem to be invisible, yet implicit in the things that are done and the decisions that are made.

3.81 Some of Airservices Safety Information Management Systems include an Electronic Submitted Incident Report (ESIR), a HAZLOG and a System Action Improvement Report (SAIR).

Safety Management Training in Australia

3.82 The meeting received advice from Australia that an essential element of a safety management system is the provision of safety management training. Airservices Australia has established a modular training programme so that safety management training delivery can be as flexible as possible. The programme consists of six modules containing a wide range of topics which are designed to be delivered to a number of different levels with the organization from senior management down.

Regulatory Reform in Australia

3.83 On Government direction, the Civil Aviation Safety Authority of Australia (CASA) is undertaking a program of regulatory reform to replace the existing regulations. The object of the program is to modernize the existing regulations, align requirements where possible with accepted international practice and to allow changes in the method of regulating various functions. Significant areas within the plan include a revised classification of operations that will align with the ICAO definitions, the use of self administering organizations such the Glider Federation of Australia to undertake the administration of specific sectors of the industry, and introduction of rules that may allow 'contestability' (or commercial competition) for such functions as the provision of ATS services, navigation aids, instrument approach design and meteorological services.

3.84 These new regulations will amend the manner in which certain services are regulated and at the same time may provide the opportunity for other methods of provision other than by direct Government supply.

Restructuring in Japan

3.85 In Japan, from January next year, the Ministry of Transport and Ministry of Construction will be combined into a single Ministry. The Civil Aviation Bureau will unaffected.

Integrated CNS/ATM

3.86 France provided the meeting with an overview of the benefits of integrated CNS/ATM. Emphasis was placed on the requirement for air traffic service providers to ensure that the CNS solutions they adopt are upgradeable and will eventually yield all the expected benefits of operational datalink. Datalink should be considered as a coherent piece of an overall ATC environment and not as a stand-alone solution. Datalink systems should be safe, user friendly, interoperable, secure, seamless, scalable and high performance.

3.87 ADS integration will provide, amongst other things, position reporting, alerts and warnings and optimum track displays. CPDLC integration will provide, amongst other things, automatic flight plan update, automated co-ordination and increased productivity.

New Zealand Oceanic Control System

3.88 New Zealand provided the meeting with an overview of the Oceanic Control System (OCS) operated by the Airways Corporation of New Zealand Limited, New Zealand's air navigation system provider. OCS was designed by air traffic controllers and oceanic specialists who identified the need to safely manage user preferred routes and airborne re-routes, reduced separation standards, increased traffic numbers and safe and expeditious responses to pilot requests for weather deviations and airborne re-routes. The system design delivers automatic real time conflict detection and automated co-ordination alerts.

3.89 Training for the Area Control ADS rating is conducted using the OCS simulator. Customer benefits include greater access to preferred levels, ability to fly flextracks and user preferred routes with consequent cost savings.

ADS/CPDLC Experience from Tahiti

3.90 France provided the meeting with an overview of the implementation of datalink ADS/CPDLC systems in the Tahiti FIR. The main results achieved to date are the creation of a network of flexible routes between Los Angeles and Auckland/Sydney, which are published on a daily basis, the introduction of ADS & CPDLC and the gradual reduction of separation standards. The ATM systems is know as VIVO and has already been subject to three development phases, each of them complying with a clearly identified regional objective, namely Phase 1 – the creation of a network of flextracks, Phase 2 – the implementation of pilot-controller datalinks and Phase 3 – the reduction of separation standards.

3.91 France advised the meeting that a number of lessons have been learnt and some of these have demonstrated the need for a new organization of work, not only within each of the bodies involved but also at a regional and international level

Terms of Reference and Work Programme

3.92 The meeting reviewed the Terms of Reference and Work Programme of the CNS/ATM/IC Sub-Group, attached at Appendix D to the Report on Agenda Item 3, and concluded that they were appropriate.

3.93 The meeting noted that one of the key terms of Reference was to educate, gather and share information between States and ATS Providers. In this regard the meeting was of the opinion that it would be helpful to develop and maintain a library of specific papers or discussions held during various CNS/ATM related meetings. Another important Term of Reference was to help resolve or mitigate problems raised by the States. The meeting was of the opinion that the CNS/ATM/IC Sub-Group should assess what mechanisms are available or should be available to help resolve problems identified.

3.94 The Agenda of the Sub-Group should be published as far in advance as possible but at least 90 days in advance of the Sub-Group meeting in order to provide the participants an opportunity to develop papers. This should result in working papers being submitted at least 30 days in advance. Use of electronic media for information transfer and storage including a Web Page that is maintained dynamically by the Secretariat, would be very useful. The meeting also encouraged States to send papers to ICAO early so that they could be published on the Web prior to each meeting. Large papers must ideally be available on the Web prior to each meeting.

Business Case Approach

3.95 The meeting recalled that APANPIRG/10 considered that it was necessary to develop a framework for the implementation of CNS/ATM systems in the region and to define the scope of work. APANPIRG/10 (Conclusion 10/44) therefore decided to establish a Business Case Task Force (BCTF) to undertake the task. The BCTF met in Bangkok from 3-5 May 2000 at the ICAO Regional Office. The meeting recalled that the Terms of Reference for the Task Force were to:

a) develop a framework for the business case studies of various options in the implementation of air navigation facilities in the region based on the CNS/ATM Global Plan, Regional Plan, Homogenous ATM areas, major international traffic flows and other relevant material;

b) develop methodology for the study and define the scope of work to be undertaken by ICAO under its Technical Co-operation Programme or other suitable mechanism, and;

c) prioritize case studies based on the established traffic flows.

3.96 With respect to the Terms of Reference the meeting noted that:

a) most parts of the Asia Pacific Region were in fact well advanced in terms of having CNS/ATM plans. The primary need was for improved integration between State plans;

b) while the ICAO Technical Co-operation programme was one suitable avenue for assisting with the development of business cases, States may elect to do such work themselves or utilize other agencies.

3.97 In development of the framework for business case studies the BCTF considered relevant background material including the results of a Survey of Proposed Withdrawal Dates for

Conventional Facilities, information relating to Workshops on a Business Case Approach to National Planning for CNS/ATM Systems, Guidance Material on Cost/Benefit Analysis, descriptions of the major traffic flows with the region, information relating to traffic forecasts and an illustration of a business case from another region.

3.98 The meeting reviewed a set of "guiding principles" or framework developed by the BCTF, which would facilitate the development of business cases and accordingly developed the following Conclusion:

Conclusion 11/38 - Framework for establishing Business Cases for the development and implementation of the CNS/ATM systems within and through the Asia/Pacific Region

Noting that:

Co-operation and agreement is required amongst all States and the aviation industry to ensure the realisation of full benefits of the CNS/ATM systems. In an effort to facilitate this it is essential that sound Business Cases, where a need is identified by the States concerned, should be developed on a traffic flow basis for the Asia/Pacific Region.

Business Cases shall:

a) be based on the Global Air Navigation Plan for CNS/ATM Systems, Regional Plans for CNS/ATM Systems and National Plans where appropriate;

b) concentrate on international flight operations while taking into account the operational characteristics of domestic services;

c) concentrate on enhancement of safety, airspace capacity, operational efficiency and environmental benefits;

d) ensure harmonisation of traffic flows within the Asia Pacific Region and the adjacent regions.

3.99 In addition the meeting reviewed a methodology for a Business Case Study and a definition, in general terms, of the scope of work. Accordingly the meeting developed the following Conclusion:

Conclusion 11/39 - Methodology for a Business Case Study

That, the following methodology be used in the development of a Business Case Study:

a) Establish needs and extent of implementation of CNS/ATM systems by both States and users;

b) Develop a plan for CNS/ATM systems implementation using a progressive, cost effective approach recognizing that co-operation between States is essential;

c) Define the objectives to be obtained - financial and non-financial (operational, safety enhancement etc);

d) Establish infrastructure and other costs based on the implementation plan;

e) Visit, if required, and evaluate the inputs of individual States and service providers or both;

f) Undertake a cost-benefit analysis including distribution of revenues & expenses;

g) Develop a financial mechanism & cost recovery;

h) Identify sources of financing for capital investment; and

i) Incorporate above into a Business Plan.

3.100 In prioritization of case studies based on established traffic flows the meeting noted that the defined traffic flows each cover large geographic areas with, in many cases, considerably differing levels of traffic and available air traffic services contained within a single traffic flow. In addition, the situation was complicated by several traffic flows overlaying each other in part. The meeting was of the opinion that the prioritization of the traffic flows, or indeed parts of them, was not a simple matter and considerably more information was required before this task could be undertaken in any detailed form. The meeting was able, however, to identify in broad terms, an area that could benefit from the proposed case study, namely those parts of major traffic flows AR-2 and AR-9 that extend from Australia to South East Asia (including the South China Sea area) and Australia to North Asia.

3.101 In recognition of the revised Terms of Reference of APANPIRG in this area and with respect to progressing the matter further the meeting was of the opinion that the development of a business case study would be a task well suited to an ICAO Special Implementation Project and accordingly developed the following Conclusion:

Conclusion 11/40 - Business Case Study Special Implementation Project

That, ICAO considers a proposal for an Asia Pacific Special Implementation Project to be established with the primary objective of developing a business case study of various options in the implementation of air navigation facilities based on CNS/ATM.

3.102 The meeting also recognized the need for making appropriate information/data readily available by States, Service Providers and Users to facilitate the study and that in order for this to be of value all States must be willing to implement the outcome of the study. In view of the critical need for such information, the meeting developed the following Conclusion:

Conclusion 11/41 - Provision of data

That,

a) States make readily available all appropriate information/data to ICAO in order to facilitate studies on cost/benefit analysis and business cases, and

b) Service Providers/Users shall co-operate fully with States in facilitating this task.

Evolutionary Transition to CNS/ATM Systems in the CAR/SAM (Caribbean and South American) Regions

3.103 The meeting was presented with an interim report of a technical cooperation project established for the States of the CAR/SAM Regions to assist in their transition to CNS/ATM systems. The meeting noted that the three-year project has been funded by the participating States and was established in 1999. The project, which is being implemented in four phases, is expected to be completed in early 2002. The meeting noted that the project study included the operational/technical enhancements, cost/benefit analysis and business case studies and would address both short-term improvements using current infrastructure as well as long-term improvements through implementation of CNS/ATM systems. The meeting also noted that cost figures shown in the cost/benefit analysis carried out for the first phase of the project are indicative in nature and may be aligned case by case for its application in other regions.

Report on technical and operational developments related to CNS/ATM system

3.104 The meeting was presented with an overview of the technical and operational developments related to CNS/ATM systems that took place in 1999 and up to April 2000. The meeting among other things noted the following:

a) Development of the Global Air Navigation Plan for CNS/ATM Systems;

b) Summary of work of ICAO's Planning and Implementation Regional Groups (PIRGs);

c) CNS/ATM implementation status survey;

d) Development status of Standards and Recommended Practices (SARPs) and guidance material;

e) work programme of various panels and study groups engaged in CNS/ATM related activities.

CHAPTER 5: CURRENT STATUS AND REGIONAL STRATEGY – CNS/ATM SYSTEMS

5.2.1.6 The present ground communications system, the Aeronautical Fixed Telecommunications Network (AFTN) is limited in throughput, data integrity, and the ability to handle bit oriented message exchanges. The evolution of the communications path to full Aeronautical Telecommunication Network (ATN) capability is seen as evolving by deploying ATN ground-ground routers. The ATN ground-ground router capability will be used to provide the establishment of ATN routing domains. By implementing AFTN/AMHS gateways over the ATN (bit-oriented) networks interconnected by ATN ground-ground routers, ground communications system resolves the shortcomings of AFTN, and will finally evolve in AMHS. Some ground ATN networks are used for the ground portion of Air-Ground data interchange by deploying ATN Air-Ground router situated at the ground end of Air-Ground data link, connected to ground network and exclusively used for Air-Ground data interchanges.

CHAPTER 7: COMMUNICATIONS

1) **7.2 Transition Guidelines**

7.2.1 Guidelines for transition to the future communications systems should be such as to encourage early equipage by users through the earliest possible accrual of the systems benefits. Although a transition period during which dual equipage, both airborne and ground, will be necessary in order to ensure the reliability and availability of the new systems, the guidelines are aimed at minimizing this period to the extent practicable. The Global Air Navigation Plan for CNS/ATM Systems, Appendix B to Chapter 5 lists the guidelines that States, regions, users, service providers and manufacturers should consider when developing CNS/ATM systems or planning for implementation of such systems. The details of the guidelines are as follows:

a) States should begin to use data link systems as soon as possible after they become available

The benefits of data link systems will become more apparent with early use.

f) ATN should be implemented in phases

For ground-ground data communications, two levels of ATN Transition have to be identified; one is the interoperable ground internetworking based on ATN Internet SARPs, and the other is ground-ground communication services (e.g. AMHS, AIDC) over ATN internetworking. The ground internetworking is used for air-ground communication services, e.g. ADS, CPDLC, FIS, as well as ground-ground communication services. The first phase of the ATN is achieved by upgrading the ground internetworking capability by deploying critical elements of the ATN, such as ATN ground-ground routers, and by providing ground-ground messaging service by deploying critical transition elements such as AFTN/AMHS gateways, targeting to migrate to AMHS as defined in ATN AMHS SARPs. The deployment and validation of the gateway and ATN ground routers is needed. The second phase of the ATN is achieved by implementing the air-ground ATN routers and associated SARPs compliant protocols, which also requires validation as well as by implementing air-ground data communication services (e.g. ADS, CPDLC, FIS) over ATN internetworking.

2) Additional amendments to paras e) and g) are proposed to comply with Appendix B to Chapter 5, Part 1, of the Global Air Navigation Plan for CNS/ATM Systems – First Edition 2000 as follows:

e) Communications networks between ATC facilities within a State and ATC facilities in adjacent States should be established, if they do not already exist.

g) If new application message processors and data link systems are implemented, they should support code-and byte-independent data transmission protocols in order to facilitate transition to the ATN.

3) 7.3.2 The transition to ATN is expected to start before the institutional issues involved in the administration of ATN have been fully agreed. The transition from AFTN circuit to ATN internetworking will be on a inter-domain connection basis, with time scales that shall be prior to any deployments of elements of the new CNS/ATM systems. In order to migrate to ATN internetworking, there shall be clear identification of the domains to be interconnected. Further more, in order to establish domain, State shall establish networks within its own domain, and understand these networks are interconnected via inter-domain connections. The determining factor will be the requirements placed on ATN communication services provided over the interconnected networks. Some inter-domain connections may be fully converted to ATN Internetworking well before any use of ATN communication services occurs in air-ground systems of the new CNS/ATM systems, other AFTN circuits may meet the service requirement by the continued use of AFTN well into the future in which case there is a need to provide gateway to communicate between ATN environment and AFTN environment.

TABLE 6-2

Asia/Pacific - Air Traffic Management System Transition

			1994	95	96	97	98	99	2000	01	02	03	04	05	06	07	08	09	2010
Development of SARPs	RTSP	Global ATM					■	■	■	■	■	■	■	■					
		Functional integration of flight OPS/ATM					■	■	■	■	■	■	■	■					
		ATM requirements for CNS				■	■	■	■	■	■								
		Separation between a/c					■	■	■	■	■	■	■	■	■	■	■	■	■
		AIDC						■	■	■	■								
		ATFM procedures and system								■	■	■	■	■					
Aircraft Equipage/ Flight		RNP certification/approval					■	■	■	■	■	■	■	■	■	■	■	■	■
		Functional integration of airborne systems with ground systems													■	■	■	■	■

Implementation and Operational Use																			
Regional ATM Operational Concept																			
Global	Determinaiton of major traffic flows				■	■	■												
Asia/Pacific					■														
Global	Identification of ATM objective based on these traffic flows					■	■												
Asia/Pacific	Enroute				■														
	Terminal	T	B	D															
Global	Development of regional strategic airspace CNS infrastruture plan based on ATM requirements							■	■										
Asia/Pacific	Enroute				■	■	■												
	Terminal	T	B	D															
Airspace Management																			
Global	Optimized sectorization (transparent boundaries)								■	■	■	■	■	■	■	■	■	■	■
Asia/Pacific						■	■	■	■	■	■	■	■	■	■	■	■	■	■
	AR 1 - AR 9	T	B	D															
Global	Fixed RNAV ATS routes				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Asia/Pacific		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	AR 1	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	AR 2			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	AR 3																		
	AR 4																		
	AR 5				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	AR 6	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	AR 7																		
	AR 8	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	AR 9																		
Global	Contingency RNAV routes						■	■	■	■	■	■	■	■	■	■	■	■	■
Asia/Pacific			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	AR 1						■	■	■	■	■	■	■	■	■	■	■	■	■
	AR 2						■	■	■	■	■	■	■	■	■	■	■	■	■
	AR 3						■	■	■	■	■	■	■	■	■	■	■	■	■
	AR 4						■	■	■	■	■	■	■	■	■	■	■	■	■
	AR 5						■	■	■	■	■	■	■	■	■	■	■	■	■
	AR 6						■	■	■	■	■	■	■	■	■	■	■	■	■
	AR 7						■	■	■	■	■	■	■	■	■	■	■	■	■
	AR 8						■	■	■	■	■	■	■	■	■	■	■	■	■
	AR 9						■	■	■	■	■	■	■	■	■	■	■	■	■

TABLE 6-2

Asia/Pacific - Air Traffic Management System Transition

		1994	95	96	97	98	99	2000	01	02	03	04	05	06	07	08	09	2010
Global	Random RNAV routes (including Flexible Tracks)																	
Asia/Pacific																		
	AR 1																	
	AR 2																	
	AR 3																	
	AR 4																	
	AR 5																	
	AR 6																	
	AR 7																	
	AR 8																	
	AR 9																	
Global	Airspace desegregation/flexible use of airspace																	
Asia/Pacific		T	B	D														
	AR 1 - AR 9	T	B	D														
Global	Application of RNP																	
Asia/Pacific																		
	AR 1																	
	AR 2																	
	AR 3																	
	AR 4																	
	AR 5																	
	AR 6																	
	AR 7																	
	AR 8																	
	AR 9																	
Global	Application of RCP																	
Asia/Pacific		T	B	D														
Global	Application of RSP																	
Asia/Pacific		T	B	D														
Air Traffic Services																		
Global	Trajectory conformance monitoring																	
Asia/Pacific																		
	AR 1 - AR 9	T	B	D														
Global	Minimum safe altitude warning																	
Asia/Pacific																		
Global	Conflict prediction																	
Asia/Pacific																		
	AR 1 - AR 9	T	B	D														
Global	Conflict alert																	
Asia/Pacific																		
	AR 1 - AR 9	T	B	D														
Global	Conflict resolution advice																	
Asia/Pacific																		
	AR 1 - AR 9	T	B	D														

TABLE 6-2

Asia/Pacific - Air Traffic Management System Transition

		1994	95	96	97	98	99	2000	01	02	03	04	05	06	07	08	09	2010
Global	Functional integrationof ground system with airborne systems																	
Asia/Pacific		T	B	D														
Global	Dynamic accommodation of user-preferred profiles																	
Asia/Pacific																		
	AR 1																	
	AR 2																	
	AR 3																	
	AR 4																	
	AR 5																	
	AR 6																	
	AR 7																	
	AR 8																	
	AR 9																	
Global	Reduced Vertical Separation																	
Asia/Pacific																		
	AR 1																	
	AR 2																	
	AR 3																	
	AR 4																	
	AR 5																	
	AR 6																	
	AR 7																	
	AR 8																	
	AR 9																	
Global	Reduced Longitudinal Separation																	
Asia/Pacific																		
	AR 1																	
	AR 2																	
	AR 3																	
	AR 4																	
	AR 5																	
	AR 6																	
	AR 7																	
	AR 8																	
	AR 9																	
Global	Reduced Lateral Separation																	
Asia/Pacific																		
	AR 1																	
	AR 2																	
	AR 3																	
	AR 4																	
	AR 5																	
	AR 6																	
	AR 7																	
	AR 8																	
	AR 9																	
Global	Independent IFR approaches to closely-spacd runways																	
Asia/Pacific																		
Global	RNAV SIDs and STARs																	

TABLE 6-2

Asia/Pacific - Air Traffic Management System Transition

		1994	95	96	97	98	99	2000	01	02	03	04	05	06	07	08	09	2010
Asia/Pacific																		
Global	Curved and segmented approaches																	
Asia/Pacific		T	B	D														
Global	Arrival metering, sequencing and spacing																	
Asia/Pacific		T	B	D														
Global	A-SMGCS																	
Asia/Pacific		T	B	D														
Global	ATS inter-facility data (AIDS) communications																	
Asia/Pacific																		
	AR 1																	
	AR 2																	
	AR 3																	
	AR 4																	
	AR 5																	
	AR 6																	
	AR 7																	
	AR 8																	
	AR 9																	
Global	Application of data link																	
Asia/Pacific																		
	AR 1																	
	AR 2																	
	AR 3																	
	AR 4																	
	AR 5																	
	AR 6																	
	AR 7																	
	AR 8																	
	AR 9																	
Air Traffic Flow Management																		
Global	Centralized ATFM																	
Asia/Pacific		T	B	D														
Global	Inter-reigonal co-operative ATFM																	
Asia/Pacific		T	B	D														
Global	Establishment of ATFM databases																	
Asia/Pacific		T	B	D														

TABLE 6-2

Asia/Pacific - Air Traffic Management System Transition

		1994	95	96	97	98	99	2000	01	02	03	04	05	06	07	08	09	2010
Global	Application of strategic ATFM planning																	
Asia/Pacific		T	B	D														
Global	Application of pre-tactical ATFM planning																	
Asia/Pacific		T	B	D														
Global	Application of tactical ATFM planning																	
Asia/Pacific		T	B	D														

TABLE 7-1

Asia/Pacific - Communications System Transition

			1994	95	96	97	98	99	2000	01	02	03	04	05	06	07	08	09	2010
Aeronautical Mobile Communications Satellite System		Japan (MTSAT)			o	o	o												
		Global (Inmarsat 3)																	
Development of SARPs	RCP	AMSS																	
		HF Data																	
		VHF Data																	
		SSR Mode S																	
		ATN																	
Aircraft Equipage		AMSS																	
		HF Data																	
		VHF Data																	
		SSR Mode S																	
		ATN																	
		FANS 1 or equivalent																	

Trials and Demonstrations																			
Global	AMSS																		
Asia/Pacific																			
	Australia																		
	China																		
	Fiji																		
	France																		
	Hong Kong, China																		
	India																		
	Indonesia																		
	Japan																		
	Malaysia																		
	Myanmar																		
	Nepal																		
	New Zealand																		
	Papua New Guinea																		
	Philippines																		
	Republic of Korea																		
	Singapore																		
	Solomon Islands																		
	Sri Lanka																		
	Thailand																		
	USA																		
Global	HF Data																		
Asia/Pacific																			
	China																		

TABLE 7-1

Asia/Pacific - Communications System Transition

		1994	95	96	97	98	99	2000	01	02	03	04	05	06	07	08	09	2010
	Indonesia	TBD																
	Thailand																	
Global	VHF Data																	
Asia/Pacific																		
	Australia																	
	China																	
	Fiji																	
	France																	
	Hong Kong, China																	
	India																	
	Indonesia																	
	Japan																	
	Malaysia																	
	Mongolia																	
	Myanmar																	
	Nepal																	
	New Zealand																	
	Papua New Guinea																	
	Philippines																	
	Republic of Korea																	
	Singapore																	
	Solomon Islands																	
	Sri Lanka																	
	Thailand																	
	USA																	
Global	SSR Mode S																	
Asia/Pacific																		
	China	TBD																
	Indonesia	TBD																
	Sri Lanka																	
Global	ATN (Ground - Ground)																	
Asia/Pacific																		
	Australia																	
	China	TBD																
	Fiji																	
	France																	
	Hong Kong, China																	
	Indonesia																	
								AFTN/AMHS G/W										
	Japan																	
	Republic of Korea																	
	Malaysia																	
	Mongolia																	
	Myanmar																	

TABLE 7-1

Asia/Pacific - Communications System Transition

		1994	95	96	97	98	99	2000	01	02	03	04	05	06	07	08	09	2010
	Nepal																	
	New Zealand																	
	Papua New Guinea																	
	Singapore																	
	Solomon Islands																	
	Sri Lanka																	
								AIDC										
	Thailand																	
	USA																	
Global	ATN (Air - Ground)																	
Asia/Pacific																		
	China	TBD																
	Indonesia	TBD																
	Thailand	TBD																

Implementation and Operational Use																		
Global	AMSS																	
Asia/Pacific																		
	Australia																	
	Brunei Darussalam																	
	China																	
	Fiji																	
	France																	
	Hong Kong, China																	
	India																	
	Indonesia																	
	Japan																	
	Malaysia																	
	Myanmar																	
	Nepal																	
	New Zealand																	
	Philippines												2nd QTR 2006					
	Republic of Korea																	
			voice		data													
	Singapore																	
	Sri Lanka																	
	Thailand																	
	USA																	
Global	HF Data																	
Asia/Pacific		T	B	D														
	China																	
	Fiji																	
	Indonesia	TBD																
	Thailand																	
Global	VHF Data																	

TABLE 7-1

Asia/Pacific - Communications System Transition

		1994	95	96	97	98	99	2000	01	02	03	04	05	06	07	08	09	2010
Asia/Pacific			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Australia			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Brunei Darussalam						■	■	■	■	■	■	■	■	■	■	■	■
	China						■	■	■	■	■	■	■	■	■	■	■	■
	Fiji			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	France			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Hong Kong, China							■	■	■	■	■	■	■	■	■	■	■
	India				■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Indonesia									■	■	■	■	■	■	■	■	■
	Japan							■	■	■	■	■	■	■	■	■	■	■
	Malaysia									■	■	■	■	■	■	■	■	■
	Mongolia								■	■	■	■	■	■	■	■	■	■
	Myanmar					■	■	■	■	■	■	■	■	■	■	■	■	■
	Nepal						■	■	■	■	■	■	■	■	■	■	■	■
	New Zealand		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Philippines										■	■	■	■	■	■	■	■
	Republic of Korea						■	■	■	■	■	■	■	■	■	■	■	■
	Singapore				■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Sri Lanka											■	■	■	■	■	■	■
	Thailand							■	■	■	■	■	■	■	■	■	■	■
	USA	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Global	SSR Mode S				■	■	■	■	■	■	■	■	■	■	■	■	■	■
Asia/Pacific													■	■	■	■	■	■
	China	TBD																
	Indonesia	TBD																
	Sri Lanka												■	■	■	■	■	■
Global	ATN (Ground - Ground)							■	■	■	■	■	■	■	■	■	■	■
Asia/Pacific							■	■	■	■	■	■	■	■	■	■	■	■
	China	TBD																
	Fiji								■	■	■							
	Hong Kong, China											■	■	■	■	■	■	■
	Indonesia										■	■	■	■	■	■	■	■
											AFTN/ATN GW							
	Singapore										■		■	■	■	■	■	■
	Sri Lanka											■	■	■	■	■	■	■
							AFTN/ATN GW		AIDC									
	Thailand						■	■	■	■	■	■	■	■	■	■	■	■
Global	ATN (Air - Ground)																	
Asia/Pacific																		
	China	TBD																
	Indonesia	TBD																
	Thailand	TBD																

TABLE 8-1

Asia/Pacific - Navigation System Transition

			1994	95	96	97	98	99	2000	01	02	03	04	05	06	07	08	09	2010
Satellite Capacity		GPS	o IOC																
		GLONASS																	
		SATELLITE OVERLAY		o	o	o		o		o									
				GLOBAL (INMARSAT) 3							AUSTRALIA (OPTUS "C"		JAPAN (MSAT)						
Development of SARPs	RNP	En-route																	
		Terminal/NPA																	
		Precision approach																	
	GNSS	GNSS perfomance criteria to support operational requirements																	
		Development of GNSS NPA procedures																	
		Use of GNSS with augmented systems																	
		Long-term satellite navigation system																	
		Datalink for navigation																	
Avaiability		GPS																	
		GLONASS																	
		Satellite Overlay																	
		SBAS																	
		GBAS																	
		ABAS																	
Aircraft Equipage		GNSS + ABAS																	
		GNSS + ABAS/SBAS/GBAS																	

Trials and Demonstrations																			
Global	Enroute																		
Asia/Pacific																			
	Australia																		
	China																		
	Fiji																		
	France																		
	Hong Kong, China																		
	Indonesia																		
	Japan																		
	Republic of Korea																		
	Malaysia																		
	Mongolia																		
	Myanmar																		
	Nepal																		
	New Zealand																		

TABLE 8-1

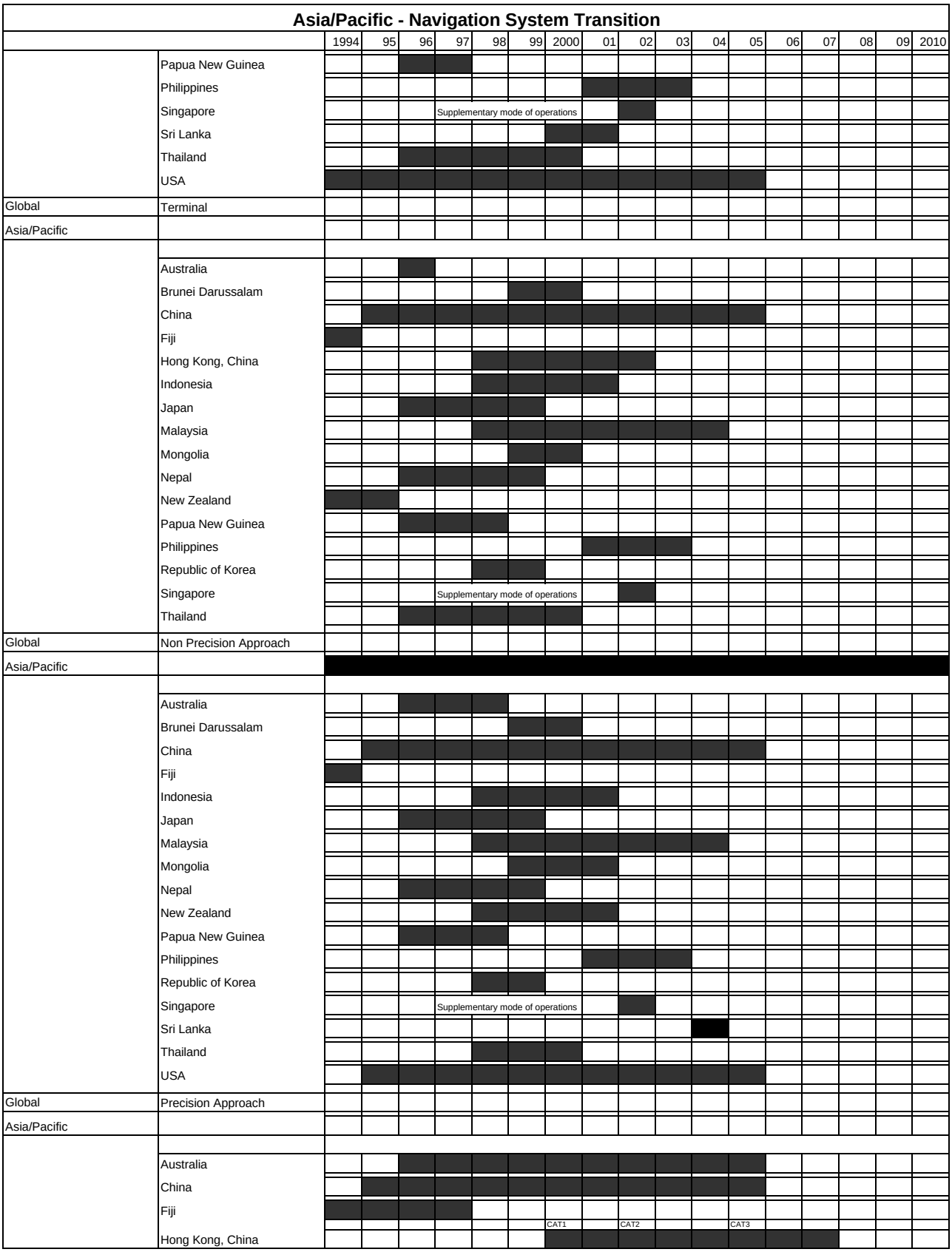

Asia/Pacific - Navigation System Transition
1994
95
96
97
98
99
2000
01
02
03
04
05
06
07
08
09
2010
Papua New Guinea
Philippines
Singapore
Supplementary mode of operations
Sri Lanka
Thailand
USA
Global
Terminal
Asia/Pacific
Australia
Brunei Darussalam
China
Fiji
Hong Kong, China
Indonesia
Japan
Malaysia
Mongolia
Nepal
New Zealand
Papua New Guinea
Philippines
Republic of Korea
Singapore
Supplementary mode of operations
Thailand
Global
Non Precision Approach
Asia/Pacific
Australia
Brunei Darussalam
China
Fiji
Indonesia
Japan
Malaysia
Mongolia
Nepal
New Zealand
Papua New Guinea
Philippines
Republic of Korea
Singapore
Supplementary mode of operations
Sri Lanka
Thailand
USA
Global
Precision Approach
Asia/Pacific
Australia
China
Fiji
CAT1
CAT2
CAT3
Hong Kong, China

TABLE 8-1

Asia/Pacific - Navigation System Transition

		1994	95	96	97	98	99	2000	01	02	03	04	05	06	07	08	09	2010
	India																	
	Indonesia																	
	Japan																	
	Malaysia																	
	New Zealand																	
	Philippines																	
	Republic of Korea																	
	Thailand	TBD																
	USA																	
Global	GNSS + ABAS																	
Asia/Pacific																		
	Indonesia	TBD																
	Singapore	TBD																
	Thailand	TBD																
Global	GNSS + ABAS + SBAS																	
Asia/Pacific																		
	Indonesia	TBD																
	Singapore																	
	Thailand	TBD																
Global	GNSS + ABAS + GBAS																	
Asia/Pacific																		
	Indonesia	TBD																
	Singapore	TBD																
	Thailand	TBD																

Implementation and Operational Use																		
Global	WGS-84																	
Asia/Pacific																		
	WGS-84 Survey																	
	Information Asia/Pacific																	
	by country																	
	China	TBD																
	Indonesia																	
Global	EN-ROUTE																	
Asia/Pacific																		
	Australia																	
	China																	
	Fiji																	
	France																	
	Hong Kong, China																	
	Indonesia																	
	Japan																	

TABLE 8-1

Asia/Pacific - Navigation System Transition

		1994	95	96	97	98	99	2000	01	02	03	04	05	06	07	08	09	2010
	Malaysia																	
	Myanmar																	
	Mongolia																	
	Nepal																	
	New Zealand																	
	Philippines																	
	Republic of Korea																	
	Singapore					Supplementary mode of operations												
	Sri Lanka																	
	Thailand																	
	Tonga																	
	USA																	
Global	Terminal																	
Asia/Pacific																		
	Australia																	
	Brunei Darussalam																	
	China	TBD																
	Fiji																	
	Hong Kong, China																	
	Indonesia																	
	Japan																	
	Mongolia																	
	Nepal																	
	New Zealand																	
	Philippines																	
	Republic of Korea																	
	Singapore					Supplementary mode of operations												
	Thailand																	
	Tonga																	
	USA																	
Global	Non Precision approach																	
Asia/Pacific																		
	Australia																	
	Brunei Darussalam																	
	China	TBD																
	Fiji																	
	Hong Kong, China																	
	Indonesia																	
	Japan																	
	Malaysia																	
	Mongolia																	
	Nepal																	
	New Zealand																	
	Philippines																	
	Republic of Korea																	
	Singapore					Supplementary mode of operations												
	Sri Lanka																	
	Thailand																	
	Tonga																	
	USA																	

TABLE 8-1

Asia/Pacific - Navigation System Transition																		
		1994	95	96	97	98	99	2000	01	02	03	04	05	06	07	08	09	2010
Global	Precision approach																	
Asia/Pacific																		
	Australia																	
	China	TBD																
	Fiji																	
	Hong Kong, China																	
	Indonesia																	
	Japan																	
	Philippines																	
	Singapore	TBD																
	Thailand	TBD																
	USA																	

TABLE 9-1

Asia/Pacific - Surveillance System Transition

			1994	95	96	97	98	99	2000	01	02	03	04	05	06	07	08	09	2010
Satellite System		Japan (MTSAT)						O(1)					O(2)					O(3)	
		Global (Inmarsat3)			O	O													
Development of SARPs	R S P	ADS																	
		ADS-B																	
		SSR Mode S																	
Aircraft Equipage		ADS																	
		ADS-FANS 1/A																	
		ADS-B								T	B	D							
		SSR Mode S																	

Trials and Demonstrations																			
Global	ADS																		
Asia/Pacific																			
		PET/ISPACG																	
		Australia																	
		China																	
		Fiji																	
		France																	
					o FANS 1														
		Hong Kong, China																	
		India																	
		Indonesia																	
		Japan																	
		Malaysia																	
		Mongolia																	
		Myanmar																	
		Nepal																	
		New Zealand																	
		Philippines																	
		Republic of Korea																	
		Singapore																	
		Sri Lanka																	
		Thailand																	
		USA																	
		Service Providers																	
Global	ADS-B																		
Asia/Pacific		T	B	D															
		China	TBD																
		Indonesia	TBD																
		Singapore	TBD																
		Thailand	TBD																

TABLE 9-1

Asia/Pacific - Surveillance System Transition

		1994	95	96	97	98	99	2000	01	02	03	04	05	06	07	08	09	2010
Global	SSR Mode S																	
Asia/Pacific																		
	Australia																	
	China	TBD																
	Hong Kong, China																	
	Indonesia	TBD																
	Japan																	
	Singapore	TBD																
	Sri Lanka																	

Implementation and Operational Use																		
Global	ADS																	
Asia/Pacific																		
	Australia																	
	China																	
	Fiji																	
	France																	
	Hong Kong, China																	
	India																	
	Indonesia																	
	Japan																	
	Malaysia																	
	Mongolia																	
	Myanmar																	
	Nepal																	
	New Zealand																	
	Philippines																	
	Republic of Korea																	
	Singapore																	
	Sri Lanka																	
	Thailand																	
	USA																	
Global	ADS-B																	
Asia/Pacific		T	B	D														
	China	TBD																
	Indonesia	TBD																
	Singapore	TBD																
	Thailand	TBD																
Global	SSR Mode S																	
Asia/Pacific																		
	Australia																	
	China	TBD																
	Hong Kong, China																	
	India																	
	Indonesia	TBD																
	Japan																	
	Malaysia																	
	Republic of Korea																	
	Singapore	TBD																
	Sri Lanka																	
	Thailand	TBD																
	USA																	

Note: Modern radar systems are capable of being upgraded to Mode S. Thailand and Hong Kong, China are planning to upgrade their current systems.

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

Key Priority	Description	Milestone	Sub-group	Status
ATN Transition	The development of an ATN transition plan is required	2001	COM/MET/NAV/SUR ATN Transition Task Force	Under development
Incorporation of CNS/ATM Material into Regional ANP & FASID	To reflect regional agreement for the implementation of CNS/ATM facilities and services and the determination of priorities for financing	APANPIRG/12	All	On-going
Revised South China Sea ATS Route Implementation	Successful implementation of this important route structure alleviates airspace congestion and provides a project model for similar route structure activity elsewhere in the Region.	Immediate	ATS/AIS/SAR	Recent meetings between China and Viet Nam under ICAO auspices have taken place to explore proposals
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)	ATS/AIS/SAR	Implementation is monitored at each meeting
RVSM Implementation	To provide more efficient flight profiles and to increase airspace capacity in conjunction with the implementation of CNS/ATM.	21 Feb 2002 – Western Pacific/South China Sea	ATS/AIS/SAR	Phased implementation RVSM Implemented in the Pacific 24 Feb 2000.
RNP Implementation	Global standard for navigation is seen as a prerequisite for many CNS/ATM implementation activities.	RNP-10/South China Sea 2001 RNP-10/Bay of Bengal 2002	ATS/AIS/SAR & CNS/ATM/IC	Phased implementation RNP-10 is implemented in NOPAC, CENPAC, CEP & Tasman Sea.

ADS	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/12	ATS/AIS/SAR	Phased implementation Revised Regional CNS/ATM Guidance Material developed containing ADS section. Implementation focus and timetable need to be developed.
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/12	All	Sub-groups to identify requirements.
Preparation for WRC2003	The co-operative participation of States is required with their respective communications authority, 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.	WRC2003	All	Report progress to APANPIRG/12.
GNSS Implementation	To implement GNSS in accordance with the Asia Pacific Regional Strategy.	Phase 1 - 2002	All	Phased implementation Sub-groups to develop plan and report progress to APANPIRG/12
Airspace Management	To implement revised ATS route structures for the major traffic flows.	Phase 1 – Asia to Europe via South of the Himalayas, July 2002	ATS/AIS/SAR COM/MET/NAV/SUR	Phased implementation Report progress to APANPIRG/12

COMMUNICATIONS, NAVIGATION, SURVEILLANCE
& AIR TRAFFIC MANAGEMENT
IMPLEMENTATION CO-ORDINATION SUB-GROUP (CNS/ATM/IC/SG)
TERMS OF REFERENCE AND WORK PROGRAMME

1. Co-ordinate the updating, on a regular basis of the ASIA/PAC Regional Plan for the new CNS/ATM systems in the light of new developments;

2. Monitor the research and development, trials and demonstrations within the ASIA/PAC Regions and information from other Regions;

3. Co-ordinate the plans of States, international organizations, airlines and industry for the implementation of the ASIA/PAC Regional Implementation Plan for the new CNS/ATM systems;

4. Provide a forum for the active exchange of information between States and for the resolution of planning and implementation problems as they arise;

5. Facilitate the transfer of CNS/ATM systems expertise, equipment, trials data, etc. between States;

6. Provide appropriate review and co-ordination of amendments to the Regional Air Navigation Plan to ensure adoption of the new CNS/ATM requirements including Basic Operational Requirements and Planning Criteria.

7. Review and identify shortcomings or deficiencies that impede implementation or affect provision of efficient CNS/ATM services;

8. Identify and co-ordinate CNS/ATM priorities for the ASIA/PAC Region;

9. Promote and progress implementation activities in the field of CNS/ATM in the ASIA/PAC;

10. Review and identify intra and inter regional co-ordination issues and where appropriate recommend actions to address those issues;

11. Ensure the harmonization and convergence of national, ASIA/PAC and Global CNS/ATM plans.

AGENDA ITEM 4: SHORTCOMINGS AND DEFICIENCIES IN THE AIR NAVIGATION FIELDS

Agenda Item 4: Shortcomings and Deficiencies in the Air Navigation Field

4.1 The meeting recalled item (c) of the Terms of Reference of APANPIRG which calls for the identification of specific problems in the air navigation field and propose in appropriate form, actions aimed at solving these problems. To meet these objectives, the Group shall review any shortcomings in the four main areas of AOP, CNS, MET and ATS/AIS/SAR in the Asia and Pacific Regional Air Navigational System and develop recommendations for remedial actions.

4.2 For the purpose of this exercise, a situation where a facility is not installed or a service is not provided in accordance with a regional air navigation plan is considered to be a **shortcoming**. A situation where an existing facility or service is partially unserviceable, incomplete or not operated in accordance with appropriate ICAO specifications and procedures is considered to be a **deficiency**. The net effect of either a shortcoming or a deficiency is a negative impact on safety, regularity and/or efficiency of international civil aviation.

4.3 The meeting noted the uniform methodology for the identification, assessment and reporting of air navigation shortcomings and deficiencies approved by the ICAO Council on 23 June 1998. States, providers and users were urged to co-operate fully in providing information on shortcomings and deficiencies in air navigation facilities and services.

4.4 Based on information available with the ICAO Regional Office a list of shortcomings and deficiencies in the various fields of air navigation was presented to the meeting.. This list was reviewed by the meeting and took action as suggested in the Uniform Methodology approved by the Council. Remedial actions and target dates were included in the list.

4.5 The meeting was advised that in the field of ATS/AIS/SAR, the following progress has been made since APANPIRG/10:

i) fifteen (15) entries related to ATS routes were removed from the previous list because they were implemented in accordance with ANP requirements, amended or deleted;

ii) one (1) ATS route was added to the list because its partial implementation status was identified;

iii) six (6) entries in WGS-84 implementation were removed from the list because its satisfactory implementation status was reported by States concerned;

iv) one (1) entry in Area Control Services was removed from the list because its satisfactory implementation status was reported by a State concerned; and

v) two (2) new items, *i.e.* Airspace Classification and AIP Format, were added to the list, and will continue to be monitored.

4.6 In the COM/MET/NAV/SUR field 16 shortcomings and deficiencies were identified and reflected in the list of shortcomings and deficiencies. Based on the corrective actions taken by States concerned 4 shortcomings and deficiencies were removed from the list.

4.7 The meeting discussed some of the possible reasons for the apparent slow progress on the resolution of these shortcomings and deficiencies. They were perceived as being lack of information, resources, non-prioritization and inadequate sensitization. In order to facilitate the process, it was recognized that follow-up actions with target dates have to be initiated including development of functional management tools (matrix/database) and discussions in forums such as ALLPIRG and Inter Regional Coordination Meetings.

4.8 The meeting called upon ICAO to expedite the resolution on arriving at a correct interpretation of whether filing a difference by a State would provide the basis for non-inclusion in the Shortcomings and Deficiencies list of air navigation system.

4.9 In reviewing the list of Shortcomings & Deficiencies presented to the meeting, IATA pointed out that the new ATC tower and operations building in Mumbai, India are obstacles that are not in compliance with the requirements of Annex 14 Obstacles Limitation Surfaces. IATA also advised the meeting that this is a matter of importance and immediate concern to the operational safety of international operations. India reported that they had carried out an in-depth aeronautical study and steps had been taken to comply with the recommendations contained in the study. The meeting was also advised that they had closed consultations with the appropriate operators on the matter. India was requested to release a copy of the aeronautical study as required by IATA.

4.10 The meeting was advised by some of the States attending the meeting of the actions taken by them with regard to the items in the list of shortcomings and deficiencies. The updated information is attached in the Appendix A to the Report on Agenda Item 4.

APPENDIX A to the Report on Agenda Item 4

AIR NAVIGATION SHORTCOMINGS AND DEFICIENCIES IN THE AOP FIELD IN THE ASIA/PACIFIC REGION

Identification		Shortcomings and Deficiencies				Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Implementation status (S, D)***	**Remarks**	**Description**	**Executing body**	**Target for completion**	**Priority for action****
RWY Condition RAN 3 Rec. 4/2	**Myanmar**								
	Yangon	RWY reported slippery when wet	10/98	D	RWY friction to be tested, corrective action taken	Has been overlaid with Asphaltic Concrete (2nd phase overlay scheduled from October 2000 to May 2001)	DGCA	5/2001	B
	Philippines								
	Manila	RWY reported slippery when wet	10/98	D	RWY friction to be tested, corrective action taken	Minimal rubber deposits on touchdown zone after derubberizing works carried out. Procurement of runway friction-measuring equipment in progress	ATO	To be determined	B
	Vietnam								
	Ho chi Minh	RWY reported slippery when wet	10/98	No change D	RWY friction to be tested, corrective action taken		CAAV	3/2000	B

Identification		Shortcomings and Deficiencies				Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Implementation status (S, D)***	**Remarks**	**Description**	**Executing body**	**Target for completion**	**Priority for action****
RAN 3 **Rec. 3.1**	**Maldives** Male	RWY 18 – no Approach lighting	1994	S		Installation of approach lights physically impra-cticable. Ground visibility rarely goes down below 1500m. Other visual aids provided. AIP to be updated accordingly	DCA	TBD	B
	Myanmar Yangon	RWY 03 – no Approach lighting	1994	No change S		SA lighting to be provided	DGCA	Implement ation as soon as possible	A
	Philippines Manila	RWY 06 – no Approach lighting	1995	No change S		PA 1 lighting to be provided	ATO	Implement ation as soon as possible	A
	Vietnam Ho Chi Minh	RWY 07R, 25L – no PAPIs, no approach lighting	1996	S		PAPIs to be provided PA 2- RWY 25L(Cat2) SA-RWY 07L	CAAV	2002	A

Identification		Shortcomings and Deficiencies				Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Implementation status (S, D)***	**Remarks**	**Description**	**Executing body**	**Target for completion**	**Priority for action****
RFF and Emergency Response Capability Annex 14 Vol. I	**Myanmar**			No change					
	Yangon	RFF category inadequate	1996	S		RFF category to be improved	DCA	12/2000	A
		Emergency Plan to be updated		D		Emergency exercises to be carried out and AEP updated			B
	Nepal								
	Kathmandu	RFF category is 5 as against 7 required	1996	S		RFF Catetgory has been upgraded to 8	CAA	6/1999	A
		Emergency Plan to be updated		D		Emergency exercises to be carried out and AEP updated			B

APANPIRG/11
APPENDIX A to the Report on Agenda Item 4

AIR NAVIGATION SHORTCOMINGS AND DEFICIENCIES IN THE CNS/MET FIELDS IN THE ASIA/PACIFIC REGION

Identification		**Shortcomings and deficiencies**				**Corrective action**			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Implementation status (S, D)***	**Remarks**	**Description**	**Executing body**	**Target for completion**	**Priority for action** **
VHF coverage to be provided in the Southern Part of Dhaka FIR and withdrawal of HF	Bangladesh	No requirement for HF except for smaller portion of FIR.HF used for ground-to-ground COM due to lack of ER VHF and reliable ATS DSCs.	1992	No change S	HF air ground channels are used to exchange co-ordination messages causing frequency congestion	Survey of the installation sites for RCAG stations has been completed and other formalities are in progress.	Civil Aviation Authority of Bangladesh	Target date being changed each time the status was reviewed and currently established for June 2001	A
RCAG VHF at Port Blair	India	RCAG station to be established at Port Blair linked to Calcutta and Chennai ACCs	1992	D	HF air ground comminations channels are congested and requirement for RCAG was identified.	RCAG VHF station has been put into operation at Port Blair controlled by Chennai. RCAG VHF station at Port Blair controlled by Calcutta is being tested and will be put into operation by end of 2000.	Airports Authority of India	December 2000.	A

Identification		Shortcomings and deficiencies				Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Implementation status (S, D)***	**Remarks**	**Description**	**Executing body**	**Target for completion**	**Priority for action** **
Reliable AFS communications between Calcutta and Dhaka FIRs.	Bangladesh and India	Performance of the Calcutta/Dhaka HF RTT AFTN Circuit has been far below the required reliability of 97%. ATS DSC not implemented. IDD service used for ATS coordination not meeting operational requirement. Agartala/Dhaka and Dhaka/Guwahati. ATS DSCS not implemented.	ATS DSC 1993 AFTN 1995	No change D	HF RTT circuit needs to be upgraded to LTT. Corrective action required to improve performance of the IDD services initially. A dedicated circuit should be established between Calcutta and Dhaka. IDD service to be provided for Agartala/Dhaka and Dhaka/Guwahati ATS DSC.	Action is being initiated to upgrade the HF RTT circuit and also to introduce Hotline IDD to enhance reliability pending, establishment of a dedicated circuit. Requirement for Agartala/Dhaka and Dhaka/Guwahati ATS DSC to be satisfied by IDD initially. India is ready for establishing the circuits with microwave.	CAA Bangladesh and Airports Authority of India	End of 2000	A

Identification		Shortcomings and deficiencies				Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Implementation status (S, D)***	**Remarks**	**Description**	**Executing body**	**Target for completion**	**Priority for action** **
Reliable HF/VHF and ATS direct speech circuits in India FIRs	India	RCAG VHF not reliable. HF congested. Some of the ATS DSCs use IDD and operational requirement is not met.	1999	D	Provision for a reliable link to RCAG stations is required to improve quality of VHF. Implementation of reliable ATS DSC is required to satisfy 15 second access time. HF congestion will be reduced upon improvement in coverage of VHF and availability of reliable of ATS DSCs.	VSAT progressively introduced for RCAG VHF stations. RCAG VHF stations at Portbandar and Agatti controlled from Mumbai and RCAG VHF station at Vishakhapatanma controlled at both Chennai and Calcutta are being established. IDD Hotlines have been introduced for ATS DSC communication, satisfying requirements in most cases. HF congestion reduced due to enhancement in IDD communication and also to some extent due to the use of CPDLC.	Airports Authority of India	End of 2000	A

Identification		Shortcomings and deficiencies				Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Implementation status (S, D)***	**Remarks**	**Description**	**Executing body**	**Target for completion**	**Priority for action** **
Adequate and reliable VHF COM	Myanmar	Quality and reliability of RCAG VHF inadequate and unavailability of required coverage	1998	No change D	Improvements in the quality of link to RCAG stations and power supply system are required.	Action should be taken to provide reliable links between the RCAG stations and Yangon ACC. Power supply to the RCAG sites needs improvement.	DCA Myanmar	Established target date of end 1999 was not achieved. Revised target date is end of 2000.	A
Harmful radio Interference	Philippines	Manila approach and departure frequencies suffer harmful interference	1999	No Change D		Action has been initiated by Air Transportation Office with concerned authority to eliminate the problem	Air Transportation Office	As soon as possible.	A

Identification		Shortcomings and deficiencies				Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Implementation status (S, D)***	**Remarks**	**Description**	**Executing body**	**Target for completion**	**Priority for action** **
Meteorological observations and reports. Provision of Annex 3, Chapter 4	Solomon I.	Weather information is inadequate and not provided on a regular basis	1996	No Change D	Reported by airlines operating to Solomon I.	Equipment to be upgraded and arrangements to be made for regular observations	Ministry of Transport, Works and Aviation, Solomon I.	To be determined	A
a) Requirements for forecasts to be provided. ASIA/PAC ANP, Part IV- Meteorology. Table MET 1A b) Meteorological observations and reports. Provision of Annex 3, Chapter 4.	Kiribati	a) TAFs for Kiritimati not regularly provided by MET Centre of Fiji. b) MET observations from Kiribati not available on regular basis	1998	S D	Reported by the National Weather Service concerned during introduction of the new flight operations. Fiji reported that MET observations not regularly available due to communication problems	a)Temporary arrangements have been made for the Honolulu MET Office to issue 18-hour TAFs during special flight operations. b)Communication between Kiribati and Fiji required to be considered c) Fiji issues TAFs for Kiribati on a regular basis. d) MET observations in Kiribati in process of implementation	Directorate of Civil Aviation, Kiribati Civil Aviation Authority, Fiji COM/MET/NAV/SUR SG	To be determined	A

Identification		Shortcomings and deficiencies				Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Implementation status (S, D)***	**Remarks**	**Description**	**Executing body**	**Target for completion**	**Priority for action** **
a) Reporting of information on volcanic eruptions to civil aviation units. Provision of Annex 3, Chapter 4. b) International airways volcano watch (IAVW) operational procedures.	Indonesia Philippines	Information on volcano activities not always reach civil aviation units due to lack of fixed communications with volcano observatories	1995	D	a) Observed by States concerned b) Reported at the WMO/ICAO Workshop on Volcanic Ash Hazards (Darwin, 1995)	a) MOU will be signed between Department of Transportation and Department of Mining and Energy, Indonesia b) Volcano observations and warnings will be made available on the Internet by Department of Mining and Energy. c) It is expected that MOU between Air Transportation Office and the Philippines Institute of Volcanology and Seismology will be considered. Office and the Philippines Institute of Volcanology and Seismology will be considered.	a) Volcanic Ash Warning Study Group (VAWSG) to develop proposal. b) ICAO Regional Office to monitor developments on this subject.	2000	A

Identification		Shortcomings and deficiencies				Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Implementation status (S, D)***	**Remarks**	**Description**	**Executing body**	**Target for completion**	**Priority for action****
a) Service for operators and flight crew members Provision of Annex 3, Chapter 9. b) Requirements for WAFS products for flight documentation. ASIA/PAC ANP, Table MET 1A	Cambodia Myanmar Papua New Guinea PAC States	VSATs for reception of the ISCS and SADIS satellite broadcasts not installed	1999	D	Expected lack of products for flight documentation due to forthcoming implementation of the final phase of WAFS and cease of RAFCs operations.	States consider urgent action to be taken for implementation of the ISCS and/or SADIS to install VSATs	Civil Aviation Administrations in co-ordination with Met. Authorities of the States concerned. COM/MET/NAV/SUR SG to monitor and coordinate.	2001	A

Identification		Shortcomings and deficiencies				Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Implementation status (S, D)***	**Remarks**	**Description**	**Executing body**	**Target for completion**	**Priority for action** **
a) Aerodrome meteorological office meteorological watch office Provisions of Annex 3, Chapter 3. b) Requirement for aerodrome meteorological office to be established ASIA/PAC ANP, Table MET 1A Requirements for meteorological watch office to be established ASIA/PAC ANP, Table MET 2A	Cambodia	Requirements for aerodrome meteorological office and meteorological watch office (WMO) to be established at Phnom-Penh international airport have not been met	1992	No Change S	Requirements have not been met due to staffing and funding problems. MET briefing and flight documentation for return flights provided by the MET offices of other aerodromes	The Authority concerned to take urgent actions to meet requirements of ANP. If MWO is not able to meet all its obligations, proposal to be considered for temporary transfer of its responsibilities to another MWO and a NOTAM to be issued to indicate such a transfer	State Secretariat of Civil Aviation, Cambodia	To be determined	A

Identification		Shortcomings and deficiencies				Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Implementation status (S, D)***	**Remarks**	**Description**	**Executing body**	**Target for completion**	**Priority for action** **
a) SIGMET information Provision of Annex 3 Chapter 7. b) Requirements for dissemination of SIGMETs, including SIGMETs for volcanic ash ASIA/PAC ANP (FASID) Table MET 2A c) International airways volcano watch (IAVW) operational procedures.	Bangladesh Cambodia India Indonesia Lao Malaysia Myanmar Nepal Papua New Guinea Philippines Sri Lanka	Requirements for issuance and proper dissemination of SIGMETs, including SIGMET for volcanic ash, have not been fully implement	2000	a) D b) S	a) reported by airlines, b) noted by Volcanic Ash Advisory Centres	a) ICAO to consider proposal for Special Implementation Project be Established with the primary objective to improve implementation of SIGMET procedures b) States to take urgent actions to implement the procedures	a) ICAO to establish and implement the SIP b) ICAO Regional Office to co-ordinate c) Volcanic Ash Working Group to assist Secretariat with development of SIP and its implementation d) COM/MET/ NAV/SUR/ SG to monitor	2001	A

AIR NAVIGATION SHORTCOMINGS AND DEFICIENCIES IN THE ATS/AIS/SAR FIELDS IN THE ASIA/PACIFIC REGION

Identification		Shortcomings and Deficiencies				Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Implementation status (S, D)***	**Remarks**	**Description**	**Executing body**	**Date of completion**	**Priority for action****
ATS routes									
A202	China/Japan/Hong Kong, China/Viet Nam	Not implemented	24/11/93	S	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/Viet Nam - consider implementation.	China/Japan/Hong Kong, China/Viet Nam		B
A203	China/Hong Kong, China	Not implemented	24/11/93	S		China - consider implementation	China/Hong Kong, China		B
A211	Malaysia	Not implemented	24/11/93	S	ICAO has requested Malaysia to co-ordinate the early implementation of A211 with States concerned, and awaits input from Malaysia	ICAO - co-ordinate with Malaysia and report the outcome to SEACG	Malaysia ICAO		B
A218	China/Russian Federation	Partially implemented	24/11/93	S	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.	China/Russian Federation - consider implementation	China/Russian Federation		B
A223	Japan	Not implemented	24/11/93	S		Japan - consider implementation	Japan		B
A224	Malaysia	Not implemented	24/11/93	S	ICAO has requested Malaysia to implement A224. Malaysia has advised that the implementation is under consideration.	Malaysia - consider implementation	Malaysia		B
A335	China/Mongolia/Russian Federation	Not implemented	24/11/93	S	ICAO has requested China to implement A335, and awaits input from China.	China - consider implementation	China/Mongolia		B
A341	Indonesia/Malaysia	Partially implemented	24/11/93	S	ICAO has requested Indonesia to co-ordinate implementation with Malaysia	Indonesia/Malaysia - consider full implementation	Indonesia/Malaysia	/12/2000	B

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AIR NAVIGATION SHORTCOMINGS AND DEFICIENCIES IN THE ATS/AIS/SAR FIELDS IN THE ASIA/PACIFIC REGION

Identification		Shortcomings and Deficiencies				Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Implementation status (S, D)***	**Remarks**	**Description**	**Executing body**	**Date of completion**	**Priority for action****
A450	Indonesia/United States	Partially implemented	24/6/94	S	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		B
A459	India	Implemented as A330	24/11/93	S	ICAO has taken action to co-ordinate with India to amend ANP. APAC 99/4-ATS to delete A459 is under preparation.	ICAO - process APAC99/4 in co-ordination with India	India ICAO		B
A466	India	Implemented with different route specification	24/11/93	S	ICAO has taken action to include this amendment in a comprehensive amendment proposed by MIDANPIRG. APAC99/4-ATS to amend the requirement is under preparation.	ICAO - process APAC99/4 in co-ordination with India	India ICAO		B
A469	Viet Nam	Implemented as W9	19/8/94	S	ICAO has requested Viet Nam to implement as A469	Viet Nam - promulgate the route with designator A469 in AIP	Viet Nam		B
A470	China/Viet Nam	Partially implemented	19/8/94	S	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/Viet Nam		B
A473	India/Nepal	Not implemented	16/3/99	S	India has advised that realignment is under consideration.	India/Nepal- consider implementation	India/Nepal	/12/2000	B
A581	China/Myanmar/Thailand	Partially implemented	17/2/97	S	ICAO has requested China to co-ordinate implementation. China, Lao PDR and Thailand have proposed an amendment to ANP. APAC99/11-ATS has been circulated to States.	ICAO - process APAC99/11 in co-ordination with China/Myanmar/Thailand	China/Myanmar/Thailand ICAO		B

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Identification		Shortcomings and Deficiencies				Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Implementation status (S, D)***	**Remarks**	**Description**	**Executing body**	**Date of completion**	**Priority for action****
A584	United States	Partially implemented	24/6/94	S	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-ordiantion with United States	United States ICAO		B
B201	Fiji/New Zealand	Not implemented	24/11/93	S	Fiji/New Zealand have advised that they agreed to delete the requirement and would propose an amendment.	Fiji/New Zealand - propose an amendment to delete the requirement in ANP	Fiji/New Zealand ICAO		B
B204	Maldives	The requirements for this route are not detailed in ANP	24/1/96	S		Maldives - propose an amendment to ANP to add the route	Maldives		B
B212	Japan/Rep of Korea	Not implemented	24/11/93	S	Japan is considering implementation as a conditional route	Japan/Rep of Korea - consider implementation	Japan/Rep of Korea		B
B213	China	Not implemented	24/11/93	S		China - consider implementation	China		B
B345	China/India/Nepal	Partially implemented	24/11/93	S	ICAO has taken action to co-ordinate with States to amend ANP. APAC99/4-ATS is under preparation.	ICAO - process APAC99/4 in co-ordination with China/India/Nepal	China/India/Nepal ICAO		B
B456	Papua New Guinea	Partially implemented	24/11/93	S	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	Papua New Guinea		B
B579	Malaysia/Thailand	Partially implemented	16/3/99	S	ICAO has requested Malaysia to co-ordinate with Thailand for implementation. Malaysia has advised that co-ordination is on-going.	Malaysia/Thailand - consider full implementation	Malaysia/Thailand		B

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Identification		Shortcomings and Deficiencies				Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Implementation status (S, D)***	**Remarks**	**Description**	**Executing body**	**Date of completion**	**Priority for action****
B588	Indonesia/Philippines	Not implemented	24/11/93	S	Philippines considered that B588 is no longer required, and co-ordinated with Indonesia to delete the route. An amendment proposal to ANP, APAC 00/1-ATS to delete the requirement has been circulated.	ICAO - process APAC 00/1	Indonesia/Philippines ICAO		B
B591	China	Partially implemented	22/7/97	S	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		B
G211	Malaysia	Not implemented	24/11/93	S	ICAO has requested Malaysia to implement G221. Malaysia has advised that implementation co-ordination is on-going.	Malaysia - consider implementation	Malaysia		B
G348	India	Partially implemented	2/3/99	S	Bhutan has advised that route segment in Bhutan airspace has been implemented.	India - consider implementation	India		B
G461	Indonesia	Implemented with different route specification	24/11/93	S	ICAO has taken action to co-ordinate with Indonesia to amend ANP requirement. APAC00/1-ATS to amend the requirement has been circulated.	ICAO - process APAC 00/1	Indonesia ICAO		B
G466	China/Viet Nam	Partially implemented	22/7/97	S	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/Viet Nam - consider implementation	China/Viet Nam		B
G473	Lao PDR/Philippines Thailand/Viet Nam	Partially implemented	24/11/93	S	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	Lao PDR/Philippines Thailand/Viet Nam		B

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Identification		Shortcomings and Deficiencies				Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Implementation status (S, D)***	**Remarks**	**Description**	**Executing body**	**Date of completion**	**Priority for action****
G589	DPR Korea/ Rep of Korea	Not implemented	24/11/93	S		DPR Korea/ Rep of Korea - consider implementation	DPR Korea/ Rep of Korea		B
R207	Lao PDR	Partially implemented as W29	24/11/93	S		Lao PDR - consider promulgation of the route with route designator R207	Lao PDR		B
R209	Malaysia	Partially implemented	10/1/00	S		Malaysia - consider early implementation	Malaysia		B
R216	China/Kazakhstan	Not implemented	24/11/93	S		ICAO - co-ordinate with States for implementation and report the outcome to EAAR	China/Kazakhstan		B
R217	Japan	Implemented as V51	24/11/93	S	Japan proposed to amend requirement of R217, and ICAO co-ordinated with Japan to amend ANP. APAC 98/15-ATS/COM was approved on 25/6/00. Japan has advised that the revised route will be promulgated in AIP on 5 Oct 2000 with effect from 30 Nov 2000.	Japan -promulgate the route with designator R217	Japan	30/11/2000	B
R218	Indonesia/Singapore	Partially implemented	24/11/93	S	Amendment proposal to ANP, APAC 00/1 to delete the requirement has been circulated.	ICAO - process APAC 00/1	Indonesia/Singapore ICAO		B
R221	Malaysia	Not implemented. The same route designator in use in Russian Federation	24/11/93	S	ICAO has requested Russian Federation to delete R221 and promulgate the route as R466 in AIP. ICAO has requested Malaysia to implement R221. Input from Russia and Malaysia is being awaited.	Malaysia - consider implementation ICAO - co-ordinate with Russian Federation to redesignate the route as R466 as already assigned as a matter of priority	Malaysia Russian Federation		A
R328	India	Implemented with different route specification	24/11/93	S	APAC 99/4-ATS to amend the requirement is under preparation.	ICAO - process APAC 99/4 in co-ordination with India	India ICAO		B

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Identification		Shortcomings and Deficiencies				Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Implementation status (S, D)***	**Remarks**	**Description**	**Executing body**	**Date of completion**	**Priority for action****
R331	India/Sri Lanka	Not implemented	24/11/93	S	India/Sri Lanka agreed that there was no requirement for this route. Then, India proposed to delete the requirement. APAC 99/4-ATS to delete the requirement is under preparation.	ICAO - process APAC 99/4 in co-ordiantion with India/Sri Lanka	India/Sri Lanka ICAO		B
R333	China	Not implemented	24/11/93	S	China is considering future implementation	China - consider implementation	China		B
R335	China/Hong Kong, China	Not implemented	24/11/93	S		China - consider implementation	China/Hong Kong, China		B
R345	Cambodia/Lao PDR/Thailand	Not implemented	24/11/93	S	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/Lao PDR/Thailand		B
R455	Malaysia	Not implemented	24/11/93	S	ICAO has requested Malaysia to co-ordinate the implementation of R455 with States concerned.	Malaysia - consider implementation	Malaysia		B
R459	Indonesia	Implemented as W51 and W36	24/11/93	S	ICAO has requested Indonesia to implement as R459	Indonesia - consider promulgation of the route with designator R459 in AIP	Indonesia		B
R466	Russian Federation	Implemented as R221 in Russian Federation. Route requirement is listed in EUR/NAT ANP	24/11/93	S	ICAO has requested Russian Federation to delete R221 and promulgate the route as R466 in AIP, and awaits input from Russia.	ICAO - co-ordinate with Russian Federation to redesignate the route as R466 as already assigned as a matter of priority	Russian Federation		A
R579	Indonesia/Malaysia	Not implemented	24/11/93	S	ICAO has requested Malaysia to co-ordinate with Indonesia for implementation.	Indonesia/Malaysia - consider implementation	Indonesia/Malaysia		B
R593	India/Oman	Not implemented	24/11/93	S		India - consider implementation ICAO - co-ordinate with Oman for implementation and report the outcome to SWACG	India/Oman (SWACG) ICAO		B
Revised South China Sea Route Structure	Cambodia/China/ Hong Kong, China/Malaysia Philippines/Singapore/ Thailand/Viet Nam	Not implemented	22/7/97	S	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	Cambodia/China/ Hong Kong(China)/Malaysia/ Philippines/Singapore/ Thailand/Viet Nam		B

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Identification		Shortcomings and Deficiencies				Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Implementation status (S, D)***	**Remarks**	**Description**	**Executing body**	**Date of completion**	**Priority for action****
WGS-84									
WGS-84	Bhutan	Not implemented		D	Data conversion completed, but not published		Bhutan		A
WGS-84	China	Not implemented		D	Differences to Annex 15 - *Aeronautical Information Services* are notified		China		A
WGS-84	DPR Korea	Not implemented		D			DPR Korea		A
WGS-84	French Polynesia	Implemented at main airports		D			French Polynesia		A
WGS-84	Kiribati	Not implemented		D			Kiribati		A
WGS-84	Lao PDR	Partially implemented		D			Lao PDR	1999	A
WGS-84	Malaysia	Partially implemented		D			Malaysia	June, 2001	A
WGS-84	Nauru	Not implemented		D	Conferring with consultant		Nauru		A
WGS-84	Philippines	Partially implemented		D			Philippines		A
WGS-84	Solomon Islands	Not implemented		D			Solomon Islands	1999	A
WGS-84	Vanuatu	Implemented at main airports		D			Vanuatu	1999	A
Type of ATS									
Area Control Services	India	Some ATS route segments in part of Mumbai FIR are subject to Advisory Services	24/11/93	D	Co-ordination in progress through BBACG	India - implement Area Control Services	India		A
Area Control Services	Sri Lanka	Several ATS route segments are subject to Advisory Services	24/11/93	D	Co-ordination in progress through BBACG	Sri Lanka - implement Area Control Services	Sri Lanka		A

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Identification		Shortcomings and Deficiencies				Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Implementation status (S, D)***	**Remarks**	**Description**	**Executing body**	**Date of completion**	**Priority for action****
Airspace Classification									
Airspace Classification	Cambodia	Not implemented	/6/99	D			Cambodia		A
Airspace Classification	China	Not implemented	/6/99	D			China		A
Airspace Classification	Cook Islands	Not implemented	/6/99	D			Cook Islands		A
Airspace Classification	DPR Korea	Not implemented	/6/99	D			DPR Korea		A
Airspace Classification	Fiji	Not implemented	/6/99	D			Fiji		A
Airspace Classification	Japan	Not implemented	/6/99	D		Implementation in progress	Japan		A
Airspace Classification	Kiribati	Not implemented	/6/99	D			Kiribati		A
Airspace Classification	Lao PDR	Not implemented	/6/99	D			Lao PDR		A
Airspace Classification	Myanmar	Not implemented	/6/99	D			Myanmar		A
Airspace Classification	Nauru	Not implemented	/6/99	D			Nauru		A
Airspace Classification	Papua New Guinea	Not implemented	/6/99	D			Papua New Guinea	mid 2001	A
Airspace Classification	Philippines	Not implemented	/6/99	D			Philippines		A
Airspace Classification	Republic of Korea	Not implemented	/6/99	D			Republic of Korea		A
Airspace Classification	Samoa	Not implemented	/6/99	D			Samoa		A
Airspace Classification	Solomon Islands	Not implemented	/6/99	D			Solomon Islands		A
Airspace Classification	Sri Lanka	Not implemented	/6/99	D			Sri Lanka		A
Airspace Classification	Tonga	Not implemented	/6/99	D			Tonga		A
Airspace Classification	Viet Nam	Not implemented	/6/99	D			Viet Nam		A

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Identification		Shortcomings and Deficiencies				Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Implementation status (S, D)***	**Remarks**	**Description**	**Executing body**	**Date of completion**	**Priority for action****
AIP Format									
AIP Format	China	Not implemented	/6/99	D			China		A
AIP Format	Cook Islands	Not implemented	/6/99	D			Cook Islands		A
AIP Format	DPR Korea	Not implemented	/6/99	D			DPR Korea		A
AIP Format	Fiji	Not implemented	/6/99	D			Fiji		A
AIP Format	India	Not implemented	/6/99	D			India	Oct, 2001	A
AIP Format	Indonesia	Not implemented	/6/99	D		Implementation in progress	Indonesia		A
AIP Format	Kiribati	Not implemented	/6/99	D			Kiribati		A
AIP Format	Lao PDR	Not implemented	/6/99	D			Lao PDR		A
AIP Format	Myanmar	Not implemented	/6/99	D			Myanmar		A
AIP Format	Nauru	Not implemented	/6/99	D			Nauru		A
AIP Format	New Zealand	Not implemented	/6/99	D	Differences to Annex 15 - *Aeronautical Information Services* are notified		New Zealand		A
AIP Format	Papua New Guinea	Not implemented	/6/99	D			Papua New Guinea	mid 2001	A
AIP Format	Philippines	Not implemented	/6/99	D			Philippines		A
AIP Format	Samoa	Not implemented	/6/99	D			Samoa		A
AIP Format	Sri Lanka	Not implemented	/6/99	D			Sri Lanka		A
AIP Format	Tonga	Not implemented	/6/99	D			Tonga		A
AIP Format	Viet Nam	Not implemented	/6/99	D			Viet Nam	Dec, 2000	A

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Identification		Shortcomings and Deficiencies				Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Implementation status (S, D)***	**Remarks**	**Description**	**Executing body**	**Date of completion**	**Priority for action****
SAR capability									
SARPs in Annex 12	Cambodia	Annex 12 requirements not implemented. No agreements with adjacent States.	20/2/97	D		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		U
SARPs in Annex 12	Cook Islands	Annex 12 requirements not implemented. No agreements with adjacent States.	31/1/95	D		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		U
SARPs in Annex 12	Maldives	Annex 12 requirements not implemented. No agreements with adjacent States.	24/4/1997	D		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		U

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AGENDA ITEM 5: REVIEW OF OUTSTANDING CONCLUSIONS AND DECISIONS OF APANPIRG

Agenda Item 5: Review of Outstanding Conclusions and Decisions of APANPIRG

5.1 The meeting reviewed the progress made on the outstanding conclusions and decisions of APANPIRG including the conclusions and decisions of its tenth meeting.

5.2 In reviewing the outstanding conclusions and decisions of APANPIRG, the meeting requested that "Actions by States/ICAO" be reflected in a more elaborative manner and urged all States to provide more emphasis to the implementation and resolution of the outstanding conclusions and decisions.

5.3 The meeting noted that there is a need to enhance the reporting system in reviewing the progress on the conclusions and decisions. In this regard, the meeting suggested that advantage be taken of the forthcoming Inter-Regional Coordination meeting by discussing this issue.

5.4 In reviewing Conclusion 9/51, the meeting expressed its concern on the slow progress in fulfilling the manpower requirements of the Regional Office.

5.5 The actions taken by States and the Secretariat on the above mentioned conclusions and decisions were reviewed and updated. The meeting decided on a consolidated list of outstanding conclusions and decisions on which further action were required, as included in Appendix A to the Report on Agenda Item 5.

OUTSTANDING CONCLUSIONS/DECISIONS OF APANPIRG IN ATS/AIS/SAR FIELDS

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.	Area control services now provided across the Bay of Bengal	Completed
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) RVSM was implemented in the Pacific Region on 24 February 2000 b) RNP-10 has been implemented in most of the Pacific Region	Completed On-going
C 4/2	 C	**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. b) The Secretariat should advise the ATS/AIS/SG/4 meeting of the results of the review. 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. Shortcomings and Deficiencies will be listed as they become apparent. b) ATS/AIS/SAR/SG/4 meting was advised.	 On-going Completed

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
C 6/13		**SAR Agreements** That, a) States are encouraged to develop formal SAR agreements on a bi-lateral or multi-lateral basis; and b) ICAO establish and maintain a register of SAR agreements between States.	a) The Regional Office continues to encourage States at regular intervals b) A register has not yet been established. Monitoring undertaken by ATS/AIS/SAR/SG	On-going On-going
C 6/19	 C	**Japan Area "G"** That, the Task associated with Japan area "G" be removed from the work programme of ATS/AIS/SAR/SG as the problem had been determined not to be of an ATS or AIS technical nature, noting that APANPIRG and ICAO will take further steps as appropriate. Noted the conclusion and requested the Secretary General to pursue the subject as a matter of high priority and report the outcome to the Council and inform the APANPIRG accordingly.	The Task has been removed from the work programme of ATS/AIS/SAR/SG. No progress could be made by the Secretariat on this subject. Japan is currently undertaking internal co-ordination with respect to resolving this issue.	 On-going
D 6/21		**Guidelines for the Construction of ATS Routes** That, Task No. 5 from the ATS/AIS/SAR Sub-Group task list be amended to include recommendations concerning the construction of ATS routes using Required Navigation Performance (RNP) and/or Automatic Dependent Surveillance (ADS) functions.	There is no longer a requirement for this task due to the recent publication of a number of ICAO provisions including The Manual on Airspace Planning for the Determination of Separation Minima (Doc 9689) and the 2nd Edition of the Manual on Required Navigation Performance (RNP).	Completed

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
C 7/7		**GPS RAIM Outage Notification** That, GPS outages be treated in a manner similar to other ' forecastable' events with : a) A RAIM prediction (or forecast) service being made available by an authorized service provider; together with, b) Operational requirements being developed by individual States to regulate safe operations of aircraft when RAIM is not available at the destination aerodrome.	a) This item has been overtaken by time and technology and is handled at a State level. b) States have completed the development of operational requirements	Completed Completed
	ANC	Noted the conclusion		
C 8/9		**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.	A SAREX and associated Search and Rescue Seminar is being organised initially for the Bay of Bengal followed by the South China Sea areas.	On-going
	ANC	Noted the conclusion and requested the Secretary General to take appropriate action.		

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
C 8/29	ANC	**Carriage of ACAS and Transponders** That, until such time as a universal standard on the mandatory carriage of ACAS is approved by the ICAO Council, in the Asia/Pacific Region, a) In respect of International Commercial Air Transport Aeroplanes, i) Effective from 1 January 2000, all turbine-powered aeroplanes which have a maximum certificated take-off mass in excess of 15000 kg or which are authorized to carry more than 30 passengers be equipped with an Airborne Collision Avoidance System (ACAS). The Airborne Collision Avoidance System should operate in accordance with ICAO Annex 10, Volume IV. ii) Requirements for mandatory carriage of ACAS for other aeroplanes be at the discretion of individual States. iii) Effective from 1 January 1999, all aeroplanes be equipped with a pressure-altitude reporting transponder. The transponder should be of a type certificated by the State as meeting the accuracy requirements of ACAS. b) In respect of International General Aviation Aeroplanes, Effective from 1 January 1999, all aeroplanes be equipped with a pressure-altitude reporting transponder. The transponder should be of a type certificated by the State as meeting the accuracy requirements of ACAS. c) In respect of International Helicopter operations, Effective from 1 January 1999, all helicopters be equipped with a pressure-altitude reporting transponder. The transponder should be of a type certificated by the State as meeting the accuracy requirements of ACAS.	A Regional Supplementary Procedure has been approved. Further action was undertaken by the ATS/AIS/SAR Sub-group at its year 2000 meeting and passed to APANPIRG/11 for consideration.	Completed

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
		d) In respect of training requirements, i) ICAO ensure that amendments to rules of the air and ATC procedures, as required to support ACAS operation be issued for worldwide application. ii) States implement a training program for pilots and air traffic controllers, to ensure a uniformity of understanding of the function of and operational issues associated with ACAS.		
	ANC	Noted the conclusion, its relation to ANC action (147-2) on State letters AN 11/1.1.23-97/70 and AN 7/1.3.72-97/77 and encouraged States to work towards the early implementation of the conclusion.		
C 8/39		**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.	Several CNS/ATM workshops and seminars were held in the year 2000 and are planned for 2001.	On-going
	C	Noted the conclusion		

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
C 9/1		**Implementation of the Revised South China Sea ATS Route Structure** Noting the need to expedite progress, it is reiterated that, in the interest of improved efficiency and to enhance the on-going safety of operations over the South China Sea, China and Viet Nam are strongly urged to continue their efforts, under the auspices of ICAO, with the aim of resolving outstanding issues which will permit the early implementation of the Revised South China Sea ATS Route Structure.	High level discussions continue between China and Vietnam under the auspices of ICAO	On-going
	C	Noted the conclusion, its relation to APANPIRG/8 Conclusion 8/2 and the need to continue the on-going efforts of the parties with the support of ICAO to implement the revised South China Sea ATS route structure.		
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.	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 9/3		**Examine the possibility of including the Asia Region to the implementation schedule of RVSM in the Pacific Region** In view of the RAN/3 agreement for an RVSM implementation schedule for the Pacific Region, there should be an examination of the capacity needs, fuel-saving benefits and height-keeping performance for routes in the Asian Region, and if warranted, and RVSM implementation schedule should be developed to include the Asian Region.	The ICAO RVSM/TF is planning for and facilitating the implementation of RVSM in Asia Region. A tentative target implementation date of 21 February 2002 has been set for the Western Pacific/South China Sea.	On-going
	ANC	Noted the conclusion and its basis on capacity needs and fuel saving benefits**.**		

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
C 9/6		**Establishment of Area Control Service and 10-Minute Longitudinal Separation using Mach Number Technique** That, States, a) As a matter of urgency upgrade advisory and flight information services to an area control service along major ATS routes within their respective FIRs, and; b) Identify ATS routes where the 10-minute longitudinal separation minima for RNAV equipped aircraft using MNT could be applied and subsequently implement such minima before the end of 1999. c) Identify ATS routes where 10-minute longitudinal separation minima can be applied for RNAV equipped aircraft without using MNT.	a) This matter is now listed as a Deficiency and consequently this item can be closed; b) With respect to the application of MNT, the ICAO Regional Office will progress an amendment to Doc 7030 to streamline the existing provisions c) Implementation still taking place	Closed On-going On-going
	C	Noted the conclusion.		
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. The Document of ATS Route Network has been revised and updated.	On-going

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 is scheduled for October 2000. b) Very little information has been received from States	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 group.	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

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
D 9/47		**Contingency Planning for Y2K problems - Formation of an APANPIRG Y2K Contingency Planning Task Force** That, an APANPIRG Y2K Contingency Planning Task Force be formed as a mechanism for the co-ordination of contingency arrangements of States in the Asia/Pacific Region leading up to and during the Y2K changeover, with the following TOR and composition. **Terms of Reference** a) address the availability and arrangements for present ATS routes within and across the Region during the contingency period; b) manage the development of contingency routing arrangements where new routes need to be established; c) develop protocols for determining priorities and arrangements for the continued passage of international air traffic; d) oversee co-ordination of Asia/Pacific routes and communications with adjacent regions that would be available during the contingency period; e) facilitate rapid communication between States and among users and service providers during the contingency period; f) examine the possible establishment of one or more crisis management unit(s) within the Region to provide assistance to States in the conduction of necessary contingencies. Co-ordinate these arrangements with adjacent regions; and, g) develop letters of agreement required to establish the agreed contingency arrangements, if necessary. h) address any other matter relevant to facilitate the above.	Work successfully undertaken	Completed

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		**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	Secretary General has been requested to take appropriate action.	On-going
	C	Noted the conclusion and requested the Secretary General to take appropriate action thereon		

OUTSTANDING CONCLUSIONS/DECISIONS OF APANPIRG IN THE COM/MET/NAV/SUR FIELDS

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion / Action Taken	Action by States/ICAO	Status
C 2/25		**Provision of RCAG VHF in KABUL FIR** That, ICAO urge Afghanistan to consider providing RCAG VHF stations at Kandahar, Herat and Mazar Sharif using the spare capacity of the satellite link to replace existing deficient HF air-ground communication and to enhance provision of ATS in Kabul FIR	Afghanistan restored basic AFS/AMS COM facilities. RCAG VHF have been implemented with the assistance of IATA.	Completed
C 4/28		**Implementation of the Dhaka/Yangon switched ATS speech circuit** That, Bangladesh and India take urgent action to coordinate and resolve technical and operational issues to ensure implementation of the Dhaka/Yangon switched ATS speech circuit via Calcutta by the end of 1994.	Direct circuit implemented using VSAT.	Completed
C 4/29		**Implementation of ATS speech communication requirements** That, States concerned be urged to implement the requirements for the speech communications using high grade common carrier services or VSAT satellite services, as appropriated, between following centres within the established target dates. (Kabul – Karachi LTF DIR ; Kabul-Lahore LTF SW via Karachi)	VSAT links have been established in Kabul with the assistance of IATA. The Karachi/Kabul AFTN circuit and the Kabul/Karachi and Kabul/Lahore ATS DSCs are in operation.	Completed
C 5/19	C	**Need for technical assistance to support WAFS implementation in the ASIA/PAC Regions** That, ICAO initiate action to provide technical assistance in terms of equipment and training of personnel under the Technical Co-operation Programme to those States that are in need of assistance to receive WAFS products by satellite broadcast. Noted the conclusion and requested the Secretary General to take action as appropriate.	The use of SADIS and ISCS/2 by ASIA/PAC States has continued to grow and further expansion is expected. Implementation of the SADIS and ISCS/2 is being monitored to define the extent of the assistance required.	On-going

Report Reference --- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion / Action Taken	Action by States/ICAO	Status
C 5/23	C	**Operation of the OPMET data banks as an OPMET Data Regional Exchange Points (ODREP) under the ROBEX Scheme** That, a) Bangkok, Brisbane, Nadi, Singapore and Tokyo OPMET data banks be designated as ODREPs under the ROBEX Scheme; and b) ICAO develop a draft proposal for amendment of the regional procedures given in the introductory text to Part IV – Meteorology of the MID/ASIA (Doc 8700) and NAT/NAM/PAC (8755) ANPs and arrange for a consequential amendment of the list of the ODREPs as given in the ROBEX Handbook and their responsibilities as follows : i. Bangkok ODREP/OPMET data bank be responsible for the ASIA/PAC- MID and ASIA/PAC – AFI (except south-east part of the region) OPMET data exchanges; ii. Brisbane ODREP/OPMET data bank be responsible for the ASIA/PAC – SAM and ASIA/PAC – South-east AFI OPMET data exchanges; iii. Nadi ODREP/OPMET data bank be responsible for the South PAC – NAM OPMET data exchanges; iv. Singapore ODREP/OPMET data bank be responsible for EUR – ASIA/PAC OPMET data exchanges; v. Tokyo ODREP/OPMET data bank be responsible for the ASIA/PAC – NAM OPMET data exchanges. Noted the conclusion on the understanding that necessary co-ordination would be made with the APIRG and GREPECAS.	- OPMET data banks have been implemented and most of the banks accepted responsibility to operate as ODREPs. - ROBEX Handbook has been amended to reflect operation of OPMET data banks/ODREPs - New Table MET 4C - OPMET Data Banks has been included in the draft ASIA/PAC FASID.	On-going Completed Completed

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion / Action Taken	Action by States/ICAO	Status
C 6/27		**Areas of** Responsibilities **of the Designated OPMET Data Banks to Support the ROBEX Scheme** That, a) the areas of responsibilities of the designated OPMET Data Banks to support the ROBEX Scheme be defined as follows: i) Areas of responsibility of Bangkok OPMET Data Bank – Bangkok, Bombay, Calcutta, Delhi and Karachi Main and/or TAF Collection Areas; ii) Area of responsibility of Brisbane OPMET Data Bank – Port Moresby, Sydney and Auckland Main and/or TAF Collection Areas; iii) Area of responsibility of Nadi OPMET Data Bank – Nadi TAF Collection Area; iv) Area responsibility of Singapore OPMET Data Bank – Singapore, Jakarta and Kuala-Lumpur Main and/or TAF Collection Areas; and v) Area of responsibility of Tokyo OPMET Data Bank – Beijing, Hong Kong, Tokyo and Seoul Main and/or TAF Collection Areas. b) Data banks exchange the METAR/TAF Bulletins collected within their areas of responsibility with other data banks; and c) Data banks disseminate the METAR/TAF Bulletins within their areas of responsibility to meet operational requirements.	OPMET Data Banks have been implemented. Implementation of the revised ROBEX Scheme has been delayed due to partial implementation of some functions of data banks. The AFS/AFTN Management Task Force/4 Meeting agreed that the revised scheme be implemented within the area of responsibility of any particular data bank following its full implementation. The revised ROBEX Scheme has been implemented by the Bangkok OPMET data bank	On-going
	ANC	Noted the conclusion with the understanding that its substance will be incorporated in a proposal to amend the relevant regional air navigation plans.		

Report Reference --- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion / Action Taken	Action by States/ICAO	Status
C 6/28		**Inter-regional Exchange of OPMET Information** That, pending the implementation of the WAFS satellite broadcast the appropriate ICAO Air Navigation Planning and Implementation Regional Bodies of the neighbouring regions be requested to consider designation of Centres in their respective regions to be responsible for the exchange of OPMET information with the ASIA/PAC Region.	Singapore OPMET Data Bank has implemented the switch of EUR TAF bulletins to the ROBEX Centres in the ASIA/PAC Region. Tokyo OPMET Data Bank has started to switch some of the TAF bulletins from U.S. and Canada to the ROBEX Centres. MID OPMET data is available in BKK OPMET Data Bank.	Completed
	ANC	Noted the conclusion and its relationship to APANPIRG Conclusion 5/23, and requested that, in their consideration of the proposal, the APIRG, GREPECAS and MIDANPIRG should take account of existing AFTN entry/exit points.		
C 8/15		**Amendment to EUR-ASIA/PAC AFTN Routing** That, a) the AFTN routing between EUR and ASIA/PAC Regions be amended to be via Bangkok, Singapore and Tokyo as proposed by the AFS Management Task Force; and b) ICAO coordinate implementation of the routings	Co-ordination was completed and all centres concerned implemented agreed routing effective 15 November 1999.	Completed
C 8/27		**Volcanic Ash Warning System** That, ICAO make arrangements for the VAW Study Group and WAFS Study Group to consider the following proposals relating to volcanic ash warning system : a) Inclusion of volcano number in SIGWX charts; b) establishing of the World-wide Ash Encounter Data Base; c) consideration of the procedure for dealing with ash cloud which crosses boundaries between adjacent VAACs; and d) establishing the exchange of information and reports on incidents involving ash encounters by aircraft.	a) Proposals developed by the SG were forwarded to the Secretary of the Volcanic Ash Warning SG (VAWSG) and WAFSSG; b) Some of the proposals were considered by Volcanic Ash Workshop (France, May 1998); and c) Implementation of the International Airways Volcano Watch in the ASIA/PAC was reviewed by the COM/MET/NAV/SUR SG.	Completed
	ANC	Noted the conclusion and requested the Secretary General to consider the proposal.		

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion / Action Taken	Action by States/ICAO	Status
C9/12	ANC	**Standardized Exchange of Electronic Aeronautical Information/Data.** That, a) States participate in the on-going development of a globally compatible aeronautical information exchange model through ICAO; and b) States support the preparation of guidance material to assist States in implementation of the exchange model which will enable the exchange of aeronautical information in a consistent and internationally accepted manner. Noted the conclusion and understood that its implementation is meant to be a strong support for the Aeronautical Data Modelling Study Group.	A number of States participated in the ICAO AIS/MAP Divisional Meeting 23 March-3 April 1998. The Aeronautical Data Modeling Study Group (ADMSG) of ANC was formed and has been undertaking tasks related to the development of an aeronautical data exchange model. No further action can be undertaken by APANPIRG.	On-going
C 9/17	ANC	**ICD for Radar Data Exchanges** That, a) the ASTERIX Standard Document be used as an ICD for Radar Data Exchange within ASIA/PAC Region; b) ICAO issue a Regional Supplement containing SAC with guidance for SIC assignment as show in Appendix B to the report on Agenda Item 2.2; c) States allocate SIC based on function and facility categories and advise ICAO Regional Office for inclusion in the Supplement; and d) ICAO coordinate assignment of SAC with States and Territories in the Region and with EUROCONTROL on procedural matter Noted the conclusion and requested the Secretariat to take action as appropriate, including examination of the need to develop SARPs related to radar data exchange.	- Tables containing SAC allotment for States in the ASIA/PAC region and the guidance material or allocation of SIC by States for individual facility were sent to States. - Supplement to the ASTERIX ICD for ASIA/PAC region has been issued. - States have allocated SIC - Coordination completed	Completed

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion / Action Taken	Action by States/ICAO	Status
C 9/18		**Operational efficacy of the ISCS/2** That, a) ICAO carry out a survey on the operational efficacy of the ISCS/2 and **b)** results of the survey be made available tot he ISCS/2 provider State and reported to the COM/MET/NAV/SUR SG/3 Meeting.	- Proposal to carry out a survey on the operational efficacy of the ISCS/2 was forwarded to the ISCS Provider State for review and consideration. - The United States was invited to review the proposed survey form and to provide comments.	To be completed in 2001
C 9/22		**Location of two-way VSATs (SADIS and ISCS) at volcanic ash advisory centres (VAACs)** That the VAAC provider States consider the installation of two-way VSATs (SADIS or ISCS), as appropriate to ensure that their volcanic ash advisories in message and graphical formats could be transmitted to the WAFCs for immediate uplink on the SADIS and ISCS satellite broadcasts. *Note : Designated VAACs are located in Australia (Darwin), Japan (Tokyo), New Zealand (Wellington) and United States (Anchorage and Washington)*	The VAAC provider States, namely Australia, Japan, New Zealand and United States have been invited to consider the installation of two-way VSATs.	Completed
C 9/25		**SADIS enhanced two-way VSAT test programme** That, a) Singapore be invited to consider a proposal to be designated as a trial site for the SADIS two-way VSAT test programme; and b) ICAO Secretariat provide assistance in co-ordinating the matter between Singapore and the United Kingdom as the SADIS provider State.	- Singapore has advised ICAO that it would be unable to participate in the test programme. - Thailand has advised ICAO that it would be unable to participate in the test programme.	Completed Completed
C 9/26		**Amended ASIA/PAC WAFS Transition Plan and Procedures** That, the ASIA/PAC WAFS Transition Plan and Procedures for the transfer of responsibilities of the RAFCs to the WAFCs London and Washington be amended as shown in Appendix F to the report on Agenda Item 2.2.	- The WAFS Transition Plan and Procedures have been amended; and - The ASIA/PAC WAFS Transition Plan and Procedures are being successfully implemented in co-ordination between the RAFCs and WAFCs provider States and with assistance of the WAFS Task Force.	Completed

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion / Action Taken	Action by States/ICAO	Status
C 9/30		**Global exchange of OPMET messages** That, ICAO develop a proposal to amend Annex 3 and the regional air navigation plans to introduce a requirement for the global exchange of OPMET messages and their dissemination by the ICAO satellite broadcasts.	Proposal for amendment to Annex 3 regarding global exchange of OPMET data was developed by the Secretariat and forwarded to States for comments.	To be completed in 2001
	ANC	Noted the conclusion and requested the Secretariat to develop a proposal to amend Annex 3 and the air navigation plans to provide for global exchange of OPMET information using all elements of the aeronautical fixed service, as appropriate.		
C 9/32		**GNSS Frequency Protection** That, as a matter of urgency States note the critical potential interference problems associated with the proposed sharing of the GNSS band with non-aeronautical mobile satellite service. States are urged to provide this information to all GNSS users, who should advise their representatives to WRC'2000, of the need to protect and secure the band from interference by retaining exclusive allocation to GNSS. States should also urge their representatives to support ICAO's position on this matter at all forums.	Action was taken in accordance with the Conclusion. States were advised to take necessary actions to support ICAO Position at APT Meetings and at WRC 2000. ICAO position was supported by WRC 2000.	Completed
	C	Noted the conclusion and its relation to ITU World Radio Conference (WRC-2000).		
C 9/34		**Draft Basic ASIA/PAC ANP and Draft ASIA/PAC FASID** That, the draft Basic ASIA/PAC ANP and the draft ASIA/PAC FASID be adopted, circulated to States in the region for them to review and verify the entries with respect to their facilities and services, prior to processing proposal for amendment to the Plan.	The documents reviewed and verified by States. A proposal for amendment of the plan is processed in accordance with established procedures.	Completed
	C	Noted the conclusion and expressed appreciation to the States concerned.		

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion / Action Taken	Action by States/ICAO	Status
C 9/36	ANC	**Proposed Withdrawal Dates for Ground Based Communications, Navigation and Surveillance Facilities** That, information from States regarding proposed dates for the withdrawal of ground based Communication, Navigation and Surveillance facilities be obtained and that this information be provided to all APAPINRG Sub-Group Meetings in 1999. Noted the conclusion and that caution should be given to the States concerned that any withdrawal plans should be in line with the regional CNS/ATM implementation plans, including co-ordination with the operators and after consultations with users through the regional planning process.	Further action will be taken in accordance with ANC directions.	On-going

AGENDA ITEM 6: DEVELOP FUTURE WORK PROGRAMME

Agenda Item 6: Future Work Programme

APANPIRG Sub-group Work Programme Review Task Force

6.1 APANPIRG/10, in Decision 10/45, established an APANPIRG Sub-group Program Review Task Force. The Task Force comprising the Chairpersons and Secretaries of the three Sub-groups met from 20-22 March and 30 September 2000 at the ICAO Regional Office, Bangkok.

6.2 The Task Force reviewed the work programmes of the three Sub-groups and was of the opinion that the CNS/ATM/IC Sub-group had completed most of its tasks and could be dissolved.

6.3 Subsequently the report of the Task Force was presented to each of the three APANPIRG Sub-groups for their comment. The COM/MET/NAV/SUR Sub-group had supported the recommendation to dissolve the CNS/ATM/IC Sub-group, the ATS/AIS/SAR Sub-group noted the recommendation and the CNS/ATM/IC Sub-group held a differing opinion.

6.4 The meeting was advised that in the light of the Task Force considerations the CNS/ATM/IC Sub-group had reviewed its method of operation. It was recognized that a revised agenda should be developed which would focus more on co-ordination and implementation activities in addition to the sharing of information. Issues in the Key Priorities List, which are at a point of development, could also be specifically placed on the Agenda. A working group to develop these ideas prior to the next Sub-group meeting was formed, consisting of representation from Australia, Japan, United States and IATA.

6.5 The meeting noted that the subject matter that was normally discussed at the CNS/ATM/IC Sub-group was very useful to States in developing their CNS/ATM strategies. The last meeting of the Sub-group re-enforced this. There was also sound merit in having equipment manufacturers and aircraft companies present to advise the meeting of their latest developments in CNS/ATM systems.

6.6 The meeting had considerable comments on the results of the Task Force deliberations with the general opinion being that the CNS/ATM/IC Sub-group had merit and should be retained.

6.7 After considering all the issues, the meeting decided to defer a decision regarding the dissolution of the CNS/ATM/IC Sub-group and review this matter at APANPIRG/12.

Schedule of Future meetings

6.8 The meeting noted that the General Assembly of the ICAO and the 30th Directors-General Civil Aviation meeting will be held on 20 September - 5 October 2001 and 5 - 9 November 2001 respectively, and decided that the tentative schedule of meetings for 2001 and 2002 shall be as follows:

2001

ATN Seminar	12-13 March 2001	Singapore
ATN Transition Task Force	14-16 March 2001	Singapore
ATS/AIS/SAR SG/11	25-29 June 2001	Bangkok
COM/MET/NAV/SUR SG/5	16-20 July 2001	Bangkok
CNS/ATM ICSG/7	30 July-3 August 2001	Bangkok
APANPIRG/12	20-24 August 2001	Bangkok

2002

ATS/AIS/SAR SG/12	July 2002
COM/MET/NAV/SUR SG/6	July 2002
CNS/ATM ICSG/8	August 2002
APANPIRG/13	September 2002

6.9 The meeting decided on the following provisional agenda for the next meeting:

Provisional Agenda for APANPIRG/12

Item 1: Review of Council and ANC actions on APANPIRG/11 Report

Item 2: ASIA/PAC Air Navigation System and Related Activities

- 2.1 ATS/AIS/SAR Matters
- 2.2 COM/MET/NAV/SUR Matters
- 2.3 ATS Co-ordination Groups' Activities
- 2.4 Other Related Matters

Item 3: CNS/ATM Implementation and Related Activities

Item 4: Shortcomings and Deficiencies in the Air Navigation fields

Item 5: Review of Outstanding Conclusions and Decisions of APANPIRG

Item 6: Develop Future Works Programme

Item 7: Any other business

AGENDA ITEM 7: ANY OTHER BUSINESS

Agenda Item 7: Any other business

Conference on the Economics of Airports and Air Navigation Services

7.1 The meeting was provided with a brief summary of issues addressed by the Conference on the Economics of Airports and Air Navigation Services (ANSConf 2000, Montreal 19 to 28 June 2000) which were of interest to APANPIRG. The group noted that the conference had made 30 recommendations (Appendix A to the Report on Agenda Item 7). It was further noted that the recommendations of the Conference were subject to the Council's approval, and would be addressed accordingly by the Council later this year.

7.2 A commercial approach to the management and operation of airports and air navigation services, coupled with specific financial and operational guidelines as well as safety and security oversight, should help governments cope effectively with airport and airspace congestion resulting from the consistent growth of air traffic worldwide. This conclusion formed the basis of recommendations made by the ANSConf 2000 where it was also emphasised that in accordance with the Convention on International Civil Aviation, States remain responsible for the provision of airports and air navigation services, even if their operation is delegated to a commercial body.

7.3 The group noted that the Conference made a number of specific recommendations to assist States in dealing with the forecast 2.5 fold increase in total passenger traffic and the doubling of aircraft movements between 1999 and 2020, which includes the following:

- implement an effective oversight mechanism to deal with the monopolistic nature of airports and air navigation services, to measure performance and productivity and to ensure compliance with fair and equitable cost-recovery practices as well as other ICAO policies and principles;
- consider pre-funding (the levy of charges from passengers for future airport services) in specific safeguarded circumstances;
- limit charges to services that are related to civil aviation operations; and
- ensure that levying of passenger service charges does not create additional queuing and delays at airports.

7.3 The group was informed that the Conference also recommended that ICAO develop further guidance on such matters as the advantages and disadvantages of intermingling non-aeronautical revenues (commercial concessions at airports) with aeronautical revenues (e.g. landing and passenger service charges); allocating the costs of the Global Navigation Satellite Systems (GNSS) to and amongst aviation users; and recovering the costs of search and rescue operations.

ATTACHMENTS TO THE REPORT

Attachment 1

Eleventh Meeting of the ASIA/PACIFIC Air Navigation Planning and Implementation Regional Group (APANPIRG/11)
Bangkok, Thailand, 2 to 6 October 2000

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International Civil Aviation Organization

ELEVENTH MEETING OF THE
ASIA/PACIFIC AIR NAVIGATION PLANNING AND
IMPLEMENTATION REGIONAL GROUP (APANPIRG/11)
Bangkok, 2 to 6 October 2000

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