INTERNATIONAL CIVIL AVIATION ORGANIZATION

REPORT OF THE THIRTEENTH MEETING OF THE ASIA/PACIFIC AIR NAVIGATION PLANNING AND IMPLEMENTATION REGIONAL GROUP (APANPIRG/13)

BANGKOK, THAILAND - 9 – 13 SEPTEMBER 2002

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

TABLE OF CONTENTS

PART I - HISTORY OF THE MEETING

PART II - REPORT ON AGENDA ITEMS

TABLE OF CONTENTS

Attachments to the Report

PART I - HISTORY OF THE MEETING

I - HISTORY OF THE MEETING

1.1 Introduction

1.1.1 The Thirteenth Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/13) was held in Bangkok, Thailand from 09 to 13 September 2002 at ICAO Asia and Pacific Office.

1.2 Attendance

1.2.1 The meeting was attended by 80 participants from 14 Member States, 10 other Contracting States of the ASIA/PAC Regions and 4 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 meeting was opened by Mr. Lalit B. Shah, Regional Director, ICAO Asia and Pacific Office. Mr. Shah stated that Mr. H.S. Khola who was serving the Group as its Chairperson had relinquished this position following his retirement as Director General of Civil Aviation of India during the early part of 2001. Mr. Shah paid tribute to Mr. Khola for having served and guided the Group faithfully with a high degree professionalism and dedication.

1.3.2 Mr. Shah welcomed the newly nominated officials from the APANPIRG member States, in particular the most recent member, Tonga and acknowledged the participation of several other Contracting States of the region who are not members of APANPIRG. He stressed that non-member States of the Asia Pacific region are entitled to participate in the Group's activities with full rights if they so wish.

1.3.3 Mr. Shah paid tribute to the leading States in the region and other key players who have contributed to the work of APANPIRG,, its Contributory Bodies and the many Task Forces. Deserving special mention were the Chairmen of the three Sub-Groups whose dedication, commitment and leadership spoke well for the quality work that APANPIRG produced in the Asia Pacific region.

1.3.4 He acknowledged the presence of several Directors General and Chief Executives who were attending APANPIRG/13 thus enhancing the value of the proceedings.With regard to International Organizations, Mr. Shah welcomed the presence of IATA, IFALPA, IFATCA and IBAC. He also welcomed the presence of Mr. Vladimir Zubkov, Chief of Regional Affairs Office of ICAO Headquarters at the meeting.

1.3.5 On a more sombre note, he pointed out that APANPIRG/13 was meeting in the week which was about to mark the first year of a collosal tragedy that befell New York City on 11 September 2001. He requested that prayers and thoughts of the meeting be offered and conveyed to the bereaved families and friends of the many victims of international community. He requested that these sentiments be kindly conveyed by the US delegation.

1.3.6 Mr. Shah also touched on some of the issues that lay ahead such as the 5th World Air Transport Conference, 11th Air Navigation Conference, ICAO's position on WRC-2003, Aerodrome Certification, expansion of the IUSOAP into Annex 11, 13 and 14 and the need to establish the Regional Aviation Safety Management Agency (RASMA).

1.3.7 He underscored the important issue of intensifying efforts in raising States's awareness of air navigation deficiencies identified by PIRGs related to safety. In this context, he informed the meeting that the Secretary-General will be transmitting a State letter, very shortly, to the Ministers of Civil Aviation of the States which are experiencing air navigation deficiencies, urging States to formulate an action plan to eliminate those deficiencies by allocating sufficient resources.

1.3.8 Mr. Shah also took the opportunity to thank the Royal Thai Government, the host country of the Regional Office, for their generous support in the commencement of the new Conference Facility, which is expected to be completed by the end of 2003.

1.3.9 Mr. Shah then invited Mr. Vladimir Zubkov to briefly share some thoughts that may be of interest to the meeting.

1.3.10 Mr. Zubkov made brief remarks along the three lines: reflection on the past, significance of the present and contribution into the future. Talking about what has transpired in the period preceding the meeting he underlined some ANC and Council actions on the outcome of the APANPIRG/12 that may be considered as an indication of the right direction by the Group. In particular, reference was made to the well appreciated work of the APANPIRG contributory bodies which prepare extensive material aimed at improving the planning and implementation of the facilities and procedures. Region's ability to utilize the powers and the potential of the different APAC fora, like the meetings of the Directors General of Civil Aviation and regional preparatory meetings was recognized. It proved to be especially practical in connection with the preparation to the WRCs when aeronautical frequency spectrum protection issue had to be elevated to the higher level.

1.3.11 The significance of the present day was illustrated by the imposing list of the Agenda items to be dealt by the meeting. It was remarked that the Secretariat, on its side, applied innovative ways of preparing the working papers by assuring expert consultations with the relevant Headquarters' Bureaus before the presentation of the documentation to the meeting.

1.3.12 Readiness and contribution to the future was encouraged and a need to prepare a regional input to the 11th Air Navigation Conference was singled out as one of the immediate and imperative tasks of the Regional Group.

1.4 Election of Chairperson

1.4.1 Following introduction of the participants, the Regional Director invited the meeting for a nomination to the position of the Chairperson of the Group.

1.4.2 The Chief Executive of the Civil Aviation Authority of Fiji Islands (CAAFI), Mr. Norman Yee proposed Mr. Wong Woon Liong, Director General, Civil Aviation Authority of Singapore (CAAS) for the position of Chairperson of the Group. In proposing, Mr. Yee highlighted the experience, credentials and achievements of CAAS under the leadership of Mr.Wong. The proposal was seconded by the Director General of Civil Aviation, India, Mr. Satendra Singh. The meeting unanimously elected Mr. Wong as the Chairperson.

1.4.3 Mr.Wong, in taking up the chair, thanked Fiji and India for their support and stated that he looked forward to close cooperation and guidance of the Group in carrying out his duties as Chairperson of APANPIRG. He also paid tribute to the excellent work carried out by the previous Chairpersons.

1.4.4 Mr. Wong thanked the ICAO Regional Office for the excellent arrangements made for the meeting.

1.5 **Officers and Secretariat**

1.5.1 Mr.. W.L. Wong, DG, CAA, Singapore as Chairperson of the Group presided over the meeting. 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. Mr. V. Zubkov, Chief of Regional Affairs Office, ICAO Headquarters, was adviser to the meeting.

1.5.2 The meeting was also assisted by Mr. Shaukat A. Ali, Deputy Regional Director, Mr. H.V. Sudarshan, Regional Affairs Officer, ICAO Headquarters, Mr. D. Ivanov, Regional Officer/MET, Mr. J. E. Richardson, Mr. David Moores and Mr. Hiroshi Inoguchi, Regional Officers/ATM, Mr. K.P. Rimal and Mr. Li Peng, Regional Officers/CNS, Dr. Paul Hooper, Regional Officer/AT, Mr. Roger Mulberge, Regional Officer/FS and Mrs. Rachani Kajiji, Administrative Officer from the ICAO Asia and Pacific Office.

1.6 **Agenda of the meeting**

1.6.1 The Agenda adopted by the meeting was as follows:

Agenda Item 1 Review of Council and ANC actions on APANPIRG/12 Report

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

2.1 ATS/AIS/SAR Matters

2.2 CNS/MET 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

1.7 **Working Arrangements, Language and Documentation**

1.7.1 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.

1.8 Conclusions and Decisions - Definition

1.8.1 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 pages i-6 to i-8.

1.9 Terms of Reference of APANPIRG

1.9.1 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 (Cont'd)

Conclusion 13/20	-	**24 bit aircraft address**
Conclusion 13/21	-	**Preparation for World Radio communication Conference – 2003 (WRC 2003)**
Conclusion 13/22	-	**ATN related procedures for Basic ANP and FASID**
Conclusion 13/23	-	**Process of review and Notification of difference**
Conclusion 13/24	-	**SADIS strategic assessment tables**
Conclusion 13/25	-	**Regional survey on the States' plans for transition to GRIB and BUFR Coded AFS products**
Conclusion 13/26	-	**Amended ASIA/PAC WAFS Transition Plan and Procedures**
Conclusion 13/29	-	**Inclusion of SIGMET in VOLMET**
Conclusion 13/30	-	**Regional survey on the current status and future plans of States to process the MET component of ADS Reports**
Conclusion 13/32	-	**QA MET seminar for ASIA/PAC Region**
Conclusion 13/34	-	**Strengthening the Civil/Military Coordination Programme**
Conclusion 13/35	-	**Amendment to the Statement of BORPC**
Conclusion 13/36	-	**Aerodrome Certification**
Conclusion 13/37	-	**Need for Adequate Resources for Traffic Forecasting Groups**
Conclusion 13/39	-	**Asia/Pacific Regional Plan for the New CNS/ATM Systems**
Conclusion 13/40	-	**Selection of GPS receiver standard for GNSS implementation**
Conclusion 13/41	-	**Inclusion of ADS-B on the list of Key Priorities of the CNS/ATM Implementation in the Asia/Pacific Region**
Conclusion 13/44	-	**Support for States to establish Safety Management Systems to meet the obligation of Annex 11**
Conclusion 13/45	-	**Continuation of the work of the Asia Pacific Airspace Safety Monitoring (APASM) Task Force to develop a Regional Airspace Safety Monitoring Agency (RASMA) for the Asia/Pacific Region**

List of Decisions

PART II - REPORT ON AGENDA ITEMS

AGENDA ITEM 1: REVIEW OF ACTIONS TAKEN BY ANC AND THE COUNCIL ON THE REPORT OF APANPIRG/12 MEETING

Agenda Item 1: Review of Action taken by ANC and the Council on the Report of APANPIRG/12 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 Twelfth Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) held in Bangkok from 20 to 24 August 2001. The meeting noted the specific actions taken by the ANC and the Council as well as the follow-up actions 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 With regard to Decision 12/9 concerning the development of lateral offset procedures for application in the Asia/Pacific Regions, the meeting noted that further guidance was being developed by the Separation and Airspace Safety Panel (SASP) and that the development of lateral offset procedures for regional implementation should be in accordance with global guidelines to avoid proliferation of procedures with potentially conflicting requirements.

1.3 In relation to Conclusion 12/30, calling for operation of VAACs on a 24-hour basis, the meeting noted that the Secretariat was requested to develop proposals for amendment of Annex 3 and the Handbook on the International Airways Volcano Watch (IAVW) (Doc 9766) accordingly.

1.4 In response to Conclusion 12/43 regarding the expeditious development of ICAO guidance material on the subject of ATS Safety Management, the meeting noted that the Secretariat had already made considerable progress in the development of draft material, which is scheduled for completion in early 2003.

1.5 The meeting noted that the Commission had appreciated the APANPIRG's initiative in the proposed establishment of regional safety arrangements (Decision 12/44 refers) and that the Secretariat was tasked to develop provisions for a global approach to establishing airspace safety performance-monitoring arrangements.

1.6 The meeting thanked the Council and Air Navigation Commission for their valuable guidance on various activities of the APANPIRG and decided that it would be taken into account in the development of ongoing action plan of the region.

CONCLUSIONS/DECISIONS OF APANPIRG/12

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
C 12/1		**Observation of non-compliance of RVSM operational approval procedures** That, States are urged to co-operate with APARMO to investigate RVSM approval status of operators and aircraft with the aim of resolving problems of RVSM non-compliant operations.	States were urged to co-operate with APARMO in this regard.	On-going
C 12/2	*ANC*	**Implementation of RVSM in the Western Pacific/South China Sea area** That, States are urged to continue their efforts to implement RVSM in the Western Pacific/South China Sea area in order to realize the foreseen benefits as early as possible. *Noted the conclusion and was pleased to receive information that RVSM had been implemented successfully in this designated area effective from 21 February 2002.*	The implementation of RVSM in the Western Pacific/South China Sea area which took place at 1930 UTC on 21 February 2002 went smoothly. Phnom Penh, Kota Kinabalu/Kuala Lumpur, Manila, Singapore, Bangkok, Ho Chi Minh FIRs and Sanya AOR were involved in this implementation. RVSM Task Force has been progressing its tasks towards the next phase implementation in the remainder of Western Pacific/South China Sea area, more specifically in Hong Kong, Bali/Jakarta/Ujung Pandang, Vientiane, and Hanoi FIRs and Sanya AOR, on 31 October 2002, which will complete RVSM implementation in the Western Pacific/South China Sea area.	On-going
C 12/3	*ANC*	**Implementation of RVSM in the Bay of Bengal area and beyond in conjunction with the planned implementation in the Middle East Region** That, States are urged to implement RVSM in the Bay of Bengal area and beyond in conjunction with the planned implementation in the Middle East Region on 27 November 2003 in order to realize the end-to-end seamless RVSM operation between Asia/Middle East/Europe south of the Himalayas. *Noted the conclusion and requested the Secretary General to urge the States concerned to implement RVSM to provide an end-to-end Asia/Europe RVSM environment.*	RVSM Task Force defined the airspace in which RVSM will be implemented on 27 November 2003, which includes Bangkok, Calcutta, Chennai, Colombo, Delhi, Dhaka, Jakarta, Karachi, Katmandu, Kuala Lumpur, Lahore, Male, Mumbai and Yangon FIRs. All States concerned have agreed to the implementation date of 27 November 2003. RVSM Task Force has been progressing its tasks towards the planned implementation in the Bay of Bengal and beyond.	On-going

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
C 12/4		**Inter-regional co-ordination between the Asia and Middle East Regions in relation to RVSM implementation** That, ICAO facilitate inter-regional co-ordination between the Asia and Middle East Regions involving States concerned with the aim of joint harmonized implementation of RVSM.	A Joint Interface Meeting of RVSM Task Forces between the Asia/Pacific and Middle East Regions involving India, Maldives and Pakistan from the Asia Region and Afghanistan, Islamic Republic of Iran, Oman, the United Arab Emirates (UAE) and Yemen from the Middle East Region, as well as IATA and IFALPA, is scheduled in Abu Dhabi, UAE, from 19 to 20 October 2002.	On-going
C 12/5	*ANC*	**Implementation of the EMARSSH Project** That, to gain benefits in terms of safety, efficiency and capacity enhancements that meet the objectives envisaged in the *Global Air Navigation Plan for CNS/ATM Systems* (Doc 9750), participant States and international organizations concerned are urged to make full commitment to the EMARSSH project to meet the implementation date of 28 November 2002. *Noted the conclusion and requested the Secretary General to call upon participating States and international organizations to make a full commitment to this project.*	Six EMARSSH Task Force meetings have taken place since APANPIRG/12. The revised ATS route structure has been agreed to by all States concerned and IATA. AIS documentation will be promulgated on AIRAC date of 5 September 2002 with an effective date for implementation of the revised route structure and subsequent deletion of some previous routes of 28 November 2002.	On-going
C 12/6		**Regional Contingency Planning Survey** That, ICAO survey States in the Asia/Pacific Region to determine the status of contingency planning and the extent to which contingency plans are exchanged between neighboring States.	A survey from States on the status of their National Contingency Plan arrangements has not been completed. Nevertheless, a framework for National Contingency Plans was presented to States at ATS/AIS/SAR/SG/12. States were encouraged to use this framework in association with their State Y2K contingency plans in developing their Plans in coordination with their neighbouring States.	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 12/7		**Guidance Manual for Aeronautical Information Services in the Asia/Pacific Region** That, the *Guidance Manual for Aeronautical Information Services in the Asia/Pacific Region* shown at Appendix G to the Report on Agenda Item 2.1 be published in accordance with the established procedures.	The first edition of the Guidance Manual will be distributed to States in the Region shortly.	On-going
	ANC	*Noted the conclusion and that the guidance manual would be published in accordance with established procedures.*		
C 12/8		**Special Implementation Project for an AIS Seminar in 2002** That, ICAO urgently consider a proposal for an Asia/Pacific Special Implementation Project to be established in order to hold an AIS Seminar in 2002 with the primary objective to improve AIS in relation to AIS automation and quality assurance programme.	ATS/AIS/SAR/SG AIS Automation Task Force developed a detailed programme of the Seminar. The AIS Seminar is planned in Bangkok, 17 – 20 December 2002.	On-going
	C	Noted the conclusion and that such a project would be put forward for the Council's approval through established procedures.		
D 12/9		**Development of lateral offset procedures for application in the Asia/Pacific Region** That, as a matter of urgency, the ATS/AIS/SAR/SG develop lateral offset procedures for application in the Asia/Pacific Region, and in co-ordination with other regional planning groups and bodies concerned, develop global offset procedures.	ATS/AIS/SAR SG/12 meeting reviewed progress to develop regional and global lateral offset procedures. The meeting noted that APANPIRG/12, D12/9 had been overtaken by events and ICAO had revised the global guidelines and issued a State letter. Work is ongoing by SASP to develop further guidelines and global procedures are being progressed by ICAO HQ. At the regional level, ISPACG is considering implementing of 1 NM lateral offsets in the South Pacific Region in September 2002 and the results of this activity should be analysed before proceeding with a regional implementation programme. The meeting recommended that APANPIRG/13 D 12/9 is no longer relevant.	On-going
	ANC	*Noted the conclusion and that the development of lateral offset procedures for regional implementation should be in accordance with global guidelines.*		

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
			Consideration should be given to conduct a study of States' requirements to implement lateral offsets and based on this information, to develop a coordinated approach to regional implementation.	
C 12/10	*C*	**Special Implementation Project – International Seminar and SAREX** That, ICAO urgently consider a proposal for an Asia/Pacific Special Implementation Project to be established with the primary objective to improve search and rescue services, co-ordination and cooperation between States. *Noted the conclusion and that such a project would be put forward for the Council's approval through established procedures.*	Due to other priorities in the ATM field, it was decided to defer the Special Implementation Project on the International Seminar and SAREX to 2002. States will be approached regarding the hosting of this SAREX/Seminar. When this decision has been finalized, other States of the Bay of Bengal area will be invited to contribute to the conduct and organizational aspects of making this event a success.	On-going
D12/11		**ATS/AIS/SAR Subject/Task List** That, the ATS/AIS/SAR Subject/Task List as contained in Appendix I 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 as assigned by APANPIRG/11.	ATS/AIS/SAR/SG/12 meeting reviewed and updated the Subject/Task List. This updated List is at Appendix A to the Report on Agenda Item 7. The meeting formulated the Draft Decision 12/9.	Completed
C 12/12		**Need to monitor AFTN circuit performance** That, States concerned closely monitor performance of the following AFTN circuits and coordinate upgrading the circuits capacity, in accordance with the AFTN plan. 1. Manila/Singapore 2. *Nadi/Apia Faleolo 3. Mumbai/Colombo 4. Christchurch/Papeete 5. Mumbai/Nairobi 6. Hong Kong/Manila 7. Kuala Lumpur/Chennai 8. Colombo/Singapore 9. Tokyo/Singapore 10. Colombo/Male	States concerned were requested to monitor loading condition and upgrade circuit capacity as specified in Table CNS-1A AFTN Plan. Consequently, - Manila/Singapore - upgraded to 300 baud; - Nadi/Apia - reconfigured to Apia/USA and implemented; - Mumbai/Colombo - planned for upgrading to 2400 bps in 12/02.	States are expected to complete action by the end of 2002.

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
		*the Apia Faleolo/Nadi AFTN circuit will be rerouted by Apia Faleolo/USA upon approval of the amendment proposal to ASIA/PAC ANP.	Testing going on; - Christchurch/Papeete - upgraded to 2400 bps; - Hong Kong/Manila – upgraded to 300 baud; - Kuala Lumpur/Chennai – upgrading planned for 12/02; - Colombo/Singapore – upgrading planned for 12/02; - Tokyo/Singapore – upgrading planned for 12/02; and - Colombo/Male – upgrading planned for 12/02.	
C12/13		**Regional ATN Planning Documents** That, the ASIA/PAC ATN ATS Message Handling System Plan, ATN Addressing Plan, ATN Network Service Access Point (NSAP) Address Registration Form and ATN Routing Architecture Plan be adopted and circulated to States in the ASIA/PAC and adjacent regions.	The ATN Planning Documents were published and distributed to States in ASIA/PAC region and adjacent regions.	Completed
C 12/14	*ANC*	**ATN Transition Plan** That, the ASIA/PAC ATN Transition Plan provided in Appendix A to the report on Agenda Item 2.2 be adopted and the ASIA/PAC ATN Router Plan contained in Table CNS-1B be included in PART IV-CNS of ASIA/PAC FASID. *Noted the Conclusion and requested the Secretary General to monitor related developments in other regions.*	Editorial changes were made to the plan and presented to the ATN Transition Task Force. A proposal for amendment to the FASID is being processed.	Completed
D 12/15		**Amendment of the Subject/Tasks List of the ATN Transition Task Force** That, the updated Subject/Tasks List of the ATN Transition Task Force provided in Appendix B to the report on Agenda Item 2.2 be adopted.	The changes adopted by APANPIRG included in the Subject/Tasks List of the Task Force and presented to the Fourth Meeting of the Task Force to note and to take appropriate action.	Completed

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
C 12/16		**Strategy for the Provision of Precision Approach and Landing Guidance System** That, the Strategy for the Provision of the Precision Approach and Landing Guidance System provided in Appendix C to the report on Agenda Item 2.2 be adopted.	The strategy was brought to the attention of States for compliance.	Completed
C 12/17		**Strategy for the Implementation of GNSS Navigation Capability in the ASIA/PAC Region** That, the Strategy for the Implementation of GNSS in the ASIA/PAC Region provided in Appendix D to the report on Agenda Item 2.2 be adopted.	The strategy was brought to the attention of States for compliance.	Completed
C 12/18	 *ANC*	**Checklist for GNSS Implementation** That, the Checklist for introduction of GNSS based operations contained in Appendix E to the report on Agenda Item 2.2 be circulated to States in the ASIA/PAC region to serve as a guidance material. *Noted the Conclusion and requested Secretary General to monitor related developments in other regions to harmonize GNSS-based operation.*	The checklist was provided to States for their use in planning and implementing GNSS as per the strategy adopted by APANPIRG.	Completed
C 12/19		**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;	ICAO Position was presented to the APT Preparatory Group Meetings for WRC-2003. The conclusion was brought to the attention of States to take appropriate action. List of CAA and APT contact points were provided to States. APT Meeting schedules were also provided to States with a request to participate at APT Meetings.	Completed Completed 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) ensure, to the extent possible that, aviation representatives are included in States delegation to the Asia-Pacific Telecommunity (APT) Conference Preparatory Group meetings and at WRCs; and		On-going
		d) ensure participation of designated focal point or contact person at the Regional Preparatory Group Meeting for WRC-2003 to be held from 15 to 16 November 2001 followed by the AMCP WG-F Meeting to be held from 19-27 November 2001 in Bangkok and attendance at APTAPG Meetings and WRC 2003.		On-going
	C	*Noted the Conclusion and requested the Secretary General to continue to encourage States to participate at various levels in different fora to provide support for the ICAO Position at forthcoming WRC-2003*		
C 12/20		**Requirement for a new WAFS area of coverage "M"** That, a) The ASIA/PAC ANP be amended to include under the WAFS a new area of coverage "M" (FASID Chart MET 7) as shown in Appendix G to the Report on Agenda Item 2.2; and b) FASID Tables MET 5 and MET 6, as developed by APANPIRG/11, be amended to include requirement for SWH prepared by the WAFC Washington for the new WAFC area of coverage "M" as given in Appendices H and I to the Report on Agenda Item 2.2. Note: FASID Chart M should be a mercator projection, with coordinates 100°E and 70°N; 110°W and 70°N; 110°W and 10°S; 100°E and 10°S.	Proposal for Amendment of FASID circulated to States.	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 12/21		**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.	The subject matter was discussed by the SADISOPSG/7.	Completed
C 12/22	C	**GRIB Training Workshop** That, the SADIS Provider State be invited to arrange for a GRIB training workshop, in co-ordination with ICAO, WMO and other States as necessary, in the ASIA/PAC Regions in 2002. *Noted the conclusion and requested the Secretary General to invite SADIS Provider state to hold this workshop in coordination and WMO.*	The workshop is planned to hold in November 2002.	On-going
C 12/23		**WAFS Area of Coverage "E"** That, ICAO be invited to consider extending the WAFS area of coverage "E" to the north up to 45°N to cover northern part of Japan.	The extended area "E" chart has been launched by WAFC London in November 2001.	Completed
C 12/24		**Amended ASIA/PAC WAFS Transition Plan and Procedures** That, the ASIA/PAC WAFS Transition Plan and Procedures be amended as shown in Appendix K to the Report on Agenda Item 2.2 to reflect considerable progress in transition to the final phase of WAFS in the regions.	Chairman of the ASIA/PAC WAFS Transition Task Force made the necessary changes	Completed
C 12/25		**Application of EUR OPMET update procedure in the ASIA/PAC Regions** That, the procedure similar to the EUR OPMET update procedure be developed and introduced in the ASIA/PAC Regions.	The procedure is to be developed by the OPMET Exchange Task Force.	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 12/26		**Tropical cyclone advisories with the data designator "FK"** That, the TCACs Honolulu, Miami, New Delhi, Darwin, Nadi and Tokyo, designated to provide the service in the ASIA/PAC Regions, issue the advisories using the data designator "FK" and ensure the routing of these bulletins to aviation users and London Centre for uplink to the SADIS broadcast. Note: Requirement for Honolulu TCAC in the ASIA/PAC Regions is covered by Conclusion 12/33 formulated by the meeting.	Implemented by Japan and USA. Other TCACs have been notified through WMO Tropical Cyclone regional bodies.	On-going
C12/27	*C*	**Composition of the SADISOPSG** That, the composition of the SADISOPSG be reviewed to replace the members representing States not participating in the cost recovery and hence not receiving the SADIS broadcast. *Noted the conclusion and its relationship to the SADIS mandatory cost-recovery scheme.*	China designated a member for SADISOPSG in replacement to member from Singapore.	Completed
C 12/28		**Proposal for amendment of ICAO SUPPS, Doc 7030/4** That, Regional Supplementary Procedures, ICAO Doc 7030/4, MID/ASIA and PAC, Part 3 – Meteorology – Aircraft Observations and Reports, be amended as shown in Appendix M to the Report on Agenda Item 2.2.	Proposal for Amendment of the regional SUPPs circulated to states.	On-going
C 11/29		**Gia Lam Meteorological Watch Office (MWO)** That, a) FASID Table MET 1B of the ASIA/PAC ANP be amended to delete requirement for Hanoi and Ho Chi Minh MWOs and to add requirements for Gia Lam	Proposal for Amendment of FASID circulated to States.	On-going

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
		MWO; and b) Consequential amendments be made to FASID Table MET 2A, renamed as FASID Table MET 2B, FASID Table MET 3, Part I and Part II, renamed as FASID Tables 3A and 3B, accordingly.		
C 12/30	 *C*	**Operation of the VAACs** That, ICAO consider the proposal to amend Annex 3, and the Handbook on the IAVW – Operational Procedures and Contact List, Doc 9766 accordingly, that each VAAC should operate on a 24 hour basis. *Noted the conclusion and requested the secretary General to develop proposals for amendment of Annex 3 and Doc 9766 to ensure operation of VAACs on a 24-hour basis.*	The requirement to be included in the Amendment proposal 73 to Annex 3.	On-going
C 12/31		**Volcanic ash advisory center** That, FASID Table MET 3, Part II of the ASIA/PAC ANP, renamed as FASID Table MET 3B, be amended as shown in Appendix N to the Report on Agenda Item 2.2.	Proposal for Amendment of FASID circulated to States.	On-going
C 12/32	 *ANC*	**Volcanic Ash Advisory and SIGMET in graphical format** That, ICAO give consideration to further improvement of the format in which the graphical advisory should be issued by VAACs and development of proposals for the format of a graphical SIGMET for volcanic ash, including the necessary guidance regarding procedures for dissemination of information. *Noted the conclusion and requested the Secretary General to consider further improving the format of graphical advisories to be issued by VAACs and develop proposals for the graphical format of SIGMET messages for volcanic ash, including the necessary guidance regarding procedures for dissemination of information.*	The recommendation for BUFR-coded graphical volcanic ash advisories to be included in the Amendment proposal 73 to Annex 3.	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 12/33	*C*	**Honolulu tropical cyclone advisory centre** That, FASID Table MET 3, Part I of the ASIA/PAC ANP, renamed as FASID Table MET 3A, be amended, as shown in Appendix O to the Report on Agenda Item 2.2, to reflect designation of the TCAC Honolulu with the area of responsibility covering portion of the Central Pacific from 140°W to 180°W. *Noted the conclusion and its relationship to the designation of Honolulu as the tropical cyclone advisory centre for the Central Pacific area.*	Proposal for Amendment of FASID circulated to States.	On-going
C 12/34		**New FASID Charts MET 2 and MET 3** That, the ASIA/PAC ANP be amended to include the new FASID Chart MET 2 and FASID Chart MET 3, as given in Appendices P and Q to the Report on Agenda Item 2.2, showing the areas of responsibility of TCACs and VAACs respectively.	Proposal for Amendment of FASID circulated to States.	On-going
C 12/35		**ASIA/PAC Basic ANP and FASID, Part VI – Meteorology** That, the regional procedures given in the introductory text to Part VI – Meteorology of the ASIA/PAC Basic ANP and FASID be amended as shown in Appendices R and S to the Report on Agenda Item 2.2.	Proposals for Amendment of Basic ANP and FASID circulated to States.	On-going
C 12/36		**Chapter 8 – Meteorology of the ASIA/PAC CNS/ATM Plan**		

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
		That, the ASIA/PAC Regional Plan for the new CNS/ATM Systems be amended to include Chapter 8 – Meteorology as given in Appendix T to the Report on Agenda Item 2.2.	To be incorporated in the next version of the Plan.	On-going
D 12/37		**Amendments to the Subject/Tasks List of the CNS/MET Sub-Group** That, the updated Subject/Tasks List of the CNS/MET Sub-Group presented in Appendix V to the report on Agenda Item 2.2 be adopted.	The amended Tasks List was noted by the CNS/MET/SG/6.	Completed
C 12/38		**Revision and Publication of Guidance Material on CNS/ATM Operations in the Asia/Pacific Region** That, a) the *Guidance Material on CNS/ATM Operations in the Asia/Pacific Region*, Chapter 4, paragraph 6 on the application of separation using ADS be revised in line with the views of the Air Navigation Commission (157-2) on reviewing the report of APANPIRG/11 as follows: **6. Application of procedural horizontal separation using ADS** Aircraft position information obtained by ADS may be used for the application of procedural horizontal separation minima contained in the PANS-RAC (Doc 4444), Part III. Area Control Service where aircraft position reports are necessary to apply the appropriate separation minimum. *Note: - ICAO is processing amendments to the PANS-RAC to include procedures for the provision of ADS services for air traffic control with an applicability date*	Events have overtaken this Conclusion. The ANC (159-7) on agreeing to Amendment 1 to PANS-ATM (applicability date 28 November 2002), also agreed that the Asia/Pacific Guidance Material should be reviewed to ensure it was in accordance with the procedures contained in PANS-ATM. Accordingly, a comprehensive technical review was carried out by ANB and revealed significant differences with PANS-ATM, therefore it will be necessary to revise the Guidance Material. Also, the HQ review noted that informal ATS coordinating groups also publish similar guidance material and there is a need to consider whether a proliferation of such documents is necessary, particular in terms of promoting uniform application of ATS data link applications and supporting transparency between ICAO regions. A working paper is being presented to APANPIRG/13 addressing the above issues.	On-going

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		in November 2002. b) the revised *Guidance Material on CNS/ATM Operations in the Asia/Pacific Region* be published by ICAO as soon as practicable.		
D 12/39		**Development of guidance material on the use of ADS for the application of separation** That, the CNS/ATM/IC/SG review the provisions in the PANS-ATM. Part XII (Doc 4444) on ADS services, and develop guidance material on the use of ADS for the application of separation to be included in the *Guidance Material on CNS/ATM Operations in the Asia/Pacific Region* as appropriate.	In light of Amendment 1 to PANS-ATM and the review by ANB of the *Guidance Material on CNS/ATM Operations in the Asia/Pacific Region*, work on this item has not been progressed and needs to be taken into account in the overall review of this Guidance Material.	On-going
D 12/40	*C*	**Inclusion of traffic forecast tables in the Asia/Pacific Regional Plan for the New CNS/ATM Systems** That, the tables of the traffic forecast values for the nine major traffic flows across the Asia/Pacific region be included in the *Asia/Pacific Regional Plan for the New CNS/ATM Systems* as shown in Appendix A to the Report on Agenda Item 3. *Noted the decision and that the traffic forecasts would assist States in planning future facilities and requested the Secretary General to monitor related developments in other regions to ensure a uniform approach.*	In the light of September 11 2001, further work on revised traffic forecast tables is considered necessary. Based on the availability of updated traffic statistics, the tables will be incorporated in the document.	On-going
D 12/41		**Establishment of a Target Level of Safety for the Asia/Pacific Region** That, a target level of safety of 5 x 10^{-9} fatal accidents per flight hour per dimension be established for en-route systems in the Asia/Pacific	A target level of safety of 5 x 10^{-9} fatal accidents per flight hour per dimension was adopted for en-route systems in the	Completed

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		Region where a TLS is required for implementation of separation minima.	Asia/Pacific Region.	
	ANC	*Noted that APANPIRG had established, by a regional agreement and in accordance with ICAO provisions, a target level of safety (TLS) of 5 x 10^{-9} fatal accidents per flight hour per dimension for en-route systems in the Asia/Pacific Regions, where a TLS is required for implementation of separation minima*		
C 12/42		**State regulatory framework for safety oversight**		
		That, States establish the necessary regulatory framework to provide safety oversight of their air navigation services in accordance with Annex 11 and PANS-ATM provisions on airspace safety management applicable on 1 November 2001.	The Asia/Pacific Airspace Safety Monitoring (APASM) Task Force has addressed this issue.	On-going
	C	*Noted the conclusion and requested the Secretary General to urge States to establish the necessary regulatory framework to provide safety oversight arrangements of their air navigation services not only in accordance with Annex 11 and PANS-ATM but also Annex 14 provisions on safety management.*		
C 12/43		**Provision of ICAO guidance material on the establishment of airspace safety arrangements**		
		That, as matter of urgency, ICAO develop guidance material for States to establish safety management arrangements in accordance with Annex 11 and PANS-ATM provisions on airspace safety management applicable on 1 November 2001.	ICAO is preparing a global guidance material.	On-going
	ANC	*Noted the conclusion and that the Secretariat had already made considerable progress in the development of draft material, which is scheduled for completion by mid-2002.*		
D 12/44		**Establishment of a task force to develop an airspace safety system performance-monitoring structure for the Asia/Pacific Regions**		
		That, a Task Force be established reporting to APANPIRG to develop an airspace safety system performance monitoring structure	The APASM TF held three meetings and one working group meeting in Bangkok since APANPIRG/12 and prepared a business	Completed

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
		and funding mechanism for the Asia/Pacific Region in accordance with ICAO provisions. The composition, guiding principles and Terms of Reference of the Task Force are as shown in the Appendix B to the Report on Agenda Item 3. *Noted the decision and requested the Secretary General to develop provisions for a global approach to establishing airspace safety performance-monitoring arrangements.*	plan recommending the establishment of a Regional Airspace Safety Monitoring Agency (RASMA) for the Asia/Pacific Region, which will be presented in a working paper to APANPIRG/13.	
	ANC			
C 12/45		**Key Priorities for CNS/ATM Implementation.** That, the updated key priorities for CNS/ATM implementation at Appendix E to the Report on Agenda Item 3 be adopted.	The Key Priorities for CNS/ATM Implementation were reviewed at CNS/ATM/IC/SG/9 as well as at ATS/AIS/SAR/SG/12.	Completed
D 12/46		**Amendment to the Terms of Reference of the CNS/ATM/IC/SG** That, the CNS/ATM/IC/SG should continue as an active Sub-Group of APANPIRG and the revised Terms of Reference be adopted as shown in Appendix F to the report on Agenda Item 3.	The Terms of Reference of the CNS/ATM/IC/SG were reviewed at APANPIRG/12.	Completed
D 12/47		**Follow-up actions on the Conclusions of ALLPIRG/4 Meeting** That, the following conclusions of ALLPIRG/4 meeting be addressed by the relevant sub-groups as part of their work programme and report its outcome. Conclusions 4/1, 4/2, 4/8 and 4/13- CNS/ATM IC SG Conclusions 4/3 and 4/7- ATS/AIS/SAR SG Conclusions 4/3 - CNS/MET SG Conclusions 4/10 and 4/11- All Subgroups Note: Cited ALLPIRG/4 conclusions are given below: Conclusion 4/1 - A general framework and terms of reference for interregional coordination meetings That the Council agree to adopt a general framework and terms	Both CNS/ATM/IC/SG and ATS/AIS/SAR/SG noted the results of ALLPIRG/4 Conclusions. Action already in hand as part of the work programme of the Sub-Groups. Further follow-up action will be taken as appropriate.	On-going

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
		of reference for interregional coordination meetings (IRCMs) as set out in Appendices A and B to the report on Agenda Item 2. Conclusion 4/2 - Interregional meetings specifically dedicated to interface areas That ICAO convene interregional meetings, as and when required, to address the specifically focussed interface problems and other issues of neighbouring States and/or neighbouring regions as a whole. Conclusion 4/3 - Increased emphasis on addressing interregional issues and missing elements That, with a view to facilitating interregional planning and the harmonization of air navigation systems, ICAO and the CNS/ATM partners put more emphasis on the addressing of interregional issues and the missing elements as outlined in Appendix C to the report on Agenda Item 2. Conclusion 4/7 - Adoption of a uniform format for the reporting of WGS-84 implementation That the table available at Appendix D to the report on Agenda Item 2 be adopted as a uniform format for the reporting of WGS-84 implementation by PIRGs and States. Conclusion 4/8 - Environmental benefits of CNS/ATM systems That: a) ICAO Regional Offices and PIRGs support ICAO/CAEP efforts to expand the methodology for the quantification of CNS/ATM environmental benefits to each region by collecting data, as necessary; b) ICAO/CAEP continue its work on the expansion of the methodology for the assessment of the environmental benefits associated with the implementation of CNS/ATM systems to the various regions; and c) ICAO proceeds with the revision of the methodology for inclusion in the *Global Air Navigation Plan for CNS/ATM Systems* (Doc 9750) at the earliest opportunity.	Conclusion 4/8: The CNS/ATM/IC/SG established a Working Group to develop Terms of Reference for an Environmental Task Force. Australia, Japan, New Zealand and the United States of America agreed to participate in the Working Group. Input would be sought from other States and Organizations. To save on cost, it was suggested that the co-ordination could be achieved by e-mail and, if necessary, conference telephone facilities.	

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
		Conclusion 4/10 - Reporting of shortcomings and deficiencies That where a State, by virtue of Article 38, has notified ICAO of a difference to Standards and Recommended Practices governing the actual provision of facilities and services listed in an air navigation plan, the non-implementation of a facility or service, in the context of the uniform methodology for the identification and reporting of air navigation shortcomings and deficiencies, should not be reported as either a shortcoming or a deficiency when it has no negative impact on safety, regularity and/or efficiency. Conclusion 4/11 - Single definition That ICAO be invited to refine the following single definition of a shortcoming/deficiency with a view to its incorporation into the uniform methodology for the identification and reporting of air navigation shortcomings and deficiencies: "A *deficiency* is a situation where a facility, service or a procedure is not provided in accordance with ICAO Standards and Recommended Practices which has a negative impact on the safety, regularity and/or efficiency of international civil aviation". Conclusion 4/13 - Database developments That ICAO: a) post promptly all tabular material from all regional air navigation plans relating to facilities and services to an ICAO-controlled web site in a simple PDF format; b) invite CNS/ATM partners to post their relevant planning material on the web site referred to in a) above; c) provide appropriate free access to relevant ICAO Headquarters' Sections, Regional Offices, PIRGs and participating CNS/ATM partners; d) maintain the currency of this database, *inter alia*, to take account of amendments made to hard copy ANPs;		

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		e) with the assistance of PIRGs and interested CNS/ATM partners, refine and develop the database, as a matter of urgency, to provide access and functionality commensurate with its use as a planning tool and in line with ICAO sale of publications		

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 Twelfth Meeting of the APANPIRG Air Traffic Services/Aeronautical Information Services/Search and Rescue Sub-Group (ATS/AIS/SAR/SG/12) which was held at the ICAO Asia and Pacific Regional Office, Bangkok, Thailand from 24 to 28 June 2002, as well as working/information 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).

2.1.3 The Task Force had met five times as below since its activities were reported to the APANPIRG/12:

TF/12: 10-14 September 2001, Denpasar, Indonesia
TF/13: 14-18 January 2002, Singapore
TF/14: 30-31 May 2002, Bangkok, Thailand
(Western Pacific/South China Sea focus)
TF/15: 3-7 June 2002, Bangkok, Thailand
(Bay of Bengal and beyond focus)
Special Coordination Meeting for the Western Pacific/South China Sea Implementation (RVSM/SCM): 29-31 July 2002, Manila, Philippines

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

Western Pacific/ South China Sea Implementation

Operational Considerations – Phase 1 implementation on 21 February 2002

2.1.5 The meeting noted that RVSM was implemented on 21 February 2002 in the following airspace (Phase 1):

a) Phnom Penh, Kuala Lumpur, Kota Kinabalu, Manila, Singapore, Bangkok and Ho Chi Minh FIRs; and

b) on N892 (within the oceanic airspace of the Sanya AOR).

2.1.6 The meeting was provided with a comprehensive overview of the 90-day post implementation review conducted by the RVSM/TF/14. The issues addressed at the meeting are as follows:

a) The meeting noted that all States concerned reported that the transition went smoothly except for minor non-compliance of flight planning requirements and occasional misunderstanding of level assignments on some routes.

b) IATA commented positively on the implementation and operations of RVSM in the Western Pacific/South China Sea area since 21 February 2002. However, there were some concerns on the dissemination of aeronautical

information and NOTAMs by individual States. In this regard, IATA emphasized the need for close co-ordination and harmonization of activities by States.

c) IATA suggested the involvement of charting companies in developing RVSM materials in order to keep abreast with States' plans and provide assistance in the area of aeronautical information. It was agreed that charting/flight data companies should be invited to the future meetings of the Task Force.

d) IFALPA considered that the implementation of RVSM in the Western Pacific/South China Sea area had enhanced the efficiency of operations. IFALPA praised the States involved and the Task Force for the successful implementation of RVSM. IFALPA also urged that procedures be harmonized with adjacent regions in order to further enhance safety.

e) IFATCA also expressed positive views on the implementation of RVSM on 21 February 2002. IFATCA emphasized the importance of the flight planning requirement to insert "W" for RVSM compliant aircraft by operators.

Operational Considerations – Phase 2 implementation on 31 October 2002

2.1.7 The meeting was advised that RVSM will be implemented on 31 October 2002 in the following airspace (Phase 2):

a) Hong Kong, Bali, Jakarta, Ujung Pandang, Vientiane and Ha Noi FIRs; and

b) in the rest of the oceanic airspace of the Sanya AOR.

2.1.8 It was noted that States involved in the Phase 2 implementation advised that preparations were progressing satisfactorily in general.

2.1.9 At RVSM/TF/14, it was agreed that the band of RVSM levels would be from FL290 to FL410 inclusive in all FIRs/AOR, except for Bali, Jakarta and Ujung Pandang FIRs, as of 31 October 2002.

2.1.10 The meeting noted the need for States to provide monthly reports on large height deviations to the Asia Pacific Approvals Registry and Monitoring Organization (APARMO). A "NIL report" (where applicable) was necessary to ensure the completeness of the safety assessments relating to RVSM operations. The monthly large height deviation reports should be submitted to the APARMO by the end of the following month.

2.1.11 It was also noted that States concerned would put appropriate measures in place to ensure that operational errors are significantly reduced in order for the target level of safety to be maintained.

2.1.12 The meeting was advised that Section 12.0 of the AIP Supplement on RVSM operations relating to procedures for operation of non-RVSM compliant aircraft in RVSM airspace, was amended, and would be published by States by late July 2002.

Airworthiness and Operation of Aircraft Considerations

2.1.13 The meeting noted with appreciation that the FAA had agreed to maintain the RVSM website (www.faa.gov/ats/ato/rvsm1.htm) for States, operators and the ICAO RVSM Implementation

Task Force, to provide a better understanding of the airworthiness and aircraft operations material available.

2.1.14 It was noted that the Task Force continued reviewing the program for the monitoring of aircraft height-keeping performance, as part of the RVSM Continuous Airworthiness Program, after initial operational approval had been issued.

Safety and Airspace Monitoring Considerations

2.1.15 The meeting was advised that the APARMO was being serviced by the FAA Technical Center, and had reported using a sample of traffic for the period 15 November to 15 December 2001 in the Western Pacific/South China Sea airspace that had been identified for RVSM implementation on 31 October 2002. China, Hong Kong China, Indonesia, Lao PDR, and Viet Nam provided traffic samples for their respective FIRs/AOR. State RVSM approvals reported to the North Atlantic Central Monitoring Agency and APARMO, as well as MASPS-compliant airframes identified by EUROCONTROL, were compared to the traffic sample. The percentage of operations currently being conducted by RVSM-approved operators and aircraft in the Western Pacific/South China Sea area was 91 percent.

2.1.16 The meeting recalled that a target of 90-percent operator approval was adopted for RVSM implementation. The readiness assessment done by the APARMO indicated that a sufficient percentage of operators had obtained RVSM approval for operations in the designated RVSM airspace. It was noted that the readiness requirement had been met for the planned implementation of RVSM in Western Pacific/South China Sea area on 31 October 2002.

2.1.17 The safety assessment conducted by the APARMO confirmed that the safety target for the Phase 1 implementation of RVSM in the FIRs/AOR in the Western Pacific/South China Sea area on 21 February 2002 had been met.

2.1.18 The Task Force reviewed the safety assessment associated with the Phase 2 implementation of the RVSM in the FIRs/AOR in the Western Pacific/South China Sea area on 31 October 2002. The meeting recalled that the safety goal to be satisfied when implementing RVSM was a Target Level of Safety (TLS) of 5×10^{-9} fatal accidents per flight hour. The Task Force noted that the number of operational errors needed to be reduced prior to implementation of RVSM in the FIRs/AOR in the Western Pacific/South China Sea area on 31 October 2002. The APARMO reported that the estimated number of minutes that aircraft were operating at incorrect flight levels exceeded the amount that could be tolerated by the Collision Risk Model (CRM). The meeting was also informed that the APARMO's experience had shown that the operational risk dominated the estimated risk value attributable to all causes. After existing procedures were improved, the APARMO would ask operational experts to forecast the likely effect on the occurrence of operational errors. Based on advice of the operational experts, a value of estimated risk would be re-computed. A final safety assessment for the FIRs/AOR in Western Pacific/South China Sea area planning to implement RVSM on 31 October 2002 would be presented at the RVSM/TF/16 meeting in September 2002.

Bay Of Bengal and Beyond Implementation

2.1.19 The meeting noted that the definition "**Bay of Bengal and Beyond (within the ICAO Asia Region)**" was adopted by the Task Force to reflect a common definition for the airspace in which RVSM will be implemented on 27 November 2003. The RVSM airspace will include the Bangkok, Chennai, Colombo, Delhi, Dhaka, Jakarta, Karachi, Katmandu, Kolkata (Calcutta), Kuala Lumpur, Lahore, Male, Mumbai and Yangon FIRs.

Operational Considerations

2.1.20 The meeting was informed that the Task Force sought initial planning details (operational readiness report) from India, Indonesia, Malaysia, Maldives, Nepal, Pakistan, Sri Lanka, and Thailand for RVSM implementation on 27 November 2003. It was agreed that States involved could not provide definite plans on the Flight Level Orientation Scheme (FLOS) until an operational concept had been agreed upon for the traffic flow in the region.

2.1.21 It was noted that all States would assess the effect of large-scale meteorological activity such as typhoon/cyclones on their planned implementation of RVSM and develop mitigating strategies as appropriate. It was agreed that where these mitigating strategies affected adjacent FIRs, the procedures should be included in the respective letters of agreement (LOAs) /Supplementary LOAs (SLOAs).

2.1.22 The Task Force would examine orographic flow, known as mountain waves activity, and other meteorological effects which may have an impact on the safe implementation of RVSM in the Bay of Bengal and Beyond. To this end, States concerned would consult with their respective meteorological agencies to assess the impact of mountain waves on the height-keeping capability of aircraft in RVSM airspace. This would determine whether the implementation of RVSM would need to be modified or suspended in areas where such mountain wave activities were forecasted.

2.1.23 The meeting was advised that implementation of RVSM in the Bay of Bengal and Beyond should be harmonized with the ICAO Middle East Region RVSM implementation plan, also scheduled on 27 November 2003. To this end, a joint co-ordination meeting will be held with the ICAO Middle East Region Task Force in Abu Dhabi, UAE, 19-20 October 2002.

2.1.24 It was advised that all States would publish an AIC on the implementation of RVSM before 27 November 2002, to ensure that a full 12-month notice would be provided to operators.

Airworthiness and Operation of Aircraft Considerations

2.1.25 The meeting noted that the Task Force reviewed the Operator and Aircraft Approval Process and Documentation for RVSM operations and agreed that the existing guidelines and procedures in the Asia Pacific RVSM program could be adopted for the Bay of Bengal and Beyond RVSM program.

2.1.26 It was informed that the Task Force reviewed the existing procedures for the application of tactical lateral offset to mitigate the effects of wake turbulence and TCAS alerts on RVSM operations, and adopted the existing procedures for the implementation of RVSM in the Bay of Bengal and Beyond.

Safety and Airspace Monitoring Considerations

2.1.27 The meeting noted that traffic movement data in the airspace where RVSM would be implemented was necessary for a comprehensive assessment of operator readiness and safety evaluation. The same data would be used for a cost benefit analysis as well. To this end, a collection of traffic movement data for the period 1 February to 31 March 2002 was conducted with cooperation of States. A plan of further traffic movement data collection for 2 months from 15 December 2002 to 15 February 2003, following the implementation of the EMARSSH route restructure, was also noted.

2.1.28 It was informed that the latest percentage of operations conducted by State-RVSM approved operators and aircraft in the Bay of Bengal and Beyond airspace where RVSM would be implemented was 69.62%.

RVSM Implementation Plan Status Report

2.1.29 The meeting noted the status of the RVSM Implementation Plan for the Asia/Pacific Region updated by the RVSM/TF, which is at **Appendix A** to this Report on Agenda Item 2.1.

Implementation Management

2.1.30 The meeting recalled the advice from the FAA that in order to meet other commitments after February 2002, they would no longer be able to provide the level of support to the Asia/Pacific RVSM/TF that it had in the past. This would also include the services associated with the APARMO. The current FAA Chairpersons and the current APARMO would be available to work closely with the new Chairpersons/Monitoring Organization during the next two meetings in order to provide a smooth transition. The RVSM/TF was in the process of identifying a new Task Force Chairperson, new Chairpersons for the Working Groups as appropriate, and a new organization to provide the services associated with the APARMO as quickly as possible to allow for an adequate transition period with the current Chairpersons.

2.1.31 The meeting was informed that the transition of the Chairmanship of the Task Force and the Working Groups took place following the RVSM/TF/13 meeting in January 2002. In this connection, the meeting unanimously wished to record their appreciation to Ms. Leslie McCormick, Mr. Sydney Maniam, Mr. Brian Colamosca, and Mr. Roy Grimes, for their leadership in chairing the Task Force meetings and seminars in the past, and to FAA for providing expert assistance to the Task Force, which led to the successful implementation of RVSM in the Pacific in February 2000 and in the Western Pacific/South China Sea area in February 2002. The meeting also expressed appreciation to Australia, Indonesia, Singapore and Thailand for the significant support provided to the Task Force through the appointment of Chairpersons of the Task Force and its Working Groups in order to ensure the continuity of the Task Force work.

2.1.32 With regard to a new organization to provide the services associated with the APARMO for the Asia Region, the meeting recalled the offer made by AEROTHAI on behalf of the Department of Aviation of Thailand at the APANPIRG/12. The meeting was further updated with the progress of the transfer of responsibility for RVSM monitoring between AEROTHAI and the FAA Technical Center. Details are addressed in this Report on Agenda Item 3.

Future Work

2.1.33 The future work of the Task Force with respect to the implementation of RVSM in the Asia/Pacific Region is as follows:

RVSM/TF/16: 23-25 September 2002 in Bangkok, Thailand
(Western Pacific/South China Sea Focus)

Joint Co-ordination Meeting between Asia/Pacific and Middle East RVSM Task Forces: 19-20 October 2002 in Abu Dhabi, UAE

(Target Implementation in Bali, Hanoi, Hong Kong, Jakarta, Ujung Pandang and Vientiane FIRs and Sanya AOR AIRAC date 31 October 2002)

RVSM Seminar/5: 15 - 17 January 2003 (tentative) and location TBD
(Bay of Bengal and Beyond focus)

RVSM/TF/17: 20 - 24 January 2003 (tentative) and location TBD
(Bay of Bengal and Beyond focus)

RVSM/TF/18: 3 days March 2003 and location TBD

(90-day and 1-year follow up review on Western Pacific/South China Sea focus)

RVSM/TF/19: 5 days May 2003 and location TBD
(Bay of Bengal and Beyond focus)

RVSM/TF/20: 5 days October 2003 and location TBD
(Bay of Bengal and Beyond focus)

(Target Implementation Bay of Bengal and Beyond AIRAC date 27 November 2003)

RVSM/TF/21: 3 days February 2004 and location TBD
(90-day follow up review on Bay of Bengal and Beyond focus)

RVSM/TF/22: 2 days November 2004 and location TBD
(1-year follow up review on Bay of Bengal and Beyond focus)

Phraseologies related to RVSM operations for application in the Asia And Pacific Region

2.1.34 The meeting was advised that the RVSM/TF discussed phraseologies related to RVSM operations to be used by pilots and controllers. The RVSM/TF/13 meeting agreed that the adopted phraseologies be included in the *Guidance Material on the Implementation of a 300 m (1000 ft) Vertical Separation Minimum (VSM) for Application in the Airspace of the Asia and Pacific*. The proposed amendments are to be made to the following paragraphs and Appendix of the Guidance Material:

a) Add paragraph 5.7 to Part 5 – Flight Crew Operating Procedures (Page 18);

b) Add paragraphs 6.5 and 6.6 to Part 6 – ATC Procedures (Page 20);

c) Add Appendix G – Controller-pilot Phraseologies (Pages G-1 and 2);

d) Amend the Table of Contents accordingly (Pages i and ii); and

e) Add the Record of Amendments and Corrigenda.

2.1.35 Noting that these phraseologies had been adopted and widely in use in the Pacific and the South China Sea area as well as in the North Atlantic and Europe, the ATS/AIS/SAR/SG/12 meeting considered it appropriate to include the proposed phraseologies related to RVSM operations in the RVSM Guidance Material. Accordingly, the Sub-Group proposed APANPIRG to adopt the RVSM related phraseologies to be included in the RVSM Guidance Material for the Asia/Pacific Region.

2.1.36 However, ICAO HQ reviewed the report of ATS/AIS/SAR/SG/12 and provided advice in relation to this proposal as follows:

a) Conclusion to come out of APANPIRG/13 need to be along the lines of "incorporation of RVSM phraseologies into the PANS-ATM". Phraseologies and CPDLC preformatted free text messages should not be in Regional Guidance Material except as explanatory material to assist in the implementation of the phraseologies contained in the Regional Supplementary Procedures for regional application or the PANS-ATM for

global application. The ICAO Separation and Airspace Safety Panel (SASP) supports the inclusion of standardized RVSM phraseologies in the PANS-ATM. HQ is of the view that RVSM is entering the sphere of international provisions.

b) It was considered that any proposal on this matter would need to harmonize with ICAO recommendations to amendments of the PANS-ATM.

2.1.37 In light of the above comments from ICAO HQ, APANPIRG considered it more appropriate to have such phraseologies related to RVSM operations in the Asia/Pacific Region in the Regional Supplementary Procedures (Doc 7030) as an interim solution until they are standardized in the PANS-ATM for global application. With a view to ensuring harmonization with other Regions, the meeting developed the following Conclusion:

Conclusion 13/1 – Inclusion of phraseologies related to RVSM operations in the ICAO Regional Supplementary Procedures (Doc 7030) for Asia and Pacific Region

That, the phraseologies related to RVSM operations contained at **Appendix B** to this Report on Agenda Item 2.1, be adopted for inclusion in the ICAO Regional Supplementary Procedures (Doc 7030) for application in the Asia and Pacific Region, subject to coordination and harmonization with other Regions.

2.1.38 The United States commented that the ICAO SASP would be an appropriate body to develop standard phraseologies related to RVSM operations to amend the PANS-ATM.

Assessment of Non-RVSM approved operators in Pacific

2.1.39 The meeting recalled that the assessment of the identification of non-RVSM approved operators using Asia/Pacific airspace had been conducted by the APARMO twice before. The APARMO identified potentially non-RVSM approved air carrier operations and summarized representative cases of the identified operators and aircraft types.

2.1.40 In light of the problems uncovered in examination of the State approval status of operations, the APANPIRG/12 meeting agreed that the APARMO should enhance its procedures for registration of State approvals in its database to take into account the special circumstances described above. Noting that the APARMO is in the process of contacting State authorities, where appropriate, to ask that they investigate RVSM approval status of operators and aircraft whose status is otherwise unresolved, the meeting formed the following Conclusion:

Conclusion 12/1 – Observation of non-compliance of RVSM operational approval procedures

That, States are urged to co-operate with APARMO to investigate RVSM approval status of operators and aircraft with the aim of resolving problems of RVSM non-compliant operations.

2.1.41 The APANPIRG/12 meeting also noted the need of the APARMO to collect a 4-week sample of traffic movements in early calendar year 2002 from those Pacific FIRs where RVSM is applied in order to perform another analysis.

2.1.42 The meeting was presented with a comprehensive assessment of the identification of non-RVSM approved operators in the Pacific airspace where RVSM is applied. Using actual Pacific traffic movement data collected during April 2002, the APARMO compared all observed air carrier aircraft operations flying between FL290 and FL390, inclusive, against the RVSM operational

approvals noted in the APARMO Approvals Registry, the North Atlantic (NAT) Central Monitoring Agency (CMA) database, and the MASPS-compliant airframes identified by EUROCONTROL. The traffic movement data used for this analysis were from the Anchorage, Auckland, Brisbane, Naha, Oakland, Tahiti, and Tokyo Flight Information Regions (FIRs).

2.1.43 The meeting noted with concern that there were a number of cases of non-RVSM approved operations in the Pacific where RVSM is applied. In this connection, the meeting was advised that the APARMO would provide the same information to the appropriate Asia-Pacific State Civil Aviation Authorities (CAAs), and suggested that in turn, those CAAs investigate the RVSM approval status of the identified operators and aircraft that are under their jurisdictions. The APARMO will continue to work with State authorities in the Asia-Pacific Region to develop enhanced procedures to properly identify RVSM-approved operations.

2.1.44 In light of the above, the meeting re-emphasized the importance of co-operation of State authorities with the APARMO to investigate RVSM approval status of operators and aircraft with the aim of resolving problems of RVSM non-compliant operations. The meeting also expressed its support to the APARMO efforts to work with States in order to clarify the RVSM approval status of operators and aircraft, in pursuant to the Conclusion 12/1.

Implementation of ATS routes

2.1.45 The meeting was advised that the ATS/AIS/SAR/SG/12 meeting was presented with 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.

2.1.46 It was informed that since APANPIRG/12, some updated information including the action agreed to be taken by States concerned had been provided to the Regional Office by India, Japan and Malaysia. In this connection, the meeting was reminded of the APANPIRG Conclusion 9/8 which calls upon States to provide information regarding implemented, re-aligned and deleted ATS routes to the Regional Office by 30 April of each year. The meeting noted the suggestion by IATA that the updated list could be circulated to States and international organizations by ICAO well in advance before ATS/AIS/SAR/SG meetings in the future, which would allow States and international organizations sufficient time to prepare comments on some ATS routes implementation status.

2.1.47 The meeting noted that the revised South China Sea ATS route structure was implemented on 1 November 2001 in accordance with the ANP amendment proposal APAC 95/16-ATS (revised ATS route structure across the South China Sea) which was approved by the President of the Council on 7 May 1997, and the ANP amendment APAC 01/2-ATS (adjustment to APAC 95/16) which was approved on 11 October 2001. These amendments deleted or amended most of the existing ATS routes and introduced a new system of RNAV routes. In this regard, IATA raised their concern that their operational requirements for some additional routes were yet to be recognized in the ANP, though they were addressed at the SEACG/10 meeting. In response, it was clarified that any additional requirements for ATS routes should be processed in coordination with States concerned in accordance with the established procedures for the amendment of approved regional plans.

2.1.48 In addition, IATA pointed out that while some changes to ANP route requirements were agreed upon at various ICAO planning meetings, there had not been action taken to process ANP amendments. IATA indicated their intention to co-operate with ICAO in developing proposals in order to keep the ANP up-to-date.

2.1.49 The meeting was advised that ATS/AIS/SAR/SG/12 identified deficiencies related to ATS routes in the Asia/Pacific Region, and included those non-implemented ATS routes in the list of air navigation deficiencies in accordance with the new methodology for the identification, assessment and reporting of air navigation deficiencies approved by the Council on 30 November 2001.

2.1.50 The meeting noted that the majority of the ATS routes listed in the air navigation deficiencies had been agreed to by the States concerned at the Third Asia/Pacific Regional Air Navigation Meeting in 1993.

Revised South China Sea ATS Route Structure implementation – Post Implementation Update

2.1.51 The revised South China Sea (SCS) ATS route structure was implemented on 1 November 2001. The meeting was advised that two ICAO meetings, namely the 7th Meeting of SCS Task Force (SCS/TF/7) held in Bangkok, Thailand, 9-11 January 2002 and the 10th Meeting of the South East Asia ATS Coordination Group (SEACG/10) held in Bali, Indonesia, 18-22 March 2002, conducted post-implementation review to discuss the results of South China Sea operations after 1 November 2001.

2.1.52 The meeting noted that the general consensus on the effectiveness of the revised South China Sea route structure was that from a user and provider perspective, the revised structure offered benefits in cost savings and efficiency as well as an easier managed structure than before.

2.1.53 Nevertheless there was still some further work to be accomplished on some ATS routes that created additional track miles and substantial costs to particular airlines. In this regard, IATA presented airline views as below:

a) With the introduction of the revised South China Sea route structure on 1 November 2001 and the implementation of RVSM on 21 February 2002, some areas saw an improvement to operations, however other areas with smaller traffic flows were significantly penalized. A summary of benefits/disbenifits are found at the table below:

City Pair	Flight time (min)	ATC Delay (min)
HKG-BKK	-5	-1
BKK-HKG	-6	-2
HKG-SIN	+6	-2
SIN-HKG	-3	-1
HKG-JKT	+23	-1
JKT-HKG	+13	+2
HKG-KUL	-1	-1
KUL-HKG	-2	+1
Brunei-MID	+16	

** Note: A negative number shows a reduction in flight time, which is an improvement.*

b) Hong Kong-Jakarta city pair has suffered significantly since 1 November 2001, and is reported by one airline alone to carry an additional 4.6 million USD annual increase to their one flight a day operation. IATA has been seeking an acceptable solution through meetings with States concerned.

c) There is also significant penalty for aircraft flying from Brunei to the Middle East/Europe by an additional 110NM, which gives a time penalty of 16 minutes over the route (Kota Kinabalu-Phuket) flown prior to implementation of the revised route structure.

d) The implementation of A202 between Bangkok and Hong Kong promotes a new level of efficiency between these airports. Airline feedback indicated a 5 to 6 minute decrease of flight time over previous routings. However, there

are two IATA suggestions where A202 could improve its service to airlines. Firstly, to allow flights on A202 beyond Hong Kong. The other issue on A202 is the portion that requires a Chinese altitude assignment. It was discovered by airlines that while FL410 was many times an ideal altitude for the short Bangkok to Hong Kong flights, the Chinese equivalent of 12,600 metres (41,300 feet) exceeds many of the Airbus service-ceiling limit of 41,000 feet.

2.1.54 It was noted that IATA would continue co-ordination with States concerned and ICAO in arriving at viable solutions. It was also noted that these issues would be addressed at a 1-year review meeting of the SCS/TF scheduled for December 2002.

AIS Automation Task Force (AATF)

2.1.55 The meeting was informed that the ATS/AIS/SAR Sub-Group's AIS Automation Task Force (AATF) met twice as below:

a) AATF/8 was held in Bangkok, Thailand, 16-18 October 2001, and attended by 9 experts from China, Hong Kong China, Japan, Singapore and Thailand.; and

b) AATF/9 was hosted by the Air Traffic Management Bureau (ATMB), the General Administration of Civil Aviation of China (CAAC) and held in Beijing, China, 20-23 May 2002. The meeting was attended by 12 experts from China, Hong Kong China, Japan, Singapore, Thailand, and IFALPA.

2.1.56 The meeting noted that the Task Force was originally composed of Australia, China, Japan, New Zealand, Singapore and the United States. IATA and IFALPA were also invited. Experts from Hong Kong China, and Thailand participated as observers since its Seventh meeting (AATF/7) in Brisbane, Australia, in February 2001 and contributed to the work of the Task Force significantly.

Guidance Manual for AIS in the Asia/Pacific Region

First Edition of the Guidance Manual for AIS in the Asia/Pacific Region

2.1.57 It was recalled that the AATF developed a draft Guidance Manual for AIS in the Asia/Pacific Region and forwarded it to the ATS/AIS/SAR/SG/11 and the subsequent APANPIRG/12 meetings for review and adoption.

2.1.58 This draft guidance material was structured to incorporate a number of separate components into one volume.

Title: ***Guidance Manual for Aeronautical Information Services in the Asia/Pacific Region***

Part 1: **AIS Quality Systems**

- Guidance Material – A Quality System for AIS
- Sample Quality Manual
- QA Implementation Planning Template

Part 2: **Selection and Training Guidelines for AIS Personnel**

Part 3: **Common Operating Procedures for Automated AIS Systems**

Part 4: Use of the Internet for Information Transfer

2.1.59 APANPIRG/12 noted that at the ATS/AIS/SAR/SG/11 meeting a number of States sought the early release of the draft guidance materials for use to enhance AIS activities in the Region. Considering that the draft guidance materials developed by the AATF had reached a stage of maturity suitable for distribution to States within the Region after review and understanding that any advice or comment that might be forthcoming from Headquarters would, where appropriate, be incorporated into the draft guidance materials before publication, the APANPIRG/12 meeting formulated the following Conclusion:

Conclusion 12/7 – Guidance Manual for Aeronautical Information Services in the Asia/Pacific Region

That, the Guidance Manual for Aeronautical Information Services in the Asia/Pacific Region *shown at Appendix G to the Report on Agenda Item 2.1 be published in accordance with the established procedures.*

2.1.60 When reviewing the Report of the APANPIRG/12, the ICAO Air Navigation Commission (ANC) noted this Conclusion and that the guidance manual would be published in accordance with established procedures.

2.1.61 AATF confirmed that once the publication of the AIS Guidance Manual was approved, the first edition of the Guidance Manual would contain new materials in Parts 1 and 2, and the existing Common Operating Procedures (COP) for the Asia/Pacific Automated AIS Systems which was issued in 1997 in Part 3. The complete set of the Guidance Manual will be issued as soon as the update of the current COP is completed after further consideration of the EUROCONTROL COP, and after new guidance material relating to the use of the Internet for information transfer becomes available. The meeting was advised that this first edition of the Guidance Manual would be distributed to States in the Region shortly.

Updating of Guidance Manual Chapter 3 – Operating Procedures for AIS Dynamic Data (OPADD)

2.1.62 The meeting noted that the AATF examined the EUROCONTROL document (EATMP Operating Procedures for AIS Dynamic Data AIS.ET1.ST05.1000-DEL-01 Edition: 1.0 dated 31.01.2000) with the aim of determining the extent of the differences between procedures in this document and the current Common Operating Procedures (COP) for the Asia/Pacific Automated AIS Systems, and updating this Guidance Material by incorporating new procedures, where appropriate.

2.1.63 With a view to aligning the current procedures in the Asia/Pacific Region with those published by EUROCONTROL, as the first step, the Task Force identified differences between the COP in the two documents.

2.1.64 After spending a considerable amount of time in comparing those differences and assessing possible impact on procedures in the Asia/Pacific Region, the Task Force confirmed that inter-regional standardization/harmonization of COP is one of the primary objectives of the AATF.

2.1.65 In addition, the Task Force considered it necessary to identify those procedures pertaining to static data in the current COP for Asia/Pacific, which should remain in the updated COP for the Region.

2.1.66 The Task Force noted with particular interest that the ICAO ANC concluded that the existing specifications in Annex 15 adequately cover a point raised by the European Air Navigation

Planning Group (EANPG), in relation to the proposed addition of Item X and Purpose D in NOTAM. As a consequence, advice from EUROCONTROL indicated that European States would not send NOTAM containing Item X and Purpose D to the outside the European Region.

2.1.67 AATF/9 reached a consensus on all the differences on procedures identified by the Task Force. These agreements were incorporated in the draft Chapter 3 - Operating Procedures for AIS Dynamic Data (OPADD) of the Manual, which is at **Appendix C** to the Report on Agenda Item 2.1.

2.1.68 The meeting noted that AATF/9 conducted a thorough examination of the EUROCONTROL document and finalized the updating of the current COP for the Asia/Pacific Region. This draft Chapter 3 contained the procedures for multi-part NOTAM messages and for the exchange of NOTAM Checks as NOTAM adopted at AATF/8.

2.1.69 The meeting reviewed the draft Chapter 3 forwarded from ATS/AIS/SAR Sub-Group and agreed that this material be published as the first amendment to the Chapter 3 of the Guidance Manual, to replace the existing COP published in 1997.

2.1.70 In this connection, the meeting considered it necessary to standardize procedures relating to multi-part NOTAM and NOTAM checks by NOTAM for global application, and formed the following Conclusion:

Conclusion 13/2 – Development of procedures relating to multi-part NOTAM and NOTAM Checks by NOTAM

That, ICAO consider developing procedures relating to multi-part NOTAM and NOTAM Checks by NOTAM based on the procedures contained in the draft Chapter 3 of the *Guidance Manual for AIS in the Asia/Pacific Region* at Appendix C to the Report on Agenda Item 2.1, for global application, and including them in the *Aeronautical Information Services Manual* (Doc 8126).

Draft Guidance Manual Chapter 4 - Use of the Internet for Information Transfer

2.1.71 The meeting noted that AATF concurred that the use of the Internet increased over the past few years to become a recognized method for the exchange of various types of information, from electronic mail, file transfers, information exchange, and includes secure exchanges for banking and a wide range of other E-Commerce applications.

2.1.72 In a number of cases the Internet provides another medium for the exchange of aeronautical data and information that might not otherwise be available to users. For example, users that are not connected to the AFTN, or where the AFTN is not of a high quality, can obtain information quickly and efficiently without the need for a substantial investment in infrastructure.

2.1.73 However, considering that the Internet was not recognized as an approved communications media by ICAO for the exchange of aeronautical data and information, and due to lack of technical justification, the Task Force was of the view that application of the Internet for aeronautical data and information exchange was still premature at this stage. Standardization of use of the Internet for such purpose on a regional basis cannot be pursued.

2.1.74 The meeting was advised that in light of the above, the AATF/8 felt that it would be prudent for the Task Force at this stage only to provide guidelines on the use of the Internet for information transfer in the Guidance Manual for AIS in the Asia/Pacific.

2.1.75 The meeting noted that at AATF/9, Japan presented a draft document of the guidance material on the use of the Internet for information transfer for consideration by the meeting. Based on this document, AATF finalized a draft Chapter 4 of the Guidance Manual.

2.1.76 It was advised that when reviewing the draft Chapter 4, ATS/AIS/SAR/SG/12 made some modifications to paragraph 3.10 of the draft material.

2.1.77 The meeting considered the draft material incorporating the above change, appropriate for publication as Chapter 4 of the Guidance Manual, which is at **Appendix D** to the Report on Agenda Item 2.1.

2.1.78 Accordingly, the meeting formed the following Conclusion pertaining to the draft Chapters 3 and 4:

Conclusion 13/3 – Guidance Materials concerning the operating procedures for AIS dynamic data (OPADD) and the use of the Internet for information transfer as Chapters 3 and 4 respectively of the Guidance Manual for AIS in the Asia/Pacific Region

That, the guidance materials concerning the operating procedures for AIS dynamic data (OPADD) (at Appendix C to the Report on Agenda Item 2.1) and the use of the Internet for information transfer (at Appendix D) be published as Chapters 3 and 4 respectively of the *Guidance Manual for AIS in the Asia/Pacific Region* be published in accordance with the established procedures.

NOTAM Checks to be sent as NOTAM, and multi-part NOTAM messages

2.1.79 The meeting noted that the Task Force considered procedures concerning NOTAM Checks to be sent as a NOTAM to facilitate automatic, rather than manual processing and checking. NOTAM Checks are an important element of the quality system to ensure that holdings by individual States are up-to-date and accurate.

2.1.80 NOTAM Checks are currently sent in a variety of formats, some as NOTAM others as a text message. Automation within the Asia/Pacific Region will be enhanced through the standardization of NOTAM Checks being sent as a NOTAM, and then automatically processed without the need for manual intervention.

2.1.81 In the case of NOTAM Checks, a considerable amount of time can be spent manually processing information received from other States. As with any manual system, errors can occur during the checking process, they are labour-intensive and consequently are not cost effective. Automating NOTAM Checks will, to a large degree, overcome these issues.

2.1.82 The meeting noted that procedures adopted by AATF were incorporated into the draft Chapter 3 of the Guidance Manual for AIS in the Asia/Pacific.

AIS Seminar 2002

2.1.83 The meeting recalled that ATS/AIS/SAR/SG/11 and APANPIRG/12 considered that further work regarding the application of the Asia/Pacific regional guidance materials would also benefit from further exposure at an AIS Seminar. In this regard, noting that ATS/AIS/SAR/SG already listed an AIS seminar in 2002 in its Task List pursuant of APANPIRG Conclusion 2/31, and recognizing requests expressed by States, APANPIRG/12 placed an special emphasis on the need of AIS seminar as a Special Implementation Project (SIP) in 2002 and formulated the following Conclusion:

Conclusion 12/8 – Special Implementation Project for an AIS Seminar in 2002

That, ICAO urgently consider a proposal for an Asia/Pacific Special Implementation Project to be established in order to hold an AIS Seminar in 2002 with the primary objective to improve AIS in relation to AIS automation and quality assurance programme.

2.1.84 When reviewing the Report of the APANPIRG/12, the ICAO Council, at the 5th Meeting of its 165th Session on 1 March 2002, noted the above Conclusion and that such a project would be put forward for the Council's approval through established procedures. Subsequently, this SIP was approved in late March 2002. In this connection, the meeting expressed its appreciation for the Council approval of SIP for an AIS seminar in 2002.

2.1.85 It was informed that an AIS Seminar for Asia/Pacific is planned in Bangkok, Thailand, from 17 to 20 December 2002. The objectives of the seminar are to:

a) increase the level of awareness by AIS/MAP providers regarding the need for, and application of, the SARPs contained in Annex 15;
b) accelerate the application of quality systems supporting AIS/MAP across the regions;
c) provide briefings relating to international directions and advances being made in the fields of AIS/MAP; provide a forum for open discussions relating to AIS matters of mutual interest between providers and users;
d) provide a forum for AIS/MAP users to articulate their specific needs and requirements; and
e) provide a forum where technological advancements and enhancements in the field of AIS/MAP can be displayed and demonstrated.

2.1.86 The meeting noted that the seminar would provide an opportunity for **technical personnel at work level** to expose themselves to the new trend in the AIS field. It is equally and critically important to raise the awareness among **the management level** of State's civil aviation authorities and/or AIS service providers, on the recent developments and the need for change, in particular after the AIS/MAP/98 Meeting.

2.1.87 The meeting also noted that a special session focusing on ISO 9000 series standard was being considered to be included in the seminar programme for better understanding of ISO, which is recommended in Annex 15.

Completion of the Work Programme of AATF

2.1.88 The meeting noted that ATS/AIS/SAR/SG/12 meeting carefully examined, in light of the Terms of Reference of the Task Force, the status of works completed since AATF/6.

2.1.89 It was advised that the Sub-Group considered that the major part of the assignments, such as the development of new guidance materials concerning quality system for AIS, training guidelines for AIS personnel, and the use of the Internet for information transfer, and updating of operating procedures for AIS automation (AIS dynamic data), were completed, within the given timeframe of 3 years as per the Terms of Reference.

2.1.90 The meeting was further advised that in light of the discussions on the update of the Task List and completion of the Work Programme, the Sub-Group was of the view that there would be no need to convene a meeting to pursue the Terms of Reference, and that the Task Force be suspended. Therefore, the ATS/AIS/SAR/SG/12 meeting developed the following Decision of the Sub-Group:

Decision 12/8 – AIS Automation Task Force (AATF)

That, the AIS Automation Task Force be suspended until such time when the need of further work is recognized by the Sub-Group.

2.1.91 The meeting noted this Decision of ATS/AIS/SAR/SG/12.

2.1.92 In addition, the meeting noted that the Task Force members expressed their willingness to provide assistance where required in the future and to undertake further work in relation to static data procedures and data exchange when it is considered appropriate by ATS/AIS/SAR Sub-Group and/or APANPIRG.

2.1.93 The meeting expressed appreciation to the experts of AATF for their efforts, dedication and commitment toward the completion of their work within the given timeframe as well as their offer to provide assistance in the future.

2.1.94 Furthermore, the meeting noted the concern expressed by Japan in relation to the progress of the development of a standardized aeronautical data exchange model. Japan informed the meeting that, since the AIS/MAP Divisional Meeting held in Montreal, 23 March – 3 April 1998, the North American and European Regions have been actively pursuing the automation of AIS, in particular in the area of exchange of electronic aeronautical information and data. ICAO established the Aeronautical Data Modeling Study Group (ADMSG) in 1999; however, ADMSG has not made significant progress to resolve various issues. Japan was of the view that such slow pace of developing internationally standardized procedures in this field would lead the Asia/Pacific Region to a situation where States have difficulties in making decisions with regard to their plan to develop AIS systems in order to meet operational requirements in a timely manner. Japan also stated that the establishment of an AIS Panel could be among ideas to be considered in facilitating the work.

Implementation of the Amendment of the ICAO Asia/Pacific Air Navigation Plan (APAC 98/8-ATS/COM/MET/SAR/AIS) on the Realignment of the Common Nadi/Auckland Oceanic FIR Boundary

2.1.95 The meeting was advised that on 27 November 2001, the ICAO Council approved the proposal for amendment of the ICAO Asia/Pacific Air Navigation Plan (Doc 9673) (serial number APAC 98/8-ATS/COM/MET/SAR/AIS) concerning realignment of the common Nadi/Auckland Oceanic FIR boundary which had been jointly proposed by Samoa and Tonga.

2.1.96 Subsequently, ICAO convened a special co-ordination meeting in Bangkok, Thailand, 27 February-1 March 2002 to foster the implementation of the approved amendment. A target implementation date of 8 August 2002 was agreed upon by all States concerned. Working Groups comprising representatives from Fiji, New Zealand, Tonga, Samoa, United States, American Samoa met three times at various locations and developed procedures and protocols required for the implementation of the realigned FIR boundary.

2.1.97 The meeting noted that the realigned FIR boundary was implemented on 8 August 2002 as agreed without any trouble.

2.1.98 The meeting recognized the demonstration of cooperation and close coordination among States concerned in this successful implementation.

Implementation of WGS-84 in the Asia/Pacific Region

2.1.99 The meeting was presented with a table in the uniform format showing the implementation status of WGS-84 in the Asia/Pacific States, which was reviewed and updated by the ATS/AIS/SAR Sub-Group.

2.1.100 In this regard, the meeting noted that India, Japan, Philippines and the United States had provided their updated information to ICAO before and during the ATS/AIS/SAR/SG/12 meeting. A minor correction was made to the information relating to Kolkata airport by India during the meeting. This updated table of WGS-84 implementation status is at **Appendix E** to the Report on Agenda Item 2.1.

2.1.101 It was reiterated that due to the importance in facilitating the world-wide implementation of WGS-84, States should supply the necessary data so that an accurate record of implementation can be established. It was noted that this information should be provided in an official correspondence to the ICAO Regional Office.

2.1.102 IATA emphasized the importance of implementation of WGS-84 for the safety in the current age of flight data oriented aircraft operations. For example, EGPWS requires the accurate WGS-84 data. In addition, IATA recommended that top priority should be given to providing WGS-84 reference stations at the airport gates to allow aircraft to align their navigation systems prior to departure.

2.1.103 The meeting considered the status of non-implementation of WGS-84 as an air navigation deficiency.

Carriage and operation of pressure-altitude reporting transponders and ACAS

2.1.104 The meeting was provided with updated tables of the status of States' implementation plans for the mandatory carriage and operation of pressure-altitude reporting transponders and those of ACAS II in the Asia/Pacific Region. These tables are at **Appendix F** to the Report on Agenda Item 2.1.

2.1.105 The meeting recalled that the APANPIRG/12 considered it necessary that situations where States had not established the requirement for the carriage and operation of pressure-altitude reporting transponders specified as a Standard in Annex 6, be listed as a "Deficiency". In this connection, the meeting was of the view that the status of non-implementation of the requirement for the mandatory carriage and operation of ACAS II on and after 1 January 2003 should be identified from airworthiness/aircraft operation perspective as well as ATS perspective.

2.1.106 The meeting noted with interest that as the number of aircraft being equipped with ACAS II has increased, the number of ACAS resolution advisory (RAs) reported by pilots and controllers has been significantly reducing in Japan. It was a JCAB's view that in addition to the adjustment of vertical speed by pilots and certain ATC procedures in place, the improved programme of ACAS II (TCAS version 7) has contributed to the reduction of the number of nuisance RAs.

2.1.107 It was also noted that on 4 January 2001, Japan mandated the carriage and operation of ACAS (TCAS version 6.04a or better) by turbine-engined airplanes of a maximum certified take-off mass in excess of 15 000kg or authorized to carry more than 30 passengers engaged in commercial transport operations, which are registered in Japan. Since then, JCAB has been strongly urging airlines to equip their aircraft with operative ACAS II. As a result, 297 (61.9%), out of 480 commercial aircraft, are equipped with TCAS version 7 while 165 (34.4%) are equipped with TCAS 6.04a as of May 2002. Japan confirmed that all commercial transport aircraft registered in Japan which has a maximum certified take-off mass in excess of 15 000 kg or is authorized to carry more

than 30 passengers, will be equipped with ACAS II by the end of 2002, meeting the Annex 6 requirement.

2.1.108 The meeting was informed that in Mumbai FIR, there were many reports of unknown traffic crossing the busy ATS routes over the Arabian sea without any standard separation minima as specified in PANS-ATM (Doc 4444).

2.1.109 It was also informed that after 1 January 2003, aeroplanes that have a maximum certificated take-off mass in excess of 15000kg or that are authorized to carry more than 30 passengers not fitted with ACAS II will not be allowed to operate within the FIRs of China. With effect from 1 January 2002, all aeroplanes shall also be equipped with a pressure-altitude reporting transponder as required in ICAO Annex 10, Volume IV.

2.1.110 The meeting re-emphasized the critical importance of aircraft not equipped with a pressure reporting transponders not being permitted to share airspace used by aircraft equipped with ACAS. The performance of ACAS is totally dependant on all aircraft in the vicinity being equipped with pressure-altitude reporting transponders, in order to detect conflicting traffic and issue a Traffic Alert (TA) or Resolution Advisory (RA).

2.1.111 In addition, the meeting recalled that APANPIRG/11 stated that when States were planning implementation of ACAS II, consideration should be given to the needs of State aircraft.

Revised ICAO Guidelines on Use of Lateral Offsets

2.1.112 The meeting recalled APANPIRG/12 Decision 12/9 – Development of lateral offset procedures for application in the Asia/Pacific Region:

> *That, as a matter of urgency, the ATS/AIS/SAR/SG develop lateral offset procedures for application in the Asia/Pacific Region, and in co-ordination with other regional planning groups and bodies concerned, develop global offset procedures.*

2.1.113 In consideration of APANPIRG Decision 12/9, the meeting noted that ICAO guidelines on the use of lateral offsets and the effect on airspace safety were issued by State letter AN 13/11.6-00/96 dated 3 November 2000. The purpose of these guidelines was to standardize procedures to reduce the likelihood of pilots inadvertently applying procedures different from those specified for the airspace in which they were operating. It was also necessary to ensure that the application of offsets to reduce the risk of collision as a result of loss of vertical separation would not increase the lateral risk between aircraft on adjacent tracks due to the magnitude of the offset being used.

2.1.114 The meeting was advised that the SASP had carried out a review of the lateral offset guidelines in late 2001, in light of information provided by certain States and further safety analyses, which had been undertaken since promulgation of the original guidelines. As a result of these new studies, the SASP had recommended that the guidelines should be amended to allow for application of offset procedures different from those specified, provided that a safety analysis for the particular airspace had shown that the proposed procedures would meet appropriate safety criteria. The revised guidelines were issued by State letter AN 13/11.6-02/21 dated 31 May 2002.

2.1.115 The meeting also noted that in Annex 2 – *Rules of the Air*, paragraph 3.6.2.1.1 authorization is required prior to a pilot applying a lateral offset, and this could be achieved by coordinated publication of approved offset procedures, by NOTAM and in Aeronautical Information Publication (AIP), by all States concerned. It was further noted that action should also be taken to incorporate offset procedures in the *Regional Supplementary Procedures* (Doc. 7030); however, because of the need to regularize the existing situation where some pilots are applying offsets at their own discretion, publication by States of procedures in accordance with the ICAO guidelines should not be delayed until Doc 7030 is amended.

2.1.116 In consideration of the revised guidelines, the meeting noted the reference to wake turbulence procedures in paragraph 7.1 e), which states:

> *"these guidelines do not apply to the use of tactical offsets by ATC, nor to the application of offsets by pilots when following published contingency procedures to avoid wake turbulence".*

In this regard, the meeting further noted that wake turbulence procedures for the Asia/Pacific Region had been incorporated in Doc 7030.

2.1.117 Furthermore, the meeting noted that States should coordinate and harmonize implementation of lateral offset procedures in line with the ICAO guidelines on a sub-regional basis. In this regard, it was noted that the Informal South-Pacific ATS Coordinating Group (ISPACG) was considering implementation of 1 NM lateral offsets in the South Pacific airspace on 5 September 2002. The meeting was of the opinion that the results of this implementation effort should be carefully analyzed before proceeding with a regional implementation programme. Accordingly, the meeting agreed that this item should be reviewed with a degree of priority by the Sub-Group at its next meeting.

2.1.118 To facilitate the ATS/AIS/SAR/SG developing a regional implementation programme, the meeting recognized that it would be helpful for the Sub-Group to have information on planning by States to implement offset procedures. Also, in light of the revised guidelines, which permits States to implement different procedures as described above, States should be reminded that implementation of lateral offsets should be undertaken in a coordinated and harmonized manner in line with the ICAO guidelines. Accordingly, the meeting formulated the following Conclusion

> **Conclusion 13/4 – Survey of State planning to implement lateral offset procedures**
>
> That, the Asia/Pacific Regional Office undertake a survey of State planning to implement lateral offset procedures, and to remind States that implementation of lateral offset procedures should be done in a coordinated and harmonized manner based on the ICAO guidelines, and taking into account planning by States in adjacent FIRs and regions.

2.1.119 The meeting recognized that the SASP was continuing its work to develop the guidelines, which had global applicability, and development of global procedures should be carried out by ICAO Headquarters. Therefore, to avoid duplication, the Sub-Group should not be tasked to develop global procedures but contribute to the work of SASP as appropriate, and develop regional offset procedures in coordination with other regional planning groups. In light of the foregoing, the meeting cancelled Conclusion 12/9 and replaced it with the following Conclusion:

> **Conclusion 13/5 – Development of lateral offset procedures for application in the Asia/Pacific Region**
>
> That, as a matter of urgency, the ATS/AIS/SAR Sub-Group develop lateral offset procedures for application in the Asia/Pacific Region in coordination with other regional planning groups and bodies concerned.

Proposal to amend the *Regional Supplementary Procedures*, ICAO Doc 7030

2.1.120 The meeting was presented with a proposed amendment to the *Regional Supplementary Procedures*, Doc 7030 in relation to the application of 55.5 km (30 NM) using ADS and 93 km (50 NM) lateral and longitudinal separation minima within the Asia/Pacific Regions. Also, editorial changes were proposed to related sections to enhance readability. The meeting noted that the proposal is in line with the PANS-ATM, Doc 4444, Amendment 1, applicability date 28 November 2002. As a consequence, the meeting formulated the following Conclusion:

Conclusion 13/6 – Amendment to the *Regional Supplementary Procedures*

That, the MID/ASIA and PAC *Regional Supplementary Procedures*, ICAO Doc 7030 be amended in accordance with the proposed amendment in Appendix x to the Report on Agenda Item 2.1.

Inclusion of SIGMET in VOLMET broadcasts

2.1.121 The meeting was reminded that APANPIRG/10 formulated Conclusion 10/3, which stated:

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.

2.1.122 As a result of this conclusion, a draft amendment proposal to the Asia/Pacific ANP (Serial number APAC 99/9-ATS) was forwarded in March 2000 to the States, whose facility and services would be significantly affected, for comments before it would be formally circulated.

2.1.123 Australia, China and Japan expressed concerns regarding the limited time for broadcast though they were all in favour of the proposal in principle. In addition, New Zealand raised an objection to the proposal. They advised that States with very large FIRs would have difficulty in transmitting SIGMET in addition to other required meteorological information in the limited timeframe of 5 minutes.

2.1.124 The meeting recalled that there were several options addressed at previous meetings:

a) SIGMET information or its availability be included in VOLMET broadcasts as the final section, when time permits. For example, Auckland broadcast includes TAF, METAR and TTL for designated aerodromes in accordance with the present ANP. The existence and validity of SIGMET is also included;

b) procedures being applied for VOLMET broadcast including SIGMET in the North Atlantic (NAT) Region whereby SIGMET information included in the Gander broadcasts include SIGMET or notification of SIGMET affecting flights operating above FL100 in the Gander Oceanic and Gander, Moncton, Montreal and Toronto FIRs (NAT ANP, Table ATS 2 refers). It was felt that these procedures would be difficult to apply in the ASIA/PAC Region.

c) some brief and simple guidance should be developed as to what SIGMET information is critical to the VOLMET and what information in the whole VOLMET broadcast could be condensed and abbreviated. Some examples were:
   i) information on position and movement of a tropical storm or depression;

ii) volcanic activity; or

iii) actual pilot reports of severe clear air turbulence (CAT) (*note: this is not referring to forecast CAT, which is subjective and rarely encountered*).

Although this may have been a practical solution, it went against the SARPS in ICAO Annex 3.

d) to identify additional frequencies for VOLMET broadcast form ITU Radio Regulation Appendix S27. It was however, not considered practical to pursue this option, as it would take a considerable period of time to secure suitable frequencies. This option was not found suitable to satisfy the immediate requirement;

e) as a near term solution, consideration may be given for the use of currently available D-VOLMET through ACARS data link pending availability of ICAO standard telecommunication system. Where feasible, the use of voice channel of existing NDB may also be considered;

f) to condense and abbreviate SIGMET, it was noted that, similar to para. c) above, this would contradict the provision of Annex 3 which particularly specifies that content and format of reports, forecasts and SIGMET information included in VOLMET broadcasts should be consistent with the provisions of Chapters 4, 6, and 7 of the Annex as applicable to bulletins disseminated beyond the aerodrome of origin; and

g) to include in VOLMET broadcast only those SIGMETs valuable to the operating crew. The CNS/MET SG/5 felt that, since issuance of SIGMET was considered as a safety issue, selection of SIGMETs to be included in VOLMET broadcast is not acceptable.

2.1.125 IATA stated that the most important aspect of inclusion of SIGMET in VOLMET broadcasts is to enable pilots to have access to the necessary MET information.

2.1.126 The meeting noted that during ATS/AIS/SAR SG/11, IATA presented a summary of the results of their survey, which concluded that no meteorological information from any airport should be deleted from the Asia/Pacific VOLMET system in order to make room for the full inclusion of a SIGMET(s). If the SIGMET(s) and normal meteorological information cannot fit in a 5-minute broadcast then a decision must be made as to what modifications should be made. This may entail streamlining the contents or the defined area of a SIGMET. If a Collaborative Decision-Making (CDM) mechanism exists between the ATS/MET Provider and relevant airlines then that may be a tool to consider. In any case, each weather phenomena must be individually considered against the intended audience of the VOLMET.

2.1.127 In light of the foregoing, the meeting was not able to reach any consensus on this issue. IATA presented a suggested procedure and agreed to further study the issue with its member airlines so that a consolidated view would be presented to the Sub-Group.

2.1.128 IATA suggested that when the contents of the weather information to be included in the VOLMET could exceed the 5-minute broadcast time limit. In such instances, the provider of the VOLMET information should if possible, co-ordinate with the Area Control Centre (ACC) responsible for the airspace impacted by the SIGMET to ascertain if any SIGMET information could be abbreviated or deleted from the VOLMET broadcast.

2.1.129 If any SIGMET is deleted from the VOLMET broadcast, the VOLMET should still indicate the SIGMET number, subject and effective time. All SIGMETs that directly affect the safety

of flight, such as clear air turbulence based on actual reports, ASHTAMs or SIGMETs involving volcanic ash that may impact any international route should be included in the VOLMET.

Search and Rescue Matters

Analysis of SAR Capability of ICAO States in the Asia/Pac Region

2.1.130 The meeting reviewed the SAR Capability Matrix Table, which provides a comprehensive listing of the SAR Capability of ICAO States in the Asia/Pacific Region. The Matrix Table was updated by the meeting and is shown at **Appendix G** to the Report on Agenda Item 2.1.

Provision of SAR and SAR Agreements

2.1.131 The meeting was reminded that APANPIRG/6 recalled the ICAO policy relating to the delegation of SAR Responsibilities from one State to another and formulated the following Conclusion:

Conclusion 6/12 – Provision of SAR

That, States unable to provide SAR, endeavour, with the assistance of ICAO if necessary, to:

a) delegate their responsibility for provision of SAR to one or more neighboring State(s); or

b) negotiate agreements with appropriate States to ensure SAR is provided on their behalf.

2.1.132 APANPIRG/6 also noted that experiences from some States indicated that establishment of SAR agreements between SAR Organizations had improved efficiency of SAR operations, in particular if such agreements also embraced maritime organizations. The following Conclusion was formulated:

Conclusion 6/13 – SAR Agreements

That,

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.*

2.1.133 The meeting was advised that ICAO had received SAR agreements based on a multi-lateral basis between Malaysia and Singapore, Philippines, Thailand, Indonesia and Brunei Darussalam.

2.1.134 Other States, which have established such SAR agreements or are in the process of doing so, were also encouraged to complete this important task and send these agreements to ICAO to be included in the register.

2.1.135 The meeting noted that certain amendments are currently being considered for Annex 12 by the ICAO-IMO Joint SAR Working Group. (IMO is the International Maritime Organization and the Working Group handles changes to the *International Aeronautical and Maritime Search and Rescue Manual* (IAMSAR Manual) and other matters pertaining to harmonization of aeronautical and maritime SAR. Other treaties, such as the *International Convention on Maritime Search and Rescue,*

as well as the IAMSAR Manual, also provide for concluding international SAR agreements. The U.S. provided the meeting with a representative SAR agreement that was between the U.S, Canada and the United Kingdom. This information is found at **Appendix H** to the Report on Agenda Item 2.1.

SAR Exercises

2.1.136 The meeting recalled that in accordance previous APANPIRG conclusions, States were requested to develop formal programs of SAR exercises and forward their programmes to the ICAO Regional Office on an annual basis by 30 April. Such exercises should be made available for other States to participate as observers.

2.1.137 It was noted by the meeting that some States hold regular joint SAR exercises (SAREXs) with their neighbours which had proved to be productive in the standardization of their procedures. States are encouraged to continue this practice or where these joint SAREXs are not presently taking place, make appropriate arrangements to develop and initiate these exercises.

2.1.138 Over the past years, several international SAR seminars and SAREXs involving many States and international organisations have been held with significant success. A main contribution to this success was the intensive preparation and planning to create a "live" atmosphere for the exercise as well as the harmonization of the event with a SAR seminar. In this way, participants at the seminar had a "front seat" to the exercise and were able to give worthwhile comment on the performance at the conclusion of the SAREX.

2.1.139 The meeting however noted that, due to other high priorities over the past few years, an International Search and Rescue Seminar and SAREX involving some States of the Bay of Bengal area was unfortunately deferred.

2.1.140 To assist in supporting this deferred SAREX/Seminar, APANPIRG/12 endorsed a Conclusion to request a Special Implementation Project for an International Seminar and SAREX in the Bay of Bengal as follows:

Conclusion 12/10 – Special Implementation Project – International Seminar and SAREX

*That, ICAO urgently consider a proposal for an Asia/Pacific Special Implementation Project to be established with the primary objective to improve search and rescue services, co-ordination and cooperation between States***.**

2.1.141 Subsequently, the ICAO Council endorsed the Special Implementation Project as described above in accordance with the prescribed ICAO procedures. Other pressing matters has caused this event to be deferred and it is now planned to take place in 2003. The ICAO Bangkok office will once again seek the approval of the ICAO Council to hold this event.

2.1.142 The meeting noted the methodology in programming and organizing this SAREX/Seminar, taking into consideration the following issues:

a) SAREX/Seminar venue
b) area to be covered by the SAREX;
c) participants to be invited to the SAREX/Seminar;
d) SAREX/Seminar structure and programme;
e) support from outside organizations;
f) SAREX/Seminar planning; and,
g) coordination requirements between States involved in the SAREX.

2.1.143 Some States have already been approached regarding the hosting of this SAREX/Seminar. When this decision has been finalized, other States of the Bay of Bengal area will also be invited to contribute to the conduct and organizational aspects of making this event a success.

Search and Rescue Training

2.1.144 The meeting recalled 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, is dated 1998.

2.1.145 Further, the Document gives a comprehensive explanation of search and rescue organization, responsibilities and requirements and is 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.

2.1.146 Using these guidelines, States were 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.

2.1.147 Chapter 3 of Volume 1 of the Manual considers 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.

2.1.148 The meeting noted that Singapore Aviation Academy programmed courses in search and rescue twice yearly; one course concentrates on Aviation Search and Rescue with the second focusing on Maritime SAR.

National Plans for Search and Rescue

2.1.149 The U.S. recommended to the meeting that every nation should have, either in legislation or other suitable form, high-level provisions for providing SAR services. The meeting was advised that,in the U.S., this is achieved mainly in the form of an interagency agreement signed at the ministry level by six federal departments (agencies). Three of these departments (Transportation (DOT), Defense (DOD) and Interior (DOI)) have operational responsibilities for SAR, and the other three (National Aeronautics and Space Administration (NASA), Department of Commerce (DOC), and the Federal Communications Commission (FCC)) have responsibilities to support SAR. DOD has overall responsibility for aeronautical and land SAR for the SAR regions (SRRs) corresponding to Alaska and the continental U.S. The Coast Guard (under DOT) handles aeronautical and maritime SAR in oceanic SRRs for which the U.S. is responsible, and operates Joint (aeronautical and maritime) RCCs (JRCCs) for this purpose. The National Park Service (under DOI) handles SAR within national parks. NASA and NOAA support the Cospas-Sarsat system and other initiatives that enable the use of technology to support SAR. The FCC (together with the Coast Guard and the Federal Aviation Administration (FAA)) regulates radio spectrum, radio equipment, and radio carriage requirements for distress alerting and response.

2.1.150 The meeting further noted that the National SAR Plan:

a) Adopts the *International Aeronautical and Maritime Search and Rescue Manual* (IAMSAR Manual)
b) Identifies responsible agencies and their duties
c) Refers to international references that define U.S. SAR regions
d) Discusses international cooperation and agreements

e) Discusses our National Search and Rescue Committee, which oversees the Plan
f) Provides for mutual assistance among the agencies

2.1.151 The Plan also addresses matters of national SAR policy, including policies on the following topics:

a) Use of all available resources for SAR
b) Charging for SAR services
c) Aeronautical and maritime SAR harmonization and cooperation
d) Terminology
e) Non-discrimination in provision of assistance
f) Preparedness for rapid response
g) Civil-military cooperation
h) Use of the Incident Command System when warranted (discussed in Section 1.12 of Volume 2 of the IAMSAR Manual)
i) SAR resources
j) Suspension and termination of SAR operations

2.1.152 The U.S. provided the meeting with a copy of their National Search and Rescue Plan for information and potential usefulness as an example of how to comply with legal and humanitarian SAR obligations, which is in **Appendix I** to the Report on Agenda Item 2.1.

Requirements for Emergency Location Transmitter (ELT) for SAR

2.1.153 The meeting noted that emergency locator transmitter (ELT) for Search and Rescue shall operate on 406 MHz and 121.5 MHz simultaneously from 1 January 2005 as prescribed in Annex 6 and Annex 10. All emergency locator transmitters installed on or after 1 January 2002 shall operate simultaneously on 406 MHz and 121.5 MHz. The technical characteristics for the 121.5 MHz and 406 MHz components are provided in paragraph 5.2 and 5.3 Chapter 5 of Annex 10 Vol. III. The meeting identified the need to implement ELT in accordance with SARPs provision and considered it as an important item to ensure timely implementation.

Update on the EMARSSH Project

2.1.154 The meeting recalled that the Revised ATS Route Structure, Asia to Middle East/Europe, South of the Himalayas (EMARSSH), was an initiative of ICAO. The purpose of the EMARSSH project is to use the existing aircraft capabilities and CNS/ATM enhancements to revise the ATS route structure and increase benefits to the ATS users and providers as well as gain environmental benefits.

2.1.155 Since the APANPIRG/12 meeting, six EMARSSH Task Force meetings have been held; one in Delhi, India, Tehran I.R. Iran, two in ICAO Paris office and two in the ICAO Bangkok office. Continued progress towards implementation has taken place at all of these meetings, with enthusiastic support from all States concerned as well as the aviation industry.

2.1.156 The Eighth Task Force Meeting on a Revised ATS Route Structure – Asia to Middle East/Europe, South-of-the-Himalayas (EMARSSH TF/8) was held in Bangkok, Thailand, from 5 to 9 August 2002.

2.1.157 The purpose of the meeting was to finalise all outstanding issues associated with the EMARSSH project in order to achieve the target implementation date of AIRAC 28 November 2002. These issues included AIS matters, route structure and coordination between adjacent FIRs/States

2.1.158 The meeting was advised that many areas concerning this large project have been addressed but will require further work to ensure a smooth transition to the revised route structure. Amongst these were:

a) safety management issues;
b) domestic route requirements;
c) planning of ATC workload and training requirements;
d) coordination and cooperation with military organisations;
e) further work on exclusive or non exclusive use of RNP airspace;
f) communication requirements as a result of the changed route structure;
g) Weather deviation procedures;
h) Transition procedures;
i) AIS requirements

2.1.159 The meeting was given a status report of progress on these above items.

Safety Management requirements

2.1.160 Traffic data collection in support of safety assessments for RNP10 operations has been initiated. Airservices Australia had kindly undertaken to provide a safety analysis for the proposed EMARSSH routes, based on the data provided. It is expected that this safety assessment will be completed before the end of October 2002.

Domestic route requirements

2.1.161 States were reminded to examine their domestic route system to ensure that they harmonize with the EMARSSH route structure.

Planning of ATC workload and Training requirements

2.1.162 States were requested to investigate the impact on ATC workload as a result of changes due to the new route structure through their FIR(s)to ensure that it was compatible with controller abilities The amount of aircraft operation within a portion of airspace at any one time is likely to increase due to the reduction of spacing of routes over the high seas. This will need further consideration when RVSM is introduced over many parts of the EMARSSH route structure in November 2003.

ATS Training for EMARSSH

2.1.163 With regard to ATC training requirements for the EMARSSH project, States were requested to seriously look at this item especially with regard to:

a) separation procedures dealing with RNP airspace;
b) familiarisation with changes to many of the ATS route designators;
c) Weather Deviation Procedures in the Bay of Bengal and Arabian Sea;
d) new sectorization within an ACC where required; and,
e) changes to coordination procedures with adjacent FIRs

Coordination and cooperation with military organizations

2.1.164 The meeting noted that the majority of civil/military coordination had been successfully completed regarding changes to EMARSSH routes. In some cases routes through military airspace were only available for limited periods, for example, nighttime operations only. However, these particular times when the routes are available are fortuitous as this is when the majority of aircraft are leaving the Malaysian Peninsular traveling westbound to Europe or the Middle

East. There was still ongoing civil/military coordination in some other areas of the project which is expected to be completed before the scheduled implementation date.

Exclusive or Non-exclusive use of RNP airspace

2.1.165 The meeting was advised that agreement had been reached between States concerned and IATA that RNP10 airspace over the high seas in the Bay of Bengal and Arabian Sea would be exclusive airspace at and above FL280, for aircraft approved for RNP10 operations.

Communications requirements as a result of the changed route structure

2.1.166 The meeting agreed that with the exception of a ground-ground direct speech circuit between Medan and Chennai ACCs, the present communication requirements in relation to the EMARSSH structure were adequate.

Weather deviation procedures

2.1.167 Due to other important matters, which needed to be finalized including AIP Supplements for AIRAC date of 5 September 2002, it was decided to defer this work till after the meeting. The EMARSSH Core Team would study this issue in more detail, and develop procedures for affected States' consideration and will produce either a NOTAM or an AIP Supplement to cover these procedures.

2.1.168 The meeting noted that the EMARSSH implementation date was in the "dry season" in both oceanic areas of the Bay of Bengal and the Arabian Sea. This would allow an appraisal of the Weather Deviation Procedures to be completed prior to the onset of the monsoon season.

AIS requirements

2.1.169 AIP SUP relating to the EMARSSH project had been agreed by States to be distributed on AIRAC 5 September 2002. The meeting recalled that this project may possibly be the largest ATS route structure change ever to be initiated. The EMARSSH routes structure covers three ICAO regions and it is essential that all changes agreed to are harmonized along the routes end-to-end. For this reason, it was agreed that sufficient time was given to the aviation industry, charting companies and aircraft database manufacturers to ensure the success of the project.

Outstanding issues carried over from previous EMARSSH meetings

2.1.170 During past EMARSSH Task Force meetings, there were several outstanding issues which still needed to be resolved. These included:

a) confirmation of agreed routes between Muscat/Mumbai FIRs;
b) some queries on routes between Tehran/Muscat/Mumbai FIRs;
c) confirmation of routes across the Bay of Bengal;
d) confirmation of EMARSSH routes in the Yangon FIR;
e) re-alignment of a route between Kuala Lumpur/Jakarta FIRs;
f) confirmation of the starting point for BB10 from the Malaysia Peninsular;
g) confirmation of EMARSSH routes through the Kabul FIR; and,
h) agreement of States concerned for a parallel route through Saudi Arabia, Jordan and Syria.

2.1.171 All of these matters were addressed at EMARSSH TF/8 and resolved.

Report on progress from States

Islamic Republic of Iran

2.1.172 The I.R. Iran has achieved major changes to their ATS route structure within the Tehran FIR in accordance with EMARSSH requirements. This, in no small part, has been achieved by excellent civil/military coordination. Many of their EMARSSH routes have already been implemented and the others will be implemented on the scheduled date of 28 November 2002. Due to the Afghanistan situation, a few routes joining from the Kabul FIR into the Tehran FIR are not expected to be open by the EMARSSH implementation date.

2.1.173 IFALPA, IATA and ICAO (Asia/Pacific) complimented the CAO (I.R. of Iran) for its progress in airspace modernization, particularly in the areas of COM, NAV and Surveillance.

India

2.1.174 India made a detailed presentation to the meeting listing out the routes and the route details from FIR of entry to the FIR of exit, that have been agreed for implementation on 28 November 2002. India informed the meeting that route segments are being progressed for developing the route system as direct as possible. When such route segments are passing through special use airspace, it is expected that these segments will be available for restricted hours of operations, viz 1630 to 0030 UTC.

Pakistan

2.1.175 Pakistan informed the meeting of the progress made towards implementation of the revised route structure through Pakistan. The meeting was also informed that Pakistan has accepted proposed routings regarding entry/exit points on India/Pakistan FIR, as well as on Pakistan/Iran FIR.

Nepal

2.1.176 Nepal informed the meeting that originally, Himalaya-1 (Nepalganj to Indek), Himalaya-2 (Kunming – Kathmandu), Himalaya-3 (Kathmandu- Nepalganj- Delhi), BB17 and BB18 routes were proposed to be established through Nepal under the EMARSSH project. Due to various issues yet to be resolved by certain States, these originally EMARSSH proposals could not be progressed in sufficient time to meet the implementation date of 28 November 2002. These routes would continue to be pursued towards implementation when the outstanding issues have been resolved.

Myanmar

2.1.177 In coordination with ICAO, Myanmar has advised their readiness and acceptance of the proposed revised route structure through the Yangon FIR.

Bay of Bengal Issues

Letters of Agreement

2.1.178 The meeting the work of Bay of Bengal States' in preparations regarding the signing of Letters of Agreement (LOAs) for the EMARSSH route structure implementation:

a) India reported that it had circulated draft LOAs to Nepal, Malaysia, Indonesia and Sri Lanka and that India plans to complete the signing of all LOAs by mid-September 2002.

b) Indonesia confirmed it had begun reviewing the draft LOAs provided by India and Malaysia. They will also send a draft LOA to Sri Lanka before 1 October 2002.

c) Malaysia advised that it is planning to complete the signing of LOAs with its neighbours by 31 October 2002 and that it would commence the training of Malaysian air traffic controllers in the first week of November.

d) Nepal advised the meeting that it was making preparations to have its LOAs with India and Bangladesh signed before the end of October.

e) Sri Lanka reported that only small changes would be required in its LOA with India. Sri Lanka expects to sign the LOA with Indonesia before the end of August.

f) Thailand planned to complete its LOA with Malaysia and Myanmar by 31October 2002.

No-Pre-Departure Clearance (PDC)

2.1.179 No-PDC arrangements currently practiced by Malaysia and Singapore would continue following the implementation of EMARSSH. Malaysia, Singapore and Indonesia were also considering the application of No-PDC to flights planning to operate on routes P574 and N563 which cut across the Jakarta FIR from the Kuala Lumpur FIR. The details of this application of No PDC will be discussed at a later date among the States concerned.

2.1.180 The meeting was also advised that Thailand had requested the addition of FL260 as a No-PDC flight level for flights on M770 (BB10) and L759 (BB9). It was agreed to put this request aside until after the implementation EMARSSH. An assessment could be made at the EMARSSH Implementation Review meeting to determine if the need to include FL260 as a No PDC flight level still existed.

Other route issues in the Bay of Bengal

2.1.181 The meeting noted that Thailand was agreeable to having the eastern end of M770 anchored at RANONG (RAN). In addition, an existing ATS route (part of R325) from Phuket would remain, joining M770 east of RANONG, within radar coverage of Phuket. This route would be the primary route for westbound departures from and overflying the Malaysian Peninsula.

2.1.182 Phuket was a popular destination for flights from Europe during certain seasons of the year. Noting the availability of radar around Phuket, it would be possible for such flights to route along P628, via OLSEL and L645 to Phuket without impeding the air traffic flow on the adjacent EMARSSH routes.

2.1.183 The meeting was advised that there was concern that the alignment of P574 through the Kuala Lumpur, Jakarta and Kuala Lumpur FIRs would generate unnecessary controller workload and increased coordination between Indonesia and Malaysia. In a spirit of cooperation, States concerned agreed to make the transfer of control point between Jakarta and Kuala Lumpur approximately 15 minutes inside the Jakarta FIR to provide sufficient time for Kuala Lumpur ACC to carry out coordination with Chennai ACC with regard to westbound flights.

2.1.184 ATS route A327 from Phuket to PAMTO supported flights to and from Johannesburg. It was noted that currently, flights operating along this route, as well as G465 and R203, were restricted to either FL260 and below or FL390 and above, due to the many major crossing routes over the Bay of Bengal for aircraft with destinations in Europe or the Middle East. The

meeting was briefed that there was a proposal for the route be converted to an RNAV route and for a review of its operation to be carried out with the aim of minimising flight level restrictions.

2.1.185 So as to address the need of non-RNAV equipped aircraft wishing to fly across the Bay of Bengal, the meeting accepted a proposal for the existing route B466 to be retained but re-defined with a highest useable level of FL270. As for non-RNAV equipped aircraft wishing to operate between Phuket and Calcutta, the meeting noted that such flights could use existing routes along the northern coast of the Bay of Bengal.

Confirmation of EMARSSH routes through the Kabul FIR

2.1.186 Agreement and approval has been obtained from the Coalition Forces operating in Afghanistan to delete the existing route, V888 and introduce a new RNAV route, N644 which would be parallel to V838 (now renamed L750) for transit international flights operating through the Kabul FIR.. This route is one of several EMARSSH routes which were earlier agreed to by the Afghanistan Ministry of Civil Aviation and Tourism in August 2001. Both of these routes will be implemented on AIRAC date of 5 September as part of the Contingency Air Traffic Management Plan (CATMP) for Transit of the Kabul FIR by International Civil Aircraft.

2.1.187 Other EMARSSH routes through the Kabul FIR are still awaiting approval from the Coalition Forces, who are the overall authority for airspace within the Kabul FIR. The meeting was advised that the Coalition Forces would regularly review the other EMARSSH routes that are not currently being used for civil operations and will advise when these routes can be implemented.

2.1.188 A chart showing the EMARSSH route structure is at **Appendix J** to the report on agenda item 2.1

Identify ATS Routes To Be Deleted

2.1.189 States were urged to identify existing routes that would become redundant with the implementation of the EMARSSH route structure. Such routes should be deleted from the Air Navigation Plan and appropriate national documentation (e.g. State's AIP). Housekeeping of this nature would minimise any confusion that could arise in flight planning and aircraft operations.

2.1.190 The meeting also recognised that there would be a need for some routes to be retained for domestic traffic operations. States were urged to consider adjusting the upper limits, the operating hours or even the alignment of such routes to ensure that they complement the EMARSSH route structure.

Finalize AIS issues required prior to implementation

2.1.191 The EMARSSH TF/8 meeting considered the draft AIP SUP which had been initially developed during EMARSSH TF/7 (Tehran 13 – 16 May 2002). As a result of discussions, it was concluded that the following items were essential elements for inclusion in the AIP SUP to be issued by individual States:

a) SIDS/STARS – including specific details of new or changed SIDS/STARS associated with the EMARSSH route structure, or those that are to be deleted as a result of deleted or changed routes;

b) Point to point descriptions of each new EMARSSH route within the respective FIRs;

c) Point to point description of all international and/or domestic airways or route segments to be revised; and

d) Details of all international and/or domestic airways or route segments that are to be deleted.

2.1.192 The meeting noted that, in addition to the requirements of the AIP SUP issue, States were also reminded of their responsibilities in relation to providing formal written notification to the ICAO regional office for proposed amendments to the Air Navigation Plan, including details of ATS routes which are to be deleted as a result of the implementation of the EMARSSH route structure.

2.1.193 The meeting was advised that, on advice from Jeppesen from an AIS data management perspective, 11 October 2002 is the last date for the cancellation/removal of previously notified data amendments and that consequently, 11 October 2002 would be regarded as the "Go/No Go" date for EMARSSH.

Transition Plan

2.1.194 The draft transitional procedures which had been developed during EMARSSH TF/7 (Tehran 13 – 16 May 2002) were reviewed by EMARSSH TF/8. It was agreed at that meeting that the transition to EMARSSH routes was a "one-time" event, which would require the application of specific procedures.

2.1.195 In finalizing the Transition Plan, the meeting adopted the following principles:

Implementation

a) The EMARSSH route structure will be implemented effective 28 November 2002 at 0200 UTC; and

b) The actual transition from the old to the new route structure should be accomplished by ATC giving specific route instructions to a specific intersection for each individual flight.

2.1.196 All transitions are to be completed by 0230 UTC.

Traffic Management

2.1.197 The meeting noted that in addition to the Flight Planning requirements detailed above, ATS Units would apply tactical management to assist each and every flight through the transition to the new routes. This may involve the use of amended ATC clearances and/or variations to the actual time of implementation.

2.1.198 It was the view of the Task Force that in some circumstances, it would be prudent for ATC to initiate an early transition, especially in those circumstances where the transition could be wholly contained within the one ATC sector and thus reduce the amount of ATS coordination with the adjoining Sector/FIR.

Radio Failure Procedures

2.1.199 A requirement for special radio failure procedures to cover the specific transition period was considered. These procedures would be unique to the EMARSSH transition and are as follows:

"In the event of radio communication failure, Pilots shall initiate the transition to the revised ATS route structure at 11280200 UTC, and be established on the revised EMARSSH route structure no later than 11280230 UTC".

NOTAM advice

2.1.200 The meeting was informed that because the transition plan was a "one-time event", details of the Transition Plan should be promulgated by NOTAM at least three weeks in advance, to enable crew training on the EMARSSH routes and associated procedures, to be completed ahead of transition. The meeting concluded that as this was a "one time event", special radio failure procedures for the transition period should also be included in the NOTAM.

2.1.201 The meeting thanked the Core Team for providing guidance and leadership to States during this EMARSSH project. The meeting also noted the significant work which has been achieved by States concerned, without which, this important route structure would not have matured.

Frequency Assignment for TIBA and IFBP

2.1.202 The meeting was advised that there had been two regional contingency plans recently activated, the Y2K and the CRAME plan, that included the use of the ICAO Traffic Information Broadcast by Aircraft (TIBA). TIBA requires the use of a dedicated VHF frequency, which if used in more than one FIR, should be adopted by regional agreement. It was further noted that during the Y2K contingency planning process, an Amendment to Annex 10 replaced the air-air procedures in the Regional Supplementary Procedures (128.95 MHz for ASPAC) with a global protected frequency of 123.45 MHz. This procedure went into effect on 4 November 1999, which in turn conveniently released the regionally protected frequency of 128.95 MHz as the obvious choice for the Y2K TIBA frequency. When procedures were developed for CRAME, 128.95 MHz was once again used as the TIBA frequency for the Asia Pacific Region. If 128.95 had not been immediately available as a protected frequency, then valuable time would have been wasted in trying to obtain a secure frequency for contingency operations.

2.1.203 The meeting was also briefed that there are two forms of broadcast procedures available, the ICAO TIBA and the IATA In-flight Broadcast Procedure (IFBP). The ICAO TIBA procedure is used when States promulgate the broadcast procedure by NOTAM. However, in airspace where an existing or sudden condition requires implementation of an in-flight broadcast procedure, and TIBA has not been promulgated for the affected airspace, the IATA IFBP would be considered implemented, and if implemented, would be promulgated by IATA. Either procedure required a protected VHF frequency.

2.1.204 A regionally agreed protected frequency for in-flight broadcasting does not exist for the Asia/Pacific Region. Without such a regional agreement it is only a matter of time before an ATS State Provider will legitimately start using 128.95 MHz for their provision of air traffic services. Recent events have shown the need for the Asia/Pacific Region to be ready with a protected frequency for contingency use. For contingency planning that may require the use of IFBP, IATA suggested that the same frequency that is regionally protected for TIBA could also be used for IFBP. This means that pilots in the Asia/Pacific Region would use the same frequency for contingency in-flight broadcasts, whether promulgated by a State or IATA.

2.1.205 The meeting agreed to formulate the following Conclusion:

Conclusion 13/7 – Adoption of a regionally protected frequency for Traffic Information Broadcasts by Aircraft (TIBA)

That,

a) A designated VHF radio telephony (RTF) frequency of 128.95 MHz be promulgated in the Regional Supplementary Procedures (Doc 7030) for the Asia/Pacific Region for the use of Traffic Information Broadcasts by Aircraft

to permit reports and relevant supplementary information of an advisory nature to be transmitted by pilots; and,

b) All States in the Asia/Pacific Region to include the frequency of 128.95 for the use of TIBA in their contingency plans.

Contingency Planning in the High Seas

2.1.206 The meeting was advised that there had been two recent examples of Restricted Airspace being, or about to be declared over the high seas that had or would have an impact on the provision of air traffic services to international civil operations. In one case the high seas airspace was closed to all flights. In the other case the ATS Provider indicated that, as a result of an industrial action, the airspace over the high seas airspace was likely to be designated as a restricted area. IATA indicated that there was a need to review these recent events and to agree on future contingency procedures that are agreeable to the States, ICAO and the civil airspace users.

2.1.207 The meeting was advised that while the closing of airspace was a State's decision in their sovereign airspace, the closure of air space over the high seas is in breach of the Convention on International Civil Aviation. The meeting was reminded that airspace over the high seas is not sovereign but is international airspace that is delegated to States, by a regional air navigation agreement, for the provision of air traffic services with the stipulation that those services must be in accordance to the provisions of ICAO.

2.1.208 The meeting noted that ICAO **Annex 11-Air Traffic Services** specifies (chapter 2, section 2.1) how airspace is to be delegated over the high seas, including the matter of delegating the responsibility of the provision of ATS to other States.

> *Those portions of the airspace over the high seas* or in airspace of undetermined sovereignty where air traffic services will be provided *shall be determined on the basis of regional air navigation agreements. A Contracting State having accepted the responsibility to provide air traffic services in such portions of airspace shall thereafter arrange for the services to be established and provided in accordance with the provisions of this Annex.*

2.1.209 This is further explained in the FOREWARD of **Annex 11-Air Traffic Services.**

> The Standards and Recommended Practices in Annex 11 apply in those parts of the airspace under the jurisdiction of a Contracting State wherein air traffic services are provided and also *wherever a Contracting State accepts the responsibility of providing air traffic services over the high seas* or in airspace of undetermined sovereignty.

2.1.210 **Article 12** of the Chicago Convention on International Civil Aviation addresses rules of the air that must be applied over the high seas as follows:

> Rules of the air
>
> *Each contracting State undertakes to adopt measures to insure that every aircraft flying over or maneuvering within its territory and that every aircraft carrying its nationality mark, wherever such aircraft may be, shall comply with the rules and regulations relating to the flight and manoeuvre of aircraft there in force. Each contracting State undertakes to keep its own regulations in these respects uniform, to the greatest possible extent, with those established from time to time under this Convention. Over the high seas, the rules in force shall be those established under*

this Convention. Each contracting State undertakes to insure the prosecution of all persons violating the regulations applicable.

2.1.211 The definition of territorial waters, high seas and their relationship to the overlying airspace was defined at the **1982 United Nations Convention on the Law of the Sea**. **Article 2** of the 1982 Law of the Sea Convention recognizes that "*the sovereignty of a coastal state extends beyond its land territory to an adjacent belt of sea, described as the territorial sea. This sovereignty extends to the airspace over the territorial sea as well as to its bed and subsoil*". **Article 3** sets the limit of territorial waters at 12 miles. Thus, "*every State has the right to establish the breadth of its territorial sea up to a limit not exceeding 12 nautical miles, measured from baselines*".

2.1.212 As far as declaring Restricted Areas over the High Seas, the Chicago Convention states that contracting States can establish "prohibited areas" above their land areas or territorial waters only in accordance with **Article 9** of the Convention.

Prohibited areas

(a) Each contracting State may, for reasons of military necessity or public safety, restrict or prohibit uniformly the aircraft of other States from flying over certain areas *of its territory*, provided that no distinction in this respect is made between the aircraft of the State whose territory is involved, engaged in international scheduled airline services, and the aircraft of the other contracting States likewise engaged. *Such prohibited areas shall be of reasonable extent and location so as not to interfere unnecessarily with air navigation*. Descriptions of such prohibited areas *in the territory of a contracting State*, as well as any subsequent alterations therein, shall be communicated as soon as possible to the other contracting States and to the International Civil Aviation Organization.

(b) *Each contracting State reserves also the right, in exceptional circumstances or during a period of emergency, or in the interest of public safety, and with immediate effect, temporarily to restrict or prohibit flying over the whole or any part of its territory*, on condition that such restriction or prohibition shall be applicable without distinction of nationality to aircraft of all other States.

(c) Each contracting State, under such regulations as it may prescribe, may require any aircraft entering the areas contemplated in subparagraphs *(*a) or *(*b) above to effect a landing as soon as practicable thereafter at some designated airport within its territory.

4.5.1 Detailed definitions of "Danger area", "Prohibited area" and "Restricted area" are found in Chapter 1 of **Annex 2-Rules of the Air** as below.

Danger area. An airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times.

Prohibited area. An airspace of defined dimensions, *above the land areas or territorial waters of a State*, within which the flight of aircraft is prohibited.

Restricted area. An airspace of defined dimensions, *above the land areas or territorial waters of a State*, within which the flight of aircraft is restricted in accordance with certain specified conditions.

2.1.213 The meeting agreed that in the case of airspace over the high seas, if a State Provider were to encounter an accident or incident that adversely affects their ability to provide air traffic services, it is important that:

a) proper notification is given to ICAO, involved States and the airspace users,

b) a contingency plan is in place where at minimum, flight information services are available to the airspace user,

c) the airspace over the high seas remains open to all civil flights. If a State closes its sovereign airspace then the high seas airspace must remain open for flights that do not impact the sovereign airspace of the affected State, and

d) if the State ATS Provider does not have a contingency plan that will at the minimum provide flight information services, then ICAO should be requested to ask an adjacent State to temporarily take over the affected international airspace with, as a minimum, the provision of flight information services.

2.1.214 The meeting was reminded that flight information service is not air traffic control. However, flight information service coupled with traffic information broadcasts by pilots can play a role in contingency planning and supplementing collision hazard information that may or may not be provided by the contingency air traffic service. In these cases the airspace should be temporarily reclassified by NOTAM as either Class F or G airspace, which legally places the responsibility of separation upon the pilot-in-command and not with the State ATS Provider.

2.1.215 The meeting agreed to formulating the following Conclusion:

Conclusion 13/8 – Contingency Planning

That, States review, amend or develop contingency plans that will:

a) provide a safe and orderly flow of international air traffic in the event of disruptions of air traffic services and related supporting services,

b) preserve the availability of major world air traffic routes within the air transportation system: and,

c) ensure continuous access to airspace for international civil flights over areas of the high seas.

Development of State Contingency Plans

2.1.216 The meeting recalled that APANPIRG/10 discussed the option of developing a model Regional and State plan, based on the Regional and State Plans for the Y2k project, that could be used for other contingencies which may have an adverse effect on aviation within and through the region. Consequently, APANPIRG/10 formulated the following Conclusion:

Conclusion 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.

2.1.217 The meeting was presented with a framework which had been developed by one State which laid out the steps in the development of a State Contingency Plan. This framework is at **Appendix K** to the Report on Agenda Item 2.1.

2.1.218 The meeting was urged to use this document, in association with their State Y2K Contingency Plans, in the development of State Contingency Plans where this had not already been completed.

ATS Inter-facility Data Communication (AIDC)

2.1.219 The meeting was informed that several States had attempted to use the standard to implement automatic communication between ATC automation systems. Difficulties have been experienced as adjacent FIRs have connected their systems together (eg New Zealand-Australia) resulting in ad-hoc agreements about being made about how adjacent systems should communicate via AIDC. Several lessons have been learned and several deficiencies in the AIDC standard exposed.

2.1.220 It is appropriate that the deficiencies and ambiguities in the existing document be corrected so that States may implement new systems with consistency, confidence and certainty.

2.1.221 The meeting noted that the AIDC Task Force was established by APANPIRG in its Decision 5/1 composed of technical and operational experts from Australia, France, Japan, Malaysia, New Zealand, Pakistan, Singapore, Thailand, Hong Kong China, United States and IATA.

2.1.222 The meeting recognized the need to convene the meeting of the Task Force or reconstitute a new Task Force to re-examine the AIDC Interface Control Document, with the objective of removing errors and correcting omissions and uncertainties.

2.1.223 In view of the foregoing the meeting formulated the draft decision as follows:

Decision 13/9 – AIDC Review Task Force

That, the Task Force established by Decision 5/1 of APANPIRG for the development Interface Control Document (ICD) for ATS Inter-facility Data Communication (AIDC) be reconvened to undertake the task of reviewing and updating the ICD. The task be completed prior to the ATS/AIS/SAR SG/13 meeting in order to permit the Sub Group to review the ICD.

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

2.1.224 The meeting reviewed and updated the List of Tasks allocated to the Sub-Group by APANPIRG/12. A copy of this list is contained in Appendix L to the Report on Agenda Item 2.1. The meeting developed the following Decision:

Decision 13/10 – ATS/AIS/SAR Subject/Task List

That, the ATS/AIS/SAR Subject/Task List as contained in **Appendix L** to the Report on Agenda Item 2.1 be adopted as the current work assignment for the ATS/AIS/SAR Sub-Group replacing the current Subject/Tasks List as assigned by APANPIRG/12.

Asia/Pacific Region RVSM Implementation Plans Status Report (as of 7 June 2002)

FIR/AOR	RVSM Implementation Date	Comments
Anchorage Arctic	24 Feb 2000	RVSM Transition Airspace only
Anchorage Continental	24 Feb 2000	RVSM Transition Airspace only
Anchorage Oceanic	24 Feb 2000	
Auckland Oceanic	24 Feb 2000	
Bali	31 Oct 2002	Phased implementation
Bangkok	21 Feb 2002	Phased implementation
Beijing		
Biak	Not applicable	Subject to Indonesia upper airspace consolidation
Brisbane	24 Feb 2000	Oceanic East of Australia 24 Feb 2000 - Remainder of FIR 1 Nov 2001
Calcutta	27 Nov 2003	
Chennai	27 Nov 2003	
Colombo	27 Nov 2003	
Delhi	27 Nov 2003	
Dhaka	27 Nov 2003	
Guangzhou		
Hanoi	31 Oct 2002	Phased Implementation
Ho Chi Minh	21 Feb 2002	Phased Implementation
Hong Kong	31 Oct 2002	
Honiara	24 Feb 2000	
Jakarta	31 Oct 2002	Phased Implementation
Karachi	27 Nov 2003	
Kathmandu	27 Nov 2003	
Kota Kinabalu	21 Feb 2002	
Kuala Lumpur	21 Feb 2002	Phased Implementation – Western part 27 Nov 2003
Kunming		
Lahore	27 Nov 2003	

FIR/AOR	RVSM Implementation Date	Comments
Lanzhou		
Male	27 Nov 2003	
Manila	21 Feb 2002	
Melbourne	1 Nov 2001	
Mumbai	27 Nov 2003	
Nadi	24 Feb 2000	
Naha	24 Feb 2000	Pacific Oceanic (non-exclusive RVSM airspace) 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		
Sanya AOR	31 Oct 2002	N892 within the oceanic airspace of Sanya AOR on 21 February 2002
Shanghai		
Shenyang		
Singapore	21 Feb 2002	
Taegu	TBD	
Tahiti	24 Feb 2000	Non-exclusive RVSM airspace
Taibei	21 Feb 2002	
Tokyo	24 Feb 2000	Oceanic
Ujung Pandang	31 Oct 2002	Phased Implementation
Ulaan Baatar		
Urumqi		
Vientiane	31 Oct 2002	
Wuhan		
Yangon	27 Nov 2003	

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PHRASEOLOGIES RELATED TO RVSM OPERATIONS IN THE ASIA AND PACIFIC RVSM AIRSPACE

1. Controller/pilot phraseologies

1.1 Controller/pilot phraseologies are found as follows:

Message	Phraseology
For a controller to ascertain the RVSM approval status of an aircraft:	(call sign) **CONFIRM RVSM APPROVED**
For a pilot to report non-RVSM approval status: i. on the initial call on any frequency within the RVSM airspace (controllers shall provide a readback with this same phrase), and ii. in all requests for flight level changes pertaining to flight levels within the RVSM airspace; and iii. in all read-backs to flight level clearances pertaining to flight levels within the RVSM airspace. Additionally, except for State aircraft, pilots shall include this phrase to read back flight level clearances involving the vertical transit through FL 290 or FL 410. *See examples that follow.*	**NEGATIVE RVSM***
For a pilot to report RVSM approval status.	**AFFIRM RVSM***
For a pilot of a non-RVSM approved State aircraft to report non-RVSM approval status, in response to the phrase (call sign) **CONFIRM RVSM APPROVED.**	**NEGATIVE RVSM STATE AIRCRAFT***
Denial of clearance into the RVSM airspace:	(call sign) **UNABLE CLEARANCE INTO RVSM AIRSPACE, MAINTAIN** [or **DESCEND TO,** or **CLIMB TO**] **FLIGHT LEVEL** (number)
For a pilot to report when severe turbulence affects the aircraft's capability to maintain the height-keeping requirements for RVSM.	**UNABLE RVSM DUE TURBULENCE***
For a pilot to report that the aircraft's equipment has degraded below the MASPS required for flight within the RVSM airspace. *(This phrase is to be used to convey both the initial indication of the non-MASPS compliance, and henceforth, on initial contact on all frequencies within the lateral limits of the RVSM airspace until such time as the problem ceases to exist, or the aircraft has exited the RVSM airspace.)*	**UNABLE RVSM DUE EQUIPMENT***
For a pilot to report the ability to resume operations within the RVSM airspace after an equipment or weather-related contingency.	**READY TO RESUME RVSM***

Message	Phraseology
For a controller to confirm that an aircraft has regained its RVSM approval status, or to confirm that the pilot is ready to resume RVSM operations.	**REPORT ABLE TO RESUME RVSM**

**** Pilot phraseology***

Example 1: A non-RVSM approved State aircraft, maintaining FL 260, subsequently requests a climb to FL 320.
Pilot: (call sign) REQUEST FL 320, NEGATIVE RVSM
Controller: (call sign) CLIMB TO FL 320
Pilot: (call sign) CLIMB TO FL 320, NEGATIVE RVSM

Example 2: A non-RVSM approved State aircraft, maintaining FL 260, subsequently requests a climb to FL 430.
Pilot: (call sign) REQUEST FL 430, NEGATIVE RVSM
Controller: (call sign) CLIMB TO FL 430
Pilot: (call sign) CLIMB TO FL 430, NEGATIVE RVSM

Example 3: A non-RVSM approved State aircraft, maintaining FL 360, subsequently requests a climb to FL 380.
Pilot: (call sign) REQUEST FL 380, NEGATIVE RVSM
Controller: (call sign) CLIMB TO FL 380
Pilot: (call sign) CLIMB TO FL 380, NEGATIVE RVSM

Example 4: A non-RVSM approved civil aircraft maintaining FL 280, subsequently requests a climb to FL 320.
Pilot: (call sign) REQUEST FL 320, NEGATIVE RVSM
Controller: (call sign) UNABLE CLEARANCE INTO RVSM AIRSPACE, MAINTAIN FL 280.

2. Phraseologies for coordination between ATC units

2.1 The following phraseologies should be used for coordination between ATC units:

Message	Phraseology
To verbally supplement an automated estimate message exchange which does not automatically transfer Item 18 flight plan information.	**NEGATIVE RVSM** or **NEGATIVE RVSM STATE AIRCRAFT** [as applicable]
To verbally supplement estimate messages of non-RVSM approved aircraft.	**NEGATIVE RVSM or NEGATIVE RVSM STATE AIRCRAFT** [as applicable]
To communicate the cause of a contingency relating to an aircraft that is unable to conduct RVSM operations due to severe turbulence or other severe weather-related phenomenon [or equipment failure, as applicable].	**UNABLE RVSM DUE TURBULENCE** [or **EQUIPMENT,** as applicable**]**

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CHAPTER 3

OPERATING PROCEDURES FOR AIS DYNAMIC DATA (OPADD)

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ACKNOWLEDGEMENTS

This Guidance Material was developed based on the *Operating Procedures for AIS Dynamic Data* which was developed and published in January 2000 by the European Organisation for the Safety of Air Navigation (EUROCONTROL) (the Operating Procedures for AIS Dynamic Data AIS.ET1.ST05.1000-DEL-01, Edition: 1.0).

The AIS Automation Task Force (AATF) of the ICAO Asia/Pacific Air Navigation Planning and Implementation Regional Group's (APANPIRG) ATS/AIS/SAR Sub-Group (ATS/AIS/SAR/SG) reviewed the above Document released by EUROCONTROL with a view to harmonizing procedures to handle AIS dynamic data with other Regions and standardizing Regional procedures to the possible extent. In light of the current status of developments pertaining to AIS automation in the Asia/Pacific Region, the AATF recognized that there was a need to modify some procedures contained in the EUROCONTROL document in order to cater for regional needs whilst bearing in mind the importance of inter-regional harmonization of procedures.

Hereby, the AATF wishes to record their appreciation for the work conducted by the EUROCONTROL and a permission given to copy the document.

For more information concerning the original EUROCONTROL document, contact

EUROCONTROL, DSA/AIM Unit

96, Rue de la Fusée, B-1130 Brussels, Belgium

Telephone: +32 2 729 4789 or 729 3132

Fax: +32 2 729 9008

For edition status, see
http://www.eurocontrol.int/projects/eatmp/ais.

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1. INTRODUCTION

1.1 History

In the interest of regional standardization, the *Guidance Material on Common Operating Procedures for the Asia/Pacific Region Automated AIS System* was developed by the AIS Automation Task Force (AATF) under the guidance of the APANPIRG, and was published in March 1997. This Guidance Material was based on the *Common Operating Procedures* (COP) developed by the Common Operating Procedures Group (COPG) of the EUROCONTROL AIS Panel for operation in the integrated EUR Region Automated AIS in an effort to follow up EAMPG Conclusion 32/26. These procedures were in line with the *Aeronautical Information Services Manual* (Doc 8126, 5th Edition), in particular with Chapter 8 – Organization of an Automated Aeronautical Information Services System. The objective of the COP was to provide guidance in relation to the operation of an integrated regional automated AIS system, where commonality was sought throughout the region, or even worldwide, for the benefit of all operators and users of the system.

In 1999, APANPIRG considered the previous work of the AATF, on-going work of the AIS/MAP Divisional Meeting (AISMAP98) held in Montreal, Canada, from 23 March to 3 April 1998, and the *Guidance Material on Common Operating Procedures for the Asia/Pacific Region Automated AIS System*, and agreed that there were a number of issues that had arisen since the AATF was deactivated in 1996. Subsequently, the AATF was reactivated in 1999 with revised Terms of Reference, which included updating the Guidance Material on COP.

In January 2000, EUROCNTROL published a document concerning the *Operating Procedures for AIS Dynamic Data* (OPADD) (the Operating Procedures for AIS Dynamic Data AIS.ET1.ST05.1000-DEL-01, Edition: 1.0), which replaced the *Common Operating Procedures* (COP).

In order to further enhance inter-regional harmonization, the AATF reviewed this OPADD document with a view to incorporating EUROCONTROL procedures, to the possible extent, into the Asia/Pacific COP. During the course of the review, the following aspects were adopted as principles:

a) Procedures which were based on an assumption or would require an amendment to the ICAO Annex 15, should not be considered;

b) Procedures which were unique to the European Region or would have no relevance to the Asia/Pacific Region should not be considered; and

c) The structure of the document should be compatible with the OPADD to the possible extent.

It should be noted that the Guidance Material contained in this Chapter 3 is a living document and needs to be reviewed and updated from time to time, taking into consideration of developments by ICAO and States, and changing technology.

1.2 Purpose

The objective of these procedures is *"the provision of standardized procedures to improve the quality of AI*S" and they concur with the overall AIS Specialist Objectives:

- *"To promote uniformity in the collection and dissemination of aeronautical information, in the interest of safety, quality, efficiency and economy*"; and
- *"To improve overall efficiency of AIS, in terms of speed, accuracy and cost effectiveness, by the increased use of automatio*n".

It should be noted that when the original procedures were being developed, all member States of the European Civil Aviation Conference (ECAC) considered that they act in conformity with the Annex 15 Integrated Aeronautical Information Package provisions. However, significant differences of interpretation of the SARPS were identified and it was acknowledged that a common understanding of procedures for NOTAM creation was a prerequisite for successful automated processing. Therefore, the Operating Procedures contained in the original EUROCONTROL document were developed to reach this common understanding.

1.3 Scope

This Guidance Material on the *Operating Procedures for AIS Dynamic Data* details the procedures related to NOTAM, in general.

The procedures are intended for guidance and may be implemented immediately. The effective date for the marked procedures will be as per the amended Annex 15 edition, except where indicated otherwise by means of a note. The procedures for NOTAM creation detailed in Section 2 will also serve as a benchmark for the processing of incoming international NOTAM, in the sense that where incoming international NOTAM are not prepared in line with these procedures, they can be manually processed in accordance with the principles and procedures laid down in Section 3 - ‘NOTAM Processing’ of this Material.

The principles and procedures related to maintaining database completeness and coherence, along with the description of messages associated with this function, are provided in Section 4. These messages, such as request and reply messages, are required to fulfill the maintenance function. These messages are based upon the use of AFTN, whereas the use of other communication means, using alternative formats, could be envisaged.

This Material also contains general procedures for SNOWTAM and ASHTAM.

Finally, a set of Appendices comprises Guidance for the Use of the NOTAM Selection Criteria (NSC), Procedures for Multi-Part Messages, System Parameters necessary for the processing and storage of NOTAM in Databases, and a Glossary, which defines the meaning of certain terms used in this document.

1.4 Document Outline

This document describes operating procedures for NOTAM with the objective of harmonizing them to enhance automatic NOTAM handling.

The document contains six Sections and four Appendices as follows:

Section 1 - Introduction, presents the deliverable context, purpose and scope. The scope statement clarifies the applicability of the procedures. Section 1 contains also a deliverable outline and a table of referenced documents.

Section 2 - NOTAM Creation, sets the procedures related to NOTAM creation in general. It provides a standard format for NOTAM Checklists, and standard methods of handling eventual Multi-part NOTAM and NOTAM related to several States. The procedures related to the relationship between NOTAM and AIP publications *i.e.* TRIGGER NOTAM production, in application of the Integrated Aeronautical Information Package are also explained.

Section 3 - NOTAM Processing, sets the procedures for the handling of NOTAM which do not comply with ICAO SARPS. Based on Section 2 content, this Section sets the limits concerning NOTAM correction and the procedures to follow when correction is not possible.

Section 4 - DATABASE Completeness and Coherence Messages, provides the message formats for maintaining AIS Dynamic Data.

Section 5 - PROCESSING of SNOWTAM and ASHTAM, sets the procedures for handling these messages for their incorporation in PIB.

Section 6. - FALL BACK PROCEDURES, provides general principles for Fall Back procedures.

Appendices*:*

1. *Guidance for the use of the NOTAM Selection Criteria (NSC);*
2. *Procedures for Multi-Part Messages;*
3. *System Parameters; and*
4. *Glossary.*

1.5 Referenced Documents

The following documents were used during the production of this Guidance Material:

No	Title	Edition	Date
1	ICAO Annex 15 - *Aeronautical Information Services*	Tenth edition with Amendments up to 31	July 1997
2	ICAO Aeronautical Information Services Manual – Doc 8126-AN/872	Fifth	1995
3	Procedures for Air Navigation Services – ICAO Abbreviations and Codes (PANS-ABC, Doc 8400)	Fifth edition with Amendments up to 24	1999
4	ICAO Regional Guidance Material on the Common Operating Procedures for the Asia/Pacific Region Automated AIS Systems	First	March 1997
5	EUROCONTROL the *Operating Procedures for AIS Dynamic Data*	AIS.ET1.ST05.1000-DEL-01, Edition: 1.0	31 January 2000

2. NOTAM CREATION

2.1 General

The international standard NOTAM format is contained in ICAO Annex 15. It is the reference format for NOTAM and forms the baseline on which this document is developed.

The different types of NOTAM are:

- NOTAMN (New NOTAM);
- NOTAMR (Replacement NOTAM);
- NOTAMC (Cancel NOTAM).

This Section 2 contains the operating procedures to be applied for the creation of NOTAM, and provides:

- Basic rules for NOTAM creation (2.1.1);
- Basic verification to be performed (2.1.2);
- Detailed Procedures relative to each NOTAM Item (2.2 and following).

The procedures relative to the processing of NOTAM are described in Section 3.

2.1.1 Basic Rules for NOTAM Creation

The following basic rules apply to the creation of NOTAM at NOF level:

- A NOTAM shall deal only with one subject and one condition of that subject.
- NOTAM are basically qualified according to the NOTAM Selection Criteria (NSC)1 , as published in ICAO Doc 8126 , Appendix C.
- All published times shall be in UTC
- For NOTAMC no anticipated date in Item B (start of validity) is permitted.
- If Item C contains ‘EST’, the NOTAM requires the later issue of a NOTAMR or NOTAMC.
- Item C shall contain ‘PERM’ solely for NOTAM information that will be incorporated in the AIP. These NOTAM are cancelled according to the rules described in paragraph 2.6 when the AIP is updated.
- Item E should be composed by the Publishing NOF in such a way that it will serve for direct Pre-flight Information Bulletin entry without requiring additional processing by the receiving Unit.
- No correct version NOTAM shall be issued. Erroneous NOTAM shall either be replaced, or cancelled and a new NOTAM issued.
- A NOTAMR shall replace only one NOTAM. Both shall belong to the same NOTAM series.

- A NOTAMC shall cancel only one NOTAM. Both shall belong to the same NOTAM series.
- Publication of several NOTAM in the same AFTN message is not allowed.
- Renumbering of existing NOTAM (containing identical information, but with a new number) is not allowed. Nor shall renumbering be done at the beginning of each year.

2.1.2 Basic Verification

High quality standards in creation of NOTAM require the application of both syntax and semantic verification.

Depending on the sophistication of the AIS system, verification may be performed to varying degrees by either manual methods or by software.

Irrespective of the way it is achieved, the following verification must be performed:

- The ICAO NOTAM format shall be strictly adhered to.
- NOTAM Series/Number/Year/Sub-number (if applicable) are correct and in ascending sequence.
- NOTAM Type: only N, R or C are allowed.
- NOTAM Number referred to in a NOTAMR or C is a valid NOTAM.
- Item A in NOTAMR and C is identical to Item A in the NOTAM referred to.
- Item Q):
  - 'FIR' is a valid entry for the Publishing NOF.
  - NOTAM Code is contained in the NOTAM Selection Criteria (NSC).
  - TRAFFIC, PURPOSE and SCOPE should correspond to those provided in the NOTAM Selection Criteria.
  - LOWER and UPPER (expressed in FL value) are logical, i.e. LOWER inferior or equal to UPPER.
  - Co-ordinates in 'Geographical Reference' Qualifier are situated inside the FIR(s), and correspond to a Radio Navigation Aid, zone or area defined in Item E or to the aerodrome in Item A. Co-ordinates are expressed in degrees of Latitude/Longitude to a resolution of one minute, followed by the radius of influence in NM.
- Item A:
  - The given FIR or FIR(s) are valid for a country, and are valid FIR(s) for the Publishing NOF.

    If more than 1 FIR is concerned, the ICAO country indicator of the Publishing NOF followed by XX or XXX must be stated in 'FIR' of the Item Q, and all FIR(s) (up to 7) shall be stated in Item A.
  - A given aerodrome is a valid aerodrome situated in the FIR stated in Item Q, and is a valid aerodrome for the Publishing NOF.

- Item B: Start of Validity
  - NOTAM ‘N’ and ‘R’:

    10 figure date/time group equal to or greater than the actual date/time of creation.
  - NOTAM ‘C’:

    10 figure date/time group equal to the actual date/time of creation of the NOTAM.

    Note: the date/time group in Item B may precede the date/time group of transmission of the NOTAM by a few minutes, due to the time required for the full completion and review of the NOTAM data.
- Item C: End of Validity

  10 figure date/time group greater than Item B, except for NOTAMC where the Item C is not included.

  The date/time group may optionally be followed by the letters ‘EST’, if appropriate.

  – If no DTG is given, the letters ‘PERM’ must be present (only for information that will be incorporated in AIP).
- Item D: Day schedule - active times

  Months, Days and Hours must be situated inside the time limits indicated by the Start and End of Validity
- Item E: Text

  This entry must be clear and concise in order to provide a suitable PIB entry.

  Use the decoded NOTAM Code, completed where necessary by indicators, identifiers, designators, call signs, frequencies, figures and plain language. ICAO abbreviations should be used where appropriate.
- Items F and G: Lower and Upper Limit

  Shall only be used for Navigation Warnings and Airspace Organization.

  Values shall be verified as to correctness and logic, and on whether the indicated data correspond to the values entered in qualifiers LOWER and UPPER in the Item Q.

  If Items F and G are required, both Items shall always be included.

All data Items in the NOTAM format shall be included according to the NOTAM type.

The following table shows the necessary data Items for each NOTAM type:

Data - Type	NOTAMN	NOTAMR	NOTAMC	Checklist
Identification	Yes	Yes	Yes	Yes
Series/Nr R or C	No	Yes	Yes	Yes
FIR	Yes	Yes	Yes	Yes
NOTAM code	Yes	Yes	Yes	Yes
Traffic	Yes	Yes	Yes	Yes
Purpose	Yes	Yes	Yes	Yes
Scope	Yes	Yes	Yes	Yes
Lower/Upper	Yes	Yes	Yes	Yes
Lat/Long/ Radius	Yes	Yes	Yes	No
Item A	Yes	Yes	Yes	Yes
Item B	Yes	Yes	Yes	Yes
Item C	Yes	Yes	No	Yes
Item D	Optional	Optional	No	No
Item E	Yes	Yes	Yes	Yes
Items F/G	Optional	Optional	No	No

Yes = Entry in Item is compulsory.

No = Entry in Item is not allowed.

Optional = Entry depending on the NOTAM contents.

2.2 NOTAM Identification

2.2.1 NOTAM Series Allocation

- The use of a NOTAM Series identifier is always required, even for countries publishing only one single NOTAM Series.
- Letters A to Z (1 character) are allowed.

2.2.2 NOTAM Number

- Consists of NOTAM number/year (4 digits/2 digits). For Multi-part NOTAM this number shall be followed by a sub-number (1 letter, 2 digits).
- Each series will start on January 1st of each year with number 0001.
- The NOTAM are issued in ascending and continuous sequence.

2.2.2.1 NOTAM Sub-Number (for Multi-part NOTAM only)

In case where a NOF produces a NOTAM exceeding the present AFTN message length (normally 1800 characters including non-printing characters, but as few as 1200 in some countries), it will produce a Multi-part NOTAM.

Each part of the Multi-part NOTAM is a separate NOTAM Message with each Item present from Item Q to Item D (if present) inclusive, and Item E continuing text. Each part shall have the same NOTAM type and has the same NOTAM number followed by a sub-number. Items F and G (if present) are transmitted with the last part only.

The sub-number is placed immediately behind the year of the number/year combination without a space.

The sub-number is identified by one letter ('part identifier' e.g. A = Part 1, B = Part 2, etc.) and a number, always consisting of 2 digits (‘number of parts’, e.g. 05= 5 parts). This enables up to 26 parts Multi-part NOTAM.

Examples:

A1234/00A02 (means Part 1 of 2)

B1235/00B05 (means Part 2 of 5)

A5678/00C03 (means Part 3 of 3)

B6453/00D06 (means Part 4 of 6)

The following example shows the NOTAM Identification of a Multi-part NOTAM consisting of 4 parts.

Example:

(A1234/97A04 NOTAMN

Q) .....

A) .....

B) .....

C) .....
E) .....)

(A1234/97B04 NOTAMN
Q) .....
A) .....
B) .....
C) .....
E) .....)

(A1234/97C04 NOTAMN
Q) .....
A) .....
B) .....
C) .....
E) .....)

(A1234/97D04 NOTAMN
Q) .....
A) .....
B) .....
C) .....
E) .....)

2.2.3 NOTAM Type

- Letters 'N' (new), 'R' (replace) and 'C' (cancel) are allocated to the NOTAM according to its type.

  Example: A0123/97 NOTAMN

- The procedures described in this chapter refer to NOTAMN (new NOTAM), most of them apply also to NOTAMR and NOTAMC.

However, there are some particulars specific to NOTAMR (Replacement NOTAM) and NOTAMC (Cancel NOTAM) creation. These are described in this Section, paragraphs 2.4.7 and 2.4.8.

2.3 NOTAM Qualification (Item Q)

2.3.1 General Rules

The NOTAM Selection Criteria (NSC) are the basis for NOTAM qualification. Guidance for their use is contained in ICAO Doc 8126, Appendix C. Publishing NOF shall basically use the NOTAM Codes and their respective allocated qualifiers provided in the NSC.

Automated (computer assisted) systems will propose these specific criteria for inclusion in the Item Q of the proposed NOTAM.

Use of the NOTAM Code and the corresponding 'Traffic', 'Purpose' and 'Scope' qualifiers is recommended.

Deviation from the published qualifiers is only allowed when required by National regulations or imposed by operational needs.

All fields of the Item Q shall be completed for each NOTAM type.

2.3.2 Qualifier 'FIR'

ICAO Location Indicator of the FIR concerned. A location indicator allocated exclusively to an overlying UIR shall not be used.

Example:

Q) EDXX/QARCH/I/OB/E/250/450/4916N01236E999

A) EDFF EDMM

Note: that the information relates to Rhein UIR and that the indicator EDUU (=Rhein UIR) is not inserted in Item Q.

If more than one FIR of the same country is concerned, the ICAO country indicator (e.g. ED) followed by 'XX' (or 'XXX') shall be inserted instead of a FIR.

In the case of multiple FIR, the ICAO location indicators of all FIR concerned shall be listed in Item A.

Example:

Q) ZXXX/QWELW/. . . . . .

A) ZGZU ZSHA ZBPE. . . . . .

If multiple FIR of different countries are concerned (supra-national), the ICAO country indicator of the Publishing NOF followed by "XX" or "XXX" shall be inserted. The ICAO location indicator of all affected FIR shall also be listed in Item A.

Example:

Q) WMXX/QWELW/.. . . . . .

A) WMFC VTBB

2.3.3 Qualifier 'NOTAM Code'

This Item contains the NOTAM Code.

The basis for the assignment of NOTAM Codes are the NOTAM Selection Criteria (NSC). NOF shall basically use the NOTAM Codes provided in the NOTAM Selection Criteria.

The association criteria defined in the NSC provide a subject-related association of NOTAM with the qualifiers 'TRAFFIC', 'PURPOSE' and 'SCOPE'.

If the NSC do not contain an appropriate NOTAM Code, the following procedures shall be applied:

a) In the exceptional case where the information to be promulgated by NOTAM has no related SUBJECT (2nd and 3rd letters of NOTAM Code) contained in the NOTAM Code list, the following NOTAM Code shall be used in all cases: '**QXXXX**'

   When QXXXX is inserted, free association of the qualifiers 'TRAFFIC', 'PURPOSE' and 'SCOPE' is possible.

   Example:

   Item Q = Q)EKDK/QXXXX/IV/M/E /000/999/5533N00940E999

   NOTAM text = E) ACCORDING TO RESOLUTION 781 UNITED NATIONS HAS DECIDED TO ESTABLISH A BAN ON MIL FLIGHTS IN …..

   The 2nd and 3rd letter combination 'XX' shall only be used in combination with the 4th and 5th letter combination 'XX', except in the case of Amendments or Supplements containing information dealing with different subjects and locations, one Trigger NOTAM with NOTAM Code 'QXXTT' will be issued.

b) Whenever the SUBJECT (2nd and 3rd letters) is contained in the NSC, but the CONDITION of the subject (4th and 5th letters of NOTAM Code) **is not** specified, the letters 'XX' shall be inserted as 4th and 5th letters.

   When "XX" is inserted as 4th and 5th letters, free association of the qualifiers (with the exception of 'SCOPE') is possible. The entries shall be made with regard to the NOTAM contents, and by analogy with the prevailing association of qualifiers to the respective subject (2nd and 3rd letters) in the NSC.

   Example:

   QMRXX (Runway)

   Prevailing qualifiers for '=

   TRAFFIC/PURPOSE/SCOPE are ' IV/NB/A/'

   Entry in Item Q accordingly:

   Q)WSJC/QMRXX/IV/NBO/A/000/999/0121N10358E005

2.3.4 Qualifier 'TRAFFIC'

This qualifier relates the NOTAM to a type of traffic:

I = IFR Traffic

V = VFR Traffic

IV = IFR and VFR Traffic

K = NOTAM is a checklist, see paragraph 2.7.

The appropriate type of traffic shall be taken from the NOTAM Selection Criteria.

The NSC contain certain subjects (2nd and 3rd letters) where the traffic (I, V or IV) depends on the NOTAM contents (e.g. QAP = REPORTING POINT or QMN=APRON). In these cases, the correct traffic entry shall be determined by the Publishing NOF according to NOTAM contents/subject.

Example:

NOTAM code = QAPCI

TRAFFIC = IV (DEPENDS ON SUBJECT (I AND/OR V)

TEXT = **VFR** REPORTING POINT ID CHANGED ...

Entry in Item Q: Q) YBBB/QAPCI/V/OB/E /000/200....

2.3.5 Qualifier 'PURPOSE'

This qualifier relates a NOTAM to certain purposes (intentions) and thus allows retrieval according to the user's requirements. The appropriate ' Purpose' qualifier(s) should be taken from the NSC.

2.3.5.1 'PURPOSE' entries

N = NOTAM selected for the immediate attention of aircraft operators

Due to their importance these NOTAM require immediate attention of aircraft operators. Aircraft Operators may request for specific delivery of such NOTAM or for inclusion into specific Pre-flight Information Bulletins.

The NOTAM will appear in a specific Pre-flight Information Bulletin containing only NOTAM related to subjects of extreme importance selected for immediate attention. NOTAM qualified OB, B or M will not appear, so only NOTAM qualified NB shall appear.

O = Operationally significant NOTAM

The NOTAM will appear in a specific Pre-flight Information Bulletin containing only NOTAM related to subjects of operational significance. NOTAM qualified B or M will not appear, only NOTAM with OB or NB shall appear.

B = NOTAM selected for PIB entry

The NOTAM will appear in a Pre-flight Information Bulletin containing all NOTAM relevant to a general Pre-flight Information Bulletin query.

NOTAM qualified B, OB or NB shall appear in the Pre-flight Information Bulletin.

M = Miscellaneous

The NOTAM is for a 'miscellaneous' purpose and will not appear in a Pre-flight Information Bulletin, unless specifically requested.

K = The NOTAM is a checklist (see paragraph 2.7).

2.3.5.2 'PURPOSE' combinations

The following combinations of one to two letters are permissible (the order of the letters in the combinations has no significance):

- NB, OB, B and M
- K for a NOTAM Checklist.

2.3.6 Qualifier 'SCOPE'

This qualifier relates the NOTAM subject (2nd and 3rd letters) to a specific scope. This qualifier is used to determine under which category a NOTAM is presented in a Pre-flight Information Bulletin, i.e. under 'Aerodrome', 'En-Route' or 'Navigational Warning'.

The details about the processing of the various entries for the production of Pre-flight Information Bulletins are to be described.

The following entries are permissible:

A = Aerodrome

relates the NOTAM to the scope of 'Aerodromes'. Entry of an aerodrome (e.g. RJAA) in Item A is compulsory. A geographical reference in the Item Q shall be given, in this case the aerodrome co-ordinates.

E = Enroute

relates the NOTAM to the scope of 'Enroute information'. Entry of one or more FIR in Item A is compulsory. A geographical reference in the Item Q shall be given according to the contents of the NOTAM.

W = Warning

relates the NOTAM to the scope of 'Navigation Warnings'. Entry of one or more FIR in Item A is compulsory. A geographical reference in the Item Q shall be given according to the contents of the NOTAM.

AE = Aerodrome/Enroute

relates the NOTAM to scopes 'A' and 'E' . Entry of an aerodrome (e.g. VHHH) in Item A is compulsory, and the geographical reference in the Item Q shall be given according to the contents of the NOTAM.

Scope 'AE' is employed where a Navigational Aid is used for both the Aerodrome and the Enroute procedures. The location indicator of the Aerodrome shall be included in Item A. Item Q shall contain the geographical co-ordinates and the radius of the Navigational Aid.

Example:

Q) VTBB/QNVAS/IV/BO/AE/000/999/1354N10036E005

A) VTBD

E) VOR BKK FREQ 117.7MHZ U/S

AW = Aerodrome/ Warning

relates the NOTAM to both scopes 'A' and 'W' . Entry of an aerodrome in Item A is compulsory, and the geographical reference in the Item Q shall be given according to the contents of the NOTAM.

Scope 'AW' is used when the Navigational Warning takes places on or in the near vicinity of an aerodrome, and it affects both the traffic flying enroute and at the aerodrome.

Item A shall contain the aerodrome location indicator, and Item Q shall contain the geographical co-ordinates of the location where the activity takes place, followed by the radius.

Example

Q) WSJC/QWPLW/IV/M/W/000/100/0123N10342E010

A) WSJC

B) 0204072300

C) 0204080100

E) PJE WILL TAKE PLACE WI 10NM RADIUS OF 012315N1034235E

F) GND

G) FL100)

K = Checklist

relates the NOTAM to a checklist, which will not appear in a Pre-flight Information Bulletin. Entry in Item A of the FIR(s) valid for the Publishing NOF is compulsory.

The appropriate entries shall be taken from the NOTAM Selection Criteria.

The NSC contain certain subjects (2nd and 3rd letters) where the SCOPE (A, E,W, AE or AW) depends on the NOTAM contents (e.g. QAA = MNM ALT or QNV = VOR). In these cases, the correct SCOPE entry shall be determined by the publishing NOF according to NOTAM contents.

If the letters 'XX' are inserted as 4th and 5th letters of the NOTAM code, the appropriate SCOPE must be derived from the NOTAM-subject (2nd and 3rd letters of the NOTAM Code) according to the NSC.

Recapitulation of ‘SCOPE’ qualification possibilities and respective Item A contents:

Qualifier ‘SCOPE’	Item A contents
A	Aerodrome
AE	Aerodrome
E	FIR(s)
W	FIR(s)
AW	Aerodrome
K	FIR(s)

2.3.7 Qualifiers ‘LOWER/UPPER’

These qualifiers relate a NOTAM influence to a vertical section of airspace specified by lower/upper limits. This allows to specify upper/lower limits in requests for pre-flight information, and by doing so to exclude from the retrieved Pre-flight Information Bulletin obtained, any NOTAM not relating to all or part of the requested vertical section.

- The limits specified in these qualifiers are given as ‘flight levels’ only. Example: /090/330/ = flight level 090 ‘ to 330 ‘UPPER’
- In the case of NAV-Warnings and Airspace Restrictions, the values specified in LOWER and UPPER shall correspond to the values specified in Items F and G and to those which are specified in the NOTAM text (see paragraph 2.4.5).
- In the case of Airspace Organization, the values specified in LOWER and UPPER shall correspond to the vertical limits of the airspace concerned, (if the NOTAM introduces a change to the vertical limits of the airspace, Items F and G shall be present and correspond to the values in LOWER and UPPER).

  Example:
  F) 2000 FT AGL
  G) 7500 FT AMSL
  = LOWER/UPPER: 020/075.

  Note: Due to the possible differences between transition heights and levels (depending on the air pressure), the values entered in qualifiers LOWER and UPPER in the Item Q, only roughly correspond to the indicated data in Items F and G.

  The Publishing NOF should take into account that the values in the Item Q refer to Flight Levels, and that the conversion of the values from the Items F and G shall include the local ‘ elevation’ or ‘height’, as well as an extra-layer that includes pressure deviations from the ‘ Standard Atmosphere’.

  At Pre-flight Information Bulletin request, an operational margin should additionally be assured by entering height values that sufficiently cover the flight profile requirements.

- Default values are LOWER = 000, UPPER = 999, for En-Route information (SCOPE ‘E’) as well as for Aerodrome information (SCOPE ‘A’), if the NOTAM do not require certain specific height indications.

  Note: Most aerodrome related information refers to ground installations, and therefore insertion of an Upper Limit is not relevant (hence the default ‘999’). Whenever the aerodrome related information also affects the airspace above, the Lower/Upper Limits need to be specified, and the ‘ SCOPE’ qualifier shall read ‘AE’ or ‘AW’.

2.3.8 Qualifier ‘GEOGRAPHICAL REFERENCE’

2.3.8.1 General rules

This qualifier allows the geographical association of a NOTAM to the location it refers to, and is composed of:

- One set of co-ordinates given in 11 characters, i.e. latitude: NORTH/SOUTH in 5 characters, longitude: EAST/WEST in 6 characters, e.g.: 1045N10725E
- Radius of influence in 3 figures rounded up to the next higher whole Nautical Mile encompassing the total area of influence; e.g. 4.2NM shall be indicated as 5.

  Example: Q)VVTS/QWMLW/IV/OB/W /000/175/1045N10725E005

2.3.8.2 Use of Co-ordinates

- For NOTAM with SCOPE A the co-ordinates of the Aerodrome Reference Point (ARP) shall be inserted
- For NOTAM with SCOPE AE or AW the appropriate co-ordinates shall be inserted. These co-ordinates may be different from the ARP.

  e.g.: A VOR situated at an aerodrome will not necessarily have the same co-ordinates as the ARP. The same applies for a Navigation Warning at or in the close vicinity of an aerodrome, affecting the aerodrome traffic, and whose co-ordinates may also be different from the ARP.
- For NOTAM with SCOPE E or W referring to a given/known point (Navigational Aid, Reporting point, City, etc.) these co-ordinates shall be inserted.
- If a NOTAM with SCOPE E or W refers to an area (FIR, Country, Danger Area etc.), the co-ordinates represent the approximate centre of a circle whose radius encompasses the whole area of influence.
- For NOTAM with SCOPE E or W containing information that cannot be allocated a specific geographical position (e.g. VOLMET, Entry requirements, Communication failure etc.) the co-ordinates represent the approximate centre of a circle whose radius encompasses the whole area of influence (this may be the centre of an FIR or multiple FIR, e.g. for an entire State)

2.3.8.3 Use of Radius

- Radius shall basically be used in a way that it encompasses the total area of influence of the NOTAM.
- Whenever the complete FIR or all the FIR (e.g. for an entire State with more than one FIR) specified in Item A are entirely concerned, then ‘ 999’ shall be filled in the radius.

  The use of the radius value ‘ 999’ shall allow an automated system to retrieve such information only against the FIR(s) indicated in Item A. Adjacent FIR(s), even within the radius of influence, are never affected by this information.

  Example:

  (D0001/00 NOTAMN

  Q) EDXX/QXXXX/IV/OB/E /000/999/5120N01030E999

  A) EDBB EDFF EDLL EDMM EDWW

  B) 0001010000 C) PERM

  E) FLIGHTS TO/FROM THE CONTRACTING STATES OF THE SCHENGEN REGIME MAY BE CONDUCTED TO/FROM ANY AERODROME WITHIN THE FEDERAL REPUBLIC OF GERMANY. THE OBLIGATION TO USE A DESIGNATED CUSTOMS AERODROME IS WITHDRAWN).
- For certain specific NOTAM subjects, the radius shall be standardized for the sake of uniformity and simplicity. These NOTAM codes and their appropriate radius are listed in the following table.

Table of Recommended Default Radius Indicators for NOTAM Creation

NOTAM Code	Plain language	Radius in NM
Q....	All Aerodrome related NOTAM (Scope A only). The default value shall also be used for Scope AE/AW, but only if appropriate values cannot be defined.	005 005 if no appropriate value can be found.
QN...	All Navigation Aids (VOR, NDB ...) except: Long Range Navigation Systems, e.g. GPS, en-route DME…	025
QOB..	OBST	005
QOL..	OBST LIGHT	005
QPH..	Holding Procedure	025
QPX..	Minimum Holding Altitude	025
QAP..	Reporting Point	005
QAX..	Intersection	005

2.4 NOTAM Items

2.4.1 Item A - Location 'FIR/AD'

2.4.1.1 Single-Location NOTAM

ICAO location indicator of one aerodrome or FIR concerned.

- In the case of one FIR, the entry must be identical to qualifier ' FIR' in the Item Q.
- If the NOTAM contents relate to an overlying UIR, the FIR or the UIR location indicator shall be inserted in Item A with appropriate levels of the UIR in the Lower/Upper fields of the Item Q.

The use of solely FIR indicators in Item A is advised, unless specifically required by the NOTAM contents.

Note that in the case of Item Q, only an FIR indicator or the Country indicator followed by XX shall be inserted.

- When an aerodrome indicator is given, it must be an aerodrome situated in the FIR inserted in the Item Q. This shall apply even when the aerodrome is situated within an overlying FIR of another State, e.g. NOTAM for EGJJ shall have LFRR in Item Q.
- If no 4–letter ICAO location indicator for an aerodrome exists, Item A contains the 2–letter country indicator + XX (EDXX) or the single-letter country indicator + XXX (KXXX), with the full name of the aerodrome as first element in Item E.

  Note: States shall take urgent steps to ensure that:

  - all aerodromes which may be the location of international NOTAM have an ICAO location indicator;

  - the same location indicator is not used for an aerodrome and an FIR.

  Examples:

  A)EBBU (1 FIR, ICAO location indicator)

  A)LFPO (Aerodrome, ICAO location indicator)

  A)EDXX (no location indicator published by Germany)

  For the latter example, the full name of the aerodrome,

  e.g. GROSSENHEIN must be stated as first element in Item E.

2.4.1.2 Multi-Location NOTAM

- No multi-location NOTAM is allowed in case of aerodrome information.
- If more than one FIR is concerned:

- all FIR location indicators affected by the information shall be entered in Item A;

- the number of FIR in Item A is restricted to 7 by the current ICAO NOTAM format (length of an AFTN line). If more than 7 FIR are affected, additional NOTAM shall be published.

- the FIR qualifier of the Item Q contains the ICAO country indicator letter(s) + XX (or XXX). For ' supra-national' information, i.e. more than 1 FIR belonging to several countries, the ICAO country indicator of the Publishing NOF (followed by XX or XXX) must be stated in ' FIR' of the Item Q.

Example:

Multiple FIR in one country :

A) RJTG RORG

Item Q 'FIR' = RJXX

Multiple FIR in different countries:

A) WMFC WSJC

Item Q ' FIR' = WMFC if the NOTAM is originated by the Kuala Lumpur NOF

2.4.2 Item B - Start of Validity

Ten-figure date-time group, giving year, month, day, hour and minutes at which the NOTAM comes into force.

Remark: A NOTAM is ' valid' from the moment it is published, whereas it only comes ' in force' at the date-time group specified in Item B.

Example: B) 0007011200 (1st of July 2000, 12:00 UTC)

- The start of a day shall be indicated by **0000.**
- For NOTAMC, Item B time shall correspond to the issuing time of the NOTAM. No start of validity projected into the future shall be given.

  Note: 'WIE' or 'WEF' are not permitted.

2.4.3 Item C - End of Validity

Ten-figure date-time group, giving year, month, day, hour and minute at which the NOTAM expires.

- The end of a day shall be indicated by **2359 (do not use 2400**).
- For NOTAM of uncertain duration of validity, the date-time group shall be followed by ' EST' (estimate).
  Note: 'APRX DUR' or 'UFN' are not permitted
- Any NOTAM which includes an 'EST' shall be replaced by NOTAMR or cancelled by NOTAMC before the ' estimated' end date specified in Item C.
- For NOTAM containing information of permanent validity, the abbreviation 'PERM' is used.

Examples:

C) 0007022030

C) 0007031230EST

C) PERM

- The Item C shall not be included in NOTAMC.
- In cases where the activity promulgated by a NOTAM takes place -or not- on (an) alternative date(s), the Publishing NOF shall take the necessary action to ensure that the NOTAM is cancelled or replaced with updated information at the appropriate time.

2.4.4 Item D - Day Schedule 'SCHEDULE'

This Item needs only to be inserted when the information contained in a NOTAM is not relevant for users at certain periods inside the stated period of validity, i.e. between the Items B and C times.

- Periods of activity stated in Item D fall between the Items B and C times and the start of the first activity in Item D always coincides with the Item B time, and the end of the last activity with the Item C time.
- This information is destined for Pre-flight Information Bulletin entry and retrieval.
- Item D shall not exceed 200 characters, if this would be the case additional NOTAM shall be published.
- The maximum time period between 2 consecutive activity periods shall not exceed 7 days. If the time gap between consecutive activity periods is 8 days or more, an additional NOTAM shall be issued.

2.4.4.1 General

Item D shall be structured according to the following rules. These provide clear and unambiguous standard expressions allowing automated processing for Pre-flight Information Bulletin production, while maintaining a good and clear readability in manual environments.

Automated processing (and to a certain extent manual processing) thus allows, whenever times or dates inside Items B and C are not concerned by the activity, that the NOTAM will not be in the content of a PIB.

2.4.4.2 Abbreviations and Symbols Used

Year: The year shall not be inserted in Item D, as it is stated in Items B and C.

When the planned time schedule goes from one year into another, the displayed data shall remain in chronological order i.e. December of this year shall precede January of next year.

Month: JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Month day: 01 02 03 .... 30 31

Day: MON TUE WED THU FRI SAT SUN

Times: Written in 4 digits (e.g.: 1030)

Text: EXC: for ‘except’

DAILY: is optional for a ‘daily’ schedule

EVERY: for a schedule on fixed days

HJ: for the period from Sunrise till Sunset (=SR-SS)

HN: for the period from Sunset till Sunrise (=SS-SR)

H24: for the whole day/dates concerned. Not be used as a single entry.

SR and/or SS: if appropriate to indicate Sunrise or Sunset

AND: shall be included in front of the last date or the last time period specified in Item D, to increase readability in a manual environment.

Signs: ‘ , ‘ (comma) for schedule element or group separation
‘ - ‘ (hyphen) means ‘ TO’ or ‘ FROM-TO’
‘ (blank) is read as ‘ AND’ . Blanks shall not be used in front of the last date or time period.
‘ / ’ (oblique) shall not be used in Item D.

Examples: D) APR 04 06 08 AND 11

D) MAR 04 0600-0800 AND 1000-1200.

2.4.4.3 Special Cases

Sunrise and Sunset:

SR (Sunrise) and SS (Sunset) can be used.

The keywords for expressing begin and end of twilight, are ‘ SR MINUS30’ and ‘ SS PLUS30’ (note that there shall be a blank space after SR and SS).

If the active time of a NOTAM corresponds to sunrise or sunset, the actual times of sunrise on the first day of validity and of sunset on the last day of validity, respectively, shall be inserted in Items B and C.

Examples:

B) 0005110413 C) 0005211701
D) SR MINUS30-SS PLUS30

B) 0005150446 C) 0005201633
D) HJ

B) 0005151920 C) 0005200437
D) SS-SR

Due to their daily variation, these special time formats may not be treated automatically for NOTAM output. If this is the case, the NOTAM will be displayed in the PIB for the whole day concerned.

Legal holiday:

The date must be stated explicitly due to differences existing between States.

Long or complicated schedules:

Should not be given in a structured Item D. Such cases should be 'split' into different NOTAM.

2.4.4.4 Examples

Remark: The examples given pre-suppose a correct calendar and the application of the rule that the start of the first activity in Item D coincides with the Item B time, and the end of the last activity with Item C. Therefore, Items B and C, (i.e. the defined time periods), are not shown in the examples.

Example 1: Repetitive event active every day:

D) 0700-1000

or D) DAILY 0700-1000

Example 2: Repetitive event active on a certain weekday

D) EVERY MON

Example 3: Activity on several days

D) FEB 08 10 AND 12

Example 4: Various day-periods explained by FROM-TO

D) FEB 08-12, FEB 17-20

Example 5: Combination of day-periods and time-periods

D) FEB 08-28 2000-2200, MAR 01-05 1800-2200

D) FEB 08-28 DAILY 2000-2200, MAR 01-05 DAILY 1800-2200

D) WED AND SAT 1000-1400, SUN-TUE 1500-1800

D) FEB 08 10 AND 12 1000-1600, FEB 13-28 1200-1900, MAR 01-05 1000-1300 AND 1500-1700

Example 6: Combination of day-periods (H24 activity) with day-periods having time-periods. Activity full day (H24) on WED and FRI, and from 0600 to 1700 on SUN:

D) WED AND FRI H24, SUN 0600-1700

or D) 01 AND 03 H24, 05 0600-1700

Example 7: Day-period and time-period with specific exceptions

D) THU 0300-1200 EXC FEB 16

or D) SUN 0700-1800 EXC FEB 19 AND MAR 12

Example 8: Activity from WED 1900 to FRI 0600, during 2 consecutive weeks.

D) WED 1900-FRI 0600
or D)01 1900-03 0600, 08 1900-10 0600

Example 9: Activity relative to Sunrise and Sunset
D) SR-SS
D) SR MINUS30-SS
D) SR MINUS30-1500
D) 0800-SS
D) 0800-SS PLUS30.

2.4.5 Item E - NOTAM Text

- Item E is free text in plain English language and does not contain NOTAM Code. The NOTAM Code is translated according to the text provided in the NOTAM Selection Criteria.
- Item E content shall be related to one NOTAM subject only. (Except in case of a trigger NOTAM, paragraph 2.5.1 bullet 6 refers).
- It may contain well known ICAO abbreviations (Doc 8400), and abbreviations used for directions and units of measurements (e.g. N, SE, FT, GND, AMSL, NM, etc.).

  Examples:

  E) RWY 25R ILS LLZ OUT OF SERVICE

  E) OBST ERECTED. CRANE 1.5 NM W THR RWY 07L 2500 FT S
  RCL 07L/25R HEIGHT 150 FT AGL/191 FT AMSL
- As Item E content is the main information to be provided in a Pre-flight Information Bulletin, it should be composed in such a way that it allows direct Pre-flight Information Bulletin entry.
- The essentials of the information (i.e. translated and amplified NOTAM subject) shall be given in the first line of Item E.
- Unclear and/or incomplete NOTAM-Text as well as unnecessary AIP references shall be avoided.

  Example 1:
  Wrong: E) WARNING WITHDRAWN
  REF AIP ENR 4-2-7.3 PARA 6.5.

  Remark: Information is unclear/incomplete.
  Solution: Clearly describe the circumstances, in the above mentioned case:

  Correct: E) ULTRALIGHT AREA SAN TEADORA 5048N 09339E COMPLETELY WITHDRAWN.

  REF AIP ENR 4-2-7.3 PARA 6.5.)

  Note: Item C = PERM in the above example.

  Example 2:

  Wrong: E) TACAN "ALA" CH88 OUT OF SERVICE REF AIP ENR 2-1.

Remark: AIP Reference not necessary (in this case, the information is of a temporary nature, and does not have a long duration).

Correct: E) TACAN ALA CH88 OUT OF SERVICE.

2.4.6 Items F and G - Lower and Upper Limit

- Lower and Upper limits should be inserted in Items F and G for Navigation Warnings and for Airspace Organization, whenever appropriate.
- Whenever the Item G is present, also the Item F shall be filled.
- Items F and G shall contain:

  an altitude or an height expressed in meters or feet, or a flight level (always expressed in 3 digits). In addition, SFC (surface) and GND (ground) may be used in Item F as well as UNL (unlimited) in Item G.

Recapitulation of expressions/formats possibilities:

Item F:	Item G
SFC	UNL
GND	XXXXXFT AGL
XXXXXFT AGL	XXXXXFT AMSL
XXXXXFT AMSL	XXXXXM AGL
XXXXXM AGL	XXXXXM AMSL
XXXXXM AMSL	FLXXX
FLXXX	

Notes:

- Only a single entry is permitted in each Item, i.e. G)10000FT (3280M) AGL shall not be used.

- Abbreviations FT or M shall be divided from AGL or AMSL by a blank character. No other character (e.g. "/", "-"...) shall be used. e.g. “3000 FT/AMSL” shall not be used.

- The values in qualifiers ‘LOWER’ and ‘UPPER’ of the Item Q must correspond to the flight levels or altitudes specified in Items F and G. If Items F and/or G are expressed in height, the values specified in the ‘LOWER’ or ‘UPPER’ qualifiers shall contain corresponding FL figures. Conversion shall take into account the ground elevation and possible deviations in barometric pressure from the ‘Standard Atmosphere’.

  Example: F) FL250 (‘LOWER’ = 250)
  G) FL310 (‘UPPER’ = 310)

  Example: F) 1500FT AGL (‘LOWER’ = 030)
  G) 7500FT AMSL (‘UPPER’ = 095) in this case GND=MSL and a safety margin has been included for barometric pressure variation.

- Where event is notified in a form such as “activity UP TO FL040 (after ATC approval up to FL080)”, the higher value (e.g. FL080) shall be used in Item G and in the ‘UPPER’ qualifier.

2.4.7 Procedures Related to NOTAM ’R’ Creation

NOTAMR are replacement NOTAM.

- NOTAMR are issued in the same series as the NOTAM to be replaced,
- NOTAMR replace only one NOTAMN or R.

  Example: A0124/97 NOTAMR A0106/97
- NOTAMR deals with precisely the same subject as the NOTAM referred to.
- NOTAMR has the same Item A contents as the NOTAM referred to.
- NOTAMR is not permitted for the replacement of an individual part of a Multi-part NOTAM.

2.4.8 Procedures Related to NOTAM ‘C’ Creation

NOTAMC are Cancel NOTAM.

- NOTAMC are issued in the same series as the NOTAMN or R referred to.
- NOTAMC cancel only one NOTAMN or R.

  Example: A0234/97 NOTAMC A0123/97
- NOTAMC has the same Item A contents as the NOTAM it cancels.
- NOTAMC become valid at the time they are issued, and immediately cancel the NOTAMN or R referred to.
- No future start of validity (cancellation) in Item B is permitted.
- In case of cancellation of a Multi-part NOTAM, all parts are cancelled by the NOTAMC. Cancellation of individual parts is not permitted.
- NOTAMC shall be published whenever NOTAM are incorporated in an AIP AMDT (see paragraph 2.6 and 2.8.3).

The qualifiers are as follows:

– Qualifier ‘NOTAM CODE’

SUBJECT: 2nd and 3rd letters identical to the original NOTAM

CONDITION: 4th and 5th letters, the following entries are permitted:

- Q..AK = RESUMED NORMAL OPS
- Q..AO = OPERATIONAL
- Q..AL = OPERATIVE SUBJECT PREVIOUS CONDITION
- Q..CC = COMPLETED
- Q..XX = OTHER (PLAIN LANGUAGE)

– Qualifiers ‘TRAFFIC', ‘PURPOSE’, 'SCOPE', ‘LOWER/UPPER’ and ‘COORDINATES, RADIUS’ may be identical to the cancelled NOTAM. Maintaining the original qualifiers allows additional use of NOTAMC for the preparation of ‘ Updates’ of Pre-flight Information Bulletins.

- NOTAMC shall not contain Items C, D, F and G.
- For all NOTAMC, the text of the decoded NOTAM Code shall be inserted in Item E together with details on the NOTAM subject.

  Example:

  NOTAM Code = QNVAK
  Item E = VOR DKB RESUMED NORMAL OPS

- In order to facilitate work in manual environments, NOTAMC, which are to be followed immediately by a NOTAMN (instead of NOTAMR), shall contain XX as 4th and 5th letters of the NOTAM Code, and at the end of the text in Item E the remark: ‘NEW NOTAM TO FOLLOW’.

  Example:

  NOTAM Code = QMRXX

  Item E = RWY 07L/25R NEW NOTAM TO FOLLOW

2.5 Trigger NOTAM and related procedures

2.5.1 General rules

When an AIP Amendment or an AIP Supplement is published in accordance with the AIRAC procedures, a Trigger NOTAM shall be originated giving a brief description of the contents, as well as the effective date and the reference number of the AIP Amendment or Supplement.

This NOTAM must come into force on the same date as the Amendment or Supplement referred to.

The text of such NOTAM is included in the Pre-flight Information Bulletins, to ensure that pilots and operators are reminded, that changes of operational significance take place from a given effective date.

Information concerning any circumstances listed in Annex 15, Appendix 4, Part 1 and 2, shall be disseminated under the regulated ‘AIRAC’ system, either as an AIRAC AIP Amendment, or as an AIRAC AIP Supplement. Due to time constraints, normal AIP Supplements are sometimes published when the nature of the information required the publication of an AIRAC AIP Supplement. In such exceptional cases, the operational nature of the information should prevail and the normal AIP Supplement shall also be Triggered.

AIRAC AIP Amendments and AIRAC AIP Supplements shall always be triggered by a NOTAM.

NON-AIRAC AIP Supplements shall only be triggered by a NOTAM when containing information that normally required the publication of an ‘AIRAC’

AIP Supplement. The 'Subject' and 'Condition' shall relate the information to at least PURPOSE 'OB', according to the NOTAM Selection Criteria.

Trigger NOTAM are issued according to the following rules:

- Trigger NOTAM are issued at the publication date of the AIRAC AIP Amendment or the AIP Supplement (AIRAC or, in exceptional cases, NON-AIRAC)
- They are issued in the appropriate NOTAM series, according to the information contained.
- Trigger NOTAM are issued according to the NOTAM Selection Criteria.

  - As Trigger NOTAM are issued only relative to information of operational significance, the NOTAM Selection Criteria shall provide PURPOSE 'OB' or ' NB'.

- Trigger NOTAM shall follow the same rules on creation as a normal NOTAM, incl. Item Q procedures.
- The NOTAM Code for a Trigger NOTAM shall always contain 'TT' as 4th and 5th letter (= condition). The 2nd and 3rd letter (= subject) shall be selected from the NSC and 'XX' may be used in case of more than one subject or location.

The exclusive ' TT' condition indicator can be used to retrieve specific Trigger NOTAM from any Publishing NOF, and can additionally be used for the inclusion (or non-inclusion) of Trigger NOTAM into Pre-flight Information Bulletins, at a specific time before their effective date.

- In the case of Amendments or Supplements containing information dealing with different subjects and/or locations (FIR(s) or Aerodromes), only one Trigger NOTAM for each location may be issued, dealing with the different subjects.

  Publishing NOF may group all the information that relates to one (or several) FIR - regardless of the subject - in order to reduce the amount of NOTAM to be published.

  Examples:

  Q)RJTG/QAGTT/IV/BO/A/000/999/3546N14023E005
  A) RJAA
  E) TRIGGER NOTAM – AIP SUP 213/02
  OPERATIONAL RESTRICTIONS AT NEW TOKYO INTL AIRPORT

Note: for Aerodromes a separate Trigger NOTAM for each aerodrome, shall be issued. Different subjects relating to the same aerodrome, may however be grouped in the same NOTAM.

Q)RJTG/QXXTT/I/OB/A/000/999/3546N14023E005
A) RJAA
E) TRIGGER NOTAM – PERM AIRAC AIP AMDT 292/98
NEW SID AND CHANGE OF NARITA TERMINAL CONTROL AREA

In the above cases the NOTAM qualifiers TRAFFIC, PURPOSE and SCOPE shall be filled according to the subject of highest operational importance.

- The text in Item E should not exceed 300 characters and shall always start with the words “Trigger NOTAM”, followed by a reference to the published AIRAC AMDT or SUP concerned.

2.5.2 Trigger NOTAM relative to AIRAC AIP AMDT

- AIRAC Amendments represent permanent changes to the AIP on a predefined date.
- AIRAC AIP Amendments become effective on the AIRAC cycle date (**Effective date**). Item B shall always contain the AIRAC effective date.
- The validity of Trigger NOTAM relative to AIRAC AIP Amendments will be from the effective date until 15 days thereafter.

  Therefore, Trigger NOTAM relative to AIRAC AIP Amendments must contain in Item B the effective date of the change and in Item C the AIRAC effective date plus 15 days.
- Trigger NOTAM relative to AIRAC AIP Amendments must contain in Item E a reference to the Amendment, and an indication that ‘permanent’ changes are taking place.

  Example:

  Q) VTBB/QARTT/I /OB/E /065/460/1108N09945E999
  A) VTBB
  B) 0003230000 (effective date)
  C) 0004072359 (effective date + 15 days)
  E) TRIGGER NOTAM - PERM AIRAC AIP AMDT 3/00
  REALIGNMENT OF ATS RTE W34

  Note: the term ‘PERM’ is inserted in Item E to stress that Item C contains an artificial end-date and that the information is of a permanent nature.

2.5.3 Trigger NOTAM relative to AIP SUP (AIRAC and NON-AIRAC)

- Due to time constraints, AIP Supplements containing information to be published under the AIRAC system are sometimes published as NON-AIRAC AIP Supplements. For all Supplements containing such information (AIRAC and NON-AIRAC), a Trigger NOTAM shall be issued.
- AIP Supplements become effective at the date stated in the Supplement.
- Information to be published under the AIRAC system does not always start on an AIRAC cycle date (e.g. major works, large air exercises etc. ...). Consequently, both the AIP Supplement and the Item B of the Trigger NOTAM shall contain the effective date of the start of the information.

- AIP Supplements normally contain information of a temporary nature, either ‘known’ or ‘unknown’ (until aprx. ...). The Supplements of ‘unknown’ duration shall be replaced in due time by another Supplement and a corresponding Trigger NOTAMR, or shall be replaced by a NOTAMR, or cancelled by a NOTAMC.
- The validity of Trigger NOTAM relative to AIP Supplements of ‘unknown’ duration, shall be described in Item C by a 10-figure date/time group followed by ‘EST’. (Cancellation or Replacement required).
- The validity of Trigger NOTAM relative to AIP Supplements of a ‘known’ duration shall be the entire duration of the Supplement, i.e. Item B contains the effective date, and Item C the ‘ end date’ of the Supplement. The NOTAM stays in the PIB for the entire duration of the Supplement.
- Trigger NOTAM relative to AIP Supplements shall contain in Item E a reference to the Supplement.

  Example:

  Q) WMFC/QRDTT/IV/OB/AE /000/400/0433N09948E035

  A) WMKB

  B) 0003230000 (effective date of the info)

  C) 0012232359 (end of validity of the info)

  E) TRIGGER NOTAM - AIRAC AIP SUP 008/01

  CHANGE IN LATERAL LIMITS OF WMD413

- Any change to an (AIRAC) AIP Supplement, especially in connection with a Trigger NOTAM, shall be published by the Publishing NOF in a way that the information itself is always clear and without any ambiguities. No detailed procedures for such cases will be given here because of the great variety and the complexity of the different circumstances possible. However, special care should be taken that the begin date (Item B) and the end date (Item C) sufficiently cover the operational needs imposed for the display of the information in Pre-flight Information Bulletins.

2.5.4 Cancellation by NOTAM of AIP Supplements containing AIRAC information

- For these AIP Supplements, an associated Trigger NOTAM has been issued, the procedures for cancellation/replacement of Trigger NOTAM apply, see paragraph 2.8.5.

2.5.5 Cancellation by NOTAM of AIP Supplements containing non-AIRAC information

- For these AIP Supplements, normally no Trigger NOTAM has been issued. In case of cancellation before their end of validity, a NOTAMN may be issued. Such NOTAM shall always contain PURPOSE qualifiers ‘M’ and shall remain in force for up to 15 days in order to allow recipients to remove the cancelled data from their AIP.

2.6 Publication of permanent information by NOTAM

Note: Permanent information shall not be distributed through a NOTAM only. This information shall be incorporated in an AIP Amendment.

When the urgency of publication of an Amendment to the AIP is such that the 'normal' AIRAC or NON-AIRAC Amendment publication is considered to be unsuitable, the responsible NOF will issue a NOTAM ' PERM' according to the following rules:

- The NOTAM is issued according to the NOTAM Selection Criteria.
- The NOTAM must contain in Item B the effective date of the change, and in Item C the term ' PERM' to indicate that the change itself is of a permanent nature.
- The NOTAM shall never include the expected publication date or the effective date of the Amendment in Item C.
- The NOTAM will be cancelled by the appropriate AIP Amendment on the next suitable occasion. A reference to the cancelled NOTAM shall be made on the cover sheet of this Amendment.

  Furthermore, a NOTAMC shall be issued 15 days after the effective date of the AIP Amendment, to cancel the 'PERM' NOTAM on that date (see paragraph 2.8.3).

  Note: It is assumed that the AIP Amendments will be available at all receiving units by the time the NOTAMC is sent.

  Note that 'Effective date' in this instance can be equal to an AIP Amendment publication date. This broadens Annex 15 use of this expression which relates currently to AIRAC AIP Amendments only.

  The NOTAMC shall contain a reference to the AIP Amendment in Item E.

  e.g. "INFORMATION INCORPORATED IN AIP AMDT NR 04 EFF 22/04/00.

- Incorporation in AIP of permanent NOTAM within 3 months after publication is required. Reissuing of "PERM" NOTAM with the same contents is not allowed.
- In cases where a NOTAM is issued to correct a mistake in an AIP AMDT, Item E shall remind of the operational content of the AMDT and not only of the mistake.

  Example:

  text such as "E) AIRAC AIP AMDT 10/00 PART AD : EGNX 1-12 RWY 08/26 EXTENSION READ 1850 M INSTEAD OF 1805 M"

  shall read "E) RWY 10/28 EXTENSION, AIRAC AIP AMDT 10/00PART AD: EGNX 1-12 RWY08 READ 1850 M INSTEAD OF 1805 M".

  This allows users to be aware of the subject when reading the PIB and to refer to the AIP AMDT content only if necessary.

2.7 Checklist Production

Checklists are issued as a NOTAM in the series they refer to. A separate Checklist shall be issued for each NOTAM Series.

Checklists have the following particulars:

- The Checklist is issued as NOTAMR with an estimated (EST) validity of not more than 1 month.
- The next Checklist NOTAMR replaces the previous Checklist with immediate effect.

  Consequently Item B is the issuing time of the Checklist and supersedes the previous one immediately.
- Checklists shall still contain the numbers of the NOTAM incorporated in a normal AIP AMDT or AIP SUP until the time that these NOTAM are cancelled by the publication of a NOTAMC.
- Qualifier 'FIR' of the Item Q is either:

  - the FIR indicator, or

  - the country indicator letter(s) followed by an appropriate number of X (2 or 3) if there is more than one FIR in a country, or

  - the country indicator of the Publishing NOF followed by 'XX' or 'XXX' if publishing for FIR in different countries.
- The NOTAM Code is a special dedicated NOTAM Code: 'QKKKK'.
- Qualifiers TRAFFIC, PURPOSE and SCOPE will be given the artificial value 'K'.
- LOWER/UPPER are default values 000/999.
- Qualifiers 'QKKKK' (NOTAM code) and 'K' (TRAFFIC, PURPOSE, SCOPE) are used to allow selective retrieval of the Checklist. It also prevents the Checklist from appearing in a Pre-flight information Bulletin.
- Item A shall contain the FIR or a list of all the FIR concerned by the Checklist.
- Item C is the estimated time of validity, normally indicating 1 month later than the issuing time, followed by 'EST'
- Item E is divided in two sections:

1. First Section, identified by the keyword 'CHECKLIST'

   Contains the list of the valid NOTAM numbers which have been promulgated in the same series as the Checklist, in a format suitable for automatic and manual processing. Note that the list shall not contain the number of the replaced NOTAM checklist nor its own NOTAM checklist number.

   - The text in Item E shall start with the word "CHECKLIST"

- The numbering of NOTAM is grouped by year (indicated by 4 digits) using the word 'YEAR' plus ' =' sign, followed by the year of publication without blanks (e.g. YEAR=1999).

- Each NOTAM number (always 4 digits) is separated by a blank with no other punctuation mark.

- Each indicator of a different year shall start on a new line.

2. Second Section, identified by 'LATEST PUBLICATIONS'

Contains the list of the latest publications, in a format suitable for manual processing only.

Example:

(B0040/02 NOTAMR B0021/02
Q)VTXX/QKKKK/K/K /K /000/999/
A) VTBB B) 0203310900 C) 0204300900EST
E)CHECKLIST
YEAR=2000 0101 0232 0244 0288 0345 0511
YEAR=2001 0101 0104 0347 0601 0653 0674 0687
YEAR=2002 0004 0006 0009 0010 0011 0012 0014 0018 0025
0027 0029 0034 0035
LATEST PUBLICATIONS
AIRAC AIP AMDT 004/02 EFFECTIVE 20 APR 02
AIP SUP 001/02
AIC A001/02

Note: Whenever the numbering of AIP AMDT takes place on a yearly basis, a reference to the year of publication will be added to the number.

- When the publication of the Checklist contains an error, the following procedures will apply:

-A valid NOTAM number was not inserted in the Checklist:

A NOTAMR shall be published replacing the omitted NOTAM with the new number. This procedure will allow consistency of the data in the database of all recipients, whatever the method of processing of Checklists.

-An invalid NOTAM number was erroneously inserted in the Checklist:

A revised Checklist (NOTAM**R** replacing the erroneous Checklist) will be published without the invalid NOTAM number (no correct version).

2.8 Cancellation of NOTAM

2.8.1 Cancellation of NOTAM by End of Validity

NOTAM (N, R and Trigger) with a defined End of Validity time (10-figure DATE/TIME group in Item C), cease to be both in force and valid at that time.

2.8.2 Cancellation/Replacement of NOTAM by another NOTAM

NOTAM which are to become invalid before their given End of Validity, or did not have a defined End of Validity (i.e. have 'EST' or ' PERM' in Item C) may be replaced or cancelled at any time.

- Cancellation by NOTAMC: The original NOTAMN or R is cancelled at publication of the NOTAMC (Item B = issuing time)
- Replacement by NOTAMR: The original NOTAMN or R is replaced at publication of the NOTAMR (Item B = issuing time or later than issuing time), with the NOTAMR having its own validity.

2.8.3 Cancellation of NOTAM by AIP Amendment

- Cancellation by AIP Amendment occurs in cases when a NOF has issued a NOTAM 'PERM' (see paragraph 2.5) containing information of permanent validity, which is to be incorporated into the AIP by AIP Amendment.
- As the NOTAM itself has no finite validity (Item C = 'PERM'), the NOF issues a NOTAMC which cancels the NOTAM 'PERM', 15 days after the effective date of the AIP Amendment that contains the 'PERM' information.

Note: It is assumed that the AIP Amendments will be available at all receiving units by the time the NOTAMC is sent.

Note: 'Effective date' in this instance can be equal to an AIP Amendment publication date. This broadens Annex 15 use of this expression which relates currently to AIRAC AIP Amendments only.

- The NOTAMC shall contain in Item E a reference to the AIP Amendment that incorporates the originally published NOTAM.

  e.g. INFORMATION INCORPORATED IN AIP AMDT 04/00 EFF 20/04/00

- The numbers of the NOTAM incorporated in the AIP Amendment shall be published on the cover page of the AIP Amendment. Recipients shall not remove these numbers from their NOTAM database, as this will be done upon receipt of a NOTAMC.

2.8.4 Replacement of NOTAM by AIP Supplement

- Publication of an AIP Supplement to replace and modify information of an existing NOTAM may occur at any time.
- A Trigger NOTAM shall be published against this AIP Supplement. The Publishing NOF shall ensure that the already existing NOTAM is cancelled at the Item B date of the Trigger NOTAM. Depending on the case this may be done with a NOTAMR or with a NOTAMC.

2.8.5 Cancellation/Replacement of Trigger NOTAM

- Basic cancellation rules for NOTAM apply.
- Trigger NOTAM relative to AIRAC AIP AMDT shall be self-canceling 15 days after the effective date of the AMDT (Item C = Effective date + 15 days).
- Trigger NOTAM relative to AIP SUP shall be cancelled according the following rules:

  1. Item C is a fixed date:

  The Trigger NOTAM will be automatically cancelled on this date.

  Exceptionally the end date specified in the AIP SUP may be brought forward by NOTAM. In this case, at the date of cancellation (new end of validity), a Trigger NOTAMR is issued that remains in force up to 15 days. It can be in force less than 15 days, if the originally published end of validity of the Supplement is reached within this 15 days period. In this case, the Item C date of the Trigger NOTAMR shall be identical to the end of validity date of the Supplement. Such 'cancellation' Trigger NOTAM shall always clearly indicate in Item E that the planned end date has been brought forward.

  Example:

  A2673/01 NOTAMN
  Q)WMFC/QFATT/IV/BO/A/000/999/0244N10142E005
  A)WMKK
  B) 0104200600
  C) 0109301600
  E)TRIGGER NOTAM – AIRAC AIP SUP 14/01
  AERODROME RESTRICTIONS DUE TO MAJOR CONSTRUCTION WORKS.

  A2910/01 NOTAMR A2673/01
  Q)WMFC/QFALT/IV/BO/A/000/999/0244N10142E005
  A)WMKK
  B) 0109171600
  C) 0109301600
  E) REF AIRAC AIP SUP 14/01
  WORKS HAVE BEEN COMPLETED. THE RESTRICTIONS PUBLISHED IN SUP 14/01 ARE NO LONGER IN FORCE.

  2. Item C is an estimated date (EST):

  A Trigger NOTAMR shall be published to replace the existing Trigger NOTAM at the appropriate time (= before the Item C time has been reached). Such Trigger NOTAMR shall follow the same rules on creation as explained in paragraph 2.5.

  Trigger NOTAM with an estimated end date shall be cancelled by the publication of a normal NOTAMC at the appropriate time (= the time at

which the Publishing NOF is informed that the situation described in the AIP SUP has stopped).

2.8.6 Cancellation of NOTAM by Checklist

- Cancellation of NOTAM solely on the basis of the Checklist is not allowed.
- Whenever a NOTAM has been inadvertently omitted from the Checklist, a NOTAM**R** with the same contents as the omitted NOTAM will be published as soon as practicable. This NOTAMR shall replace the NOTAM number that was omitted from the Checklist.

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3. NOTAM PROCESSING

3.1 Introduction

The current standard NOTAM format was introduced in ICAO Annex 15, 8th Edition published on 14 November 1991. All NOTAM should be produced in this format, following the procedures on NOTAM creation explained in Section 2 of this Guidance Material.

However, there are still NOTAM published according to the former NOTAM Class I format that need to be converted in order to allow their automatic processing.

Some countries are also not adhering completely to the Integrated Aeronautical Information Package and do not publish Trigger NOTAM for operationally significant publications.

As a result, differences and discrepancies exist internationally in NOTAM published. NOTAM have to pass through a series of phases where their conformity to the ICAO format is analyzed, and their contents assessed prior to their storage in automated NOF systems. The purpose of this Section on "NOTAM processing", is to define and describe the principles and detailed procedures applied throughout these different phases.

3.2 Objective

The goal of NOTAM processing is to bring all received NOTAM in accordance with the procedures laid down in Section 2 of this Material on NOTAM Creation, so as to allow their storage into automated systems.

NOTAM processing should result in a standardized level of service, regardless which Unit was responsible for the processing.

This Chapter addresses NOTAM Processing principles and procedures which support NOTAM storage and their consequent potential retransmission. The production of Pre-flight Information Bulletin is not addressed here.

3.3 Definitions

- **Processing** - the examination of NOTAM received from other NOF in order to verify suitability for acceptance into an automated AIS system, undertaking conversion, translation, syntax correction, data correction, editing and/or summarizing as required.
- **Automatic processing** - the processing and storage of NOTAM received from other States without any human intervention.
- **NOTAM Processing Unit** - any unit that is responsible for the reception, processing and further distribution of NOTAM originated by other NOF. This unit may do these functions for its own purposes only, or may act on behalf of other NOF.

- **Publishing NOF** - the NOF responsible for the creation of the NOTAM, as opposed to the originator of the AFTN message within which the NOTAM is contained (which are not necessarily the same).
- **Client NOF** - any NOF which has subscribed to the services provided by a NOTAM Processing Unit.

3.4 Procedures for the processing of NOTAM

The procedures described in this Chapter refer to NOTAMN (new NOTAM). Most of them apply also to NOTAMR and NOTAMC.

Specific procedures relative to NOTAMR (Replacement NOTAM) and NOTAMC (Cancel NOTAM) and the particulars of their processing are described in this Chapter after the NOTAM ' N' procedures.

3.4.1 General Principles

- The original NOTAM shall be stored as received by the NOTAM Processing Unit and made available on request.

  Whilst it is expected that most Client NOF will work with the processed version of the NOTAM, the NOTAM Processing Unit should be able to systematically provide:

  - the processed version;

  - the original version; or

  - both versions.

  depending upon requirements of the clients.
- The NOTAM Processing Unit shall keep track of any message (free text or 'correct version' NOTAM) which is related to the original NOTAM.
- The NOTAM Processing Unit, whether this is an individual Unit of one State, or a centralized Unit handling on behalf of a group of States, will perform the following processing functions:

  - **conversion** into the standard format;

  - **syntax correction** of obvious mistakes in syntax;

  - **data correction** of detected mistakes in data;

  - **editing** text in order to clarify it;

3.4.2 Conversion of original NOTAM Class I

- **Conversion** - the transposition of a NOTAM received in the old format into a correctly formatted NOTAM in Annex 15
- On reception of NOTAM from countries that do not adhere to the NOTAM format, the NOTAM Processing Unit has the function to transform these into the correct ICAO Annex 15 NOTAM format before storage and eventual retransmission.

In this case each Item of the original NOTAM is transposed into the standard NOTAM Item, and those not present (e.g. Item Q) are added.

- Converted NOTAM shall be qualified according to the NOTAM Selection Criteria published in ICAO Doc 8126. For this purpose, the NOTAM Code must be identified from Item E:

  - If the NOTAM Code is present in Item E, it is moved into the Item Q for further qualification, and decoded in Item E according to the text provided in the NOTAM Selection Criteria.

  - If no NOTAM Code is contained in Item E, the subject and condition have to be derived from the NOTAM contents.

3.4.3 Syntax correction

- **Syntax correction** - changing syntax where these are obviously wrong, it may be carried out automatically by a system or manually by an operator.
- Correction of syntax shall be based on the format described in ICAO Annex 15 and in Section 2 of this Manual.

3.4.4 Data correction

- **Data correction** - changing data elements where these are obviously wrong. This may be carried out automatically by a system or manually by an operator. (It does not include correction by the Publishing NOF).
- Correction of data shall only be carried out when the error is such that there can be no possible ambiguity. Where appropriate, corrections will be made using validated Static data. Where there is ambiguity or any doubt whatsoever the Publishing NOF shall be consulted and the procedures for "NOTAM SUBJECT TO QUERY" shall be applied (see paragraph 3.4.6).

3.4.5 Editing

- **Editing** - changing the wording of the free text of a NOTAM to make it clearer or express explicitly ideas that are implicit in that text.
- Editing might be carried out in order to clarify text, or to draw specific attention to important elements which are implied by the original text but not stated explicitly. Under no circumstances shall editing change the sense of the original NOTAM.
- When the sense of the original NOTAM is not clear, the procedures for "NOTAM SUBJECT TO QUERY" shall be applied (see paragraph 3.4.6).

3.4.6 Procedures for dealing with NOTAM SUBJECT TO QUERY

- Whenever a received NOTAM contains ambiguities that cannot be clarified by the NOTAM Processing Unit, a query shall be addressed to the Publishing NOF. However, such NOTAM will be retransmitted as "NOTAM SUBJECT TO QUERY" by the NOTAM Processing Unit without delay to all relevant addressees.

- The NOTAM Processing Unit shall add the reason for the query after the statement 'NOTAM SUBJECT TO QUERY'.
- If the Publishing NOF follows ICAO procedures the corrected version will consist of a NOTAMR (if the queried NOTAM is already in force) or a NOTAMC followed by a NOTAMN (if the queried NOTAM is not in force). In either case the new NOTAM is processed normally by the NOTAM Processing Unit.
- If the reply is in the form of a 'Correct Version' NOTAM retaining the Series and Number of the queried NOTAM, it will be processed by the NOTAM Processing Unit, and retransmitted as an ordinary NOTAM. The words 'Correct Version' will be removed.

When it is received by a "Client NOF" the latter must recognize that:

– it is a duplicate Series and Number;

– that it was transmitted by a NOTAM Processing Unit;

and automatically use it to overwrite the previous version in their NOTAM database.

- If the reply is in the form of a free text message the NOTAM Processing Unit will edit the last processed version of the queried NOTAM in accordance with the information provided, and the statement 'NOTAM SUBJECT TO QUERY' will be removed. The corrected NOTAM will then be distributed retaining the Series and Number of the original. When received by a NOTAM Processing Unit 'Client NOF' it will be treated as in the previous case.

3.4.7 Procedures for correction of NOTAM

- If an obvious error is found by the NOTAM Processing Unit, appropriate action will be taken to correct the received NOTAM and a query shall additionally be sent to the Publishing NOF.
- If the NOTAM Processing Unit detects re-occurring errors, it shall address a letter to the Publishing NOF, indicating the correct procedure.
- When a NOTAM Processing Unit is alerted that an error has occurred in a NOTAM processed by itself, the NOTAM Processing Unit will determine the origin of the error, and:

  – either re-send the NOTAM after correction, when the error was made by the NOTAM Processing Unit; or

  – proceed with a request to the Publishing NOF, if the error was already contained in the original NOTAM (rules for 'NOTAM SUBJECT TO QUERY' have to be applied).

3.5 NOTAM Verification

Basically all NOTAM Items shall be checked according to the rules described in Section 2 on NOTAM Creation. In addition, the following general verification shall be performed by the NOTAM Processing Unit:

- Check if the NOTAM has already been received and differentiate between a 'Dupe' and a 'Correct Version' NOTAM.
- Check if there is a logical sequence in the origin time of the AFTN messages whenever an 'identical' NOTAM is received.
- NOTAM Series/Number/Year/Sub-number, relative to the Publishing NOF, are valid and in logic ascending sequence. If not, appropriate request for missing NOTAM is sent by the NOTAM Processing Unit to the Publishing NOF. (see Section 4, Database completeness and Coherence messages)
- NOTAM Number referred to in a NOTAMR or C is a valid NOTAM from the same Publishing NOF.

Additional specific verification will be done as explained in the following sub-paragraphs.

3.5.1 NOTAM Identification

For storage in automated systems, the NOTAM identification consists of establishing the relation between the NOTAM series, number and the "Numbering Reference", which is in most cases the Publishing NOF 4-letter location indicator. This allows unique identification of NOTAM and easy tracking of missing numbers.

3.5.1.1 Publishing NOF Identification

- The identification of the ' Publishing NOF' is not straightforwardly contained in the NOTAM format. According to SARPS in ICAO Annex 10, the location indicator (AFTN address) of the Publishing NOF is given in the AFTN message origin of the original NOTAM.
- When transmitting or re-transmitting a NOTAM, the NOTAM Processing Unit enters its own AFTN address into the message origin line according to the same SARPS.
- However, to assist Client NOF, the NOTAM Processing Unit shall retain the origin line of the original message within which the NOTAM was received and attach it in a line introduced before the opening bracket of the processed NOTAM.

Example: a USA NOTAM re-transmitted by a NOTAM Processing Unit:

Original NOTAM:

GG .....
121800 KDCAYNYX

(A1275/00 NOTAMN
A)KJFK B)WIE.....
etc. –

Processed NOTAM:

GG .....
121805 NOTAM Processing Unit address
121800 KDCAYNYX
(A1275/00 NOTAMN
Q)KZNY/Q …./…..
- A)KJFK
  B) 0008121800
  - etc

- This original origin line shall remain with the processed NOTAM, upon each further retransmission.

  Note: Where a Client NOF' s system would be adversely affected by inclusion of this initial origin line, it shall be removed by the NOTAM Processing Unit before retransmission.

3.5.1.2 NOTAM Series Allocation

- The NOTAM Processing Unit retains the Series and NOTAM Number of the original NOTAM upon retransmission.
- Whenever the NOTAM Series letter has been omitted, the NOTAM Processing Unit shall try to derive it from the NOTAM sequence number and include this series.
- If the Publishing NOF does not use a NOTAM Series letter, the NOTAM Processing Unit will automatically allocate a Series letter (normally 'A') for such NOTAM.

3.5.1.3 NOTAM Number

- When a NOTAM is received that is out of the numerical sequence, a query for the missing NOTAM number(s) will be initiated, according to Section 4 procedures (Database completeness and coherence messages).
- If the NOTAM number consists of less than 4 digits the NOTAM Processing Unit will add the leading zeros. When the 'Year' indicator is missing, it shall also be added.

3.5.1.4 NOTAM Sub-Number (Multi-part NOTAM)

- Whenever a Multi-part NOTAM is received without having the format specified in Section 2, it shall be converted into the correct Multi-part NOTAM format by the NOTAM Processing Unit.

3.5.2 NOTAM Type

- If the Publishing NOF did not include the NOTAM type in the original NOTAM, the NOTAM Processing Unit will have to insert the appropriate NOTAM type letter.
- If the Publishing NOF wrongly allocated the NOTAM type in the original NOTAM, the NOTAM Processing Unit inserts the appropriate type.
- In both cases, the Publishing NOF will be informed about the change.

3.5.3 NOTAM Qualification (Item Q)

3.5.3.1 General Rule

Whenever the Item Q is missing, it shall be inserted by the NOTAM Processing Unit.

3.5.3.2 Qualifier 'FIR'

The NOTAM Processing Unit shall check that this field contains the ICAO Location Indicator of the FIR concerned, or if more than one FIR is concerned in Item A, the ICAO Country indicator of the Publishing NOF followed by 'XX' or 'XXX'. In this case, the ICAO location indicators of all FIR concerned (up to 7) shall be listed in NOTAM Item A.

Example:

Q) ZXXX/QWELW/ . . . . . .
A) ZGZU ZSHA ZBPE . . . . . .

3.5.3.3 Qualifier 'NOTAM CODE'

- The NOTAM Selection Criteria are the basis for NOTAM code allocation and qualification as described in Section 2.
- Overwriting of the original qualifiers (Traffic, Purpose and Scope) should be avoided, unless to correct obvious mistakes.
- Downgrading of the qualifier 'Purpose' is not allowed.
- Whenever the NOTAM Code in the Item Q is not filled, the NOTAM Processing Unit shall include the NOTAM Code, corresponding to the Item E content, together with the appropriate 'Qualifiers'.
- If the NOTAM code does not correspond to the text of Item E, and the text of Item E is clear and unambiguous, the NOTAM code may be brought in line with the text, provided that this does not imply a downgrading in the 'Purpose' qualifier of the NOTAM. The Publishing NOF shall be informed about the change.
- For NOTAM received with a NOTAM Code that is not contained in the NSC, the NOTAM Processing Unit shall allocate a 'NOTAM Code' in accordance with the subject and the condition of the subject specified in the NOTAM text. The Publishing NOF shall be informed about the change.
- When a Trigger NOTAM is received without the 4th and 5th letter 'Condition' indicator "TT", the NOTAM Processing Unit shall replace the original 4th and 5th letter 'Condition' indicator by "TT".

3.5.3.4 Qualifier 'TRAFFIC'

- When the 'TRAFFIC' qualifier is missing, it shall be filled according to the NOTAM Selection Criteria, or, if not specified therein, according to the NOTAM contents.

3.5.3.5 Qualifier 'PURPOSE'

- When the 'PURPOSE' qualifier is missing, it shall be filled according to the NOTAM Selection Criteria, or, if not specified therein, according to the NOTAM contents.
- The 'PURPOSE' qualifier of a NOTAM shall not be modified by a NOTAM Processing Unit, unless it implies an upgrading.

3.5.3.6 Qualifier 'SCOPE'

- When the 'SCOPE' qualifier is missing or is not filled according to the NOTAM Selection Criteria, it shall be filled according to the NOTAM contents, following the procedures described in Section 2 of this Manual.

3.5.3.7 Qualifiers 'LOWER/UPPER'

- It shall be made sure that the values specified in LOWER and UPPER are in logical order, and correspond to the values specified in Items F and G for Navigation Warnings and Airspace Restrictions.

  Example:

  F) 2000 FT AGL
  G) 7500 FT AMSL
  = LOWER/UPPER: 020/075

- If Items F and G are filled and:

  – the values in the Item Q extend beyond the limits of Items F and G, they shall be left unchanged;

  – the values in the Item Q do not equate but lie between the limits of Items F and G, they shall be modified to correspond to Items F and G

  – the limits in the Item Q are 000/999, they shall be modified to correspond to Items F and G.

The NOTAM Processing Unit shall define these values in accordance with the procedures specified in paragraph 2.3.7.

3.5.3.8 Qualifier 'GEOGRAPHICAL REFERENCE'

- The Geographical Reference shall be present in each NOTAM re-transmitted by a NOTAM Processing Unit. If this value is not contained in a received NOTAM, the NOTAM Processing Unit has to add it, following the procedures described in Section 2 of this Manual.
- If no radius has been included by the Publishing NOF, and if no radius can be extracted from the Static Database, the NOTAM Processing Unit will include a 'Default Radius Indicator', as specified in the following table:

Table of Default Radius Indicators for NOTAM Processing

NOTAM code	Plain language	Radius
Q	All Aerodrome related NOTAM (only Scope A) The default value shall also be used for Scope AE/AW, if applicable	005
QAC	CTR	005
QAT	TMA	050
QN	All Navigation Aids (VOR, NDB ...) except: Long Range Navigation Systems, e.g. GPS, en-route DME…	025
QOB	OBST	005
QOL	OBST LIGHT	005
QPH	Holding Procedure	025
QPX	Minimum Holding Altitude	025
QAP	Reporting Point	005
QAX	Intersection	005

3.5.4 NOTAM Items

3.5.4.1 Item A - Location 'FIR/AD'

- If the location indicator is not filled or contains a typing error, the NOTAM Processing Unit shall try to deduce it from the Item Q and from the Item E content. The NOTAM Subject to Query procedure shall be applied.
- If the location indicator is unknown to the NOTAM Processing Unit (aerodrome location indicator not in the Static Database), the NOTAM Processing Unit shall replace the location indicator by the Country indicator, followed by 'XX'. The NOTAM Subject to Query procedure shall be applied.

3.5.4.1.1 Single-Location NOTAM

- This shall always be the ICAO Location Indicator of one aerodrome or FIR.
- In the case of one FIR, the entry must be identical to the qualifier 'FIR' in the Item Q. If not, this entry shall be corrected by the NOTAM Processing Unit.
- When an aerodrome indicator is given, it must be an aerodrome situated in the FIR inserted in the Item Q. If not, the FIR in the Item Q shall be changed according to the Static Database.

- For aerodromes without ICAO location indicator Item A shall contain the 2–letter country indicator + XX (e.g. EDXX), with the full name of the aerodrome as first element in Item E.

  If Item A of a received NOTAM contains the full name of an aerodrome, the NOTAM Processing Unit shall replace it by a 4–letter code consisting of the 2–letter country indicator and XX (e.g. LFXX), and shall incorporate the full name into Item E.

  Examples:

  A) EBBU (1 FIR)

  A) LFPO (ICAO location indicator)

  A) EDXX (no location indicator published by Germany)
  E) PRITZWALK AD

  In the latter example, Item E shall contain the full name of the aerodrome as its first element.

3.5.4.1.2 Multi-Location NOTAM

- According to the current NOTAM format there can be only up to 7 FIR location indicators in Item A. If more than 7 FIR were entered, only the first 7 listed will remain in Item A. One or more NOTAM shall be issued with identical data as in the original NOTAM until all original FIR have been covered.
- In cases where a NOTAM contains 'supra-regional' information covering several FIR belonging to more than 1 country, qualifier 'FIR' of the Item Q shall contain the Publishing NOF' s Country Code followed by 'XX'. If this procedure is not applied by the Publishing NOF, the NOTAM Processing Unit shall correct the Item Q.

3.5.4.2 Item B – Start of Validity

- This shall be a 10-figure date-time group, giving year, month, day, hour and minutes at which the NOTAM comes into force. NOTAM Processing Unit shall make sure that all NOTAM are retransmitted in the correct format.

  Example: B) 0007011200

- For NOTAM received with WIE (With Immediate Effect), Item B will be replaced by a 10 figure date/time group corresponding to the time of origin of the original NOTAM.

3.5.4.3 Item C - End of Validity

- This shall be a 10-figure date-time group, giving year, month, day, hour and minutes at which the NOTAM ceases to be in force and becomes invalid.

- For NOTAM received with 'UFN' (Until Further Notice) in Item C, the NOTAM Processing Unit will retransmit the NOTAM as received, with Item C unchanged (=UFN).
- NOTAM containing 'EST' must be replaced by NOTAMR at the appropriate time, or cancelled by NOTAMC. NOTAM Processing Unit are responsible for the following action regarding such NOTAM:

  – NOTAM received with 'EST' and retransmitted: If the Publishing NOF does not react at the end of the estimated validity, the NOTAM Processing Unit is supposed to make request action from the Publishing NOF one hour prior to or shortly after the 'EST' time, as the significance of the NOTAM may warrant.

  – NOTAM received with 'UFN' and retransmitted:'

  No further action will be initiated by the NOTAM Processing Unit for such NOTAM.

3.5.4.4 Item D - Day Schedule 'SCHEDULE'

- If the Item D of the original NOTAM is not structured according to the procedures as detailed in Section 2 paragraph 2.4.4, it shall be edited by the NOTAM Processing Unit in accordance with these specifications.
- Item D shall not exceed 200 characters. If it does, then the Item D time schedule shall be removed and inserted at the start of Item E. This procedure will however, exclude automatic retrieval into Pre-flight Information Bulletins on the specified days and times.

3.5.4.5 Item E - NOTAM Text

- The NOTAM Processing Unit shall check the correspondence between the Item E text and the NOTAM code.
- In case of a non-standard ICAO NOTAM format, The NOTAM Processing Unit must identify the subject and select the relevant NOTAM Code. If Item E contains more than one subject, the subject of highest operational importance, based on the ' Purpose' qualifier in Item Q, shall be inserted in the Item Q.

  If the NOTAM Code is already present in Item E of the original NOTAM, it shall be moved to the Item Q and decoded in Item E, using the text provided in the NOTAM Selection Criteria.
- All navigational data, navigation aids, frequencies, location indicators, heights and any logical combinations shall be verified as to correctness.
- Whenever the text in the Item E is ambiguous, the NOTAM Processing Unit shall retransmit the original NOTAM with Item E as received according to the procedures described in paragraph 3.4.6.

3.5.4.6 Item F and G - Lower and Upper Limit

- NOTAM Processing Unit shall make sure that Lower and Upper limits in Items F and G are inserted for Navigational Warnings (Qualifier 'SCOPE' = W or AW) and for Airspace Organizations ('SCOPE' = E or AE). If these Items are missing, the NOTAM Processing Unit shall add them after verification of the data in Item E, or in the Item Q 'Lower/Upper' qualifiers, or in the Static Database, and/or after consultation with the Publishing NOF.
- If the values specified in Items F and G do not cover the limits mentioned in Item E, the NOTAM Processing Unit shall:

  - change the values in Item F or in Item G to correspond to the lowest (Item F) or the highest (Item G) value mentioned Item E; and

  - the 'NOTAM SUBJECT TO QUERY' procedure shall be used, and the Publishing NOF shall be contacted to clarify the content of the NOTAM.

  Note: the original values will not be changed, whenever the limits in Item F or G are respectively lower or higher than the limits specified in Item E.
- If no Lower limit (Item F) has been specified in a NOTAM that contains an Item G, but from the Item Q or from the Item E it is obvious that the Lower limit is "Sea or Ground", then the term 'SFC' (surface) shall be inserted in Item F.

  Example: Item Q shows: LOWER/UPPER = 000/090

  Item F) ' SFC' shall be inserted in the processed NOTAM.

  Note: the NOTAM Processing Unit shall use SFC, as use of GND may be inappropriate due to the unavailability of precise topologic information concerning the area of influence of the NOTAM.

3.5.5 Checklist Processing

3.5.5.1 General Principles

- A received Checklist will be processed and retransmitted to all Client NOF by the NOTAM Processing Unit without undue delay.
- In case of any ambiguities, e.g.:

  – valid NOTAM not on checklist,

  – NOTAM on checklist is not in the database, etc.

  The NOTAM Processing Unit addresses the Publishing NOF for clarification.
- When, as a result of a query, omitted NOTAM numbers are restored in the corrected version of a Checklist, the NOTAM Processing Unit shall:

  - retransmit the revised checklist to their client-NOF

  - on request, retransmit the omitted NOTAM to their Client NOF.

3.5.5.2 Checklist Received as a NOTAM

When a Checklist is received as a NOTAM, but it is not in the agreed NOTAM Checklist format (see Section 2), the NOTAM Processing Unit shall convert it as described hereafter:

- NOTAM Series, Number and Type shall be retained.
- Qualifier 'FIR' of the Item Q is

  - the FIR of the Publishing NOF, if responsible for only 1 FIR; or

  - the 2–letter country indicator of the Publishing NOF followed by XX, if the Publishing NOF is responsible for multiple FIR (in the same or in different countries).
- The NOTAM Code is always ' QKKKK' or will be changed into 'QKKKK' by the NOTAM Processing Unit.
- Qualifiers TRAFFIC, PURPOSE and SCOPE will be given the artificial value 'K', even if another qualifier was included by the Publishing NOF.
- LOWER/UPPER are default values 000/999, or should be changed accordingly by the NOTAM Processing Unit.
- Item A shall contain the list of all valid FIR for the Publishing NOF, if these are not all included, the NOTAM Processing Unit shall add them.
- Item C is the estimated time of validity, usually exactly one month after the publication date and time of the current checklist, followed by 'EST'. Whenever another Date/Time Group is filled by the Publishing NOF, the NOTAM Processing Unit shall not change it.
- Item E is divided in two parts:

  1. **NOTAM Number Part**, identified by 'CHECKLIST'

  Contains the valid NOTAM promulgated in a particular series, in a format suitable for automatic and manual processing as described in Chapter 2 paragraph 2.7.

  If required, the NOTAM Processing Unit shall convert the Checklist according to this format.

  2. **Latest Publication Par**t, identified by 'LATEST PUBLICATIONS'

  Contains the list of the latest publications (Amendments, Supplements, NOTAM Class II and AIC).

  This part shall be transmitted as received. If this part is not present in the original NOTAM, the NOTAM Processing Unit shall retransmit the Checklist without this Latest Publication Part.

3.5.5.3 Checklist not Received as a NOTAM

- Whenever a NOTAM Checklist is not received as a NOTAM (i.e. when no NOTAM number has been allocated to the Checklist), the NOTAM

Processing Unit shall adapt the received AFTN message to the Ad-hoc Checklist format, as described in Section 4.

- The processed checklist shall also be retransmitted as an AFTN message. The message shall start with the word 'CHECKLIST', the 4-letter indicator of the Publishing NOF or any other location indicator to which the numbering of the NOTAM refers and the corresponding NOTAM Series. The valid NOTAM numbers will be included in the next line(s) according to the format described in Section 4, but retaining the latest publication part only if included in the original message.

Example:

CHECKLIST RJAA A
YEAR=1999 1678 1789
YEAR=2000 0012 0022 0056 0057 0058 0073 0099
0102 0123 0124 0125
LATEST PUBLICATIONS
AIRAC AIP-AMDT 005/00 EFF 20 APR 00
AIP-SUP 001/00
AIP-AMDT 413
AIC A001/00

3.6 Missing NOTAM

- In case of missing NOTAM the NOTAM Processing Unit requests the missing NOTAM from the Publishing NOF by a request message.
- Time parameters depending on the Publishing NOF will be defined by the NOTAM Processing Unit for initiating the first request message and succeeding repetition of the message.
- Client-NOF should request a missing NOTAM to the NOTAM Processing Unit only once.

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4. DATABASE COMPLETENESS AND COHERENCE MESSAGES

Note: This Section describes a set of messages based upon the use of AFTN, whereas the use of other communication means, thus alternative formats, could be envisaged to fulfill the same functions. In this sense the content of this Chapter is indicative only.

4.1 General Principles

The maintenance of dynamic data is essential for the efficient operation of a NOTAM Processing Unit, a Publishing NOF or for an aeronautical database administrator. The application of 'query messages' is required to ensure the database completeness and coherence between NOTAM Processing Unit and Client-NOF. These query messages, described in this Chapter, were developed so as to permit automatic and manual processing of queries.

The basic requirements for messages destined for the maintenance of the dynamic data are:

- Request for one or more NOTAM.
- Request for a List of valid NOTAM.

In order to facilitate automatic processing, the requests and the replies to the requests, are identified by means of 3 - letter identifiers.

- Request for NOTAM: 'RQN'
- Request for a List of valid NOTAM: 'RQL'
- Reply to these requests: 'RQR'

4.2 Request for the Repetition of NOTAM (RQN)

4.2.1 General Specification

- For every request, the 4 - letter indicator of the Publishing NOF or any other location indicator to which the numbering of the required NOTAM refers, shall be included.
- Request messages shall only refer to one Publishing NOF.
- A reply message shall contain only one NOTAM, or a status text regarding the requested NOTAM, normally followed by the requested NOTAM.
- The reply message of a processed NOTAM shall always include the original origin line (DTG + Publishing NOF address).

  Note: Where a Client NOF' s system would be adversely affected by inclusion of this initial origin line, on request by the Client NOF, it shall be removed by the NOTAM Processing Unit before retransmission.
- The maximum number and series of requested NOTAM in a single request message will be based on the individual system specifications of the NOTAM Processing Unit.

- A single request for multiple NOTAM shall result in multiple reply messages (from the NOTAM Processing Unit).

The requests and replies are generally transmitted via the AFTN network. Therefore, the examples below are presented in the AFTN format.

4.2.2 Codes and symbols used

‘RQN’ designator for ‘Request NOTAM’.

‘ZBBB’ 4-letter indicator of the Publishing NOF or other location indicator to which the numbering of the NOTAM refers.

‘A0123/00’ NOTAM Series Identifier and NOTAM Number.

‘ - ‘ (hyphen) is used to indicate ‘TO’ or ‘FROM-TO’.

‘ ‘ (blank) is interpreted as ‘AND’.

‘RQR’ designator for the reply

Note: no brackets will be used when transmitting a ‘Request NOTAM’ message.

4.2.3 Examples of the Request for NOTAM

- Request of a single NOTAM:

Example 1 :

Kuala Lumpur NOF requests from Tokyo NOF the China NOTAM A1688/01

Request: ZCZC…
GG RJAAYNYX
160830 WMKKYNYX
RQN ZBBB A1688/01

Reply: ZCZC…
GG WMKKYNYX
160835 RJAAYNYX
RQR ZBBB A1688/01
091635 RJAAYNYX *
(A1688/01 NOTAMN
Q).../..../.... etc.)

* *Note*: Where a Client NOF’ s system would be adversely affected by inclusion of this initial origin line, on request by the Client NOF, it shall be removed by the NOTAM Processing Unit before retransmission.

Example 2:

PARIS NOF requests from FRANKFURT NOF the Polish NOTAM A1253/00.

Request: ZCZC...
GG EDDZYNYX
160900 LFFAYNYX

RQN EPWW A1253/00

Reply: ZCZC...
GG LFFAYNYX
160905 EDDZYNYX
RQR EPWW A1253/00
152355 EPWWYNYX *
(A1253/00 NOTAMN
Q).../..../.... etc.)

* *Note*: Where a Client NOF' s system would be adversely affected by inclusion of this initial origin line, on request by the Client NOF, it shall be removed by the NOTAM Processing Unit before retransmission.

- Request of several NOTAM with continuous numbering:

Example 3:

PARIS NOF requests from ROMA NOF for Cyprus NOTAM between A0199/00 and A0210/00.

Request: ZCZC...
GG LIIAYNYX
281030 LFFAYNYX
RQN LCNC A0199/00-A0210/00

Reply: ZCZC...
GG LFFAYNYX
281035 LIIAYNYX
RQR LCNC A0199/00
261730 LCNCYNYX *
(A0199/00 NOTAMN
Q).../..../.... etc.)

* *Note*: Where a Client NOF' s system would be adversely affected by inclusion of this initial origin line, on request by the Client NOF, it shall be removed by the NOTAM Processing Unit before retransmission.

Note: The full Reply consists of 12 messages containing one NOTAM each.

- Request of several NOTAM with discontinuous numbering:

Example 4:

PARIS NOF requests from FRANKFURT NOF for Russian Federation NOTAM A0400/00, A0410/00 and NOTAM between A0420/00 and A0425/00.

Request: ZCZC...
GG EDDZYNYX
281530 LFFAYNYX
RQN UUUU A0400/00 A0410/00 A0420/00-A0425/00

Reply: ZCZC...
GG LFFAYNYX
281540 EDDZYNYX
RQR UUUU A0400/00
270810 UUUUYNYX *
(A0400/00 NOTAMN
Q)..../..../.... etc.)

* *Note*: Where a Client NOF' s system would be adversely affected by inclusion of this initial origin line, on request by the Client NOF, it shall be removed by the NOTAM Processing Unit before retransmission.

Note: The full Reply consists of 8 messages containing one NOTAM each.

4.3 Content of Reply Messages (RQR)

4.3.1 General Specification

- A Reply message contains only one NOTAM. If a request was made for multiple NOTAM it will result in multiple reply messages.
- If the queried NOTAM has a particular status, concerning its validity or availability, this will be communicated through the reply.

  - If the NOTAM is no longer valid, a ' Status line' will precede the transmission of the requested NOTAM.

  - If the NOTAM is not available, only a relevant ' Status line' will be transmitted.
- Only one status line shall be included in the reply and it shall contain only one status expression.
- Database should allow repetition of no longer valid NOTAM for a period of 2 months.
- NOTAM Processing Unit shall provide their Client NOF with a list of the available NOTAM series for each Publishing NOF. This list shall contain the 4-letter indicators that uniquely identify the Publishing NOF or any other location indicator to which the numbering of the NOTAM in the series refers to.

4.3.2 Standard Expressions in Reply Messages

The following mandatory statements shall be mentioned in the reply when appropriate:

'NOTAM EXPIRED':	Item C time was reached
'NOTAM REQUESTED':	The NOTAM Processing Unit has requested the requested NOTAM but not yet received it.
'NOTAM CANCELLED BY A1324/00':	NOTAM was cancelled by a NOTAMC

'NOTAM NO LONGER IN DATABASE'	NOTAM was either expired, replaced or cancelled since more than 2 months
'NOTAM NOT ISSUED':	The Publishing NOF has not issued the requested NOTAM
'NOTAM REPLACED BY C3042/00':	NOTAM was replaced by a NOTAMR
'NOTAM VALIDITY SUBJECT TO QUERY':	NOTAM not on the Checklist, but no information about its cancellation is received.

4.3.3 Examples for Status of NOTAM

Example 1: The requested Egyptian NOTAM A0400/00 is expired.

Reply:
ZCZC ...
GG LFFAYNYX
281600 LIIAYNYX
RQR HECA A0400/00
NOTAM EXPIRED
031530 HECAYNYX *
(A0400/00 NOTAMN
Q).../.../.... etc.)

* *Note*: Where a Client NOF' s system would be adversely affected by inclusion of this initial origin line, on request by the Client NOF, it shall be removed by the NOTAM Processing Unit before retransmission.

Example 2: The requested Senegal NOTAM A0213/00 was not received at the NOTAM Processing Unit.

Reply:
ZCZC ...
GG EDDZYNYX
091430 LFFAYNYX
RQR GOOO A0213/00
NOTAM NOT RECEIVED

Example 3: The requested Tahiti NOTAM A0021/00 was cancelled.

Reply:
ZCZC ...
GG LIIAYNYX
301235 LFFAYNYX
RQR NTAA A0021/00
NOTAM CANCELLED BY A0023/00
300155 NTAAYNYX *
(A0021/00 NOTAMR A0017/00
Q).../.../.../ etc.

* *Note*: Where a Client NOF' s system would be adversely affected by inclusion of this initial origin line, on request by the Client NOF, it shall be removed by the NOTAM Processing Unit before retransmission.

Example 4: The requested Cuban NOTAM A1577/00 was not issued.

Reply: ZCZC ...
GG EDDZYNYX
110925 LEACYNYX
RQR MUHA A1577/00
NOTAM NOT ISSUED

Example 5: The requested Korean NOTAM A0449/00 was replaced.

Reply: ZCZC ...
GG LFFAYNYX
282055 LIIAYNYX
RQR RKSS A0449/00
NOTAM REPLACED BY A0452/00
101735 RKSSYNYX *
(A0449/00 NOTAMN
Q)../../../ etc.)

* *Note*: Where a Client NOF' s system would be adversely affected by inclusion of this initial origin line, on request by the Client NOF, it shall be removed by the NOTAM Processing Unit before retransmission.

Note: The importance of transmitting the requested NOTAM is emphasized, even when it is already cancelled or replaced. Otherwise, there might be inconsistencies in the database, as NOTAM could not be removed then, (NOTAM A0017/00 in Example 3).

Example 6: The requested Japan NOTAM A0587/00 is not on the Checklist, but no information about its cancellation is yet received.

Reply: ZCZC ...
GG LFFAYNYX
201935 EDDZYNYX
RQR RJAA A0587/00
NOTAM VALIDITY SUBJECT TO QUERY
112350 RJAAYNYX *
(A0587/00 NOTAMN
Q).../.../...

* *Note*: Where a Client NOF' s system would be adversely affected by inclusion of this initial origin line, on request by the Client NOF, it

shall be removed by the NOTAM Processing Unit before retransmission.

4.4 Request for a List of valid NOTAM (RQL)

4.4.1 General Specification

- The ‘List of valid NOTAM’ is a free text message. Contrary to the regular checklist, this list of valid NOTAM is not a NOTAM itself, as it does not receive a number of the series it refers to.
- For every request, the 4–letter indicator of the Publishing NOF or other location indicator to which the numbering of the NOTAM refers shall be stated for the required checklist.
- Request messages shall refer to only one Publishing NOF. Multiple series of the same Publishing NOF may be requested in one message.
- A reply message shall contain the checklist of only one NOTAM Series.
- A request for multiple NOTAM series shall result in multiple reply messages each containing one series checklist.
- The reply message is identified by the unique 4-letter indicator and the NOTAM series identifier. The ‘List of valid NOTAM’ according to the NOTAM Processing Unit database content is provided in a way similar to the structure of Item E of a regular NOTAM checklist, without the latest publication part.
- Whenever the regularly published NOTAM checklist is requested, the Client NOF should use the RQN procedure, clearly indicating both NOTAM series and number.

4.4.2 Codes and Symbols used

‘RQL’	designator for ‘request list’ .
‘LFFA’	4-letter indicator of the Publishing NOF or other location indicator to which the numbering of the NOTAM refers to.
‘ A’	NOTAM Series Identifier.
‘ ‘	(blank) is interpreted as ‘AND’.
‘RQR’	designator for the reply.

4.4.3 Examples of the request for a List of valid NOTAM

- Request of a single NOTAM Series:

Example 1:

PARIS NOF requests from ROMA NOF the list of valid Cyprus NOTAM in series Alpha:

Request: ZCZC ...
GG LIIAYNYX
281040 LFFAYNYX
RQL LCNC A

Reply: ZCZC ...
GG LFFAYNYX
281055 LIIAYNYX
RQR LCNC A
YEAR=1997 0322 0452
YEAR=1998 0001 0006 0010 0015 0016
0021 0035 0039.

- Request of multiple NOTAM Series

Example 2:

ROMA NOF requests from FRANKFURT NOF the list of valid NOTAM from the United Kingdom in series Bravo, Echo and Foxtrot:

Request: ZCZC ...
GG EDDZYNYX
310840 LIIAYNYX
RQL EGGN B E F

Reply: ZCZC ...
GG LIIAYNYX
310850 EDDZYNYX
RQR EGGN B
YEAR=1997 1678 1789
YEAR=1998 0012 0022 0056 0057 0058
0123 0124 0125

Note: The full Reply consists of 3 Messages containing one NOTAM Series each.

5. PROCEDURES FOR SNOWTAM AND ASHTAM

5.1 Introduction

These operational messages are described in ICAO documentation and distributed via the AFTN. As they are operationally relevant, their processing is required to enable database storage and consequently further retrieval for their incorporation in PIB. The concerned messages are:

- SNOWTAM
- ASHTAM

5.1.1 General procedures

These messages are expected to be received in their defined format. Therefore, it is anticipated that they shall neither be edited nor corrected. If a message is detected as received obviously incorrect (e.g. garbled), a query shall be addressed to the originator for clarification. This processing can be done by individual or centralized Units.

5.2 SNOWTAM

5.2.1 Definition

A special series NOTAM notifying the presence or removal of hazardous conditions due to snow, ice or standing water associated with snow, slush and ice on the movement area by means of a specific format.'

During periods when deposits of snow, ice or water associated with these conditions remain on the aerodrome pavements, information on such conditions should be disseminated to all to whom the information is of direct operational significance. Use of the ICAO abbreviations (Doc 8400) and plain language is also permissible.

Example: GG EDZZ.... .....
300645 EDDKYDYX
SWED0012 EDDK 12300645
(SNOWTAM 0012
A) EDDK B) 12300630 C) 14L F) 2/2/2 G) 30/30/40 H) 5/5/5
C) 14R F) 5/5/5 G) 30/30/40 H) 9/9/9
C) 07 F) 5/5/5 G) 40/30/30 H) 9/9/9
R) WET S) 12300800 T) SNOW REMOVAL IN PROGRESS)

Note: for details of SNOWTAM Items refer to the ICAO Annex 15, Appendix 2.

5.2.2 Procedures

The incorporation of SNOWTAM in PIB is highly recommended, as it improves pre-flight briefing and provides airline operators with more comprehensive information.

The verification of a SNOWTAM should be made in the first line of the AFTN message text. This heading starts with the SNOWTAM indicator 'SW' followed by the designator for the State e.g. 'ED', and a serial number in a four-figure group. The aerodrome to which the SNOWTAM refers is indicated with its four-letter location indicator. The observation time is shown as an eight-figure group (MMDDHHMM).

Example: SWED0012 EDDK 12300645

These five indicators provide data to differentiate the SNOWTAM, and allow retrieval with a particular aim.

Whenever a significant change of the weather condition occurs, a new SNOWTAM will be published. Therefore it is necessary for the system to always check for the latest SNOWTAM. The former SNOWTAM can be recognized easily, due to the lower serial number and the earlier observation time. The previous SNOWTAM is outdated then and shall not appear anymore in PIB.

The maximum validity of a SNOWTAM is 24 hours. Therefore it shall be assured that a SNOWTAM will not appear in a PIB more than 24 hours after its observation time.

5.3 ASHTAM

5.3.1 Definition

A special series NOTAM notifying by means of a specific format change in activity of a volcano, a volcanic eruption and/or volcanic ash cloud that is of significance to aircraft operations.

When notification of such activity is made, the ASHTAM provides information on the status of activity using a 'volcano level of alert colour code'.

The ASHTAM also provides information on the location, extent and movement of the ash cloud and air routes and flight levels affected.

Example:
G .....
11250800 LICCZPZX
VALI0001 LIRR 11250800
ASHTAM0001
A) ROMA
B) 0745
C) ETNA
D) Lat/Long
E) YELLOW ALERT
F) Existence and horizontal/vertical extent of ash cloud

G) Direction of movement of ash cloud
H) Air routes and flight levels affected
I) Closure of airspace and/or air routes or portions of air routes, and alternative air routes available
J) Source of information
K) Plain language remarks

For details, refer to ICAO Annex 15, Appendix 3.

5.3.2 Procedures

The incorporation of ASHTAM in PIB is highly recommended, as it improves pre-flight briefing and provides airline operators with more comprehensive information.

The verification of an ASHTAM should be made in the first line of the AFTN message text. This heading starts with the ASHTAM indicator 'VA' followed by the designator for the State, e.g. 'LI', and a serial number in a four-figure group. The FIR to which the ASHTAM refers is indicated with its four-letter location indicator. The observation time is shown as a eight-figure group.

Note: These procedures are based on the ASHTAM format described in Annex 15, as very few example of ASHTAM were available at the time of composing this document.

Example: VALI0001 LIRR 11250800

These five indicators provide data to differentiate the ASHTAM, and allow retrieval with a particular aim.

Whenever there is a change in the level of alert, a new ASHTAM will be published. Therefore it is necessary for the system to check if a ASHTAM was issued for the concerned FIR before. The former ASHTAM could be recognized easily then, due to the lower serial number and the older observation time. The previous ASHTAM is outdated then and shall not appear anymore in PIB.

The maximum validity of a ASHTAM is 24 hours. Therefore it shall be assured that ASHTAM will not appear in a PIB after 24 hours of its observation time.

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6. FALL BACK PROCEDURES

6.1 GENERAL PRINCIPLES

States may develop Fall Back procedures to ensure continued operations of their NOTAM System in the event of failure of their NOF(s).

Fall Back procedures should take into consideration the continuation of service to clients regularly served by the NOF.

Fall Back procedures must include the procedures to be followed as the failed NOF returns to normal services.

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Appendix 1

Guidance for the use of the NOTAM Selection Criteria

1. General

The basis for the assignment of NOTAM are the NOTAM Selection Criteria (NSC). They are provided in form of tables in Doc 8126 and constitute a rationalized version of the ICAO NOTAM Code contained in the PANS ABC (Doc 8400). They also provide the English language text to be used in Item E of the NOTAM.

The NSC provide a subject-related association of NOTAM with the qualifiers 'TRAFFIC', 'PURPOSE' and 'SCOPE'. This allocates the first basis for the preparation of Pre-flight Information Bulletins already during the origination of the NOTAM.

NSC are used for the following:

a) the storage and retrieval of information;

b) to determine whether a particular item is of operational significance; and

c) the relevance of particular items for various types of flight operations.

Publishing NOF shall use the NOTAM Codes and respective allocation of the qualifiers as provided in the NSC and make sure, that their NOTAM Database contains and maintains the respective tables. Every Publishing NOF should make sure that the correct NOTAM Code in the sense of *describing the most important information* is selected from the NSC.

Example: Work in progress on or near the runway (QMRHW) is qualified M but may affect the safe use of the runway (i.e. RWY limited). In this case the subject/condition "RWY limited (QMRLT)" should be taken from the NSC.

2. NOTAM Code

The NOTAM Code corresponding to the NOTAM content shall be taken from the NOTAM Selection Criteria.

If the NSC do not contain an appropriate NOTAM Code, the following procedures shall be applied:

a) In the exceptional case where the information to be promulgated by NOTAM has no related SUBJECT (2nd and 3rd letters of NOTAM code) contained in the NOTAM code list, the following NOTAM Codes shall be used in all cases:

QXXXX

When QXXXX is inserted, free association of the qualifiers 'TRAFFIC', 'PURPOSE' and 'SCOPE' is possible.

Example:
Item Q = Q)EKDK/QXXXX/IV/M/ E/000/999/5533N00940E999
NOTAM text = E) ACCORDING TO RESOLUTION 781 UNITED
NATIONS HAS DECIDED TO ESTABLISH A BAN ON
MIL FLIGHTS IN …..

The 2nd and 3rd letter combination ‘XX’ shall only be used in combination with the 4th and 5th letter combination ‘XX’, except in the case of Amendments or Supplements containing information dealing with different subjects and locations, one Trigger NOTAM with NOTAM Code ‘QXXTT’ will be issued.

b) Whenever the SUBJECT (2nd and 3rd letters) is contained in the NSC, but the CONDITION of the subject (4th and 5th letters of NOTAM Code) **is not** specified, the letters ‘ XX’ shall be inserted as 4th and 5th letters.

When "XX" is inserted as 4th and 5th letters, free association of the qualifiers is possible with the exception of ‘ SCOPE’ which is fixed by the NOTAM subject (2nd and 3rd letters). The entries for Traffic and Purpose shall be made with regard to the NOTAM contents, and by analogy with the prevailing association of qualifiers to the respective subject (2nd and 3rd letters) in the NSC.

Example:

QMRXX (Runway)
prevailing qualifiers for "QMR" (Traffic/Purpose/Scope) are "IV/NB/A/".
Entry in Item Q accordingly:
Q) LIRR/QMRXX/IV/NB/A /000/999 /4053N01417E005

If the NOTAM contents do not justify the insertion of the prevailing association of the subject from the NSC, NOTAM shall be assigned the appropriate qualifiers taking into account the operational needs especially for the output/query side.

Example:

NOTAM Code QFAXX,
TEXT GRASS CUTTING IN PROGRESS
prevailing qualifiers for "QFA" = (Traffic/Purpose/Scope) are "IV/NB/A".
Entry in Item Q:
Q) LFFF/QFAXX/IV/ M/A /000/999/4856N00250E005

c) Special combinations of NOTAM – codes for Cancellations:

NOTAM Code combinations for the NOTAMC (Cancellation) are not included in the NOTAM Selection Criteria.

For Cancellations, all field entries (Qualifiers) of the Item Q shall be identical to the qualifiers used in the original NOTAM except the CONDITION, 4th and 5th letters of the NOTAM Code which should be taken from the following list:

- Q..AK = RESUMED NORMAL OPS
- Q..AO = OPERATIONAL
- Q..AL = OPERATIVE SUBJECT PREVIOUS CONDITION
- Q..CC = COMPLETED
- Q..XX = OTHER (PLAIN LANGUAGE)

3. TRAFFIC

This entry relates the NOTAM to a type of traffic: I for IFR, V for VFR or IV for both. The appropriate type of traffic shall be taken from the NOTAM Selection Criteria.

The NSC contain certain subjects (2nd and 3rd letters) where the traffic (I, V or IV) depends on the NOTAM contents (e.g. QAP = REPORTING POINT or QMN = APRON). In these cases, the correct traffic entry shall be determined by the Publishing NOF according to NOTAM contents.

Example:
NOTAM code = QAPCI
TRAFFIC = IV (DEPENDS ON SUBJECT (I AND/OR V)
TEXT = **VFR** REPORTING POINT ID CHANGED .....
Entry in Item Q: Q) LFFF/QAPCI/V/BO/E/000/200/4856N00250E005

The letter K in this qualifier indicates that the NOTAM is a Checklist.

4. PURPOSE

This qualifier group relates a NOTAM to certain purposes (intentions) and thus allows retrieval according to the User requirements. The following entries are possible:

N = NOTAM selected for the immediate attention of aircraft operators

Due to their importance these NOTAM require immediate attention of aircraft operators. Aircraft operators may request for specific delivery of such NOTAM or for inclusion into specific Pre-flight Information Bulletins.

The NOTAM will appear in a specific Pre-flight Information Bulletin containing only NOTAM related to subjects of extreme importance selected for immediate attention. NOTAM qualified OB, B or M will not appear, so only NOTAM qualified NB shall appear.

O = Operationally significant NOTAM

The NOTAM will appear in a specific Pre-flight Information Bulletin containing only NOTAM related to subjects of operational significance. NOTAM qualified B or M will not appear, only NOTAM with OB or NB shall appear.

B = NOTAM selected for PIB entry

The NOTAM will appear in a Pre-flight Information Bulletin containing all NOTAM relevant to a general Pre-flight Information Bulletin query. NOTAM qualified B, OB, or NB shall appear in the Pre-flight Information Bulletin.

M = Miscellaneous

The NOTAM is for a 'miscellaneous' purpose and will not appear in a Pre-flight Information Bulletin, unless specifically requested.

K = The NOTAM is a checklist.

Permissible Purpose letters combinations (one to three letters) are:

- NB, OB, B and M (the order of the letters in the combinations has no significance);
- K for a NOTAM Checklist.

5. SCOPE

This qualifier relates the NOTAM subject (2nd and 3rd letters) to a specific scope. This qualifier is used to determine under which category a NOTAM is presented in a Pre-flight Information Bulletin, i.e. under 'Aerodrome', 'En-Route' or 'Navigational Warning'.

The following entries are permissible:

A = Aerodrome

relates the NOTAM to the scope of 'Aerodromes'. Entry of an aerodrome location indicator (e.g. RJBB) in Item A is compulsory. A geographical reference in the Item Q shall be given, in this case the co-ordinates of the aerodrome.

E = Enroute

relates the NOTAM to the scope of 'Enroute information'. Entry of one or more FIR in Item A is compulsory. A geographical reference in the Item Q shall be given according to the contents of the NOTAM.

W = Warning

relates the NOTAM to the scope of 'Navigation Warnings'. Entry of one or more FIR in Item A is compulsory. A geographical reference in the Item Q shall be given according to the contents of the NOTAM.

AE = Aerodrome/Enroute

relates the NOTAM to scopes 'A' and 'E'. Entry of an aerodrome in Item A is compulsory and the geographical reference in the Item Q shall be given according to contents of the NOTAM.

Scope 'AE' is employed where a Navigational Aid is used for both the Aerodrome and the Enroute procedures.

The location indicator of the Aerodrome shall be included in Item A. Item Q shall contain the geographical co-ordinates and the radius of the Navigational Aid.

Example: Q)WSJC/QNMAU/IV/OB/AE/000/999/0125N10402E025
A) WSSS

E) VOR/DME VTK FREQ 116.5MHZ/CH112Y NOT AVBL

AW = Aerodrome/Warning
relates the NOTAM to both scopes A and W. Entry of an aerodrome in Item A is compulsory and the geographical reference in the Item Q shall be given according to the contents of the NOTAM.

Scope 'AW' is used when the Navigational Warning takes places on or in the near vicinity of an aerodrome, and it affects both the traffic flying enroute and at the aerodrome.

Item A shall contain the aerodrome location indicator, and Item Q shall contain the geographical co-ordinates of the location where the activity takes place, followed by the radius.

Example: Q)LOVV/QWPLW/IV/M/AW/000/160/4720N01113E010
A) LOWI
B) 9910201400
C) 9910202200
E) MIL PJE WILL TAKE PLACE AT SEEFELD 471940N0111300E RADIUS 10NM
INFORMATION ABOUT THE DROPPING ZONE MAY BE OBTAINED BY INNSBRUCK TWR 120.100MHZ OR BY WIEN INFORMATION ON 124.400MHZ.

Note: co-ordinates for LOWI Ad are 471539N0112040E, but the actual co-ordinates of the site where the activity takes place are filled in Item Q.

K = Checklist

relates the NOTAM to a checklist, which will not appear in a Pre-flight Information Bulletin. Entry in Item A) of the FIR(s) valid for the publishing NOF is compulsory.

The appropriate entries shall be taken from the NOTAM Selection Criteria.

The NSC contain certain subjects (2nd and 3rd letters) where the scope (A, E, W, AE or AW) depends on the NOTAM contents (e.g. QAA = MNM ALT or QNV = VOR). In these cases, the correct Scope entry shall be determined by the Publishing NOF according to NOTAM contents/subject.

If the letters "XX" are inserted as 4th and 5th letters of the NOTAM code, the appropriate SCOPE must be derived from the NOTAM-subject (2nd and 3rd letter of the NOTAM code) according to the NSC.

Recapitulation of 'SCOPE' qualification possibilities and respective Item A contents:

Qualifier 'SCOPE' Item A) contents
A Aerodrome
E FIR(s)
W FIR(s)
AE Aerodrome
AW Aerodrome

K (Checklist) FIR(s).

……..

INTENTIONALLY
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Appendix 2 - Procedures for Multi-Part Messages

AFTN MESSAGE LENGTH

The text of a single message transmitted over the AFTN can normally contain a maximum of 1800 characters including non-printing characters, but may contain as few as 1200 in some countries.

Where a unit produces a message (or NOTAM) exceeding the present AFTN message length, the message needs to be divided into two or more parts.

At present, if a long message is created using an automated system, the system may divide the message at inappropriate places, such as the middle of a sentence.

A procedure is needed that will automatically divide a message at an appropriate place or alert the person creating it, that the message length has reached 1800 characters.

PROPOSAL

The following procedure is suggested for use by automated systems to deal with multi part messages:

1. Use a prescribed electronic NOTAM Promulgation Form.
2. Reserve a certain number of characters for Item E after taking into account the message overhead and other Items like A, B, C, D, F and G.
3. Allow the operator to enter freely in Item E.

The operator can click on the preview button to view the multi parts of the message and make adjustments, if necessary, before sending out the message to the AFTN.

INTENTIONALLY
BLANK

Appendix 3 - System Parameters

1 Data Definition

In order that procedures for NOTAM Creation (Chapter 2), NOTAM Processing (Chapter 3) and NOTAM storage can be performed, the associated database must contain the necessary data.

The data are divided into 2 categories:

- Static Data

  Data known to the aviation world and documented in publications like AIP, e.g. FIR(s), Aerodromes, Navaids, Areas, Maps, Rules, Subjects to which a NOTAM may be related and other aeronautical information like AIC etc. and Data required to enable NOTAM creation and processing, e.g. reference lists, standard routes, distribution files, selection criteria, association criteria etc.

- Dynamic Data

  All NOTAM, SNOWTAM, ASHTAM, Checklists received, coherence messages exchanged.

The list of static data which might be used for NOTAM processing is contained in Appendix C, Figure C-2, of ICAO Doc 8126. Elements of this list will also be used for NOTAM Creation, as well as for ASHTAM and SNOWTAM.

2 System Parameters

NOTAM database management is governed by a certain number of system parameters.

2.1 System Parameters for Data Storage

- NOTAM are stored in the database from their publication/reception until their indicated end of validity, replacement or cancellation (including. removal from the monthly checklist). Expired, replaced or cancelled NOTAM shall no longer appear in Pre-flight Information Bulletins, nor in the checklist.
- Expired, replaced or cancelled NOTAM shall remain available from the database for a period of at least 30 days after their deletion. Note that for NOTAM Processing Units this period shall be at least 60 days.
- SNOWTAM and ASHTAM shall also be stored for a period of at least 30 days from their expired validity.

2.2 System Parameters for Data Archiving

When NOTAM and other Messages are no longer valid for operational database needs (e.g. Pre-flight Information Bulletin production) storage is required to comply with legal obligations.

Long-term storage is possible on various media. The duration of the storage can vary from one Administration to another, depending upon the type of data and upon national legal requirements.

It is recommended that a NOTAM Processing Unit will store NOTAM for a period of time (one to several years) to be defined, depending upon the source of information, i.e.:

- NOTAM produced by a client-NOF and retransmitted by the NPU;
- Original NOTAM received from non-client NOF;
- Processed NOTAM version from the NOTAM Processing Unit.

2.3 System Parameters for 'EST' NOTAM

NOTAM that contain ' EST' in the Item C (end of validity) require an action by the Publishing NOF for their replacement or cancellation before the 'EST' time is reached.

Therefore, the 'EST' produces the following conditions:

2.3.1 At NOF Level (NOTAM Creation)

The NOF System shall ensure that a reminder is provided before the ' estimated' end of validity, to produce a NOTAMR or a NOTAMC. Individual parameters can be installed, depending upon the type of information, and the operational possibilities of the Unit.

2.3.2 At NOTAM Processing Unit Level

See Section 3, paragraph 3.5.4.3 last bullet.

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Appendix 4 - GLOSSARY

ACTIVE NOTAM
A NOTAM is active between the date-times stated in Items B and C taking into account the time schedule in Item D.

AIRAC AIP AMENDMENT
Permanent changes of operationally significant information to be contained in the AIP, and published in accordance with AIRAC procedures.

AIRAC AIP SUPPLEMENT
Temporary changes of operationally significant information to be contained in the AIP, and published by means of special pages in accordance with AIRAC procedures.

AIRSPACE RESTRICTION
Any changes to the limits, structure and/or availability of airspace.

AUTOMATIC PROCESSING
The processing and storing of NOTAM received from states without any human intervention.

CANCELLED NOTAM
A NOTAM for which the Item C date-time has been brought forward by another NOTAM (NOTAMC or NOTAMR).

CHECKLIST
A NOTAM published regularly in a NOTAM series containing a list of valid NOTAM numbers grouped by year promulgated in this series.

CLIENT NOF
Any NOF which has subscribed to the services provided by a NOTAM Processing Unit.

CONVERSION
Transposition of a NOTAM received in the old format in the correctly formatted ICAO NOTAM.

DATA CORRECTION
Changing data elements where these are obviously wrong.

DEFAULT VALUES
A predetermined and agreed value to be inserted in fields that need to be filled but for which a specific value could not be defined.

EDITING
Changing the wording of the free text of a NOTAM to make it clearer or express explicitly ideas that are implicit in that text.

END OF VALIDITY (= Item C)
The ten figure date-time group at which the NOTAM ceases to be in force and valid.

EST
Suffix added to the ten figure date-time group in Item C for NOTAM with an estimated date/time of end of validity.

EXPIRED NOTAM
NOTAM whose date of end of validity stated in Item C has been reached.

GEOGRAPHICAL REFERENCE
Eighth field of the Item Q containing co-ordinates and radius. Geographical association of a NOTAM to the co-ordinates of the location it refers to and the radius with the precision of 1 Nautical Mile.

MULTI-PART NOTAM
NOTAM exceeding the AFTN message length (normally 1800 characters) and therefore requiring more than one message.

NOTAM CLASS II
NOTAM sent formerly by post mail, have been replaced by AIP SUPPLEMENT within the ICAO Annex 15 Integrated Aeronautical Information Package. Therefore, these are not to be used.

NOTAM CODE
A code group containing a total of five (5) letters always starting with 'Q', to indicate the coding of information regarding the establishment, condition or change of radio aids, aerodrome and lighting facilities, dangers to aircraft in flight, or search and rescue facilities.

NOTAM CONDITION
Expressed as the 4th and 5th letter of the NOTAM Code, to describe the hazard or status of operation of the NOTAM Subject (2nd and 3rd letter of the NOTAM Code) reported on.

NOTAM IN FORCE
A NOTAM is in force once it has reached the date stated in Item B and has neither been cancelled nor replaced nor reached its end of validity stated in Item C.

NOTAM Processing Unit
Any unit that is responsible for the reception, processing and further distribution of NOTAM originated by other NOF.

NOTAM SELECTION CRITERIA (NSC)
The basis for the assignment of NOTAM codes. The association criteria defined provide a subject related association of NOTAM with the qualifiers TRAFFIC, PURPOSE and SCOPE.

NOTAM SUBJECT
Expressed in the second and third letters section of the NOTAM code to identify the facility, service or danger to aircraft in flight reported upon.

NOTAM SUB-NUMBER
In the case of Multi-part NOTAM, a 3-character group placed immediately behind the year of the number/year combination and composed of one letter and a number consisting of 2 digits.

OPERATIONAL SIGNIFICANCE
Information essential for the safe and efficient conduct of a flight.

PROCESSING
The examination of NOTAM received from other NOF in order to verify suitability for acceptance into an automated AIS system, undertaking conversion, syntax correction, data correction and editing as required.

PUBLISHING NOF
The NOF responsible for the creation of the original NOTAM.

QUALIFIER LINE (ITEM Q)
This Item is divided in eight fields, each separated by a stroke and contains the necessary qualifiers to facilitate data retrieval.

RADIUS
A three digit figure in Nautical Miles to be used in the QUALIFIERS line that, together with the co-ordinates, defines the circle which encompasses the whole area of influence of the NOTAM.

SUPRA NATIONAL INFORMATION
Information concerning an activity or condition which affects the airspace/FIR of two or more States.

SYNTAX CORRECTION
Changing the published format structure of the NOTAM where these are obviously wrong.

START OF VALIDITY (= Item B)
The ten figure date-time group at which the NOTAM comes into force.

TRIGGER NOTAM
NOTAM alerting recipients and PIB users of the existence and subject content of AIRAC AIP Amendments and Supplements. In the case of Supplements, these may not always follow the AIRAC cycle.

VALID NOTAM
NOTAM which has been published and has not reached the end of its validity and has neither been cancelled nor replaced.

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CHAPTER 4

USE OF THE INTERNET FOR INFORMATION TRANSFER

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Table of Contents

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1. INTRODUCTION

This Chapter 4 of the Guidance Manual is designed to provide general guidelines for States that consider using the Internet for information transfer.

The use of the Internet has increased over the past few years to become a recognized method for the exchange of various types of information, from electronic mail, file transfers, information exchange, and includes secure exchanges for banking and a wide range of other e-commerce applications. Low-cost, easy access by public and global connectivity are just a few examples of benefits identified.

There are some cases the Internet provides another medium for the exchange of aeronautical data and information that might not otherwise be available to users. For example, users that are not connected to the AFTN, or where the AFTN is not of a high quality, can obtain information quickly and efficiently without the need for a substantial investment in infrastructure.

However, it should be born in mind that the Internet has not been recognized as an approved communications media by ICAO for the exchange of aeronautical data or information. Therefore, at present, the Internet service should be implemented for some specified services.

2. APPLICATION

The following are the possible areas where the Internet can be used in the AIS field:

a) Pilot briefing;
b) Flight planning;
c) Retrieval of aeronautical information.

Some States have been using the Internet for the above purposes. Examples of systems and/or procedures currently in place or being planned are described in Appendices to this Part for information.

The higher level services, such as exchange of aeronautical data and information between AIS units, operators, States, may be another area for future applications. However, standardization of use of the Internet for such purpose on a regional basis has not reached the stage of maturity, and need to be considered in light of technological developments of the Internet and ATN as well.

3. CONSIDERATIONS

Due consideration should be given to the following elements ensure that the integrity of the aeronautical data and information is protected in accordance with the provisions of Annex 15 while in storage or in transit when the use of the Internet is planned:

3.1 Security

The Internet is easily accessible to anyone with a computer and a network connection. However, along with the convenience and easy access to information come new risks. Among them are the risks that valuable information will be lost, stolen, corrupted, or misused and that the computer systems will be corrupted. If information is recorded electronically and is available on networked computers, it is more vulnerable than if the same information is printed on paper and locked in a file cabinet. Intruders can create new electronic files, run their own programs, and hide evidence of their unauthorized activity.

Basic Security Concepts

Three basic security concepts important to information on the Internet are *confidentiality*, *integrity*, and *availability*. Concepts relating to the people who use that information are *authentication*, *authorization*, and *non-repudiation*.

When information is read or copied by someone not authorized to do so, the result is known as *loss of confidentiality.* For AIS information, confidentiality is a very important attribute.

When information is modified in unexpected ways, the result is known as *loss of integrity.* This means that unauthorized changes are made to information, whether by human error or intentional tampering. Integrity is particularly important for critical safety data such as AIS.

Information can be erased or become inaccessible, resulting in *loss of availability.* This means that people who are authorized to get information cannot get what they need. Availability is often the most important attribute in services that depend on information such as AIS. Availability of the network itself is important to anyone who relies on a network connection. When a user cannot get access to the network or AIS service provided on the network, they experience a *denial of service.*

To make information available to those who need it and who can be trusted with it, organizations use authentication and authorization. *Authentication* is proving that a user is whom he or she claims to be. That proof may involve something the user knows (such as a password). *Authorization* is the act of determining whether a particular user (or computer system) has the right to carry out a certain activity, such as reading a file. Authentication and authorization go hand in hand. Users must be authenticated before carrying

out the activity they are authorized to perform. Security is strong when the means of authentication cannot later be refuted - the user cannot later deny that he or she performed the activity. This is known as *non-repudiation.*

Figure -1 below illustrates those security activity flow:

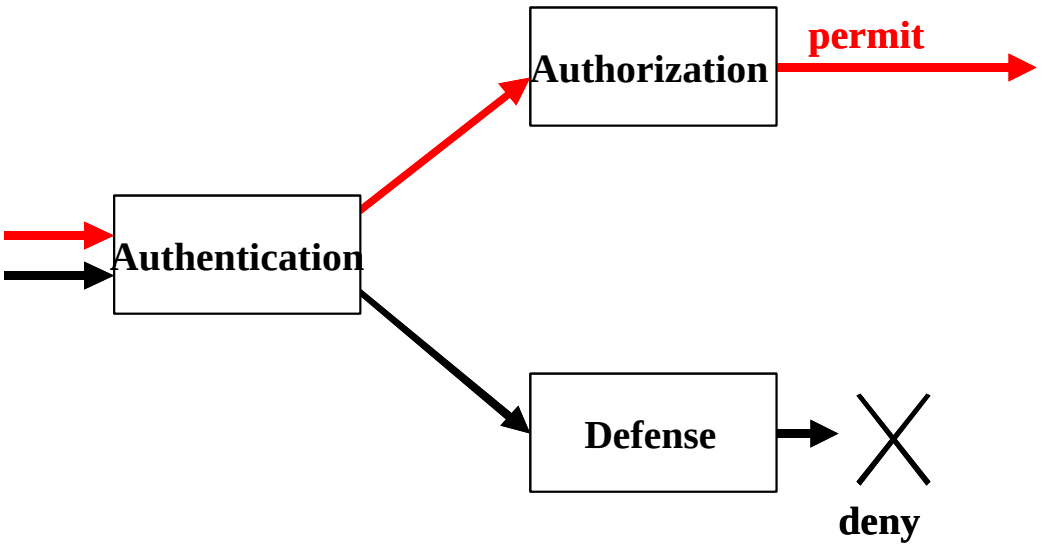

Figure -1 Security Activity Flow

Network Security Attacks

A typical attack pattern consists of gaining access to a user's account, gaining privileged access, and using the victim's system as a launch platform for attacks on other sites.

Attacks can be broadly classified into several kinds as follows:

a) Probe

A probe is characterized by unusual attempts to gain access to a system or to discover information about the system. One example is an attempt to log in to an unused account.

b) Account Compromise (Spoofing)

An account compromise is the unauthorized use of a computer account by someone other than the account owner. An account compromise might expose the victim to serious data loss, data theft, or theft of services.

c) Packet Sniffer

A packet sniffer is a program that captures data from information packets as they travel over the network. That data may include user names, passwords, and proprietary information in clear text.

d) Denial of Service

The goal of denial-of-service attacks is not to gain unauthorized access to machine or data, but to prevent legitimate users of a service from using it. A denial-of-service attack can come in many forms. Attackers may "flood" a network with large volumes of data or deliberately consume a scarce or limited resource, such as process control blocks or pending network connections.

i) ***Improving Security***

Against the above attacks, the Internet systems should have appropriate security system and management in accordance to the recommendations of ISO 17799.

ii) ***Security Technology***

A variety of technologies have been developed to help organizations secure their systems and information against intruders. These technologies help protect systems and information against attacks, detect unusual or suspicious activities, and respond to events that affect security.

iii) ***Operational Technology***

Intruders actively seek ways to access networks and hosts. System administrators face the dilemma of maximizing the availability of system services to valid users while minimizing the susceptibility of complex network infrastructures to attack. In response, technologies have evolved to reduce the impact of such threats. No single technology addresses all the problems. Nevertheless, organizations can significantly improve their resistance to attack by carefully preparing and strategically deploying personnel and operational technologies. Data resources and assets can be protected, suspicious activity can be detected and assessed, and appropriate responses can be made to security events as they occur.

iv) ***One-Time Passwords***

Intruders often install packet sniffers to capture passwords. Therefore, all passwords should at least be encrypted. A better solution is to use one-time passwords because there are times when a password is required to initiate a connection before confidentiality can be protected.

Remote users carry a device synchronized with software and hardware on the dial-up server. The device displays random passwords, each of which remains in effect for a limited time period (typically 60 seconds). These passwords are never repeated and are valid only for a specific user during the period that each is displayed. In addition, users are often limited to one

successful use of any given password. One-time password technologies significantly reduce unauthorized entry.

v) ***Firewalls***

Intruders often attempt to gain access to networked systems by pretending to initiate connections from trusted hosts. To counter these address-spoofing attacks and enforce limitations on authorized connections into the network, it is necessary to filter all incoming and outgoing network traffic.

A firewall is a collection of hardware and software designed to examine a stream of network traffic and service requests. Its purpose is to eliminate from the stream those packets or requests that fail to meet the security criteria established by the organization. A simple firewall may consist of a filtering router, configured to discard packets that arrive from unauthorized addresses or that represent attempts to connect to unauthorized service ports. More sophisticated implementations may include bastion hosts, on which proxy mechanisms operate on behalf of services. These mechanisms authenticate requests, verify their form and content, and relay approved service requests to the appropriate service hosts. Because firewalls are typically the first line of defense against intruders, their configuration must be carefully implemented and tested before connections are established between internal networks and the Internet.

The firewall and the filtering router should be implemented as shown in Figure –2 below.

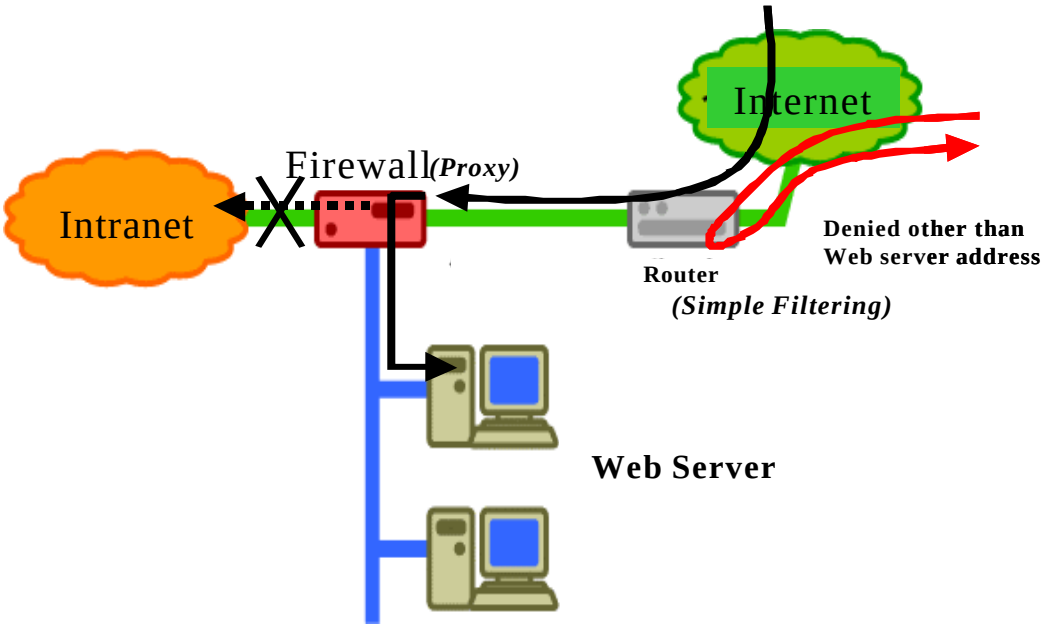

Figure -2. Firewall and Filtering router

vi) ***Monitoring Tools***

Continuous monitoring of network activity is required. Network monitors may be installed at strategic locations to collect and examine information continuously that may indicate suspicious activity. It is possible to have automatic notifications alert system administrators when the monitor detects anomalous readings. Such notifications may use a variety of channels, including electronic mail and mobile paging. Sophisticated systems capable of reacting to questionable network activity may be implemented to disconnect and block suspect connections, limit or disable affected services, isolate affected systems, and collect evidence for subsequent analysis.

vii) ***Cryptography***

One of the primary reasons that intruders can be successful is that most of the information they acquire from a system is in a form that they can read and comprehend. Intruders may reveal the information to others, modify it to misrepresent an individual or organization, or use it to launch an attack. One solution to this problem is, through the use of cryptography, to prevent intruders from being able to use the information that they capture.

Encryption is the process of translating information from its original form (called *plaintext*) into an encoded, incomprehensible form (called *ciphertext*). Decryption refers to the process of taking ciphertext and translating it back into plaintext. Any type of data may be encrypted, including digitized image. Two methodologies of cryptography are popular in the Internet area.

One is cryptography by Common Key method shown as Figure.-3, and another is cryptography by Public Key and Private Key method shown as Figure.-4.

(1) Cryptography by Common Key method

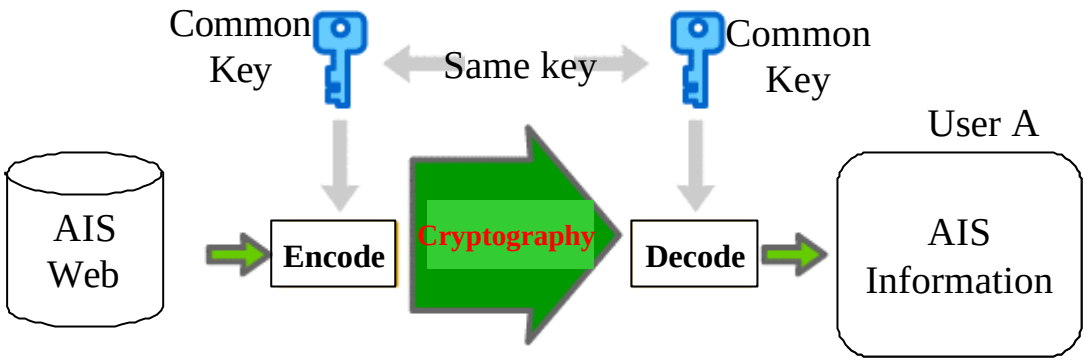

Figure – 3: Cryptography by Common Key method

The Common Key must be issued by the system administrator in AIS center. The information between AIS web and User A can be encoded and decoded only by the Common Key.

(2) Cryptography by Public Key and Private Key method

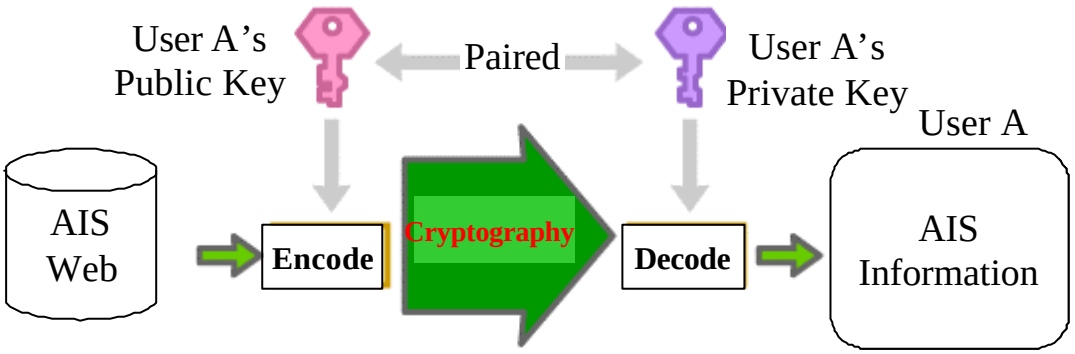

Figure – 4: Cryptography by Public Key and Private Key method

The Public Key must be issued by the Certificate Authority. The information and data between AIS Web and User A can be encoded only by the Public Key and decoded only by the Private Key paired with the Public Key for User A.

Current laws in several countries restrict cryptographic technology from export or import across national borders. In the era of the Internet, it is particularly important to be aware of all applicable local and foreign regulations governing the use of cryptography.

Table –1 indicates efficient security technology versus threat and attack.

	Probe	Account Compromise (Spoofing)	Packet Sniffer	Denial of Service
One Time Passwords	S	S	S	-
Filtering Router	W	W	-	-
Firewall	M	M	-	W
Monitoring	For detection	For detection	For detection	Only one method for this threat
Cryptography Common key	-	W	W	-
Cryptography Public/Private key	-	S	S	-

Secure level: **W** – Weak, **M** – Medium, **S** – Strong

Table-1 Security technology vs. Threat

viii) ***Security-Related Procedures***

Procedures are specific steps to follow that are based on the computer security policy. Procedures address such topics as retrieving programs from the network, connecting to the site's system from home or while traveling, using encryption, authentication for issuing accounts, configuration, and monitoring.

ix) ***Security Practices***

System administration practices play a key role in network security. Checklists and general advice on good security practices are readily available. Below are examples of commonly recommended practices:

- Ensure all accounts have a password and that the passwords are difficult to guess. A one-time password system is preferable.
- Use tools such as checksums*, a strong cryptographic technique, to ensure the integrity of system software on a regular basis.

* A checksum is a count of the number of bits in a transmission unit that is included with the unit so that the receiver can check to see whether the same number of bits arrived. If the counts match, it's assumed that the complete transmission was received. Both TCP communication layers provide a checksum count and verification as one of their services

- Use secure programming techniques when writing software. These can be found at security-related sites on the World Wide Web.
- Be vigilant in network use and configuration, making changes as vulnerabilities become known.
- Regularly check with vendors for the latest available fixes and keep systems current with upgrades and patches.
- Regularly check on-line security archives, such as those maintained by incident response teams, for security alerts and technical advice.
- Audit systems and networks, and regularly check logs. Many sites that suffer computer security incidents report that insufficient audit data is collected, so detecting and tracing an intrusion is difficult.

3.2 Integrity

As mentioned earlier, *integrity* is particularly important for critical safety data such as AIS. Also the security system should assure the integrity of AIS information. However, information is often displayed in out of order, garbling or ambiguous format to user's terminal. This may occur usually depending on the Browser software. Therefore, it is important that the system administrator announces the appropriate Internet Browser software, *e.g.* Netscape, Internet Explorer, Java, and its version to users.

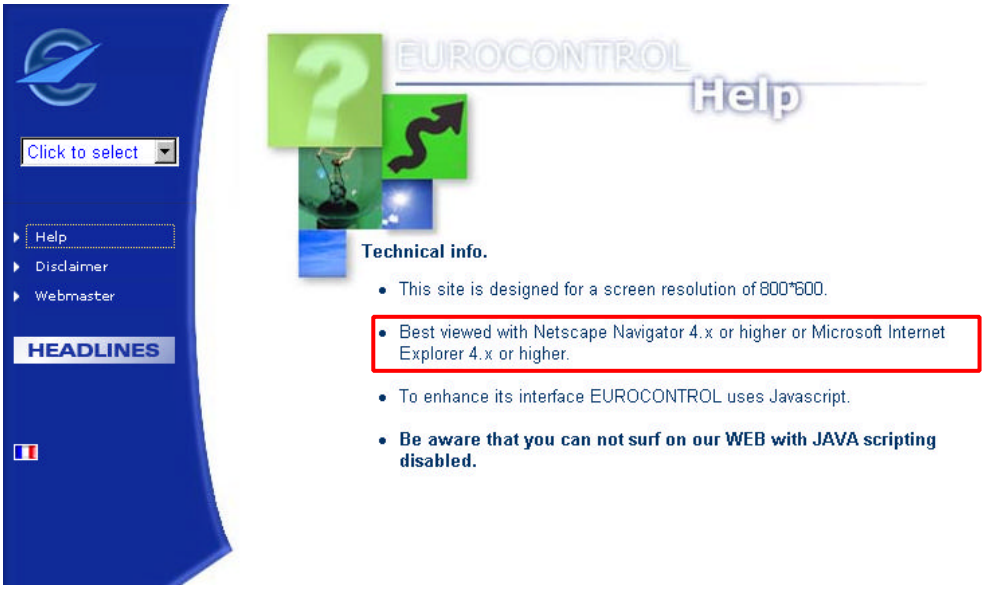

Figure - 5: Announcement of recommended Internet Browser Software

3.3 Availability

As mentioned in the Security section, *availability* is also one of the most important attributes in AIS. When a user cannot get access to AIS service, they experience not only a denial of service but also the lack of significant information for his or her flight. Therefore, the Internet system for AIS should have higher-level availability than the average Internet information system.

The following specifications should be considered as requirements:

a) Operating for 24 hours, 7days/week, 365 days/year;
b) Recovering from system failure within 30 minutes;
c) The period of planned out of service due to maintenance should be within 15 minutes;
d) Total period of out of service in one month, including planned and system failure should not be over 4 hours; and
e) The AIS Web site should respond for user's request within 8 seconds[*2].

High level availability will require the redundancy in system hardware and software. Thus, the AIS Website system should be configured with a dual system, the cross-links network, etc. Figure – 6 illustrates a simple example for such configuration.

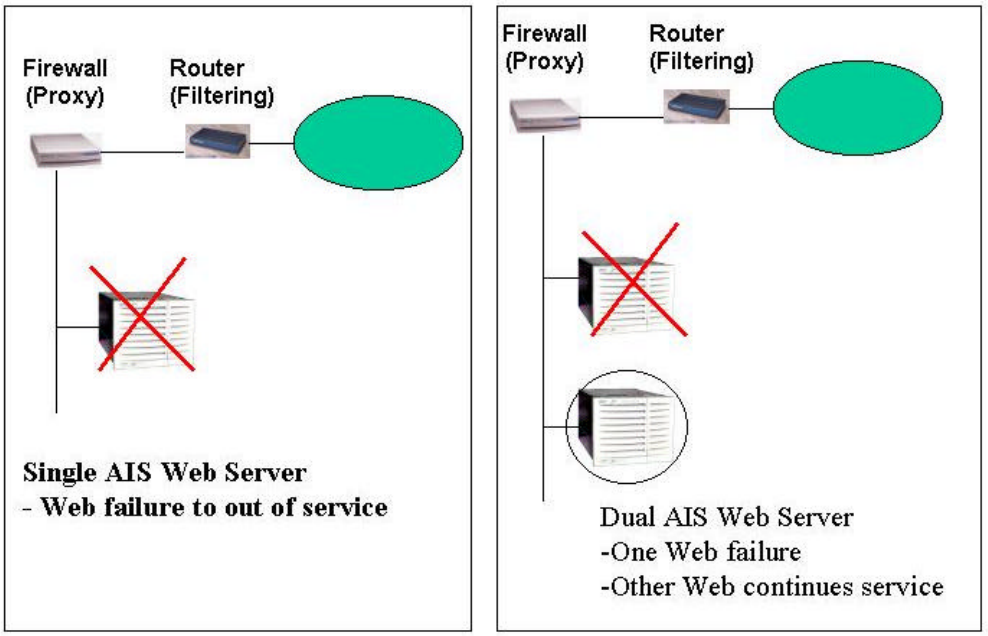

Figure – 6: an example of AIS Website configuration

[*2] 8 seconds rule – one of criterion for the Internet Web site performance from the report "The need for speed", EC, 1999

3.4 Accessibility

Accessibility means how easy to access the AIS Website. In this regard, a concept of unified AIS Website naming has been proposed by European States, *e.g.* xx.AIS.aero, xx.AIS.info. This is considered to enhance accessibility when established though it would need co-ordination and central management on a global or regional basis. The actual AIS sites of individual States are redirected from the unified AIS Website. The AIS site of each State will have a link to the other States' AIS sites to further enhance the accessibility.

Figure – 7 below is an example of the unified regional AIS site.

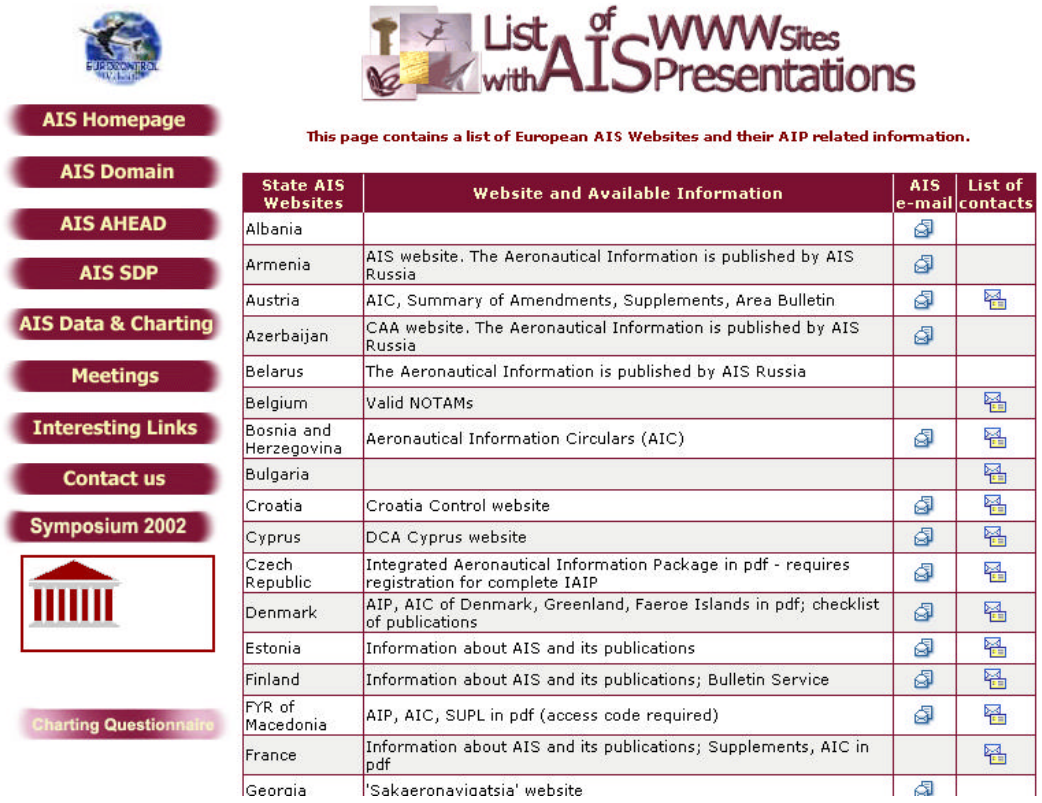

Figure – 7: an example of the unified regional AIS site.

3.5 Reliability

Reliability is very closely related to the availability and integrity. High reliability will be achieved only with the high availability and integrity. In order for a system to achieve this high reliability, all components of the system, such as system hardware, software, database, network, power, should have a highly reliable configuration, such as dual, back-up system, alternate network, mirrored database.

In general, the cost of system increases in proportion to the level of the reliability. However, it is considered critically important for service providers to ensure that the requirement for the high reliability in combination with the availability and integrity as described earlier be met.

3.6 Integration

Integration of information and data is a basic principle of AIS. The airspace users need all valid NOTAMs concerning origin, flight-route, and destination. This is a principle of PIB. Therefore, the AIS Internet system should provide the same level of function in terms of the integration of information and data.

This system should be developed, following the steps of integration as below:

a) PIB (Primary integration);

b) Indicate the multiple events by NOTAMs, *e.g.* runway close and construction in taxi, on the graphical format (PDF or other graphical method);

c) Integration of NOTAMs with weather data;

d) Integration of NOTAMs and weather data with other additional useful ATM information, *e.g*. use of airspace, traffic flow control, etc.

Extensible Mark-up Language (XML), one of the Internet technologies, is considered as one of efficient tools to realize those integration functions.

3.7 Performance Requirements

Performance requirements of the Internet system depend on the volume of simultaneous accesses to the Website. The system should be designed and implemented satisfying the appropriate response time based on an estimated volume model. It is considered appropriate if this appropriate response time does not exceed 8 seconds, as defined in the Availability section, paragraph 3.3 e).

3.8 Quality of Service (QoS)

The Internet Website should assure the certain level QoS. In particular, the AIS Internet system should assure the high level QoS of accessibility and information.

a) Authentic users should always have an access to the information and obtain it with no limitation;

b) The system should provide valid information in a timely manner; and

c) The services should be able to accommodate both any users' hardware and software.

3.9 Linkages with Other Systems

a) ATN/AMHS

The ATN, the communication standard of CNS/ATM concept is based on ISO OSI protocol model, which is different from the TCP/IP* protocol, used in the Internet field. Therefore, the AIS services on the Internet will not be possible to transit to the ATN.

The ATN/AMHS is a next generation network of the current AFTN and has the ability of bits-transference, so that the ATN/AMHS will be the best solution for the exchange of aeronautical information including bit-oriented information including graphical data and map data. However, it is considered that the AIS Internet services would still have the merits for users that are not connected to the ATN.

b) Air-Ground Datalink

The ATN will also provide a new air-ground datalink infrastructure and ATS communication. Provision of NOTAM via datalink is being considered a one of components the datalink flight information services (DFIS). Airlines are currently investigating the possibility of using the Internet from the cockpit via satellite communication or VHF digital link. It is possible that in the future, the AIS Internet services will be used via air-ground datalink subnets.

3.10 Copyright

In order to protect the investment in the products of State's AIS as well as to ensure better control of their use, States may wish to apply copyright to those products in accordance with their national laws.

On the Website, a copyright declaration may be made for prohibition of reusing information. This declaration enables the copyright to be protected under copyright laws and international copyright conventions. In addition, it is important to explain with clarity what kinds of action are prohibited, *i.e.* distribution of copies of the material to the public, including distribution by sale, rental, lending or by way of donation, and modifying, amending, translating or, in any other way, changing the material, or what kinds of action are allowed.

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* TCP/IP Protocol – Transmission Control Protocol / Internet Protocol The world-wide de-facto standard communication protocol for the Internet.

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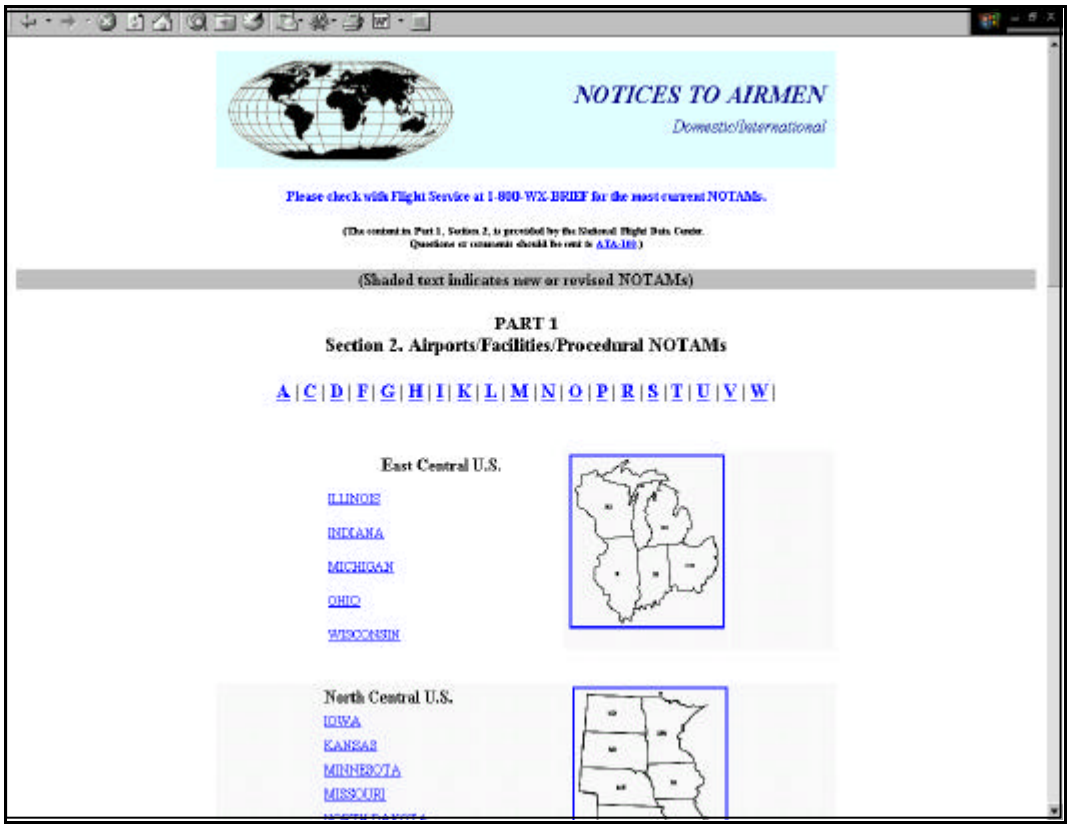
Appendix 1 – States Internet AIS

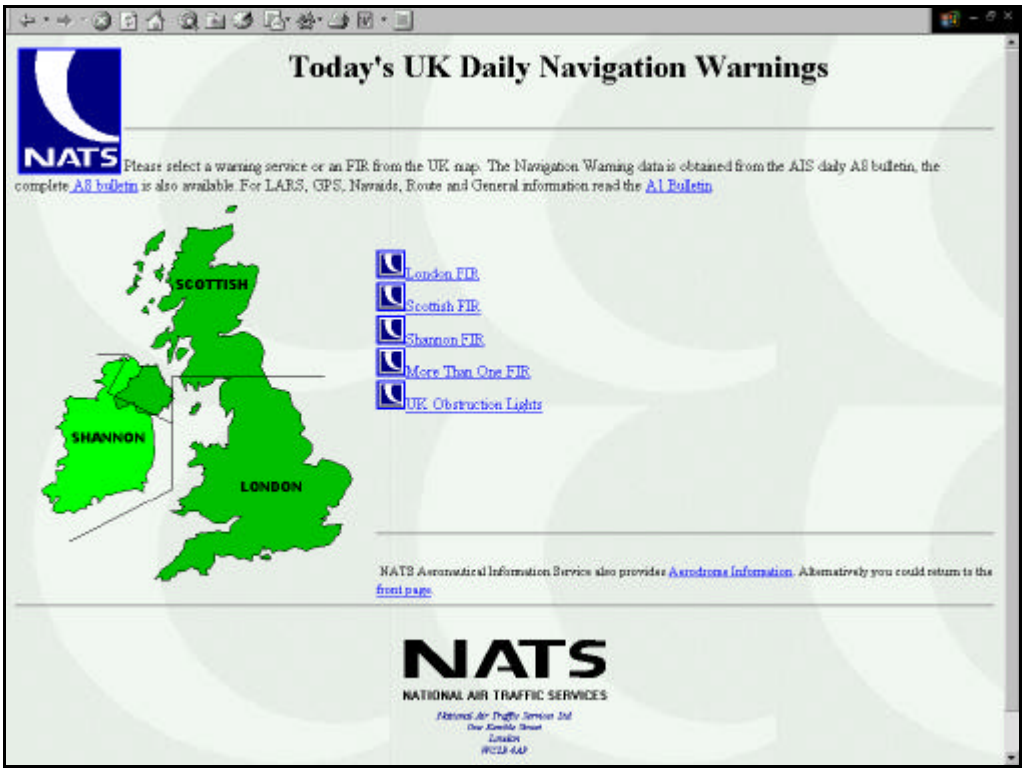
Status of use of the Internet for AIS by States (as of May 2002)

States	NOTAM (Text format)	NOTAM (PDF)	AIP (PDF)
Australia	x	-	x
Austria	x	x	x
Brazil	x	-	x
Czech	x	x	x
Denmark	x	-	x
France	x	-	x
Germany	x	-	x
Italy	x	x	x
Mexico	x	x	x
Netherland	x	x	x
Romania	x	-	x
Slovenia	x	x	x
Spain	x	x	x
Sweden	x	x	x
United Kingdom.	x	x	x
United States	x	x	x

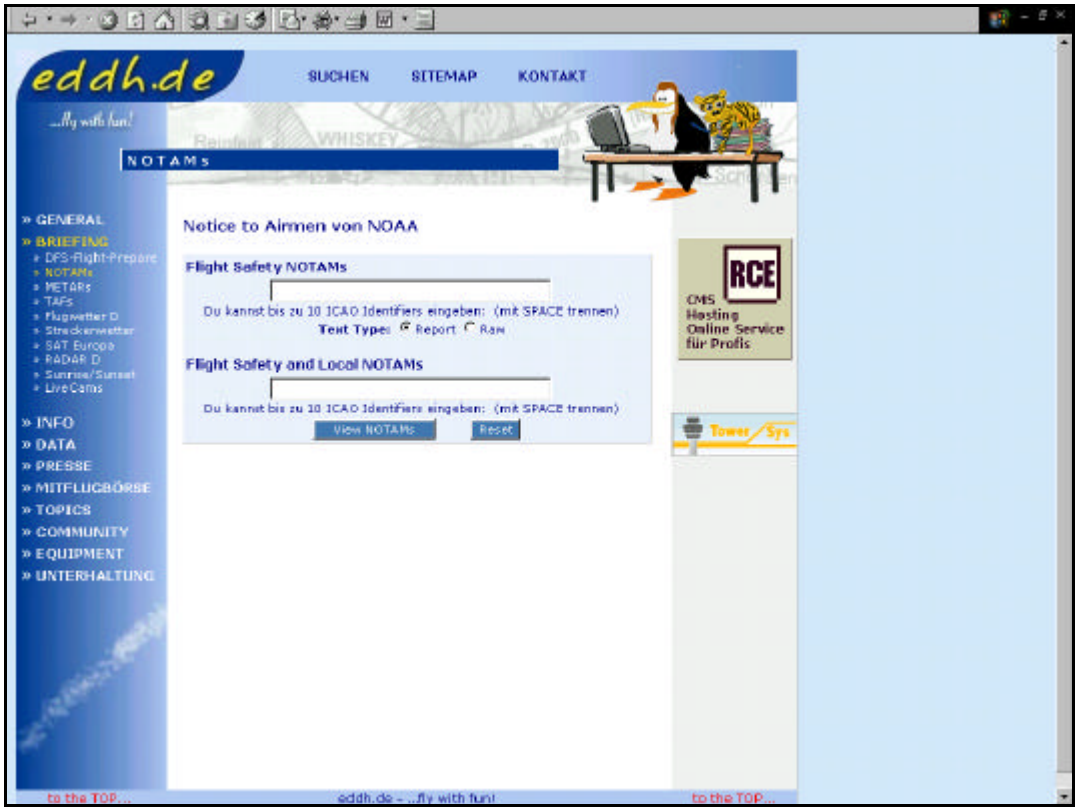
Example 1: United States (FAA)



Example 2: United Kingdom (NATS)



Example 3: Germany



Example 4: Spain

Example 5: Australia

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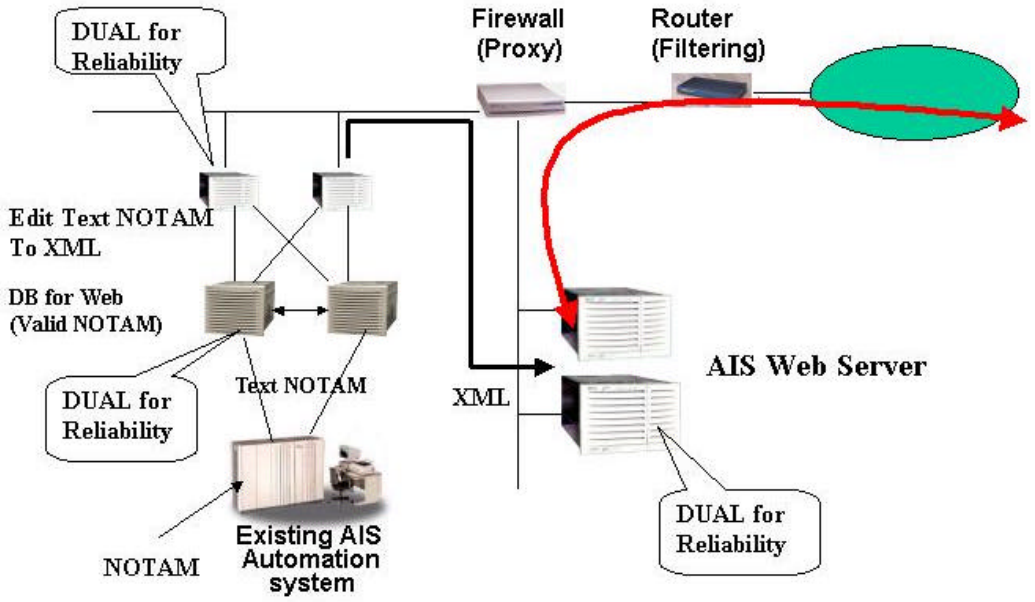
Appendix 2 – An Example for Configuration of the Internet AIS System

The following illustrates an example of a system designed and configured for the Internet AIS with a high reliability and availability. XML technology may also be integrated into this system for services.



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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 I, Chapter 1, 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

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STATUS OF WGS-84 IMPLEMENTATION

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
AUSTRALIA			X	X						X	X	
YPAD ADELAIDE/												
Adelaide	05	NPA			X	X	X	X				
RS	23	PA1				X	X	X				
	12	NPA				X	X	X				
	30	NPA				X	X	X				
YBBN BRISBANE/					X			X				
Brisbane	1	PA1				X	X					
RS	19	PA1				X	X					
	14	NPA				X	X					
	32	NPA				X	X					
YBCS CAIRNS/					X			X				
Cairns	12	NPA				X	X					
RS	30	NPA				X	X					
	15	PA1				X	X					
	33	NPA				X	X					
YPDN DARWIN/					X			X				
Darwin	11	NPA				X	X					
RS	29	PA1				X	X					
	18	NINST				X	X					
	36	NPA				X	X					
YMML MELBOURNE/					X			X				
Melbourne	09	NPA				X	X					
RS	27	PA1				X	X					
	16	PA1				X	X					
	34	NPA				X	X					
YPPH PERTH/					X			X				
Perth Intl	03	NPA				X	X					
RS	21	PA1				X	X					
	06	NPA				X	X					
	24	PA1				X	X					
	11	NPA				X	X					
	29	NPA				X	X					
YSSY SIDNEY/					X			X				
Kingsford Smith Intl	07	PA1				X	X					
RS	25	NPA				X	X					
	16L	PA1				X	X					
	34R	PA1				X	X					
	16R	PA1				X	X					
	34L	PA1				X	X					
YMAV AVALON/					X			X				
Avalon	18	PA1				X	X					
AS	36	NPA				X	X					
YBRM BROOME/					X			X				
Broome	10	NPA				X	X					
RS	28	NPA				X	X					

STATUS OF WGS-84 IMPLEMENTATION

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
YSCB CANBERRA/					X			X				
Canberra	12	NPA				X	X					
AS	30	NPA				X	X					
	17	NPA				X	X					
	35	PA1				X	X					
YSCH COFFS HARBOUR/					X			X				
Coffs Harbour	03	NPA				X	X					
AS	21	NPA				X	X					
	10	NPA				X	X					
	28	NPA				X	X					
YBCG COOLANGATTA/					X			X				
Coolangatta	14	NPA				X	X					
AS	32	NPA				X	X					
	17	NPA				X	X					
	35	NPA				X	X					
YMHB HOBART/					X			X				
Hobart	12	PA1				X	X					
RS	30	NPA				X	X					
					X			X				
Learmonth	18	NPA				X	X					
AS	36	NPA				X	X					
YLHI LORD HOWE ISLAND/					X			X				
Lord Howe Island	10	NPA				X	X					
RS	28	NPA				X	X					
YPPD PORT HEDLAND					X			X				
Port Hedland	14	NPA				X	X					
AS	32	NPA				X	X					
	18	NPA				X	X					
	36	NPA				X	X					
YBTL TOWNSVILLE/					X			X				
Townsville	01	PA1				X	X					
AS	19	NPA				X	X					
	07	NPA				X	X					
	25	NPA				X	X					
YBAS ALICE SPRINGS/					X			X				
Alice Springs	06	NPA				X	X					
AS	24	NPA				X	X					
	12	PA1				X	X					
	30	NPA				X	X					
	17	NPA				X	X					
	35	NPA				X	X					
YSDU DUBBO/					X			X				
Dubbo	05	NPA				X	X					
AS	23	NPA				X	X					
	11	NPA				X	X					
	29	NPA				X	X					

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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
YPKG KALGOOLIE/					X			X				
Kalgoorlie	11	NPA				X	X					
AS	29	NPA				X	X					
	18	NPA				X	X					
	36	NPA				X	X					
YMLT LAUNCETON/					X			X				
Launceston	14L	ninst				X	X					
AS	32R	ninst				X	X					
	14R	NPA				X	X					
	32L	PA1				X	X					
	18	ninst				X	X					
	36	ninst				X	X					
YBRK ROCKHAMPTON/					X			X				
Rockhampton	04	NPA				X	X					
AS	22	NPA				X	X					
	15	NPA				X	X					
	33	NPA				X	X					
YPTN TINDAL/					X			X				
Katherine	14	NPA				X	X					
AS	32	NPA				X	X					
YHID HORN ISLAND/					X			X				
Horn Island	08	NPA				X	X					
RGS	26	NPA				X	X					
	14	NPA				X	X					
	32	NPA				X	X					
YSNF NORFOLK ISLAND/					X			X				NZZO FIR
Norfolk Island	04	PA1				X	X					
RS	22	NPA				X	X					
	11	PA1				X	X					
	29	PA1				X	X					
YPXM CHRISTMAS ISLAND/					X			X				
Christmas Island	18	NPA				X	X					
RS	36	NPA				X	X					
YPCC KEELING/					X			X				
Cocos Island Intl	15	NPA				X	X					
RS	33	NPA				X	X					
BANGLADESH			X	X						X	X	
VGZR DHAKA/					X			X				
Zia Int'l	14	PAI				X	X		*			* Not yet decided
RS	32	NPA				X	X					
VGEG CHITTAGONG/					X			X				
M.A. Hannan Intl	05	NPA				X			*			* Not yet decided
RS	23	PA1				X	X					
VGSY SYLHET/					X			X				
Osmani Intl	11	PA1				X	X		*			* Not yet decided
RS	29	NPA				X	X					

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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
BHUTAN												
BRUNEI DARUSSALAM												WBFC FIR
WBSB BRUNEI/					X			X			X	
Brunei Intl	03	PA1				X	X					
	21	PA1				X	X					
CAMBODIA												
CHINA			X	X								Sanya AOR only
HONG KONG, China			X	X						X	X	
VHHH HONG KONG/					X			X	X			
Hong Kong Intl	07L	PA2				X	X		X			
RS	07R	PA2				X	X		X			
	25L	PA2				X	X		X			
	25R	PA3				X	X		X			
MACAO, China												VHHK FIR
VMMC MACAU/					X			X			X	
Macau Intl	16	NPA				X	X		X			
	34	PA2				X	X		X			
COOK ISLANDS												
DPR KOREA												
FIJI			X	X						X	X	
NFFN NADI/					X			X				
Nadi Intl	02	PA1				X	X		X			
RS	20	PA1				X	X		X			
	09	NINST				X	X		X			
	27	NINST				X	X		X			
NFSU SUVA/					X			X				
Nausori Intl	10	NPA				X	X		X			
RS	28	NPA				X	X		X			
FRENCH POLYNESIA (FRANCE)			2003	2003						2003	2003	
NTAA TAHITI/								X				

STATUS OF WGS-84 IMPLEMENTATION

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
Faaa	04	PA1				2003	X		X			
RS	22	NPA				2003	X	X	X			
NTTB BORA BORA/												
Moto-Mute	11	NPA				2003	X	2003	X			
	29	NPA				2003	X	2003	X			
NTTR RAIATEA												
Utoroa	07	NPA				2003	X	2003				
	25	NPA				2003	X	2003				
NTTG RANGIGORA												
Rangigora	09	NPA				2003	X	2003				
AS	27	NPA				2003	X	2003				
NEW CALEDONIA (FRANCE)			X	X						2001	X	NFFF FIR
NWWW Noumea/					X			X				
La Tontouta	11	PA1				X	X		X			
RS	29	NINST				X	X		X			
WALLIS ISLANDS (FRANCE)												NFFF FIR
NLWW Wallis/												
Hihifo										2001	X	
RS	08	NPA				X	X					
	26	NPA				X	X					
INDIA			X	X							X	
VIDP DELHI/					X			X				
Indian Gandhi Intl	09	NPA				X	X					
RS	27	PA1				X	X					
	10	PA1				X	X					
	28	PA2				X	X					
VABB MUMBAI/					X			X				
ChhatrapatiShivaji Intl	09	PA1				X	X					
RS	27	PA1				X	X					
	14	PA1				X	X					
	32	NPA				X	X					
VOMM CHENNAI/					X			X				
Madras	07	PA1				X	X					
RS	25	NPA				X	X					
	12	NPA				X	X					
	30	NPA				X	X					
VECC KOLKATA/					X			X				
Netaji Subash	19L	PA1				X	X					
Chandra Bose Intl	01R	PA1				X	X					
RS	19R	NPA				X	X					
	01L	NPA				X	X					
VAAH AHMEDABAD/					X			X				
Sardar VallabhBhai	05	NPA				X	X					
Patel Intl	23	PA1				X	X					
RS												
VIAR AMRITSAR/					X			X				

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1	2	3	4	5	6	7	8	9	10	11	12	13
Amritsar	16	NPA				X	X					
RS	34	PA1				X	X					
VOBG BANGALORE/					X			X				
Bangalore	09	NPA				X	X					
RS	27	PA1				X	X					
VOCI COCHIN/					X			X				
Cochin Intl	09	NPA				X	X					
RS	27	PA1				X	X					
VAGO GOA/					X							
Goa	08	NPA				X	X					
RS	26	NPA				X	X					
VEGT GUWAHATI/					X			X				
Lokapriya Gopinath	02	PA1				X	X					
Bardoloi Intl	20	NPA				X	X					
RS												
VOHY HYDERABAD/					X			X				
Rajiv Gandhi Intl	09	NPA				X	X					
RS	27	PA1				X	X					
VOTV TRIVANDRUM/					X			X				
Thiruvananthapuram	14	NPA				X	X					
Intl	32	PA1				X	X					
RS												
	Note: Transformation into WGS-84 has been done by mathematical means using MADRAN software developed by NIMA (National Imaginary and Mapping Agency), USA											
INDONESIA			2002	X					X	2001		
WAPP AMBON/					2002			X				
Pattimura	04	NPA				X	X					
RNS	22	PA1				X	X					
WRLL BALIKPAPAN/					2002			X				
Sepinggan	07	NPA				X	X					
RS	25	PA1				X	X					
WRBB BANJARMASIN/					2002			X				
Syamsudin Noor	10	PA1				X	X					
AS	28	NPA				X	X					
WIKB BATAM/					2002			X				
Hang Nadim	04	PA1				X	X					
RS	22	NPA				X	X					
WABB BIAK/					2002			X				
Frans Kaisiepo	11	PA1					X					
RS	29	NPA					X					
WRRR DENPASAR/					2002			X				
Ngurah Rai	09	NPA				X	X					
RS	27	PA1				X	X					
WIII JAKARTA/					2002			X				
HalimPerdanakusuma	06	NPA					X					
RNS	24	PA1					X					
WIIH JAKARTA/					2002			X				

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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
Soekarno-Hatta	07L	PA1				X	X					
RS	25L	PA1				X	X					
	07R	PA1				X	X					
	25R	PA1				X	X					
WAJJ JAYAPURA/					2002			X				
Sentani	12	NPA				X	X					
RS	30	PA1				X	X					
WRKK KUPANG/					2002			X				
El Tari	07	NPA					X					
RS	25	PA1					X					
WAAA MAKASSAR/					2002			X				
Hasanuddin	13	PA1				X	X					
RNS	31	NPA				X	X					
WAMM MANADO/					2002			X				
Sam Ratulangi	18	PA1				X	X					
RS	36	NPA				X	X					
WIMM MEDAN/					2002			X				
Polonia	05	PA1				X	X					
RS	23	NPA				X	X					
WAKK MERAUKE/					2002			X				
Mopah	16	NPA				X	X					
RNS	34	NINST				X	X					
WIMG PADANG/					2002			X				
Tabing	16	NINST				X	X					
RS	34	NINST				X	X					
WIPP PALEMBANG/					2002			X				
SM Badaruddin II	11	NPA				X	X					
RNS	29	PA1				X	X					
WIBB PEKANBARU/					2002			X				
SultanSyarifKasim II	18	NPA				X	X					
RNS	34	PA1				X	X					
WIOO PONTIANAK/					2002			X				
Supadio	15	PA1				X	X					
RS	33	NPA				X	X					
WRSJ SURABAYA/					2002			X				
Juanda	10	PA1				X	X					
RS	28	NPA				X	X					
WIKN TANJUNG PINANG/					2002			X				
Kiang	04	NPA				X	X					
RNS	22	NINST				X	X					
WRLR TARAKAN/					2002			X				
Juwata	06	NPA				X	X					
RS	24	NINST				X	X					
WABP TIMIKA/					2002			X				
Tembaga Pura	12	NPA					X					
RS	30	NPA					X					

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1	2	3	4	5	6	7	8	9	10	11	12	13
WIJJ YOGYAKARTA/					2002			X				
Adi Sucipto	09	NPA					X					
RNS	27						X					
	* The WGS-84 was implemented in almost all International Airport in Indonesia including the NPA with overlay ** The Ground Undulation (Diference between Mean Sea Leval and Elipsoit) will be started in the Year 2002											
JAPAN			X	X							X	
RJFF FUKUOKA/					X			X				
Fukuoka	16	PA1				X	X					
RS	34	NPA				X	X					
RJCH HAKODATE/					X			X				
Hakodate	12	PA1				X	X					
RS	30	NPA				X	X					
RJFK KAGOSHIMA/					X			X				
Kagoshima	16	NPA				X	X					
RS	34	PA1				X	X					
RJBB OSAKA/					X			X				
Kansai Intl	06	PA2				X	X					
RS	24	NPA				X	X					
RJFT KUMAMOTO/					X			X				
Kumamoto	07	PA3				X	X					
RS	25	NPA				X	X					
RJFU NAGASAKI/					X			X				
Nagasaki	14	NPA				X	X					
RS	32	PA1				X	X					
	18	NPA				X	X					
	36	NPA				X	X					
RJNN NAGOYA/					X			X				
Nagoya	16	NPA				X	X					
RS	34	PA1				X	X					
ROAH NAHA/					X			X				
Naha	18	NPA				X	X					
RS	36	PA1				X	X					
RJCC SAPPORO/					X			X				
New Chitose	01L	PA1				X	X					
RS	19R	NPA				X	X					
	01R	PA1				X	X					
	19L	NPA				X	X					
RJAA NARITA/					X			X				
New Tokyo Intl	16	PA3				X	X					
RS	34	NPA				X	X					
RJSN NIIGATA					X			X				
Niigata	04	NPA				X	X					
RS	22	NPA				X	X					
	10	NPA				X	X					
	28	PA1				X	X					
RJOO OSAKA/					X			X				
Osaka Intl	14R	NPA				X	X					

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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
RS	32L	PA1				X	X					
	14L	NPA				X	X					
	32R	NPA				X	X					
RJSS SENDAI/					X			X				
Sendai	09	NPA				X	X					
RS	27	PA1				X	X					
	12	NPA				X	X					
	30	NPA				X	X					
RJTT TOKYO/					X			X				
Tokyo Intl	16L	NPA				X	X					
RS	34R	PA2				X	X					
	16R	NPA				X	X					
	34L	PA1				X	X					
	04	NPA				X	X					
	22	PA1				X	X					
KIRIBATI												NFFF FIR
LAO PDR												
MALAYSIA			X	X							X	
WMKA ALOR SETAR/					X			X				
Sultan Abdul Halim	04	NPA					X					
RS	22	NINST					X					
WMKB BUTTERWORTH/					X			X				
Butterworth	18	NPA					X					
RS	36	NPA					X					
WMKC KOTA BHARU/					X			X				
Sultan Ismail Petra	10	NPA					X					
RS	28	NPA					X					
WMKD KUANTAN/					X			X				
Kuantan	18	NPA					X					
RS	36	PA1					X					
WMKE KERTEH/					X			X				
Kerteh	16	NPA					X					
RS	34	NPA					X					
WMKF KUALA LUMPUR/					X			X				
Simpang	04	NINST					X					
RS	22	NINST					X					
WMKI IPOH/					X			X				
Sultan Azlan Shah	04	PA1					X					

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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
RS	22	NINST					X					
WMKJ JOHOR BAHRU/					X			X				
Sultan Ismail	16	PA1					X					
RS	34	NPA					X					
WMKK KUALA LUMPUR/					X			X				
Sepang Intl	14R	PA1				X	X					
RS	32L	PA1				X	X					
	14L	PA1				X	X					
	32R	PA1				X	X					
WMKL LANGKAWI/					X			X				
Langkawi Intl	03	PA1					X					
RS	21						X					
WMKM MALACCA/					X			X				
Malacca	03	NPA					X					
RS	21	NPA					X					
WMKN KUALA TERENGGANU/					X			X				
Sultan Mahmud Shah	04	NPA					X					
RS	22	NPA					X					
WMKP PENANG/					X			X				
Penang Intl	04	PA1					X					
RS	22	NPA					X					
WMSA KUALA LUMPUR/					X			X				
SultanAbdulAzizShah	15	PA1					X					
RS	33	PA1					X					
WMBT PULAU TIOMAN/								X				
Pulau Tioman	02						X					
RS	20	NINST					X					
WMPA PULAU PANGKOR/								X				
Pulau Pangkor	04						X					
RS	22	NINST					X					
WMAP KLUANG/								X				
Kluang	05	NINST										
RS	23	NINST										
WBGB BINTULU/					X			X				
Bintulu	12	NPA					X					
RS	30	NINST					X					
WBGG KUCHING/					X			X				
Kuching Intl	07	NPA					X					
RS	25	PA1					X					
WBGR MIRI/					X			X				
Miri	02	PA1					X					
RS	20	NPA					X					
WBGS SIBU/					X			X				
Sibu	13	PA1					X					
RS	31	NPA					X					
WBKD LAHAD DATU/					X			X				

STATUS OF WGS-84 IMPLEMENTATION

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
Lahad Datu	11	NINST					X					
RS	29	NPA					X					
WBKK KOTA KINABALU/					X			X				
Kota Kinabalu Intl	02	PA1					X					
RS	20	NPA					X					
WBKL LABUAN/					X			X				
Labuan	14	NPA					X					
RS	32	NPA					X					
WBKS SANDAKAN/					X			X				
Sandakan	08	PA1					X					
RS	26	NPA					X					
WBKW TAWAU/					X			X				
Tawau	17	NINST					X					
RS	35	NPA					X					
MALDIVES			X	X						X		
VRMM MALE/					X			X				
Male Intl	18	PA1				X	X		X			
RS	36	NPA					X					
MARSHALL IS.												KZOK FIR
MICRONESIA, FS												KZOK FIR
MONGOLIA			X	X						2002	X	
ZMUB ULAN BATOR/					X			X				
Byant-Ukkaa	14	NPA				X	X					
	32	NPA				X	X					
RS												
MYANMAR												
NAURU												
NEPAL				X						X	X	
VNKT KATHMANDU					X			X				
Tribhuvan Intl	02	NPA				X	X					

STATUS OF WGS-84 IMPLEMENTATION

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
RS	20	NINST					X					
NEW ZEALAND			X	X						X	X	
NZAA AUCKLAND/					X			X				
Auckland Intl	05	PA1				X	X		X			
RS	23	PA1			X	X	X		X			
NZWN WELLINGTON/					X			X				
Wellington	16	PA1				X	X		X			
RS	34	PA1				X	X		X			
ZCH CHRISTCHURCH/					X			X				
Christchurch	02	PA1				X	X		X			
RS	20	PA1				X	X		X			
NZNS NELSON/					X			X				
Nelson	02	NPA				X	X		X			
RS	20	NPA				X	X		X			
NZDN DUNEDIN/					X			X				
Dunedin	03	PA1				X	X		X			
RS	21	PA1				X	X		X			
NAPM PALMERSTON/					X			X				
Palmerston North	07	NPA				X	X		X			
RNS	25	NPA				X	X		X			
NZHN HAMILTON/					X			X				
Hamilton	18	NPA				X	X		X			
RNS	36	NPA				X	X		X			
NZQN QUEENSTOWN/					X			X				
Queenstown	05	NPA				X	X		X			
RNS	23	NPA				X	X		X			
NZWP WHENUAPAI/					X			X				
Whenuapai (Mil)	03	PA1				X	X		X			
RNS	21	PA1				X	X		X			
NZOH OHAKEA					X			X				
Ohakea (Mil)	09	PA1				X	X		X			
AS	27	PA1				X	X		X			
NIUE ISLAND (New Zealand)												NZZO FIR
NIUE ALOF/												
Niue Intl												
RS												
PAKISTAN			X	X						X	X	
OPFA FAISALABAD/					X			X				
Faisalabad	03	PA1				X	X		X			
RS	21	NPA										
OPGD GWADAR/					X			X				
Gwadar	06	NINST				X	X		X			
RS	24	NPA										
OPRN ISLAMABAD/					X			X				
Chaklala	12	NINST				X	X		X			
RS	30	PA1										

STATUS OF WGS-84 IMPLEMENTATION

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
OPKC KARACHI/					X			X				
Quaid-e-Azam Intl	07	NINST				X	X		X			
RS	25	PA1										
OPLA LAHORE/					X			X				
Lahore	18	NPA				X	X		X			
RS	36	PA2										
OPMT MULTAN/					X			X				
Multan	18	NPA				X	X		X			
RS	36	PA1										
OPNH NAWABSHAH/					X			X				
Nawabshah	02	NPA				X	X		X			
AS	20	NPA										
OPPS PESHAWAR/					X			X				
Peshawar	17	NPA				X	X		X			
RS	35	NPA										
OPTU TURBAT/					X			X				
Turbat	08	NPA				X	X		X			
RS	26	NPA										
PALAU												KZOK FIR
PAPUA NEW GUINEA												
	Note: All Navaids coordinates using WGS-84 datum FLT SUP COM 2-1 to 2-7											
PHILIPPINES			X	X							X	Calculated
RPLL MANILA/					X	X					X	Calculated
Ninoy Aquino Intl	06	PA1					X	X	07/2002		X	ATO-NIMA survey
RS	24	PA1					X	X	07/2002		X	
	13	NINST					X	X	07/2002		X	
	31	NINST					X	X	07/2002		X	
RPLB SUBIC BAY/					X	X					X	Calculated
Subic Bay Intl	07R	NPA					X	X	07/2002		X	ATO-NIMA survey
RS	25L	(S Cat1)					X	X	07/2002		X	
	07L	NINST					X	X	07/2002		X	
	25R	NINST					X	X	07/2002		X	
RPMD DAVAO/					X	X					X	Calculated
Francisco Bangol Intl	05	NPA					X	X	07/2002		X	** Old co-ordinates converted
AS	23	NPA					X	X	07/2002		X	
RPLI LAOAG/					X	X					X	Calculated
Laoag Intl	01	NPA					X	X	07/2002		X	* Old co-ordinates converted
AS	19	NPA					X	X	07/2002		X	
RPVM LAPU-LAPU/					X	X					X	ATO-NIMA survey
Mactan Cebu Intl	04	PA1					X	X	07/2002		X	
RS	22	PA1					X	X	07/2002		X	
RPLC PAMPANGA/					X	X					X	Calculated

STATUS OF WGS-84 IMPLEMENTATION

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
Clark Intl	02R	PA1					X	X	07/2002		X	ATO-NIMA survey
RS	20L	PA1					X	X	07/2002		X	
	02L	NINST					X	X	07/2002		X	
	20R	NINST					X	X	07/2002		X	
RPMZ ZAMBOANGA/					X	X					X	Calculated
Zamboanga Intl	09	PA1					X	X	07/2002		X	* Old co-ordinates converted
AS	27	PA1					X	X	07/2002		X	
Note: * ATO-NIMA survey final report to be incorporated in the AIP Amendment #2 dated 11 July 2002												
** ATO-NIMA survey final report to be incorporated in the AIP Amendment #3												
REP OF KOREA			X	X						X	X	
RKSI INCHEON/					X			X				
Incheon Intl	15R	PA3				X	X		X			
RS	15L	PA3				X	X		X			
	33R	PA3				X	X		X			
	33L	PA3				X	X		X			
RKSS GIMPO/					X			X				
Gimpo Intl	14R	PA2				X	X		X			
RS	32L	NPA				X	X		X			
	14L	PA1				X	X		X			
	32R	PA1				X	X		X			
RKPK BUSAN/					X			X				
Gimhae Intl	18L	NPA				X	X		X			
RS	36R	PA1				X	X		X			
	18R	NPA				X	X		X			
	36L	PA1				X	X		X			
RKPC JEJU/					X			X				
Jeju Intl	6	PA1				X	X		X			
RS	24	PA1				X	X		X			
	31	NINST				X	X		X			
	13	NINST				X	X		X			
RKTU CHEONG/					X			X				
Cheongju	06L	PA1				X	X		X			
RNS/AS	24R	PA1				X	X		X			
	06R	NINST				X	X		X			
	24L	NINST				X	X		X			
RKJJ GWANGJU/					X			X				
Gwangju	4	PA1				X	X		X			
RNS/AS	22	NPA				X	X		X			
RKTN DAEGU/					X			X				
Daegu	31	PA1				X	X		X			
RNS/AS	13	NPA				X	X		X			
RKNN GANGNEUNG/					X			X				
Gangneung	26	NPA				X	X		X			
RNS/AS	8	NINST				X	X		X			
RKTH POHANG/					X			X				
Pohang	10	NPA				X	X		X			

STATUS OF WGS-84 IMPLEMENTATION

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
AS	28	NPA				X	X		X			
RKTY YECHEON/					X			X				
Yecheon	28	PA1				X	X		X			
AS	10	NPA				X	X		X			
SAMOA											X	NFFF FIR
NSFA FALEOLO/					X			X				
Faleolo Intl	08	PA1				X	X			X	X	
RS	26	NPA				X	X			X	X	
NSFI FAGALII/												
Fagalii	10											
RG	28	NINST										
NSMA MAOTA/												
Maota	08											
RG	26	NINST										
NSAU ASAU/												
Asau	08											
RG	26	NINST										
SINGAPORE			X	X						X	X	
WSSS SINGAPORE/					X			X				
Changi Intl	02L	PA2				X	X		X			
RS	20R	PA1				X	X		X			
	02R	PA1				X	X		X			
	20L	PA2				X	X		X			
WSSL SINGAPORE/					X			X			X	
Seletar	03	NINST					X		X			
RG	21	NINST					X		X			
WSAP SINGAPORE/					X			X			X	
Paya Lebar	02	NPA				X	X					
AS	20	NPA				X	X					
SOLOMON ISLANDS												
SRI LANKA			X	X							X	
COLOMBO/												
Bandaranaike Intl	22	PA1			X	X	X			X	X	AIP Supplement
RNS	04	PA1				X					X	
THAILAND			2001	2001							2002	
VTSE CHUMPHON/					2001			X				
Chumphon												
RG	06	NPA					X		X			
	24	NPA					X		X			
VTPH PRACHUAP KHIRI KHAN/								X				
Hua Hin												
RG	16	NPA					X		X			

STATUS OF WGS-84 IMPLEMENTATION

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
	34	NINST					X		X			
VTUK KHON KAEN/								X				
Khon Kaen	03	NPA					X		X			
RNS	21	NPA					X		X			
VTSG KRABI/								X				
RNS	14	NPA					X		X			
	32	NPA					X		X			
VTUQ NAKHON RATCHASIMA/								X				
Nakhon Ratchasima												
RG	06	NPA					X		X			
	24	NPA					X		X			
VTCN NAN/								X				
Nan												
RNS	02	NPA					X		X			
	20	NPA					X		X			
VTSC NARATHIWAT/								X				
Narathiwat												
RG	02	PA1					X		X			
	20	NPA					X		X			
VTSK PATTANI/								X				
Pattani												
RG	08	NPA					X		X			
	26						X		X			
VTPP PHITSANULOK/								X				
Phitsanulok	14	NPA					X		X			
RS	32	PA1					X		X			
VTSR RANONG/								X				
Ranong												
RG	02	PA1					X		X			
	20						X		X			
VTSB SURAT THANI/								X				
Surat Thani	04	NPA					X		X			
RNS	22	PA1					X		X			
VTST TRANG/								X				
Trang												
RG	08	NPA					X		X			
	26						X		X			
VTUU UBON RATCHATHANI/								X				
Ubon Ratchathani	05	NPA					X		X			
RS	23	PA1					X		X			
VTUD UDONTHANI/								X				
Udon Thani												
RNS	12	NPA					X		X			
	30	PA1					X		X			
VTSM SURATHANI/					X			X				
Samui												

STATUS OF WGS-84 IMPLEMENTATION

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
RS	17	NPA				X	X		X		X	
	35	NPA				X	X					
VTPO SUKHOTHAI/					X			X				
Sukhothai												
RS	18	NPA				X	X		X		X	
	36	NPA				X	X					
VTCC CHIANG MAI/												
Chiang Mai Intl	18	NPA			2001	X	X	X				
RS	36	PA1										
VTSS SONG KHLA/												
Hat Yai Intl	08	NPA			2001	X	X	X				
RS	26	PA1										
VTSP PHUKET/	09	NPA			2001	X	X	X				
Phuket												
RS	27	PA1										
VTCT CHIANG RAI/												
Chiangrai Intl	03	PA1			2001	X	X	X				
RS	21	NPA										
VTBU RAYONG/												
Ban U-Taphao	18	PA1			2001	X	X	X				
AS	36	NPA										
VTBD BANGKOK/					2001			X				
Bangkok Intl	03R	NPA				X	X					
RS	03L	PA1				X	X					
	21R	NPA					X		X			
	21L	PA1					X		X			
TONGA			X	X						X	X	NFFF FIR
NFTF FUA'AMOTU/					X			X				
Fua'amotu Intl	11	NPA				X	X		X			
RS	29	NPA				X	X		X			
	17	NINST				X	X		X			
	35	NINST				X	X		X			
TUVALU												NZZO FIR
UNITED STATES			X	X						X	X	
PANC ANCHORAGE/					X			X				
Anchorage Intl	14	PA1				X	X		X			
RS	32	NINST				X	X		X			
	6L	PA1				X	X		X			
	24R	NINST				X	X		X			
	6R	PA3				X	X		X			
	24L	NINST					X		X			
PAED ANCHORAGE/					X			X				
Elmendorf AFB	5	PA1				X	X		X	X	X	
AS	23	NINST										
	15	NINST										
	33	NINST										

STATUS OF WGS-84 IMPLEMENTATION

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
PACD COLD BAY/					X			X				
Coldbay	14	PA1				X	X		X			
AS	32	NPA				X	X		X			
	26	NINST										
KPAE EVERETT/					X			X				
Paine Field	34L	NPA				X	X		X			
AS	16R	PA1				X	X		X			
	11	NINST										
	29	NINST										
	34R	NINST										
	16L	NINST										
PAEI FAIRBANKS/					X			X				
Eielson AFB	13	PA1				X	X		X			
AS	31	PA1				X	X		X			
PAFA FAIRBANKS/					X			X				
Fairbanks Intl	19R	PA1				X	X		X			
RS	01L	PA3				X	X		X			
	19L	NINST										
	01R	NINST										
KFAT FRESNO/					X			X				
Yosemite Intl	29R	PA3				X	X		X			
AS	11L	NPA										
	29L	NINST										
	11R	NINST										
PHTO HILO/					X			X				
General Lyman Field	03	NINST				X	X		X			
AS	21	NINST										
	26	PA1				X	X		X			
	08	NINST										
PHNA HONOLULU/												
Barbers Point	04R	NPA										No WGS-84
AS	22L	NINST										data available

STATUS OF WGS-84 IMPLEMENTATION

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
PHNL HONOLULU/					X			X				
Honolulu Intl	8L	PA1				X	X		X			
INTL	26R	NINST					X					
RS	04L	NINST					X					
	22R	NINST					X					
	04R	PA1					X					
	22L	NINST					X					
	26L	PA1				X	X		X			
	8R	NINST					X					
PHOG KAHULUI/					X			X				
Kahului	32	NINST										
AS	02	PA1				X	X		X			
	05	NINST					X					
	20	NPA				X	X		X			
KLAX LOS ANGELES/					X			X				
Los Angeles Intl	06L	PA1				X	X		X			
RS	24R	PA3				X	X		X			
	6R	PA1				X	X		X			
	24L	PA1				X	X		X			
	07L	PA1				X	X		X			
	25R	PA1				X	X		X			
	07R	PA1				X	X		X			
	25L	PA3				X	X		X			
KOAK OAKLAND/					X			X				
Oakland Metropolitan	11	PA1				X	X		X			
AS	29	PA3				X	X		X			
	09R	NPA										
	27L	NPA										
	09L	NPA										
	27R	PA1				X	X		X			
KONT ONTARIO/					X			X				
Ontario Intl	26R	PA1				X	X		X			
AS	08L	PA1				X	X		X			
	26L	PA3				X	X		X			
	08R	NPA				X	X		X			
KPMD PALMDALE/					X			X				
Palmdale	22	NPA				X	X		X			
AS	25	PA1				X	X		X			
	07	NPA				X	X		X			
KPDX PORTLAND/					X			X				
Portland Intl	03	NINST				X	X		X			
AS	21	NPA				X	X		X			
	10R	PA3				X	X		X			
	28L	PA1				X	X		X			
	10L	PA1				X	X		X			
	28R	PA1				X	X		X			

STATUS OF WGS-84 IMPLEMENTATION

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
KSMF SACRAMENTO/					X			X				
Metropolitan	16R	PA3				X	X		X			
AS	34L	PA1				X	X		X			
	16L	PA1				X	X		X			
	34R	NPA				X	X		X			
KSFO SANFRANCISCO/					X			X	X			
San Francisco Intl	10L	NINST										
RS	28R	PA3				X	X		X			
	10R	NINST					X					
	28L	PA1				X	X		X			
	01L	NINST					X					
	19R	NINST					X					
	01R	NINST					X					
	19L	PA1				X	X					
KSJC SAN JOSE/					X			X				
San Jose Intl	12R	PA1				X	X		X			
RS	30L	PA1				X	X		X			
	12L	NPA				X	X		X			
	30R	NPA				X	X		X			
	11	NINST					X					
	29	NINST					X					
KBFI SEATTLE/					X			X				
Tacoma Intl	13R	PA1				X	X		X			
RS	31L	PA1				X	X		X			
	13L	NINST				X	X		X			
	31R	NINST										
KGEG SPOKANE/					X			X			X	
Spokane Intl	25	NPA				X	X		X		X	
AS	07	NINST				X	X					
	21	PA2				X	X					
	03	PA3				X	X					
KSCK STOCKTON/					X			X				
Metropolitan	11L	PA1				X	X		X			
AS	29R	NINST				X	X		X			
AMERICAN SAMOA (United States)												NFFF FIR
NSTU PAGO PAGO/					X			X				
Pago Pago Intl	05	PA1				X	X					
RS	23	NINST				X	X					
GUAM ISLAND (United States)												KZOK FIR
PGUM GUAM/					X			X				
Agana	06L	PA1				X	X					
RS	24R	NPA				X	X					
	06R	NINST				X	X					
	24L	NINST				X	X					
PGUA GUAM ISLAND/					X			X				
Andersen	06L	NPA				X	X					

STATUS OF WGS-84 IMPLEMENTATION

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
AS	24R	NPA				X	X					
	06R	PA1				X	X					
	24L	NPA				X	X					
JOHNSTON ISLAND (United States)												KZOK FIR
PJON JOHNSTON ISLAND/					X			X				
Johnston Atoll	05	NPA				X	X					
RS	23	NPA				X	X					
NORTHERN MARIANA ISLANDS (United States)												KZOK FIR
PGSN SAIPAN/					X			X				
Saipan Intl	07	PA1				X	X					
RS	25	NPA				X	X					
VANUATU												NFFF FIR
VIET NAM			X	X							X	
VVNB HANOI/					X							
Noi Bai Intl	11	PA1				X	X		X			
RS	29	NPA				X	X		X			
VVDN DANANG/					X							
Da Nang Intl	17L	NPA				X	X		X			
RS	35R	PA1				X	X		X			
	35L	NPA				X	X		X			
	17R	NPA				X	X		X			
VVTS HO CHI MINH/					X							
Tan Son Nhat Intl	07R	NPA				X	X		X			
RS	07L	NPA				X	X		X			
	25R	PA1				X	X		X			
	25L	NPA				X	X		X			

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

(AP-ATM0551 dated 17 August 2000)

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

Pressure-Altitude Reporting Transponders

State/Territory	Effective date (dd/mm/yy)	Applicable airspace	Applicable to			Aeronautical Publication
			aeroplanes engaged in international air transport operations	aeroplanes engaged in international general aviation operations	helicopters engaged in international commercial air transport or international general aviation operations	
Australia	Early 1990's	Controlled airspace inside radar coverage	YES	YES	YES	AIP
Bangladesh						
Bhutan						
Brunei Darussalam	1-Jul-01	Brunei terminal control area	YES	YES	YES	
			* State aircraft as well			
Cambodia	1-Jan-03	All airspace within FIR				
China	~~31-Dec-00~~ ***01-1-02***	All airspace within FIR	YES	YES	YES	~~To be~~ published ***as AIC 05/2001***
Hong Kong,China	1980	Controlled airspace within Hong Kong FIR	YES	YES	YES	AIP Hong Kong GEN 1.5-2
Macau, China	2-Jan-97	Controlled airspace within Macau ATZ	All aircraft flying within Macau ATZ			AIP Macau GEN 1.5-1 dated 2 Jan 1997
Cook Islands						
DPR Korea						
Fiji						
France (French Polynesia)	23-Jan-03	All airspace within FIR	YES	YES (All aircraft in general aviation)	YES	AIP
(New Caledonia)						
India	07-9-99	All airspace within FIRs	YES	YES	YES	Civil Aviation Requirements Section2, Series "R", PART IV
Indonesia						
Japan	10-Oct-75	Airspace defined by Minister of Transportation	YES	YES	YES	AIP dated 1 Oct 1975

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 (dd/mm/yy)	Applicable airspace	Applicable to			Aeronautical Publication
			aeroplanes engaged in international air transport operations	aeroplanes engaged in international general aviation operations	helicopters engaged in international commercial air transport or international general aviation operations	
Kiribati						
Lao PDR						
Malaysia	1-Jan-03	All airspace within FIRs	YES	YES	YES	AIC 6/2000 dated 10 Mar 2000
Maldives	2002	Defined portion	YES	YES	YES	
Marshal Islands						
Micronesia, Federated States of						
Mongolia	1-Jan-02	International routes	YES	NO	NO	To be published in Dec 2001
Myanmar	1-Jan-00	All airspace within FIR	YES	YES	YES	Notice to owner T/41 dated 20 Jan 1999
Nauru						
Nepal	Not specified	Not specified	YES	YES	YES	Flight Operations Requirements, Amendment Number 2 dated 18 Feb 2000
New Zealand	01-4-97	Transponder Mandatory Airspace prescribed in NZ Air Navigation Register				Civil Aviation Rules Part 91
Pakistan	1-Jul-01	All airspace within FIR	YES			AIP
Palau						
Papua New Guinea						
Philippines	***31-Jan-01***	***Airspace defined by Air Transport Office (ATO)***	***20%***			
	31-Jan-02		***50%***			
	31-Jan-04		***ALL***			
Republic of Korea	30-Nov-94	All airspace within FIR	YES	YES	NO	Aviation Law

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 (dd/mm/yy)	Applicable airspace	Applicable to			Aeronautical Publication
			aeroplanes engaged in international air transport operations	aeroplanes engaged in international general aviation operations	helicopters engaged in international commercial air transport or international general aviation operations	
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	01-1-00	All airspace within FIR	YES	N/A	N/A	
Viet Nam						

Note: Blank indicates that no information has been provided.

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(AP-ATM0551 dated 17 August 2000)

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Airborne Collision Avoidance System (ACAS)

State/Territory	Effective date (dd/mm/yy)	Required TCAS types	Applicable airspace	Applicable to		Aeronautical Publication
				turbine-engined aeroplanes of a maximum certified take-off mass in excess of 15000kg or authorized to carry more than 30 passengers engaged in international air transport operations	turbine-engined aeroplanes of a maximum certified take-off mass in excess of 5 700kg or authorized to carry more than 19 passengers engaged in international air transport operations	
Australia	01-1-00	Version 6.04 or greater until 1 Jan 2003, thereafter Version 7	All airspace within FIRs	YES	No plan	Civil Aviation Regulation and AIP
Bangladesh	1-Jan-03	Version 7				AIP will be published
Bhutan						
Brunei Darussalam	1-Jul-01	Version 7	Brunei terminal control area	YES		
Cambodia	1-Jan-03	Version 7	All airspace within FIR	YES		AIP will be published
China	~~31-Dec-00~~ ***11-7-02***	Version 7	***At the specified 10 airports, and along ATS routes A461, A593 and A599***	***YES***	***YES (On 31 Dec 2003)***	***AIC 06/2001 and AIC 08/2001***
	1-Jan-03	Version 7	All airspace within FIR	YES	YES (On 31 Dec 2003)	***To be published***

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

(AP-ATM0551 dated 17 August 2000)

Airborne Collision Avoidance System (ACAS)

State/Territory	Effective date (dd/mm/yy)	Required TCAS types	Applicable airspace	Applicable to		Aeronautical Publication
				turbine-engined aeroplanes of a maximum certified take-off mass in excess of 15000kg or authorized to carry more than 30 passengers engaged in international air transport operations	turbine-engined aeroplanes of a maximum certified take-off mass in excess of 5 700kg or authorized to carry more than 19 passengers engaged in international air transport operations	
Hong Kong,China	1-Jan-00	Version 6.04 until 1 Jan 2003	All airspace within FIR	YES		AIP Hong Kong GEN 1.5-2
	1-Jan-03	Version 7	All airspace within FIR	YES	YES (on 1 Jan 2005)	AIC 02/01 dated 1 Feb 2001
Macau, China	1-Jan-00	Version 7	Controlled airspace within Macau ATZ	All fixed wing aircraft registered in Macau greater than 5700 kg or certified for more than 9 passengers seats.		AIC 07/99 dated 1 Dec 1999
Cook Islands						
DPR Korea						
Fiji						
France (French Polynesia)	23-Jan-03	Version 7	All airspace within FIR	YES	YES (on 1 Jan 2005)	AIP & AIC 010/00 dated 3 Aug 2000
(New Caledonia)	23-Jan-03	Version 7	All airspace within FIR	YES	YES (on 1 Jan 2005)	AIP & AIC 010/00 dated 3 Aug 2000
India	31-Dec-98	Any Version	All airspace within FIRs	Aeroplane having a maximum certified passenger seating configuration of more than 30 or maximum payload capacity of more than 3 tonnes		
	1-Jan-03	Version 7	All airspace within FIRs	Aeroplane having a maximum certified passenger seating configuration of more than 30 or maximum payload capacity of more than 3 tonnes	YES (on 1 Jan 2005)	Civil Aviation Requuirements, Section2, Series 'I', PART VIII, Revision2 dated 4 Dec 2000

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

(AP-ATM0551 dated 17 August 2000)

Airborne Collision Avoidance System (ACAS)

State/Territory	Effective date (dd/mm/yy)	Required TCAS types	Applicable airspace	Applicable to		Aeronautical Publication
				turbine-engined aeroplanes of a maximum certified take-off mass in excess of 15000kg or authorized to carry more than 30 passengers engaged in international air transport operations	turbine-engined aeroplanes of a maximum certified take-off mass in excess of 5 700kg or authorized to carry more than 19 passengers engaged in international air transport operations	
Indonesia						
Japan	4-Jan-01	Version 6.04 or greater *upgrading to Version 7 before 2003 is under consideration	Domestic airspace	YES	YES (on 1 Jan 2005)	AIP dated 4 Jan 1996
Kiribati						
Lao PDR						
Malaysia	1-Jan-03	Version 7	All airspace within FIRs	YES	YES	AIC 6/2000 dated 10 Mar 2000
Maldives	Jan-00	Version 7	All airspace within FIR	YES	YES (in Jan 2005)	Published on 14 Sep 1997
Marshal Islands						
Micronesia, Federated States of						
Mongolia	1-Jan-02		International routes	YES	No	To be issued in Dec 2000
Myanmar	1-Jan-03	Version 7	International routes	YES	No	Notice to owner T/42 dated 1 Sep 2000
Nauru						
Nepal	1-Jan-03	Version 7	Not specified	YES	YES (on 1 Jan 2005)	Flight Operations Requirements, Amendment Number 2 dated 18 Feb 2000

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

(AP-ATM0551 dated 17 August 2000)

Airborne Collision Avoidance System (ACAS)

State/Territory	Effective date (dd/mm/yy)	Required TCAS types	Applicable airspace	Applicable to		Aeronautical Publication
				turbine-engined aeroplanes of a maximum certified take-off mass in excess of 15000kg or authorized to carry more than 30 passengers engaged in international air transport operations	turbine-engined aeroplanes of a maximum certified take-off mass in excess of 5 700kg or authorized to carry more than 19 passengers engaged in international air transport operations	
New Zealand						Civil Aviation Rules regulating the carriage of ACAS in FIRs will be included in Civil Aviaiton Rules Programme for the fiscal year 2000/2001.
Pakistan	1-Jul-01	Version 6.04 or greater	All airspace within FIR	YES		AIP
Palau						
Papua New Guinea						
Philippines	***31-Jan-01***	***Airspace defined by Air Transport Office (ATO)***	***20%***			
	31-Jan-02		***50%***			
	31-Jan-04		***ALL***			
Republic of Korea	1-Jan-00	Version 6.04 or greater & Version 7 after Jan 2003	All airspace within FIR	YES	N/A	Aviation Law
Samoa	2000	Version 6.04 or greater & Version 7 for new installation after Jan 2002	All airspace within FIR	YES	YES (on 1 Jan 2005)	NOTAM will be issued
Singapore	1-Jan-02	Version 7	All airspace within FIR	YES	YES (on 1 Jan 2005)	AIC will be issued
Solomon Islands						
Sri Lanka						
Thailand	1-Jan-03	Version 7	All airspace within FIR	YES	YES (on 1 Jan 2005)	
Tonga						

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

(AP-ATM0551 dated 17 August 2000)

Airborne Collision Avoidance System (ACAS)

State/Territory	Effective date (dd/mm/yy)	Required TCAS types	Applicable airspace	Applicable to		Aeronautical Publication
				turbine-engined aeroplanes of a maximum certified take-off mass in excess of 15000kg or authorized to carry more than 30 passengers engaged in international air transport operations	turbine-engined aeroplanes of a maximum certified take-off mass in excess of 5 700kg or authorized to carry more than 19 passengers engaged in international air transport operations	
U.S.A.	31-Dec-95	Version 6.04 or greater	Within the territorial limit of 12 miles from the US coast	A passenger or combination cargo/passenger (combi) airplane that has a passenger seat configuration, excluding any pilot seat, of more than 10 seats		FAR, Part 121
Vanuatu	1-Jan-00	Version 6.04 or greater	All airspace within FIR	YES	N/A	Australia CAA Act 1998, Sbusection 9 (1)
Viet Nam						

Note: Blank indicates that no information has been provided.

	Training	Alerting	Legislative	SAR committee	Agreements	Relationships	Communications	Quality Control	Civil/Military	Resources	SAREX	Library	Computerisation	SAR programme	Supply dropping	Special equipment	SAR aircraft	Navigation	ELTs	LUT
Australia	E	E	E	E	E	C	E	E	E	E	E	E	E	E	E	E	E	E	C	E
Bangladesh	B	C	D	A	A	C	C	A	D	A	A	C	A	A	C	C	D	A	D	C
Bhutan																				
Brunei	E	E	E	E	D	E	E	E	E	E	E	C	B	E	D	D	E	E	E	A
Cambodia	B	B	B	B	B	B	C	A	B	B	A	C	A	A	A	A	B	A	A	A
China	E	E	E	E	E	E	D	D	E	D	D	C	B	A	E	E	E	E	E	A
Cook Islands	A	B	B	A	A	C	C	C	B	A	B	A	A	A	A	B	B	A	E	A
DPR Korea	B	D	B	D	A	B	D	D	D	C	B	A	A	A	B	A	C	C	A	A
Fiji	B	C	C	C	C	C	C	B	D	C	D	C	A	C	B	A	C	C	C	A
French Polynesia	C	D	D	D	C	D	E	A	E	C	C	B	A	A	E	D	E	E	E	E
Hong Kong, China	E	E	E	E	D	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
India	D	C	C	B	B	C	C	A	C	C	C	C	C	D	D	D	C	A	B	E
Indonesia	E	D	E	E	E	D	D	D	E	D	E	D	D	D	C	D	D	D	D	E
Japan	E	E	E	E	D	E	E	E	E	E	E	E	D	E	E	E	E	E	E	E
Kiribati																				
Lao PDR	B	A	B	B	B	A	B	A	B	B	A	C	A	A	A	A	A	A	A	A
Macau, China	E					E	E				E						E			
Malaysia	E	E	C	E	D	E	E	E	E	E	E	D	E	E	E	D	E	E	E	B
Maldives	B	A	A	A	A	A	A	A	D	A	C	A	A	A	A	A	A	A	A	A
Marshall Islands																				
Micronesia	C	B		A	A	B	C					A		B	B					
Mongolia	A	C	C	A	B	B	B	A	B	B	B	C	B	B	A	A	A	A	B	A
Myanmar	B	A	B	C	A	D	C	C	D	A	A	A	A	A	C	A	D	C	A	A
Nauru																				
Nepal	D	D	C	B	A	C	C	B	D	B	A	B	A	D	D	C	D	D	D	B
New Caledonia	C	D	D	D	C	D	E	A	E	C	C	B	A	A	E	D	E	E	E	E
New Zealand	E	E	E	E	A	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Pakistan	C	C	D	D	A	D	D	C	D	C	A	A	A	A	D	A	D	D	C	E
Palau																				
Papua New Guinea	D	E	D	C	D	D	C	C	D	C	C	D	C	C	C	A	A	A	E	A
Philippines	D	C	E	D	D	C	D	D	E	C	C	C	C	C	C	B	C	E	C	A
Rep. of Korea	C	C	C	C	C	D	E	E	E	E	C	A	D	E	D	E	E	E	E	E
Samoa																				
Solomon Islands																				
Singapore	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Sri Lanka	D	A	C	D	B	C	C	D	E	D	B	C	A	A	D	D	C	A	C	A
Thailand	E	E	E	E	D	E	E	E	E	E	E	D	B	B	E	E	E	E	E	B
Tonga	C	B	A	A	B	C	C	A	D	A	A	A	A	A	A	A	A	C	A	E	A
United States	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Vanuatu																				
Viet Nam	D	D	D	E	C	D	D	B	E	D	C	C	B	C	C	D	D	C	D	B

Updated 29 June 2001

Categorisations:

A = Not implemented

B = Initial implementation

C = Meets Annex 12 requirements in some areas

D = Meets Annex 12 requirements in most areas

E = Fully meets Annex 12 requirement

Blank = No response

MEMORANDUM OF UNDERSTANDING FOR

CO-OPERATION AMONG

THE DEPARTMENT OF NATIONAL DEFENCE OF CANADA

THE DEPARTMENT OF FISHERIES AND OCEANS OF CANADA

THE UNITED STATES COAST GUARD

THE UNITED STATES AIR FORCE

THE UNITED KINGDOM MARITIME AND COASTGUARD AGENCY

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

AND

THE UNITED KINGDOM MINISTRY OF DEFENCE

CONCERNING
SEARCH AND RESCUE

1. Introduction

1.1 The Department of National Defence of Canada as represented by the Canadian Forces (CF), the Department of Fisheries and Oceans of Canada as represented by the Canadian Coast Guard (CCG), the United States Coast Guard (USCG), the United States Air Force (USAF), the United Kingdom Department of Environment, Transport and the Regions (DETR), as represented by the United Kingdom Maritime and Coastguard Agency (MCA) and the United Kingdom Civil Aviation Division (CAD), and the United Kingdom Ministry of Defence (MOD), hereinafter referred to as the "Participants" of this Memorandum of Understanding (MOU), recognise the benefits that have been enjoyed from previous co-operative arrangements, including the Exchange of Notes dated 24th and 31st January, 1949 between Canada and the United States relating to aeronautical Search and Rescue (SAR) operations along the common boundary of the two countries, and further recognise that additional benefits may be enjoyed from the co-operative arrangements detailed herein.

1.2 The Participants recognise the great importance of co-operation in maritime and aeronautical SAR, and in the provision of expeditious and effective SAR services to save lives and reduce suffering. The Participants also recognise the assumed responsibilities for SAR within the framework of the International Convention on Maritime Search and Rescue, 1979 and of the Convention on International Civil Aviation 1944, with particular attention paid to Annex 12 (Search and Rescue) of the latter Convention, both Conventions as amended.

1.3 The Participants have reached the following understanding.

2. Objectives and Scope

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

3. Responsibilities

3.1 Any Participant, on receiving information of a maritime or aeronautical incident where any person is in distress within its search and rescue region(s) (SRRs), will take urgent measures to provide the most appropriate assistance, regardless of the nationality or status of such a person or the circumstances in which the person is found.

3.2 SAR operations should normally be carried out in accordance with the relevant SAR manuals and recommendations of the International Civil Aviation Organisation (ICAO) and the International Maritime Organisation (IMO), taking account of any nationally accepted SAR procedures.

3.3 To ensure that SAR operations are conducted in an efficient and co-ordinated manner, the Participants of each country concerned should consult and co-operate with each other as necessary and appropriate, lending assistance as capabilities allow. If primary responsibility for co-ordination of a SAR response or operation cannot be immediately ascertained, the Participants of each country concerned should consult to resolve the responsibility.

3.4 For any SAR operation involving co-ordination among Participants from more than one country, the Participants will, through appropriate consultation, decide in each case which Participant will have primary responsibility for co-ordinating the SAR operation.

3.5 Entry of SAR units onto or over the territory of the countries of those Participants conducting SAR operations will, to the best of their ability, be expeditiously arranged via the appropriate rescue co-ordination centres (RCCs).

3.6 Solely for the purpose of rendering emergency rescue assistance to persons, vessels, or aircraft in danger or distress, when the location is reasonably well known, SAR facilities of a Participant may immediately enter onto or over the territory of another Participant country, with notification of such entry made as soon as practicable.

3.7 To facilitate the co-ordination referred to in this Section, the Participants of each country concerned will, to the best of their ability, keep each other fully and promptly informed of all relevant SAR operations. They should develop appropriate procedures to provide for the most effective and efficient means of communication.

4. SAR Regions

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

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

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

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

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

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

5. Rescue Co-ordination Centres

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

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

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

6. Co-operation

6.1 The subordinate elements of all Participants of each country may provide for further co-ordination and co-operation by the establishment of appropriate operational MOUs

and procedures among the Participants. Such will contain provisions consistent with this MOU.

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

6.2.1 arranging exchange visits between SAR personnel;

6.2.2 carrying out joint SAR exercises and training;

6.2.3 using ship reporting systems for SAR purposes;

6.2.4 developing SAR procedures, techniques, equipment, facilities, and information systems;

6.2.5 providing services in support of SAR operations, such as the use of aircraft landing fields, fuelling and medical facilities;

6.2.6 co-ordinating, as appropriate, national positions on international SAR issues of mutual interest;

6.2.7 supporting and conducting joint research and development initiatives aimed at reducing search time, improving rescue effectiveness, and minimising risk to SAR personnel; and

6.2.8 conducting regular communications checks and exercises including the use of alternative methods to cater for communications overloads during major disasters.

7. Finances

7.1 Unless otherwise determined by the Participants, each Participant will fund its own expenses for activities pertinent to this MOU.

7.2 The provisions of this MOU are contingent upon the availability of SAR personnel, facilities and funding.

8. Application of this MOU

8.1 This MOU is not intended to create binding obligations under international law.

8.2 Nothing in this MOU in intended to affect in any way rights and duties based on international agreements or other MOU's pertaining to any of the Participants.

8.3 Any dispute regarding the interpretation or implementation of this MOU, or any of its operational MOUs, will be resolved by consultation among the Participants and will not be referred to an international body or third party for settlement.

9. Amendment

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

10. Duration, Withdrawal and Termination

10.1 The Memorandum of Understanding between the United States Coast Guard, the United States Air Force, the Canadian Forces, and the Canadian Coast Guard signed March 16 and March 24, 1995, and the Search and Rescue Agreement between Chief of Defence Staff, Canadian Forces and Commandant, U.S. Coast Guard signed 25 October, 1974, are hereby superseded.

10.2 This MOU will enter into immediate effect, for an indefinite period, upon signature by all Participants.

10.3 Any Participant may withdraw from the MOU, by giving not less than six (6) months notice in writing to the other Participants. Such termination will not affect the applicability of this MOU to the remaining Participants.

10.4 This MOU may be terminated with the mutual written consent of all the Participants or by any superseding arrangement.

10.5 Termination of this MOU will not affect SAR operations in progress at the time of termination unless otherwise determined to by the Participants involved.

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United States

National Search and Rescue Plan--1999

POLICY

1. It is the policy of the signatory federal agencies to provide a National Search and Rescue Plan for coordinating civil search and rescue (SAR) services to meet domestic needs and international commitments. Implementing guidance for this Plan is provided in the *International Aeronautical and Maritime Search and Rescue Manual* (IAMSAR Manual discussed below), the *National Search and Rescue Supplement* (a domestic interagency supplement to the IAMSAR Manual), and other relevant directives of the Participants to this Plan.

PURPOSE

2. This Plan continues, by interagency agreement, the effective use of all available facilities in all types of SAR missions. The National Search and Rescue Plan-1986 is superseded by this Plan.

TERMS AND DEFINITIONS

3. The following terms and definitions are based on international usage for civil SAR. For more information about these terms and others commonly used for civil SAR, refer to the IAMSAR Manual, which is jointly published by the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO).

Search and rescue coordinator. A federal person or agency with overall responsibility for establishing and providing civil SAR services for a search and rescue region(s) for which the U.S. has primary responsibility.

Search and rescue region (SRR). An area of defined dimensions, recognized by ICAO, IMO or other cognizant international body, and associated with a rescue coordination center within which SAR services are provided.

Search and rescue services. The performance of distress monitoring, communication, coordination and SAR functions, including provision of medical advice, initial medical assistance, or medical evacuation, through the use of public and private resources including cooperating aircraft, vessels and other craft and installations.

Rescue coordination center (RCC). A unit, recognized by ICAO, IMO or other cognizant international body, responsible for promoting efficient organization of civil SAR services and for coordinating the conduct of SAR operations within an SRR.

Rescue sub-center (RSC). A unit subordinate to an RCC established to complement the latter according to particular provisions of the responsible authorities.

Joint rescue coordination center (JRCC). An RCC responsible for more than one primary type of SAR services, e.g., both aeronautical and maritime SAR incidents. *NOTE: The term "JRCC" will not be used for civil SAR purposes solely on the basis that an RCC is staffed by personnel from, or is sponsored by, more than one organization.*

OBJECTIVES

4. Knowing the importance of cooperation in providing expeditious and effective SAR services, the Participants to this Plan desire to:

- Provide a national plan for coordinating SAR services to meet domestic needs and international commitments, and to document related basic national policies;
- Support lifesaving provisions of the International Convention on Maritime Search and Rescue of IMO, the Convention on International Civil Aviation of ICAO, certain international agreements to which the U.S. is Party, and similar international instruments;
- Provide an overall Plan for coordination of SAR operations, effective use of all available resources, mutual assistance, and efforts to improve such cooperation and services; and
- Integrate available resources which can be used for SAR into a cooperative network for greater protection of life and property and to ensure greater efficiency and economy.

5. This Plan is further intended to:

- Help the U.S. satisfy its humanitarian, national, and international SAR-related obligations;
- Provide national guidance for development of SAR-related systems;
- Describe its Participants and their roles in a pro-lifesaving context;
- Recognize lead federal agencies, respectively, for the types of operations covered by this Plan, and describe geographic regions of SAR responsibility, as appropriate;
- Account for saving property, but on a secondary basis to saving lives;
- Account for all operations up to and including providing initial assistance (food, clothing, medical, etc.) to survivors and delivering them to a place of safety; and
- Have, as a primary concept, cooperation for overall and continual development, coordination and improvement of SAR services.

SCOPE

6. It is intended that this Plan not conflict in any way with SAR responsibilities agreed to by contracting States of the Convention on International Civil Aviation, the International Convention on Maritime Search and Rescue, or other appropriate international instruments to which the U.S. is or may become a Party.

7. No provisions of this Plan or any supporting plan are to be construed in such a way as to contravene responsibilities and authorities of any Participant as defined by statutes, executive orders or international agreements, or of established responsibilities of other agencies and organizations which regularly assist persons and property in distress resulting from incidents of a local nature.

8. This Plan is solely intended to provide internal guidance to all signatory federal agencies. State organizations may wish to retain established SAR responsibilities within their boundaries for incidents primarily local or intrastate in character. In such cases, appropriate agreements are generally made between SAR coordinator(s) and relevant State organizations.

PARTICIPANTS

9. The Participants to this Plan are as follows:

- The agencies of the Department of Transportation (DOT) carry out broad responsibilities in transportation safety. The Coast Guard develops, establishes, maintains and operates rescue facilities for the promotion of safety on, under and over international waters and waters subject to U.S. jurisdiction, conducts safety inspections of most merchant vessels, and investigates marine casualties. The Federal Aviation Administration has air traffic control and flight service facilities available to assist in SAR operations. The Maritime Administration operates a fleet of merchant ships for government use and promotes a safe merchant marine.
- Department of Defense (DOD) components have facilities and other resources that are used to support their own operations. These resources may be used for civil SAR needs on a not-to-interfere basis with military missions.
- The Department of Commerce (DOC) participates in or supports SAR operations through the National Oceanic and Atmospheric Administration (NOAA). NOAA provides nautical and aeronautical charting; information on tides and tidal currents; marine environmental forecasts and warnings for the high seas, and coastal and inland waterways; and satellite services for detecting and locating aircraft, ships or individuals in potential or actual distress.
- The Federal Communications Commission (FCC) promulgates rules and regulations for non-government use of wire and radio facilities for promoting safety of life and property, and cooperates in SAR operations through its long-range direction finder network.
- The National Aeronautics and Space Administration (NASA) has aircraft, spacecraft and worldwide tracking, data acquisition and communications networks which can assist in SAR operations. Additionally, NASA supports SAR objectives through research and development or application of technology to search, rescue, survival, and recovery systems and equipment, such as location tracking systems, transmitters, receivers, and antennas capable of locating aircraft, ships, spacecraft, or individuals in potential or actual distress.
- Land managing components of the Department of the Interior (DOI) provide SAR services on lands and waters administered by DOI and may assist in operations in adjacent jurisdictions. The degrees of responsibility assumed in each DOI field area depends upon the legislative and jurisdictional character of the bureau and field area. Responses range from support of law enforcement authorities or other local units to primary SAR coordination and operations. Similarly, components assume varying degrees of responsibility for preventative measures to protect the visiting public.

10. A federal agency that is not a Participant to this Plan may become a Participant by unanimous vote of the National Search and Rescue Committee, followed by written notification by the agency to the Chairman of the National Search and Rescue Committee of its accession to the Plan.

U.S. SEARCH AND RESCUE REGIONS

11. SRRs are established to ensure provision of adequate land-based communications infrastructure, efficient distress alert routing, and proper operational coordination to effectively support SAR services.

12. SRRs should be contiguous and, as far as practicable, not overlap.

13. Establishment of SRRs is intended to effect an understanding concerning where nations have accepted primary responsibility for coordinating or providing SAR services. The

existence of SRR limits should not be viewed as a basis to restrict, delay, or limit in any way, prompt and effective action to relieve distress situations.

14. All SRRs of the U.S. are established in cooperation with neighboring nations, are internationally recognized, and are described in pertinent documents of IMO or ICAO.

NOTE: U. S. maritime and aeronautical SRRs are established in accordance with the relevant IMO and ICAO Conventions and with the guidance of the IAMSAR Manual. These SRRs are internationally-recognized and documented in the appropriate ICAO Regional Air Navigation Plans and in the IMO SAR Plan. More specific information on U.S. SRRs can also be found in the U.S. "National Search and Rescue Supplement," in which SRR charts will be included for convenient reference.

15. U.S. maritime and aeronautical SRRs will be harmonized with each other to the extent practicable, recognizing, however, that lines separating SRRs must normally be agreed by governments having neighboring SRRs when possible. SRRs will not be allowed to unduly affect or be affected by any political boundaries.

16. For civil SAR there must be, by definition, one RCC associated with each recognized SRR. Comprehensive standards and guidance pertinent to these RCCs have been developed by IMO and ICAO, and may be found in relevant Conventions, the IAMSAR Manual, and other publications which should be held and used by U.S. RCCs. U.S. SAR Coordinators as designated in this Plan are responsible for arranging for SAR services and establishing the RCCs for these SRRs. The U.S. civil SAR system becomes integrated into the global SAR system by establishing recognized SRRs and RCCs which comply with international standards.

17. SRRs may be subdivided as long as the delimitation of the sub-regions coincide with pertinent SRR limits. Where this is not practicable, changes to international limits should be proposed to the appropriate international organization through proper channels by the agency primarily concerned.

PARTICIPANT RESPONSIBILITIES

Primary Responsibilities

18. The SAR Coordinators, designated below, have overall responsibility for establishing RCCs as necessary, and for providing or arranging for SAR services within U.S. SRRs. Only RCCs properly established by these SAR Coordinators should carry out domestic and international coordination of civil SAR operations.

19. U.S. SAR Coordinators are as follows (see paragraph 14):

- The U.S. Air Force for the recognized U.S. aeronautical SRR corresponding to the continental U.S. other than Alaska;
- The U.S. Pacific Command for the recognized U.S. aeronautical SRR corresponding to Alaska;
- The U.S. Coast Guard for the recognized U.S. aeronautical and maritime SRRs which coincide with the ocean environments, and including Hawaii.

NOTE: State and local authorities often designate a person to be a "SAR Coordinator" within their respective jurisdictions. Responsibilities of such personnel may be quite different from the responsibilities of national SAR Coordinators as

designated in this Plan, but often these personnel are important contacts for the national SAR coordinators.

20. The National Park Service (NPS) is the lead agency that provides SAR and other emergency services within national parks.

21. The Department of State has designated the U.S. Coast Guard to lead and coordinate national participation in the SAR and safety-related initiatives of IMO.

22. The Department of State has designated the Federal Aviation Administration to lead and coordinate national participation in safety-related initiatives of ICAO.

23. Based upon invitations from ICAO and IMO, respectively, the U.S. Air Force will provide an aeronautical SAR expert and the U.S. Coast Guard will provide a maritime SAR expert, to serve as members of the ICAO-IMO Joint SAR Working Group.

Support Outside U. S. Search and Rescue Regions

24. SAR Coordinators, as well as other U.S. authorities, may support civil SAR operations anywhere in the world, consistent with their expertise and capabilities and legal authority. This is consistent with the principles of assisting persons in distress without regard to nationality or circumstances and of using all available resources for SAR. It is in the interest of the safety of U.S. citizens who travel or live worldwide. It is also consistent with U.S. humanitarian goals and the advantages of domestic and international cooperation.

25. In accordance with international law, U.S. SAR facilities, in a position to render timely and effective assistance, may exercise the right to enter into or over the territorial seas or archipelagic waters of another state for the purposes of rendering assistance to a person, ship, or aircraft whose position is reasonably well known, is in danger or distress due to perils of the seas, and requires emergency assistance.

26. Participants to this Plan, consistent with their capabilities and legal authority, will support civil SAR operations of other countries in territory and international waters beyond recognized U.S. aeronautical and maritime SRRs. As appropriate, and within their capabilities, DOD combatant commands should provide such support within their respective geographic areas of responsibility.

27. In carrying out civil SAR support functions with other nations, such as training, exercises, and liaison, each Participant will coordinate its activities with other Participants having civil SAR expertise with respect to the support concerned.

Note: A wealth of valuable reference material is available which should be used working with other nations in the area of civil SAR. These include, but are not limited to, the SAR-related conventions, the IAMSAR Manual (three volumes), this Plan, the National Search and Rescue Supplement, information about the AMVER ship reporting system, and many documents of Cospas-Sarsat, IMO, ICAO, etc. Some of these references are available in languages other than English. Participants should be familiar with such references, and use them as appropriate.

28. While it is appropriate, to the fullest extent the Participants have the authority to do so, to maintain liaison and cooperate with authorities of other nations that have comparable civil SAR responsibilities, such support should be carried out in coordination with the U.S. SAR

Coordinators, and with other neighboring SAR authorities, as appropriate. Such coordination will normally include U.S. Coast Guard Headquarters, Office of Search and Rescue, in order to ensure consistency with U.S. obligations under international agreements to which the U.S. is a Party, and compliance with the IAMSAR Manual and other relevant international guidance relevant to implementing such agreements.

29. Participants should not accept a SAR Coordinator or RCC role for SAR operations for SRRs for which other nations are responsible. However, the Participants may provide and support SAR operations in such areas when:

- Assistance is requested (normally this should be in accordance with RCC-to-RCC procedures prescribed in the IAMSAR Manual);
- U.S. citizens are involved; or
- U.S. facilities become aware of a distress situation to which no other suitable facilities are responding, or where other available SAR services appear to be inadequate.

30. For distress situations in international waters or airspace where no SRR exists for which an RCC is responsible, or where it appears that the responsible RCC is not responding in a suitable manner, U.S. RCCs or facilities will assist as appropriate. Such assistance will be subject to availability of resources, legal constraints, and other applicable U.S. policies. *NOTE: Provisions of international conventions dealing with SAR are intended to ensure that wherever any person goes in the world, suitable SAR services and responsibilities will be in place to assist should that person become in danger or distress. However, there may be nations which are not Parties to, or which have not yet fully complied with, these conventions. Therefore, situations may exist for U.S. resources to supplement SAR capabilities in certain geographic areas, or to support these nations by training or other means, consistent with U.S. domestic law, to help develop their SAR capabilities. Participants to this Plan may be take advantage of such situations as appropriate.*

31. When assisting civil SAR authorities of other nations, or other agencies or organizations supporting these authorities, Participants to this Plan should ensure that:

- They have appropriate legal authority and expertise to do so;
- Principles or provisions of conventions or agreements to which the U.S is Party are not violated;
- Applicable procedures set forth in the IAMSAR Manual, National SAR Supplement, and other relevant directives are known and followed;
- Such efforts are carried out in consultation with other Participants to this Plan as appropriate; and that
- The authorities assisted are responsible for the SAR functions in that country.

32. Policies on rendering assistance in foreign territories or territorial waters must have the goal of balancing concerns for saving lives, for sovereignty, and for national security. Provisions for territorial entry as necessary should be addressed in international SAR agreements where relevant, as discussed below, and care should be taken to ensure that such agreements are compatible with national policies in this regard.

33. When any Participant to this Plan is addressing civil SAR-related inquiries or proposals from other nations or organizations outside the U.S., or when hosting or attending international meetings on civil SAR, care should be taken that interested U.S. agencies, organizations, or persons are consulted and involved as appropriate.

CIVIL SAR AGREEMENTS

34. Bilateral or multilateral SAR agreements with other U.S. agencies or organizations, or with authorities of other nations, may be of practical value to civil SAR, and beneficial for purposes including:

- Helping to fulfil U.S. domestic or international obligations and needs;
- Enabling more effective use of all available resources;
- Better integration of U.S. SAR services with the global SAR system;
- Building commitment to support civil SAR;
- Resolving SAR procedures and sensitive matters in advance of time-critical distress situations; and
- Identifying types of cooperative matters and efforts which may enhance or support SAR operations, such as access to medical or fueling facilities; training and exercises; meetings; information exchanges; use of communications capabilities, or joint research and development projects.

35. Negotiation and conclusion of such agreements should consider matters such as the following:

- Which authorities of the governments, agencies, or organizations concerned are the proper ones to be involved with the agreement;
- Which types of SAR operations (e.g., aeronautical, maritime, etc.) or SAR support functions should be included within the scope of the agreement;
- Consistency with international and domestic SAR principles or policies;
- Establishment of lines separating SRRs if relevant;
- Whether other treaties, agreements, etc., exist which should be superseded or accounted for in preparation of a new agreement; and
- Relevant guidance of the IAMSAR Manual, National SAR Supplement, and other pertinent directives.

36. Participants which develop any agreement dealing with civil SAR shall ensure that such efforts are coordinated with other interested Participants.

37. Any such international agreement may not be signed or otherwise concluded without prior consultation with the Secretary of State (see Title 1 USC 112b).

NATIONAL SEARCH AND RESCUE COMMITTEE

38. The sponsor of this Plan is the National Search and Rescue Committee. The National Search and Rescue Committee, consistent with applicable laws and executive orders:

- Coordinates implementation of this Plan;
- Reviews matters relating to the Plan affecting more than one Participant, including recommendations for Plan revision or amendment;
- Encourages federal, state, local and private agencies to develop equipment and procedures to enhance national capabilities for implementing the Plan; and
- Promotes coordinated development of all national resources for this purpose.

39. In particular, the Committee is intended to accomplish the following:

- Oversee this Plan;
- Provide a standing national forum for coordination of administrative and operational civil SAR matters;

- Provide an interface with other national, regional, and international organizations involved with providing or supporting civil SAR services;
- Develop and maintain suitable guidance for implementation of this Plan, such as a National SAR Supplement to the IAMSAR Manual;
- Promote effective use of all available resources for support of civil SAR;
- Serve as a cooperative forum to exchange information and develop positions and policies of interest to more than one Participant;
- Promote close cooperation and coordination between civilian and military authorities and organizations for provision of effective civil SAR services;
- Improve cooperation among the various SAR communities for the provision of effective services; and
- Determine other ways to enhance the overall effectiveness and efficiency of SAR services, and to standardize procedures, equipment, and personnel training where practicable.

SAR SERVICES COVERED BY THIS PLAN

40. This Plan covers civil SAR operations such as:
    - Maritime (involving rescue from a water environment);
    - Aeronautical (including SAR assistance in the vicinity of airports);
    - Land (including SAR operations associated with environments such as wilderness areas, swift water, caves, mountains, etc.)
    - Provision of initial assistance at or near the scene of a distress situation (e.g., initial medical assistance or advice, medical evacuations, provision of needed food or clothing to survivors, etc.);
    - Delivery of survivors to a place of safety or where further assistance can be provided; and
    - Saving of property when it can be done in conjunction with or for the saving of lives.

    NOTE: Outside national parks, state and local authorities or SAR units often accept responsibility for providing domestic land SAR services.

41. Civil SAR does *not* include operations such as:
    - Air ambulance services which did not result from a rescue or recovery operation;
    - Assistance in cases of civil disturbance, insurrection or other emergencies which endanger life or property or disrupt the usual process of government;
    - Rescues from space (although rescue of persons returned from space can be included);
    - Military operations, such as combat SAR or other types of recovery by military operations to remove military or civilian personnel from harm's way;
    - Salvage operations;
    - Overall response to natural or man-made disasters or terrorist incidents; and
    - Typical disaster response operations such as locating and rescuing victims trapped in collapsed structures or other assistance provided under the scope of the Federal Response Plan.

    NOTE: No provision of this Plan or any supporting plan is to be construed as an obstruction to prompt and effective action by any agency or individual to relieve distress whenever and wherever found.

EXTENT OF MUTUAL ASSISTANCE

42. The Participants agree to cooperate as follows:

- Support each other by pooling relevant facilities and support services as appropriate for operations within their respective SRRs, and consistent with each participant's relevant legal authorities;
- Make, and respond to, requests for operational assistance between the designated RCCs, RSCs, or comparable command centers (CCs) of the Participants as capabilities allow;
- Develop procedures, communications, and databases appropriate for coordination of facilities responding to distress incidents, and for coordination between the RCCs, RSCs or CCs of the Participants;
- Normally follow applicable guidance of the IMO, ICAO, or other relevant international bodies regarding operational procedures and communications; and
- In areas where more than one authority may respond to distress situations, agreed procedures should be in place, which balance concerns for saving lives and for jurisdiction.

43. The Participants may also enter into other collaborative efforts with each other such as:

- Mutual visits, information exchanges, and cooperative projects for support of SAR;
- Joint training or exercises;
- Cooperation in development of procedures, techniques, equipment, or facilities;
- Establishment of groups subordinate to the National Search and Rescue Committee as a means for more in-depth focus on matters of common concern; and
- Carry out cooperative efforts similar to those indicated above on an international level.

GENERAL TERMS

44. Cooperative arrangements between a Participant with operational responsibilities and state, local, and private agencies should provide for the fullest practicable cooperation of such agencies for operational missions, consistent with the willingness and ability of such agencies to act, and for such coordination by the responsible RCC, RSC, or CC of their facilities as may be necessary and practicable.

45. Participants with operational responsibilities may request assistance from other federal agencies having capabilities useful for a mission.

46. The federal government does not compel state, local or private agencies to conform to this Plan; such entities can direct and control their own facilities within their boundaries, and cooperation will be pursued through liaison and consultation.

CHARGING FOR SAR SERVICES

47. Each Participant will fund its own activities in relation to this Plan unless otherwise arranged by the Participants in advance, and will not allow a matter of reimbursement of cost among themselves to delay response to any person in danger or distress.

48. The Participants agree that SAR services that they provide to persons in danger or distress will be without subsequent cost-recovery from the person(s) assisted.

49. In accordance with customary international law, when one nation requests help from another nation to assist a person(s) in danger or distress, if such help is provided, it will be done voluntarily, and the U.S. will neither request nor pay reimbursement of cost for such assistance.

PRINCIPLES ACCEPTED BY THE PARTICIPANTS

General

50. Participants coordinating operations should, consistent with applicable laws and executive orders, organize existing agencies and their facilities through suitable agreements into a basic network to assist military and non-military persons and property in actual or potential danger or distress, and to carry out obligations under customary international law and international instruments to which the U.S. is a Party.

51. The Participants will seek to keep political, economic, jurisdictional, or other such factors secondary when dealing with civil lifesaving matters, i.e., where possible, what is best for lifesaving will govern their decisions.

52. Consistency and harmonization will be fostered wherever practicable among plans, procedures, equipment, agreements, training, terminology, etc., for the various types of lifesaving and recovery operations, taking into account terms and definitions adopted internationally as much as possible.

53. Terminology and definitions used throughout the U.S. SAR community will be standardized to the extent possible, and be as consistent as possible with usage in pertinent international conventions and the IAMSAR Manual.

54. If a distress situation appears to exist or may exist, rescue or similar recovery efforts will be based on the assumption that a distress situation does actually exist until it is known differently.

55. Assistance will always be provided to persons in distress without regard to their nationality, status, or circumstances.

56. Generally, cost-effective safety, regulatory, or diplomatic measures that tend to minimize the need for U.S. SAR services will be supported.

57. Close cooperation will be established between services and organizations, which may support improvements in lifesaving functions in areas such as operations, planning, training, exercises, communications and research and development.

58. Recognizing the critical importance of reduced response time to the successful rescue and similar recovery efforts, a continual focus will be maintained on developing and implementing means to reduce the time required for:

- Receiving alerts and information associated with distress situations;
- Planning and coordinating operations;
- Facility transits and searches;
- Rescues or recoveries; and
- Providing immediate assistance, such as medical assistance, as appropriate.

Aeronautical and Maritime Search and Rescue

59. All SAR personnel should be generally familiar with the International Convention on Maritime Search and Rescue of the IMO, the Convention on International Civil Aviation, Annex 12 (“Search and Rescue”) of ICAO, the joint ICAO-IMO IAMSAR Manual, the National SAR Supplement, and other primary directives or information applicable to their work in civil SAR.

60. Local cooperative arrangements within the U.S. should be made in advance between SAR, air traffic, and airport authorities for close coordination in handling aircraft emergencies, unless the same authorities hold all the involved responsibilities.

61. The SAR principles and procedures of relevant customary international law and international Conventions and the IAMSAR Manual will serve as the framework for coordination of any SAR operations, and especially those involving multiple countries, organizations or jurisdictions; U.S. organizational or operational SAR plans and provisions of the National SAR Supplement will be consistent with these international provisions to the extent practicable.

62. The U.S. Coast Guard will sponsor a global voluntary ship reporting system for maritime and aeronautical SAR and offer pertinent information from the associated database to recognized RCCs worldwide. (This system will be used only for SAR, with its information being treated as "commercial proprietary" as promised to the ships reporting. Continuation of this system as just described will be reconsidered if need for the reporting system changes, or acceptable alternative international systems develop.)

63. Operational responsibilities for maritime and aeronautical SAR will generally be associated with internationally-recognized geographic maritime and aeronautical SRRs, and a single federal agency will be given primary responsibility for coordinating SAR operations within each SRR, with other agencies and organizations providing support as appropriate. However, in some specific sub-areas, such as within national parks, other federal authorities may be responsible.

64. Distress situations involving airborne aircraft will normally be handled by the maritime or aeronautical SAR authorities responsible for the SRR concerned once the distressed aircraft is down, and cooperatively between these authorities and air traffic service authorities as long as the aircraft remains airborne.

NOTE: Land SAR services may include aeronautical SAR operations. Involvement of Participants in such operations may be governed by agreements between SAR coordinators and various state and local authorities. Participants will support such operations as appropriate, bearing in mind the provisions of paragraph 7 of this Plan.

Coordination of Operations

65. Each agency responsible for operations under this Plan will:

- Keep information readily available on the status and availability of key SAR facilities or other resources which may be needed for operations; and
- Keep each other fully and promptly informed of operations of mutual interest, or which may involve use of facilities of another Participant;

66. SAR Coordinators will delegate to their RCCs the authority to:

- Request assistance via other RCCs/RSCs including those of other nations;
- Promptly respond to requests for assistance from other RCCs/RSCs, including those of other nations as discussed below;
- Grant permission for entry into the U.S. of SAR facilities of other countries; and
- Make arrangements with appropriate customs, immigration, health or other authorities to expedite entry of foreign SAR facilities as appropriate

67. SAR Coordinators will authorize their RCCs to arrange promptly or in advance for entry of foreign rescue units into the U.S. should it ever become necessary. Such arrangements should involve appropriate U.S. authorities as well as proper authorities of the nation or SAR facility involved with the entry. Such entry may include overflight or landing of SAR aircraft, and similar accommodation of surface (land or water) SAR units) as circumstances dictate for fueling, medical, or other appropriate and available operational support, or delivery of survivors, or it could also be in response to a request from a U.S. RCC to the RCC of another nation for assistance of those facilities.

68. Establishment of JRCCs, and of jointly sponsored and staffed RCCs or RSCs, are encouraged where appropriate.

69. Operations of SAR facilities committed to any SAR mission normally should be coordinated, and, as appropriate, directed, by an appropriate RCC or RSC consistent with the provisions of this Plan.

70. On scene coordination may be delegated to any appropriate unit participating in a particular incident under the cognizance of the SAR mission coordinator at an RCC or an incident commander.

71. No provision of this Plan or any supporting plan is to be construed as an obstruction to prompt and effective action by any agency or individual to relieve distress whenever and wherever found.

72. If an RSC is established by any agency, it must operate under the oversight of an RCC, and be responsible for certain tasks or for portions of the RCC's SRR, as determined by the agency concerned.

73. SAR Coordinators shall arrange for the receipt of distress alerts originating from within SRRs for which they are responsible, and ensure that every RCC and RSC can communicate with persons in distress, with SAR facilities, and with other RCCs/RSCs

Incident Command System

74. A coordination system often used in local areas, and for emergency response scenarios involving multiple agencies and multiple jurisdictions, is the Incident Command System (ICS).

75. When SAR forces become involved in situations where ICS is being used, an on scene incident commander will be in charge of coordinating operations overall. In such cases the SAR mission coordinator or person designated by the SAR mission coordinator will normally serve as a SAR Agency Representative to the incident commander.

76. RCCs should normally use the coordination procedures of the IAMSAR Manual and the National SAR Supplement, but should also be familiar with the ICS system, and may use or support ICS as the situation warrants.

Military Roles and Military-Civilian Relationships

77. Arrangements between federal military and civil agencies should provide for the fullest practicable cooperation among themselves, consistent with statutory responsibilities and authorities and assigned SAR functions.

78. Cooperative arrangements involving DOD and Coast Guard commands should provide for the fullest practicable use of their facilities for civil SAR on a not-to-interfere basis with military missions, consistent with statutory responsibilities and authorities and assigned agency functions.

79. Participants with operational responsibilities should develop plans and procedures for effective use of all available SAR facilities, and for contingencies to continue civil SAR operations if military forces are withdrawn because of another emergency or a change in military missions.

80. DOD responsibilities under this Plan include support of civil SAR on a not-to-interfere basis with primary military duties, in accordance with applicable national directives, plans, guidelines, agreements, etc.

Resources

81. To optimize delivery of efficient and effective services, and, where practicable and consistent with agency authorities, provide the organizations and persons interested in supporting these services the opportunity to do so, all available resources will be used for civil SAR. Certain state and local governments, civil and volunteer organizations, and private enterprises have facilities, which contribute to the effectiveness of the over-all SAR network, although they are not Participants to this Plan.

82. To help identify, locate and quantify primary SAR facilities, Coast Guard and DOD commands may designate facilities which meet international standards for equipment and personnel training as “SAR units” (SRUs). (Such facilities do not need to be dedicated exclusively to the associated type of operations, and this designation is not intended to preclude use of other resources.)

83. Recognizing the critical role of communications in receiving information about distress situations and coordinating responses, and noting that such responses sometimes involve multiple organizations and jurisdictions, the Participants will work aggressively to develop suitable SAR provisions for:

- Interoperability;
- Means of sending and receiving alerting;
- Means of identification;
- Effective provisions for equipment registration and continual access to registration data by SAR authorities;
- Rapid, automatic, and direct routing of emergency communications;
- High system reliability; and
- Preemptive or priority processing of distress communications.

Technical and Support Services

84. The Participants will strive together to:

- Apply the most effective systems to save the most lives at the least operational risk and cost; and
- Foster innovation in technical, administrative and informational systems, which will improve the ability of the Participants and associated non-governmental organizations to carry out their civil SAR duties.

85. Management, operational, and support personnel of the Participants will be partners, assisting each other with the goal of maximum operational effectiveness.

86. Priority goals of the Participants shall include:

- Make distress alerts and associated data available to operational personnel as quickly, comprehensively, and reliably as possible;
- Provide communications systems which are highly reliable, simple, problem-free, interoperable, and as functionally effective as possible; and
- Enable operational personnel to be as highly effective in planning and conducting operations as possible, by providing them with the training, equipment, procedures, facilities, information, and other tools necessary to carry out planning and operational duties in a consistent, highly professional, and effective manner.

87. Participants should:

- Encourage development and maintenance of proficiency in SAR techniques and procedures by other agencies participating in civil SAR, and assist them as appropriate;
- Encourage continued development of state and local SAR facilities as appropriate; and
- Enter into agreements, as appropriate, with State, local, and private organizations to provide for the fullest practicable cooperation in civil SAR consistent with their capabilities and resources, and to account for use of federal facilities in SAR missions with which these organizations are involved.

Suspension or Termination of Operations

88. SAR operations shall normally continue until all reasonable hope of rescuing survivors or victims has passed.

89. The responsible RCC/RSC concerned shall normally decide when to discontinue these operations. If no such center is involved in coordinating the operations, the OSC or IC may make this decision. If there is no OSC or IC involved, the decision will be made at an appropriate level of the chain-of-command of the facility conducting the operations.

90. When an RCC/RSC or other appropriate authority considers, on the basis of reliable information that a rescue or recovery operation has been successful, or that the emergency no longer exists, it shall terminate the SAR operation and promptly so inform any authority, facility or service which has been activated or notified.

91. If an operation on-scene becomes impracticable and the RCC/RSC or other appropriate authority concludes that survivors might still be alive, it may temporarily suspend the on-scene activities pending further developments, and shall promptly so inform any authority, facility or

service which has been activated or notified. Information subsequently received shall be evaluated and operations resumed when justified on the basis of such information.

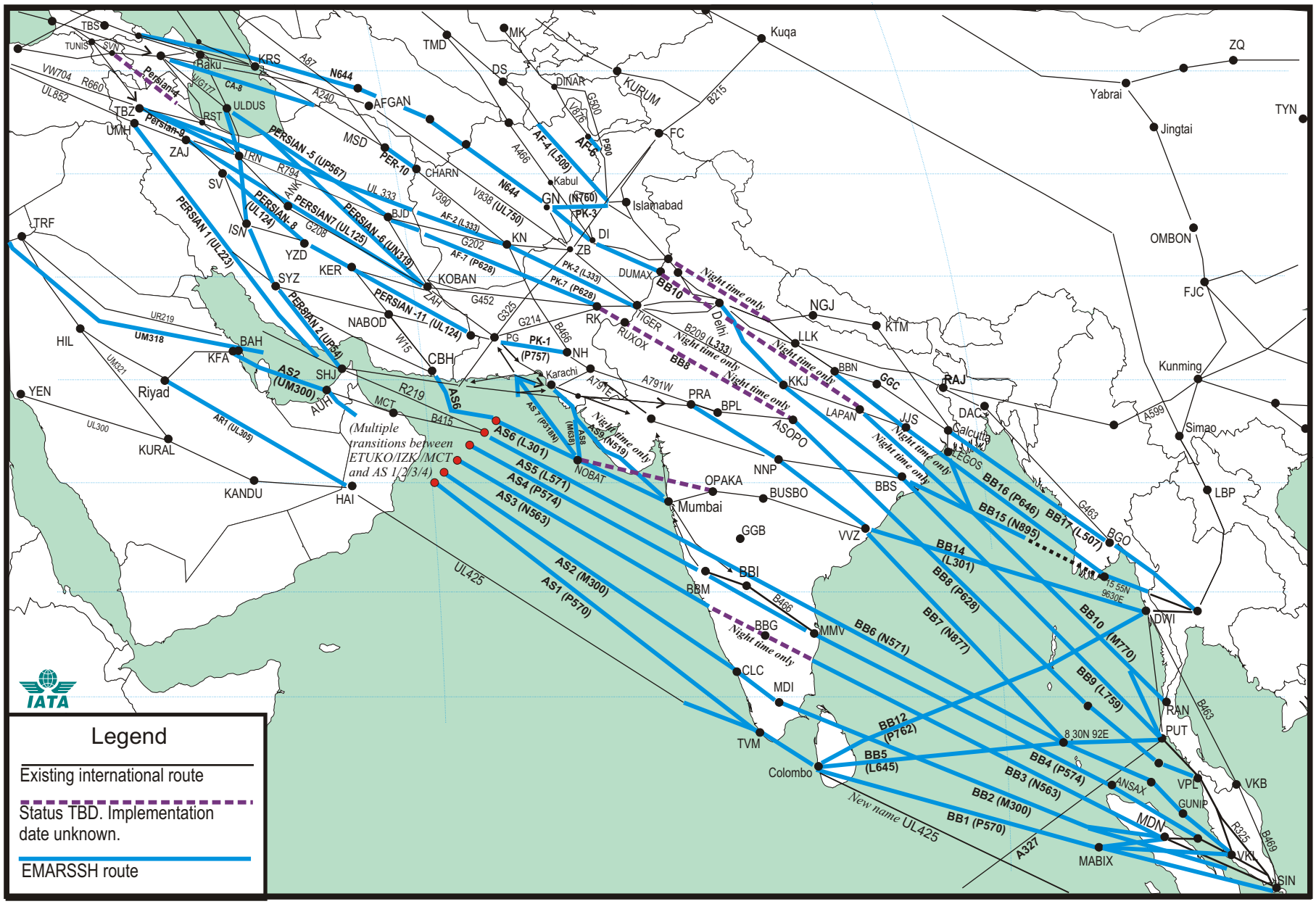
ENTRY INTO FORCE, AMENDMENT, OR TERMINATION

92. This Plan:

- shall enter into force effective January 1, 1999;
- may be amended by written agreement among the Participants; and
- may be terminated or superseded by a new Plan or by written agreement among the Participants.

93. An individual Participant may terminate its status as a Participant to this Plan by notifying the other Participants in writing at least six months in advance of such termination. Since the National Search and Rescue Committee sponsors this Plan, and it is intended that the Participants to this Plan correspond to the member agencies of that Committee, such termination will be deemed to also terminate the Participant's membership on the Committee.

…….



EMARSSH TF/8 Appendix G

NATIONAL ATS CONTINGENCY PLANNING FRAMEWORK

Amendments

Amendments to this planning document must be by page replacement, addition and deletion or by complete re-issue.

Staff amending this document must complete the Amendment Record Sheet below and ensure that all pages are current according to the Checklist of Effective Pages.

Amendment Number	Amendment Date	Amended By	Date Amended
Initial Issue			

Document Control Sheet

Introduction

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Subject	Pages	Issue Date
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Development of Contingency Plans		

Development of contingency plans

Introduction

ATS Contingency Planning is necessary to ensure the continuing safety of air navigation within *[insert state]* FIRs and to minimise effects on the traveling public in the event of facility failures, natural disasters, civil unrest (demonstrations), personnel shortages or industrial action. This document provides guidelines for the development of ATS Contingency Plans.

This document outlines the framework of Contingency Planning. The National ATS Contingency Plan follows on from this document. Individual Centre then group plans follow on from the National ATS Contingency plan.

Contingency plan objectives

The objective of contingency plans is to provide a timely, ordered and structured response to and recovery from, any catastrophic degradation or failure to provide Air Traffic Services. Whilst circumstances may vary, contingency plans provide for the worst case scenario. Depending on the availability of resources, a greater level of air traffic services may be provided.

Airways Contingency Committees

When necessary, Airways Contingency Coordination Committees (ACCC) will be formed to implement contingency plans, allocate times for the operation of individual flights and manage traffic restrictions. These committees may be at a National and/or Local level. Each contingency plan shall outline the ACC responsibilities and communication requirements between the ATS service provider, government agencies, aircraft operators and any other relevant party.

National Airways Contingency Coordination Committee

The National Airways Contingency Coordination Committee (NACCC) will be convened to implement the national contingency plan or during any other significant event. If any contingency plan is activated, the *[insert responsible authority]* shall be notified.

Testing and review

Regular review (biannually) and testing (annually) of contingency plans shall be undertaken to ensure validity of the plans.

Following activation of any ATS contingency plan, [insert responsible Manager] shall ensure that formal revision is undertaken involving consultation with all affected organisations (ATS, Regulator, Military and Industry).

Air Traffic Services

In ICAO Annex 11, ATS comprises:

1. an air traffic control service;
2. a flight information service; and
3. an alerting service.

Airspace over the high seas

Only an airspace classification (Classes A – G) or a Danger Area should be declared beyond Australia's Territorial Limits, however it is recognised that airspace management is necessary in the vicinity of major airports.

Considerations

Staffing

- Staff availability and manning arrangements;
- Licensing status of available staff;
- Additional resources such as briefing officers to provide particular attention to airspace, frequency and clearance requirements.

Procedures

- Consider the need to increase traffic spacing to ensure the minimum is not infringed; and
- Need to temporarily suspend the application of certain procedures , eg traffic information in Class G airspace;
- Minimise the impact on existing airspace arrangements, pilot / ATS procedures;
- The preparation of diagrammatic presentation of affected airspace changes, including frequency change details and SID / STARs suitable for transmission via AVFAX and NAIPS;
- Develop a methodology to facilitate special operations.

Facilities

- Availability of NAVAIDS and communications facilities;
- The use of other units facilities, including towers;
- The use or assistance of military ATS facilities.

Demand/Capacity

- Determine anticipated traffic levels;
- Need to limit or "flow" traffic eg:
  - by means of gate spacing at sector boundaries;
  - route restrictions to initiate a simplified network;
  - controlled departures times; and
  - enroute holding.

Individual plans will outline use of a time allocation system where necessary.

Options

When developing a contingency plan, the preferred options, in order, are:

a. Consolidate functions to alternate operating positions (subject to availability of appropriately licensed staff) and, if required, implement traffic metering; or

b. Transfer responsibility for services to another Unit / Centre and if required, implement traffic metering; or

c. Implement traffic metering, to reduce traffic congestion, and / or

d. Reclassify the airspace to another classification (eg Class C to Class A or Class C to Class D); or

e. Re-designate the airspace to Restricted area; and

(1) implement TIBA;

(2) implement MBZ at certain aerodromes; or

f. Reclassify as Class G airspace; or

Where airspace is reclassified as Class G or the normal services of Class G airspace are affected, [eg SAR alerting], issue NOTAM to define what services are not available.

Transfer of Responsibility

Where a transfer of responsibility for airspace occurs, formal Letters of Agreement shall be exchanged between Unit/Centre Managers to clearly state requirements for the transfer of responsibility. Additionally, all ATS personnel shall be trained in appropriate aspects of the responsibilities they may be required to assume under any Contingency Plan Letter of Agreement (LOA). When necessary, the LOA shall indicate training and competency requirements. When responsibility for airspace cannot be absorbed or transferred, then ***Options c-g*** (above) will apply. LOAs shall contain, but are not limited to the following:

a. notification procedures where an event can be foreseen, the transfer should take place prior to any risk of failure of communications facilities;

b. areas of responsibility with training and competency requirements;

c. procedures and coordination arrangements;

d. relevant Local Instructions;

e. lateral separation diagrams; and

f. details of a formal amendment process of the foregoing.

Procedures documentation shall detail contingency arrangements with military ATS units.

Where appropriate, en-route Centres, in conjunction with the Office of the HATC, shall establish LOAs with neighbouring States for route restrictions or the provision of services (to the extent possible) for international air traffic over the high seas or for domestic operations.

Contingency Services

During contingency periods, where a level ATS staffing is available it may be deemed necessary to provide basic services in the form of basic flight monitoring operations.

Flight monitoring service

Where it is determined that an enroute flight monitoring service can be provided, contingency services, when available, will acknowledge the following:

- when initial contact is made on the frequency;
- emergency communications; and
- when advised of changing to another frequency.

This flight monitoring system along with radar and ADS/CPDLC information will be used to assist in establishing aircraft positions during recovery from the contingency and return to the provision of normal air traffic services.

The ATS provider may not be able assure the provision of aerodrome control services. Limited aerodrome information may be provided from selected control tower locations.

Local contingency plans will detail the specific availability.

Resumption of service

Individual plans will outline the process followed to resume normal service.

Authorisation

This document is authorised by:

[Insert authority]	**Date**

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	On-going
	APANPIRG C 2/22 C 3/24 C 4/4 C 4/5	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 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	On-going
		~~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~~	~~Completed~~

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.~~ EMARSSH/TF established - commenced work	~~SCS/TF~~ ~~United States~~ ~~BB/TF~~ ~~EMARSSH/TF~~ EMARSSH/TF	~~Completed~~ ~~Completed~~ ~~Completed~~ 11/02

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 e) Develop AIS Guidance Material	~~ICAO~~ ~~ICAO~~ ~~AA/TF~~ AA/TF ATS/AIS/SAR/SG ATS/AIS/SAR/SG	~~Completed~~ ~~Completed~~ ~~Completed~~ On-going Completed
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~~ Dec. 2002
~~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~~ South China Sea and Western Pacific (phase one 2/2002) (phase two 10/2002) Parts of Asia and MID Regions – EMARSSH (11/2003)
~~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~~

No.	Reference	Subject/Task	Priority	Action Proposed / In Progress	Action By	Target Date
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 deficiencies	~~States~~ ~~ICAO ATS/AIS/SAR/SG~~ ~~ATS/AIS/SAR/SG~~ ICAO ATS/AIS/SAR/SG	~~Completed~~ ~~Completed~~ ~~Completed~~ On-going On-going
11	APANPIRG D 3/21 C 9/2	Subject: Transition to WGS-84 in the Asia Pacific Region ~~Task: Develop a plan and assist with the transition to WGS-84~~ Task: Monitor and facilitate the transition to WGS-84	A	~~a) Information for planning to be provided by States~~ ~~b) Information to be collated for presentation to ATS/AIS/SG~~ ~~c) Transition plan and assistance to States to be considered~~ a) Maintain status report of WGS-84 implementation within the Asia Pacific Region b) Identify States requiring assistance and where possible assist those States c) Identify deficiencies	~~States~~ ~~ICAO~~ ~~ICAO~~ ATS/AIS/SAR/SG States ICAO ATS/AIS/SAR/SG ATS/AIS/SAR/SG	~~Completed~~ ~~Completed~~ ~~Completed~~ On-going On-going 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 b) ATS/AIS/SAR/SG to monitor progress c) Identify deficiencies	ATS/AIS/SAR/SG ATS/AIS/SAR/SG ATS/AIS/SAR/SG	On-going On-going On-going

No.	Reference	Subject/Task	Priority	Action Proposed / In Progress	Action By	Target Date
~~13~~	~~APANPIRG C 2/33 C 6/19~~	~~Subject: Access to Japan Area "C"~~	~~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~~ ~~b) Develop implementation plan~~ ~~(overtaken by technology enhancements)~~	~~ATS/AIS/SAR/SG/6~~ ~~ATS/AIS/SAR/SG~~	~~Completed~~ ~~Completed~~
15	C 11/8	**SAR Capability Matrix** That, a) the "SAR Capability Matrix" be distributed to States for information and action as appropriate; and b) States provide information to ICAO by 30 April 2001 to permit the periodic update of the Matrix.		The SAR Matrix is discussed by States at all ATS/AIS/SAR/SG Meetings States to update the Matrix by providing information to ICAO by 30 April each year	ICAO	Completed On-going
16	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~~ 2002 ~~Completed~~
17	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

No.	Reference	Subject/Task	Priority	Action Proposed / In Progress	Action By	Target Date
~~18~~		~~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~~
19	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 encourages States to submit reports) b) ICAO to conduct seminars	States ICAO	On-going ~~10/00~~ 2003
20	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 ~~Completed~~
21	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
22	APANPIRG/12	Subject: Lateral Offset Procedures	A	a) Review ICAO Guidelines on Lateral Offsets b) Identify bodies developing offset procedures c) Coordinate with all parties concerned d) Identify issues regarding route structures where offsets could be applied e) Consider methodologies for safety assessment	ATS/AIS/SAR/SG	On-going

No.	Reference	Subject/Task	Priority	Action Proposed / In Progress	Action By	Target Date
23	APANPIRG/13 C12/6	Subject: Regional Contingency Planning Survey Task: That, ICAO survey States in the Asia/Pacific Region to determine the status of contingency planning and the extent to which contingency plans are exchanged between neighboring States.		a) States to complete their State Contingency Plans, using framework supplied and their Y2K CP b) Coordinate with neighboring States c) Send copy of their Contingency Plan to ICAO	ICAO/States	On-going

AGENDA ITEM 2.2: CNS/MET MATTERS

2.2 CNS/MET Matters

2.2.1 The meeting reviewed the report of the Sixth Meeting of the CNS/MET Sub-Group (CNS/MET/SG/6) held in Bangkok from 15 to 19 July 2002. The contents of the report of the Sub-Group were noted with appreciation. The meeting also noted with satisfaction actions taken on all Decisions and Conclusions of APANPIRG/12 in the CNS/MET fields. The meeting took the following actions on the report of the CNS/MET/SG/6.

AFTN Improvements

2.2.2 The meeting noted the implementation status of AFTN circuits in the ASIA/PAC region based on the reports of the CNS/MET/SG/6 meeting and the COM coordination meeting. The main highlights of the AFTN communication improvements during 2001 and 2002 were as follows:

- Guangzhou/Sanya 2400 bps circuit was established on 9 August 2001;
- Hong Kong/Sanya 2400 bps circuit was established on 9 August 2001;
- Singapore/Jakarta circuit was upgraded to 2400 bps on 10 October 2001;
- Singapore/Manila circuits was upgraded from 75 baud to 300 baud on 30 October 2001;
- Christchurch/Papeete circuit was upgraded from 300 baud to 2400 bps in November 2001;
- Hong Kong/Manila circuit was upgraded from dual 75 baud to 300 baud on 21 December 2001;
- Brisbane/Singapore circuit was upgraded from 600 baud to 2400 bps in February 2002;
- Hong Kong/Ho Chi Minh circuit was upgraded from 300 baud to 2400 bps in July 2002;
- Apia/USA circuit was implemented with 2400 bps and X.25 protocol on 15 July 2002.
- Singapore/Brunei circuit was upgraded from 75 baud to 2400 bps using X.25 protocol on 22 August 2002.

Message Switching System

2.2.3 An Unified Message Switching System (UMSS) was commissioned at the new Nadi ATM Centre, Fiji in August 2001.

Requirements for new AFTN circuits

2.2.4 It was noted that based on the proposal for amendment of the ICAO ASIA/PAC Air Navigation Plan APAC 98/8, which was approved by the ICAO Council on 27 November 2001, a requirement of AFTN connection between Tonga and New Zealand was identified. The meeting agreed to incorporate this requirement in the AFTN Plan. The meeting also noted New Zealand's

plan to establish a new ATS direct speech circuit between Auckland and Oakland and a 9600 bps data channel would be used for an AFTN circuit between Christchurch and USA.

2.2.5 In view of the several AFTN communication centers involved in relaying of AFTN messages between Hanoi and adjacent ACCs in China causing transit delays, China and Vietnam agreed to establish a new direct AFTN circuit between Hanoi and Guangzhou which would also satisfy the printed communications requirements between Hanoi and Sanya, Nanning and Kunming. In view of the above, it was agreed to specify requirement for the Guangzhou/Hanoi circuit in the AFTN Plan.

2.2.6 In light of several changes and new requirements proposed, the meeting agreed to replace the existing Table CNS 1A with the updated Table provided in Appendix A to the report on Agenda Item 2.2 and adopted the following conclusion:

Conclusion 13/11 – Amendment to the Table CNS-1A - AFTN Plan

That, the Table CNS 1A contained in ASIA/PAC FASID be replaced with an updated Table CNS-1A provided in Appendix A to the Report on Agenda Item 2.2 in accordance with established procedure.

AFTN Circuit Performance

2.2.7 On the basis of the review of AFTN circuit loading statistics, the meeting identified the need to closely monitor loading and to upgrade capacity some of the AFTN circuits. It was noted that the tests were being conducted to upgrade the Colombo/Mumbai circuit. The existing signaling speed for the Mumbai/Nairobi circuit was considered adequate by Kenya. However, being an inter-regional circuit, its capability was required to be closely monitored. Accordingly, the meeting endorsed the following conclusion:

Conclusion 13/12 - Need to monitor AFTN circuit performance

That, States concerned closely monitor performance of the following AFTN circuits and coordinate upgrading the circuit capacity within the target date established in the AFTN Plan.

1. Colombo/Male
2. Colombo/Singapore
3. Mumbai/Colombo
4. Mumbai/Nairobi
5. Kuala Lumpur/Chennai
6. Tokyo/Singapore
7. Tokyo/Moscow

2.2.8 The meeting also noted that Mumbai/Paro circuit would be implemented upon commissioning of the new AFTN switch at Paro by the end of 2002.

2.2.9 It was also noted that Japan and the Russian Federation were exchanging information on cost of leased landline and satellite channel and other technical details for upgrading the Tokyo/Moscow AFTN circuit to 2400 bps by the end of 2003.

2.2.10 The meeting noted that the Thirteenth African Planning and Implementation Regional Group (APIRG/13) Meeting in its Conclusion 13/9 had proposed to change in the AFI-ASIA/PAC entry/exit point from Mauritius to Johannesburg. The meeting reviewed the request for designation of correspondent location for the entry/exit point in the ASIA/PAC Region. Recognizing that Brisbane is one of two entry/exit points between AFI and the ASIA/PAC Region linking Mauritius in AFI region. Australia informed the meeting that the proposal is under study to determine financial implication. It is expected that a decision would be made by the end of 2002.

Delivery of AFTN Traffic over the public Internet

2.2.11 The meeting noted that Internet had been used for AFTN traffic between Australia and a number of small Island States for which the use of dedicated AFTN facilities are neither available nor are economical. Current alternative method to provide AFTN traffic to such locations has been via the use of manual faxing or telephone. Replacement with dedicated digital connections required leasing bandwidth far in excess of requirements made many of these services uneconomical to provide the standard AFTN service. The use of available public Internet to provide an alternative communications medium for AFTN connectivity to sites of low traffic requirements was the only viable action as an interim solution.

2.2.12 The meeting recognized public Internet is a practical and economically feasible vehicle for distributing aeronautical information and is increasingly considered to be a fundamental communication tool that may be used to help support the AFTN where dedicated leased channels do not justify handling low volume message traffic. However, concerns on the security, reliability, data integrity and timeliness aspects were raised. It was considered that without adequate protection against security risk it would not be advisable to use this option as an interim solution.

2.2.13 It was also noted that the United States had informed, during discussion on this issue, at the ATN Transition Task Force meeting that exchange of AFTN messages will not be permitted with those stations which use such kind of public service communication means. In some other States, security and certification processes were required before introduction of such kind of public service for operational use. New Zealand informed that in certain cases Internet with necessary security protection is used as an alternative means to deliver AFTN messages.

2.2.14 It was noted that the ATN Transition Task Force had reviewed this issue and concluded that further study and discussion for using Public Internet and developing some policies as guidance to the States were required. Subsequently, a task to develop guidance material was included in the Task List of the Task Force.

COM Co-ordination Meeting

2.2.15 The meeting noted that a COM Co-ordination Meeting was held in Kunming, China from 18-20 June 2002. The meeting was hosted by the Air Traffic Management Bureau of CAAC.

2.2.16 The objectives of the meeting were to review status of implementation of the required AFTN/ATS direct speech circuits and to develop a coordinated action plan to implement and upgrade those concerned circuits to satisfy the established operational requirements.

2.2.17 The meeting noted that the unreliable AFS communications between Dhaka and Kolkata FIRs are listed as long standing deficiencies in the deficiency list in the CNS filed in the ASIA/PAC region. The target date for completion of the proposed corrective action was June 2002 but the status remained unchanged.

2.2.18 It was recognized that in absence of upgrading of the circuit, for the provision of an alternate routing via Bangkok and Mumbai should be considered for implementation.

2.2.19 The meeting also noted 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. The reactivation of the ATS direct speech circuits was discussed during the meeting. China and Myanmar have reached an agreement to reactivate the VSAT link as well as establishment of the new AFTN circuit between Beijing and Yangon by the end of 2002 in accordance with the updated AFTN Plan.

2.2.20 China had proposed to upgrade the Beijing/Karachi AFTN circuit capacity. It was noted that the AFTN circuit between Beijing and Karachi is running at 50 baud. It was further noted that such capacity could not meet the need to cater for potential AFTN diversion traffic. It was considered cost effective to establish a higher speed circuit using VSAT technology. China was requested to coordinate with Pakistan to work out a practical action plan for implementation of a VSAT link to upgrade the circuit.

VSAT technology used for AFS communications

2.2.21 China and Thailand informed the meeting of their experiences of using VSAT technology supporting AFS and AMS communications within their own country and with neighbouring countries. India informed the meeting that VSAT is used extensively to support AFS communication and to enhance coverage of VHF within India. The meeting also noted that VSAT technology was widely used in the ASIA/PAC region to support AFS communication with exception in the Bay of Bengal area where some States have experienced difficulty in establishing VSAT link with neighbouring States due to regulatory restrictions.

2.2.22 The meeting therefore concluded that VSAT technology is identified as an appropriate solution to the last mile (local lead between airport and downtown PTT) problem in the area. In the interest of efficiency and economy, States were encouraged to take urgent actions to overcome regulatory restrictions for the use of VSAT technology especially for integrated data and voice requirements where two separate data/voice circuits have been implemented or planned. There was a strong support by the meeting to encourage States to use VSAT technology to improve quality and reliability of AFS, remote control air-ground (RCAG) VHF communications. Accordingly, the meeting formulated the following conclusion:

Conclusion 13/13 - Use of VSAT Technology for AFS

That, States in the Bay of Bengal area, implement AFS circuits using VSAT technology as a matter of high priority to enhance safety and efficiency of aircraft operations and to meet AFS communication requirements for data/voice communications.

ATN transition planning

2.2.23 The meeting reviewed the work accomplished by the Fourth Meeting of the ATN Transition Task Force which was held in Mumbai, India from 8 to 12 April 2002.

2.2.24 It was recognized that the next edition of the ATN Planning Document should be published in loose leaf to enable incorporation of future amendments in the document. The meeting then reviewed a new document called the ATN Documentation Tree that provides an index and hierarchy on relevant ATN documents that are available to assist States in their ATN planning and implementation programmes. The meeting agreed that this document would be of value and recommended that the document, shown in Appendix B be considered for inclusion in the Second Edition of the ATN Planning Document. In view of the foregoing the meeting endorsed the conclusion as follows:

Conclusion: 13/14 - ATN Documentation Tree

That,

a) the ATN Planning Document be published in a loose-leaf form to include future amendments to the Document; and

b) the ATN Documentation Tree provided in Appendix B to the report on Agenda Item 2.2 be adopted and included in the ATN Planning Document.

2.2.25 The meeting reviewed the ATS Message Handling System (AMHS) Interface Control Document (ICD). The meeting adopted the AMHS ICD contained in the report of CNS/MET/SG/6 to be published as Issue 1. The meeting endorsed the following conclusion:

Conclusion 13/15 - ASIA/PAC Interface Control Document (ICD) for ATS Message Handling System (AMHS)

That, the ASIA/PAC ICD for AMHS be adopted and published as Issue 1.

2.2.26 A checklist for implementation of ATN ground-to-ground network was prepared with a view to assist States in the implementation of the ground/ground network infrastructure. It was, therefore, agreed to adopt the checklist for circulation to States for their use. The meeting endorsed the conclusion as follows:

Conclusion 13/16 - Checklist for Implementation of Ground to Ground ATN Infrastructure

That, the Checklist provided in Appendix C to the report on Agenda Item 2.2 be adopted and circulated to States to assist in implementation of the Ground-to-Ground ATN infrastructure.

Review the Subject/Tasks List of the ATN Transition Task Force

2.2.27 The meeting reviewed the Terms of Reference (TOR) of the Task Force. The meeting carried out a review of the Subject/Tasks List taking into account ATN related subject contained in the Key Priorities for CNS/ATM Implementation in the ASIA/PAC region.

2.2.28 The meeting recognized the need to address, as a matter of urgency, an additional Task for the development of technical guidance material relating the use of public Internet to support AFTN with particular emphasis on security. In addition, it was proposed to undertake a task of developing guidance material for Internet Protocol (IP) as a sub-network of ATN in accordance with the work performed by the ATN Panel. The meeting, therefore, agreed that the proposed tasks be added as No. 7 and No. 8 Tasks respectively, in the Subject/Tasks List.

2.2.29 The meeting updated the Subject/Tasks List in light of the above and reached the following decision:

Decision 13/17 - Revision of the Subject/Tasks List of the ATN Transition Task Force

That, the updated Subject/Tasks List of the ATN Transition Task Force provided in the Appendix D to the report on Agenda Item 2.2 be adopted.

Required Communication Performance

2.2.30 The meeting noted that a paper was presented by Japan regarding ATN Performance on the air/ground communications at the Fourth Meeting of ATN Transition Task Force. The paper was also presented for comments to the ATS/AIS/SAR/SG/12 meeting in June and to the CNS/MET/SG/6 meeting in July 2002. Required Communications Performance (RCP) was seen as set of parameters, the values of which would determine the operational requirements for communication

system in the various phases of flight. There was a need to assess the various technical options of communication systems against such a set of parameters including cost and benefits analysis.

2.2.31 In this connection, the meeting noted that a State letter SP52/4-01/85 on development of an operational concept of required communication performance (RCP) was sent to States and international organizations for comments by ICAO Secretary General dated 10 August 2001. The replies from States and international organizations were substantive and a majority of them indicated broad support for the operational concept of RCP. While acknowledging that further work would be required to provide States with the necessary detail for applying an RCP type in support of specific air traffic services functions, the APANPIRG noted that the Commission has tasked OPLINK Panel:

a) to review the comments from States and develop as appropriate Standards and Recommended Practices (SARPs), procedures and guidance material, relating to the use of required communication performance (RCP) in the provision of air traffic services;

b) develop a manual as a guidance materials; and

c) develop a sample application.

2.2.32 The meeting was informed that at the moment there are no operational requirements established in the Asia and Pacific region for the air-ground data communications. It was, therefore, noted that at this stage the current requirements were satisfied by the existing provisions contained in relevant documents.

Communication function of MTSAT

2.2.33 It was informed that MTSAT system is constructed with highly reliable hot stand-by satellite. Due to the importance of AMSS, redundancy has been designed into the space and earth segments to ensure that the operational system satisfies reliability requirements. GES or satellites switchover is activated automatically within 6 seconds in case of failure. MTSAT 1-R is scheduled for launch in the summer 2003 and the Ground Earth Stations (GES) dedicated for the satellite at Kobe and Hitachi-Ota Satellite Centers have been ready for operation use since 1999. MTSAT 2 is scheduled for launch in 2004 and the dedicated GESs are under construction at the existing Satellite Centers. The first satellite will become operational nine month after the launch. MTSAT will contribute to improve both safety and communication capacity in ASIA/PAC region by providing coverage via global and spot beams.

2.2.34 It was noted that four satellites would be available in ASIA/PAC region for air-ground communication after MTSATs are operational. However, this may not result in increasing availability of AMSS for the AESs because a satellite or a GES can only be useful when an AES registers it in its owner's preference table. According to the AMSS SARPs, AES has a programmable owner preference table by which aircraft may choose from certain selectable systems, satellites, and/or GESs. Therefore, each AES is required to register all satellites and GESs available.

2.2.35 The meeting recognized that MTSAT would increase the availability of AMSS in ASIA/PAC region. However, conditions and procedures for using MTSAT air-ground communication functions should be made available to users and service providers for their considerations.

Satellite Voice Communication

2.2.36 It was noted that the current satellite voice services called SITA Enhanced Ground to Air Voice (EGtA). This service allows use of existing satellite voice for SATCOM equipped aircraft. The presentation stated the current serviceability of satellite voice for airline applications and

compliance to the supporting ICAO AMSS SARPs. It was informed that a "Statement of Needs" for satellite voice has been developed by airlines and selected ATS Providers and that this has been the basis of operational evaluation for the use of satellite voice for ATS air-ground communication by ATS providers and pilots. It was suggested that States evaluate the suitability of satellite voice as an alternative to HF voice.

2.2.37 The meeting noted the availability of SITA air-ground data link and planned transition to VDL Mode 2 and Satellite based services. SITA begun deployment of the VGS in 2000 and demonstrated the VDL Mode 2 capability with full avionics qualification and demonstration. The transition accommodates the functional capabilities of aircraft using air-ground data link.

2.2.38 The meeting noted that airlines and airframe manufacturers are undertaking significant discussion on airframe capabilities in the migration to ATN. The meeting concluded that air-ground transition plans need to take account for the differing aircraft capabilities and related avionics.

Radio Navigation Aids Maintenance of conventional systems

2.2.39 It was noted that the continued operation of conventional navigation aids is required to support current operations. The issue of maintenance, refurbishment and replacement of aids was discussed together with consideration of radiation of hazardous and misleading information from an ILS during maintenance.

Extending Life and Maintaining Conventional Navaid Systems

2.2.40 The meeting noted that availability of the current conventional navigation aid network in Australia and provided details of issues being addressed in maintaining services until transition to a GNSS based system can be accomplished. The issues identified were: equipment age, spare and replacement parts, sourcing new equipment, technician skills, site constraints, flight inspection, maintenance tracking, performance analysis and test equipment.

2.2.41 The meeting noted the benefit of sharing information on capabilities particularly with older equipment where the support of the original equipment manufacturer is no longer available. It was considered appropriate to establish an index of organizations within the region with the knowledge and capability of providing on going support of equipment and also organizations with specialist skill, such as flight inspection. The information would be provided in a similar manner to the existing register of regional flight inspection units and allow for direct contact in addressing support requirements. The publication of an index on the Internet and using links to the listed organizations own pages was considered the most suitable arrangement.

Strategies for the Provision of Precision Approach and Landing Guidance Systems and Strategy for Implementation of GNSS Navigation Capability in the ASIA/PAC region

2.2.42 The meeting reviewed the Strategy for Precision Approach and Landing Guidance Systems and the Strategy for the Implementation of GNSS Navigation Capability in the ASIA/PAC region. The meeting noted that the Strategies should be considered as living documents and they had to be reviewed and updated regularly.

2.2.43 The meeting reviewed and agreed to the changes proposed to the Strategy for the Provision of Precision Approach and Landing Guidance System. With regard to the Strategy for the Implementation of GNSS Navigation Capability in the ASIA/PAC region, the meeting discussed the need to retain RNP4 in para b) of the Strategy for en-route and specify RNP 1.0 for terminal phase of flight. Since the Strategy was developed by an experts group, it was agreed, after a considerable

discussion, to refer it back to the Sub-Group for comments. The Strategy with the amendments proposed by the Sub-Group was adopted without any change. In view of the foregoing, the meeting adopted the following conclusion:

Conclusion 13/18 - Revision of the Strategy for Precision Approach and Landing Guidance Systems and the Strategy for the Implementation of GNSS Navigation Capability in the Asia/Pacific Region

That, the updated Strategy for Precision Approach and Landing Guidance Systems and the Strategy for the Implementation of GNSS Navigation Capability in the ASIA/PAC region provided in Appendices E and F respectively, to the report on Agenda Item 2.2 be adopted and provided to States.

2.2.44 The meeting noted the findings of an ICAO Regional GNSS Measurement Campaign, as initiated by the 11th APANPIRG meeting, for determination of GPS accuracy over the ASIA/PAC region. Australia, China, India, Singapore and the United States participated in the Measurement Campaign, which was carried out on 3 days, namely 11 and 25 September, and 9 October 2001. The mean horizontal and vertical errors measured in this campaign were found to be low, generally less than 5 m with Position Dilution of Precision (PDOP) of less than 3, thus GPS without Selective Availability and augmentation could satisfy ICAO's accuracy requirements for en-route flight as well as non-precision approach.

2.2.45 The meeting expressed appreciation to Singapore and all the participating States for successfully completing the task.

GPS and GEO Augmented Navigation in India

2.2.46 It was informed that based on a cost benefit analysis, India decided to go for a Satellite Based Augmentation System called GAGAN (GPS And Geo Augmented Navigation) for supporting Air Navigation services over Indian Airspace. A Memorandum of Understanding had been signed between Airport Authority of India (AAI) and Indian Space Research Organisation (ISRO) for implementation of a Technology Demonstration System (TDS), which could be upgraded to a full operational capability system. Project Management Council and Project Management boards had been formed with senior executives for effective decision taking for smooth progress of the project. The TDS phase would have eight Reference Stations (INRES), a Master Control Center (INMCC) and an Uplink Station (INLUS). The Message formats and timing will be according to WAAS Functional and Performance specification No. FAA-E-2892. The first satellite carrying Indian navigation payload, which would provide the Geo Overlay, is likely to be GSAT3. A string of TEC measurement stations would be established to take Ionospheric measurements for Ionospheric modelling. The TDS phase is targeted for completion by 2005. Testing and validation of the TDS will be carried out for compliance to ICAO SARPs. Inter-operability of the system with other such systems like WAAS, EGNOS, MSAS etc. will be ensured. There is also a plan to utilize the INMARSAT 3 navigational transponder in the initial phases. TEC receivers have been procured and are expected to installed by November 2002 and ionospheric data collection started thereafter.

Flight Inspection

2.2.47 The meeting noted a prepublication draft of Volume 2 of the Manual on the Testing of Radio Navigation Aids (Doc. 8071). The manual has been prepared by the Testing of Radio Navaids Study Group (TRNSG). General description of GNSS element is contained in Chapter 1. Flight inspection of GNSS non-precision approaches supported by ABAS is provided in Chapter 2.

Additional chapters are in preparation for the volume, which will describe ground, and flight inspection procedures based on GBAS and SBAS which are expected to be completed in 2003.

2.2.48 The meeting noted the issue of interference as described in the manual as well as the requirement for periodic flight-testing of NPAs.

Ground Based Augmentation System (GRAS)

2.2.49 The meeting noted that information on the development of SARPs for the Ground Based Regional Augmentation System (GRAS) was provided by Australia. The GNSSP has received the operational concept for GRAS and is expected to consider the SARPs at the Fourth Meeting of the Panel in March 2003.

2.2.50 Details were provided on continued testing of GRAS in Australia, concentrating on the validation of this system. Test results show the trouble free transition between common frequency and slot different ground stations.

2.2.51 The meeting was also informed that a memorandum of cooperation between Airservices Australia and Aerothai cover the development of a GRAS test bed in Thailand.

Ultra Wide Band (UWB)

2.2.52 The meeting was informed of potential interference problem for UWB systems to the radio navigation systems. The GPS was among the systems that have been analyzed and tested to be potential for interference. It was suggested that States should carefully determine whether or not the implementation of UWB technology would cause interference to system operated in radio spectrum used for aeronautical safety services. The more information regarding UWB systems is provided in the FCC First Report and Order (FCC-02-48) at web page:
http://www.fcc.gov/Document_Indexes/Engineering_Technology/2002_Index_OET_Order.html

Automatic Dependent Surveillance (ADS) developments

2.2.53 The meeting was informed of Automatic Dependent Surveillance Broadcast (ADS-B) systems trials being conducted and implemented within the Region. The meeting noted potential benefits and low cost of ATC surveillance provided by ADS-B technology.

2.2.54 Australia informed the meeting that the implementation and application of ADS-B offers considerable benefits in terms of services that are currently only provided in radar environments. It was further informed that decisions have been taken in Europe and North America on the selection of technology for ADS-B. It is appropriate that the Asia Pacific Region address these considerations in the immediate future. Australia indicated its support to the establishment of an ADS-B Study and Implementation Task Force and offered to host its first meeting of the task force in Brisbane Australia during November 2002.

2.2.55 Australia provided an information paper in which stated ADS-B would offer potential for Asia Pacific region to significantly increase ATC surveillance capabilities at a low cost. An approximation of current ATC surveillance radar coverage based upon data extracted from FASID and an indicative example of coverage that could be achieved by ADS-B were presented. It was informed that ATC coverage in excess of 250 nautical miles has already been demonstrated at an Australia's ADS-B ground station. It is estimated that an ADS-B ground station could be deployed for less than 15% of the cost of radar. An indicative cost for deployment of a high quality duplicated ADS-B ground station is between US$300,000 USD and $600,000.- each including project management and data communications feeding back to an ATC centre. Lower cost alternatives also exist. It was estimated that 33 new ADS-B ground stations with estimated cost less than US$20 M

would be required for ATC coverage for South East Asia and 21 new ADS-B ground stations at cost less than US$13 M would be required for the South Pacific area. Data feeds from ADS-B could use the Eurocontrol Category 21 ASTERIX data exchange format. The benefits that could be obtained for equipped aircraft in areas of ADS-B coverage includes:

a) Improvements in safety
- Short term conflict alert;
- Danger area infringement warning;
- Cleared level adherence monitoring;
- Route adherence monitoring;
- Minimum safe altitude monitoring.

b) Improvements in FIR crossing coordination
- Improved situational awareness;
- Ability to detect coordination failures eg: mismatches between actual aircraft level and coordination level.

c) Improvements in efficiency
- Potentially the ability to use ADS-B radar like separation standards in lieu of existing procedural standards;
- Ability to detect that aircraft have "passed" and hence issuance of preferred cleared levels;
- Increase probability of states being able to offer user preferred routes.

2.2.56 Fiji informed the meeting of its studies and plans for ADS-B. It has been identified that the use of radar is not an option for the domestic airspace surveillance covering 120 NM and 300 islands spread over the seas due to the number that would be required together with the prohibitive costs (capital and operational). The lessons learnt and experiences gained enabled Fiji to move forward in search for a long-term solution for ADS in its domestic airspace as well as share those experiences with member states in the Regions. Fiji is currently undertaking a Cost Benefit Analysis (CBA) study in partnership with suppliers of the EUROCAT system (Thales ATM) on the integration of ADS-B information into the Eurocat system. The study is expected to be completed by October 2002. Following CBA, further discussions with Stakeholders (CAAFI, Airports Fiji Ltd, Airline operators, Government) who are also part of the National CNS/ATM Planning team would continue so that trials may be conducted in 2003. Fiji supported the establishment of the Task Force and expressed willingness to participate in its activities.

ADS-B/ADS-C in Mongolia

2.2.57 Mongolia made a visual presentation of a successful combined ADS-B/ADS-C demonstration conducted in Ulaanbaatar from 25 to 26 September 2001. ICAO standardized technology VDL Mode 4 was employed for the demonstration. The demonstration consisted of an MIAT AN-24 aircraft equipped with ADS-B avionics + CDTI and one Mil-8 helicopter with ADS-B avionics, one airport vehicle with ADS-B unit and ADS-B ground station with ADS-B, FIS-B and DGNSS functions. ADS is seen as having great potential for Mongolia for reducing infrastructure costs, as Mongolia has no civil radars but a modern ATC system and supporting infrastructure. ADS-B is considered for domestic use and ADS-C for international operations in the near-term plan. The current ATM automation system (AutoTrac 2100) was capable of integrating ADS-B information with ADS-C data. Mongolia also expressed interest in the Task Force and expressed willingness to contribute to its work.

Selection of ADS-B technology

2.2.58 The meeting noted following ADS-B activities, decisions and meetings, which have contributed towards the deployment of ADS-B as a surveillance tool.

- The United States of America has formally announced that it will use 1090MHz extended squitter as the ADS-B link technology for Air Transport category aircraft.

- The USA had also selected UAT ADS-B link for the general aviation users.

- ICAO's Separation and Airspace Safety Panel (SASP), First Meeting of the Working Group of the Whole, agreed that an ICAO separation standard be developed for ADS-B using radar surveillance characteristics as a reference system.
- The June 2002 Joint User Requirement Group (JURG) of Association of European Airlines and IATA concluded that 1090 MHz extended squitter ADS-B was the interoperable link.

- Airbus has indicated that it will make ADS-B out capability; using 1090 MHz extended squitter, available on all aircraft produced after early 2003. Airbus also States that retrofit kits will also be made available at that time.

- Some Boeing aircraft are already equipped with ADS-B (eg some British Airways B747 and B757). Boeing is expected to consider ADS-B 1090MHz squitter implementation together with other transponder changes required for Europe's enhanced surveillance and the FAA's anticipated transponder rules regarding security enhancements.

2.2.59 The upgrading of existing Mode S transponders required the implementation of a link between the navigation system and the transponder. Due to the technical simplicity, the provision of Extended Squitter from most aircraft already equipped with TCAS is expected to be inexpensive. This is totally consistent with the existing ICAO Annex 10 provisions and the development path of Mode S and TCAS.

2.2.60 Operational benefits may be made available to ADS-B equipped aircraft operating in airspace served by ADS-B ground stations. These benefits could include the following depending on the capabilities of the Air Traffic Control system:

- Provision of radar like separation services allowing decreased separation minima compared to procedural control

- Increased likelihood of preferred levels and in some increased likelihood of preferred routes and hence decreased fuel burn and lower operating costs

- Reduced pilot and controller workload by removal of routine position reporting and management

- Increased safety through provision of ground based safety alert protection including short-term conflict alert, minimum safe altitude warning, danger area infringement warning, cleared level adherence monitoring and route adherence monitoring.

2.2.61 The meeting review the Terms of Reference of the Task Force particularly with a view to avoid any duplication of efforts with the activities undertaken by ICAO Panels. The proposed Terms of Reference was revised accordingly to incorporate views expressed during the discussion.

2.2.62 The meeting noted support expressed by several States for the establishment of Task Force and the inclusion of ADS-B as a new item in the Key Priority. In view of the foregoing, the meeting adopted the following conclusion:

Conclusion 13/19 – ADS-B Study and Implementation Task Force

That,

a) a multidisciplinary Task Force be established consisting of members from Australia, China, Hong Kong China, Fiji, India, Japan, Mongolia, Singapore, United States, IATA, IFALPA, IFATCA and SITA with the Term of Reference provided in Appendix G to the report on Agenda Item 2.2; and

b) the result of the study to be presented to APANPIRG/14 meeting in 2003.

2.2.63 As a result of observation carried out by Japan, the meeting was informed of difficulties in ensuring 24 bit aircraft addresses while aircraft ownership was changed but the address remained unchanged. This was particularly difficult for "wet-lease" aircraft on comparative short-term deployments. It was also considered that lack of adherence to the 24bit aircraft address allocation procedures might have been an important factor causing this problem. With a view to resolve this problem, the meeting formulated the following conclusion:

Conclusion 13/20 – 24 bit aircraft address

That,

a) the ICAO issue a State Letter reminding States of the requirement to maintain aircraft address allocations in accordance with provisions laid down in Annex 10, Volume III and provide 24bit address allocation procedure;

b) Japan be encouraged to undertake additional monitoring in the twelve-month period after the issue of State letter to observe changes in the level of compliance; and

c) the need to enforce the procedure a working paper be presented to the 39th DGCA Conference.

Preparation for World Radiocommunication Conference 2003 (WRC-2003)

2.2.64 The meeting noted ICAO Position on the WRC-2003 agenda items of interest to aviation, which will be discussed at the ITU World Radiocommunication Conference (WRC-2003) to be held from 9 June to 4 July 2003 in Geneva, Switzerland.

Elements of the ICAO Position for the ITU WRC-2003

2.2.65 The agenda for the WRC-2003 includes a number of items of a technical nature with implications for aviation. The most critical WRC 2003 agenda items are as follows:

Agenda Item 1.4	allocations in the band 5091-5150 MHz;
Agenda Item 1.14	harmful interference to maritime mobile and aeronautical mobile (R) services;
Agenda Item 1.15	studies concerning RNSS relating to protection of the existing services DME/RADAR in the bands 1164-1215 and 1215-1300 MHz, respectively by prescribing epfd limits;
Agenda Item 1.17	upgrading of allocation to the radio location services in the 2.9-3.1 GHz band and
Agenda Item 1.28	differential correction using the 108-117.975 MHz band.

2.2.66 It was noted that the 38th Conference of the Directors General of Civil Aviation, Asia and Pacific Region in its Action Item 38/4 strongly urged States to provide support to the ICAO Position for WRC 2003. Follow up action was taken in accordance with the above action item.

2.2.67 ICAO Position for WRC 2003 was presented at the Fourth APT Conference Preparatory Group meeting for WRC 2003 (APG2003-4) held in Busan, Republic of Korea from 26 to 31 August 2002. The Fifth and the last APT APG 2003-5 meeting will be held in Tokyo, Japan from 19 to 25 February, 2003.

2.2.68 With a view to ensure concerted efforts to support ICAO position at the last APT Preparatory Group Meeting for WRC 2003 to be held in Tokyo in February 2003, the meeting recommended that a meeting of the Designated Contact Persons should be held in Bangkok towards the end of 2002 on early 2003 to review the APT Provisional Views developed by the fourth APG meeting and finalize their input to their respective telecommunication regulators for consideration and submission to the last APG meeting in Tokyo. It was also recognized that the List of Contact Persons designated by Civil Aviation authorities should be posted in the ICAO webpage to facilitate better coordination. In view of the above the meeting formulated the following conclusion:

Conclusion 13/21 - Preparation for World Radiocommunication Conference – 2003 (WRC 2003)

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 Asia-Pacific Telecommunity (APT) Conference Preparatory Group meetings and at WRC-2003; and

d) ICAO convene a meeting of designated contact persons before the end of 2002 or early 2003 to review the result of the fourth APT Preparatory Group meeting and to finalize input to the fifth and the last APT Preparatory Group meeting for WRC 2003.

e) publish the list of contact persons at the ICAO APAC webpage.

2.2.69 Australia informed the meeting of the action taken by them for the preparation of WRC 2003 and identified critical areas to be considered and suggested that State should consider various aspects such as requirements for radionavigation and other services in the 5 GHz band and adopt positions to ensure the protection of this spectrum for aviation use; protection of incumbent DME and aviation radar systems as proposed in the RNSS sharing studies while ensuring judicious selection of sharing criteria; and participation and support at WRC to aeronautical spectrum issues through national and international fora including the APT WRC Preparatory Group Meetings APG-2003 and WRC-2003.

Runway Incursion

2.2.70 IATA stated that the band 5091 to 5150 MHz which at the present time is allocated to ARNS and up-links to non-geostationery satellite. A requirement for Runway Incursion Prevention (RIP) system had already been identified. Further work was on going in the US and Japan. It was, therefore, necessary that State take due note of the need to implement RIP system at busy International Airports in the future and refrain from allocating this band to non- ARNS usage. States were requested to support the continued use of the 5 GHz band for emerging ARNS technologies at the WRC-2003.

Protection of spectrum for Aeronautical Mobile (R) Satellite Service

2.2.71 The meeting was informed that an agenda has been proposed by Japan for WRC-2006 to discuss the need to ensure the availability and protection of spectrum for the aeronautical and mobile (R) satellite service in the band 1 545 – 1 555 MHz and 1 646.5 – 1 656.5 MHz. The proposal for the agenda was presented at the fourth APT Preparatory Group Meeting held in Busan, Republic of Korea in August 2002.

2.2.72 It was noted that the proposal made by Japan is broadly in line with the elements of ICAO Position in WRC-2003 Agenda Item 7.2 which supports the inclusion in the agenda of WRC-2006 of an item addressing protection of AMS(R) S allocation in the 1.5-1.6 GHz band.

Consideration of training needs for engineering/technical staff

2.2.73 States have a requirement to ensure competent and qualified persons to undertake key roles in the operation and maintenance of airways systems. Australia presented a paper, which discussed the development of competency standards for engineers, related professionals and engineering officers to enable the demonstration of competency against national and international benchmarks.

2.2.74 The programme has been developed based on National Generic Competency Standards published by the Institution of Engineers, Australia. The program provides for entry-level academic qualification, the achievement of competency in the workplace and the requirement for ongoing professional development. The competencies are being tailored to represent the particular skill required in the design, construction and operation of airways systems.

2.2.75 The Asia-Pacific Economic Cooperation (APEC) Engineer Register is an international scheme, which has been developed in cooperation with the engineering councils and institutions of the Economies. The scheme also incorporates entry-level academic qualification, the achievement of competency in the workplace and the requirement for ongoing professional development. The APEC Engineer Register is currently operating in the economies of New Zealand, Australia, Malaysia, Hong Kong China, Japan, Republic of Korea and Canada. Other Economies are participating in the project but have not as yet had their assessment statements approved.

2.2.76 A third schedule is the Engineers Mobility Forum (EMF). The EMF is similar in nature to the Australian national and APEC schemes. The recognition of competency under one program is recognized by the other programs.

2.2.77 The States were requested to consider the development of competency criteria for engineers, related professionals and engineering officer engaged in the design, operation and maintenance of airways systems. Such competency criteria could be implemented through the APEC scheme. Once in place, it would provide assurance that appropriately qualified and competent persons were engaged either on a local basis or across State boundaries.

Amendment to the CNS Part of ASIA/PAC Basic ANP and FASID

2.2.78 The meeting noted the proposed changes to be incorporated into Part IV of the Basic ANP and the introduction to the Part IV of FASID. Accordingly, the meeting endorsed the following conclusion:

Conclusion 13/22 - ATN related procedures for Basic ANP and FASID

That, the amendments proposed to the regional procedures contained in the Part IV-CNS of the ASIA/PAC Basic ANP and FASID relating to ATN materials provided in Appendix H and Appendix I, respectively to be report on Agenda Item 2.2 be adopted and incorporated in the respective documents in accordance with the established procedure.

Notification of Differences to Annexes and Review Process

2.2.79 The meeting noted with interest a good practice in reviewing States' compliance with ICAO Annexes. Contracting States are obligated by Article 38 of the Convention to notify ICAO of any differences between their national regulations and practices and the International Standards contained in the Annexes to the Convention. The ICAO Universal Safety Oversight Audits have considered States' compliance with the selected Annexes in light of the differences notified by the State. In numerous cases unnotified differences have been identified and reported as part of the audit programme. Australian, aware of its obligation, has completed a full review of compliance with all Annexes. The identified differences have been forwarded to ICAO and also published in the Australian AIP.

2.2.80 The ICAO Annexes contain SARPs that may go across several organisations in support of the provision of aviation related services. In order to address compliance to the SARPs, the involvement of each of these organizations and coordination was required. Details of each SARP were put into a database, for ease of comment input and management.

2.2.81 Australia has a database containing the SARPs and necessary information for the continued review and tracking for compliance. Australia also offered that the database could be made available to assist States in the region for their use.

2.2.82 Australia expressed difficulties with the extraction of text from the web published documents. On occasions the parameters set when generating the PDF or DjVu prevents the extraction of text to copy and paste to the database. It is considered prudent to inhibit changes to the published documents but it is recommended that the parameter always be set to allow extraction of text and graphics.

2.2.83 Concern was also expressed regarding the need for an identification of changes to Annexes. State Letters with amendment proposals clearly identify changes by the shading and strikeout. In the final publication, changes are not identified by change-bar or similar marking. It is acknowledged that the use of change-bar or similar marking is not an ideal solution but it would readily identify the change. Perhaps an electronic version of a change bar could be optionally selected in web published documents.

2.2.84 States expressed difficulties in understanding requirements for filing differences due to various factors such as lack of clear understanding of the ICAO provision in relation to the national practice due to the language problem and complexity of ICAO provisions. Views were also expressed that a Special Implementation Project (SIP) could be considered to provide some assistance to States in enabling them to review international standards with national regulations and also make use of the database for review of SARPs.

2.2.85 The meeting appreciated the practice followed by Australia in reviewing Annexes and considered that States should be encouraged to follow similar practice and adopted the following conclusion:

Conclusion 13/23 - Process of review and Notification of difference

That, States establish a procedure with assistance of a database for review of SARPs and notification of differences to Annexes in a timely and comprehensive manner.

Progress in implementation of the ISCS and SADIS

2.2.86 The meeting was invited to review and update FASID Table MET 7 of the ASIA/PAC ANP concerning the implementation of the ISCS/2 and SADIS in the ASIA/PAC Region. It was agreed that FASID Table MET 7 would be amended as shown in Appendix J to the report.

2.2.87 The CNS/MET SG/6 reviewed the executive summary of the report of the seventh meeting of SADISOPSG, held at the ICAO MID Office, Cairo, 9 to 13 June 2002. The meeting noted with appreciation the implementation by the UK of an internet ftp back-up service available to States and users authorized to receive SADIS or ISCS broadcasts at no additional cost to States. All user States in the region will be advised by UK how to obtain a password and how to use the ftp service. In addition a “premium” http service was planned to become operational by the end of 2002.

2.2.88 The meeting was advised that information to States would be distributed through ICAO on the need for software upgrade by SADIS users in order to be able to display SIGWX forecasts in the BUFR code. Information on the types of SADIS receiving stations which have become or will soon become obsolete would be provided as well.

SADIS Strategic Assessment Tables

2.2.89 The meeting reviewed the SADIS Strategic Assessment Tables, as drafted by the CNS/MET SG/6, and agreed with entries regarding the current and projected data volumes for 2002-2006. The significant increase (49%) in OPMET data volumes since 2001 was noted. It has been proposed that the Volcanic Ash (FV) and Tropical Cyclone (FK) advisory messages be included in the tables since their number has been growing. The following conclusion was formulated by the meeting:

Conclusion 13/24 - SADIS strategic assessment tables

That,

a) the ASIA/PAC SADIS strategic assessment tables, as given in Appendix K to the report, be adopted and forwarded to the SADISOPSG for planning the future SADIS bandwidth requirements; and
b) the SADISOPSG be invited to consider amendment to the format of the SADIS Strategic Assessment Tables so as to include explicitly the requirements for the Volcanic Ash (FV) and Tropical Cyclone (FK) advisory messages.

Replacement of ISCS STAR4 workstation

2.2.90 The meeting noted the information provided to the CNS/MET SG/6 by the United States on the plans for replacement of the STAR4 workstation used by the majority of ISCS user States in the region. The replacement was necessary due to the fact that the STAR4 manufacturer was no longer in business, and software upgrades were no longer supported. It was determined that the STAR4 had no capability to produce SIGWX graphics and to handle BUFR code, as well as to produce wind/temperature charts in polar stereographic projection. It was stressed that the States that were currently using this workstation must replace it by early 2004 in order to be capable of producing all graphical products required by the Annex 3 SARPs by late 2004 when both WAFCs are scheduled to terminate issuance of products in T4 format.

2.2.91 As a result of the above, WAFC Washington has decided to delay removal of the wind/temperature charts from the ISCS broadcast originally scheduled for mid 2003, and to remove both wind/temperature and SIGWX charts simultaneously in late 2004. It was emphasized that the replacement of STAR4 workstations with current technology WAFS workstations would improve significantly the capability to process WAFS data received through ISCS and would allow for production of products tailored to individual users such as charts covering specific routes rather than the standard ICAO Areas. The meeting was advised that STAR4 replacement WAFS workstation funding may be made available from the United States on a case-by-case basis through the WMO VCP.

Transition to the final phase of WAFS

2.2.92 A comprehensive analysis of the status of the transition to the final phase of WAFS in the ASIA/PAC Region has been carried out by the CNS/MET SG/6. The following issues have been addressed:

2.2.92.1 **Lead time of SIGWX chart broadcasts.** To ensure that SIGWX charts were available in time to support long haul flights between Asia and Europe WAFC London planned to increase the lead-time by 3 hours and to make available SIGWX charts about 13 hours before validity time. It was expected the completion of this task will take place in November 2002, but this was still to be confirmed by the UK.

2.2.92.2 **SIGWX charts area.** With regard to the follow-up action on the APANPIRG conclusions 12/23, the CNS/MET SG expressed its appreciation to UK for the prompt action on extending the WAFS chart area "E" by 5 degrees to the north (viz. from 40°N to 45°N) to cover the northern part of Japan that became operational in November 2001. The meeting addressed also the need for a new SIGWX chart area "L" for the new polar routes over the North Pole.

2.2.92.3 **WAFS backup arrangements.** It was noted that the internet based ftp back-up of the SADIS broadcast became operational in May 2002. WAFC Washington made all WAFS charts from both centres available on internet but it was noted that this service was not yet considered operational as the provision of aviation meteorological data was subject to the internet policy being developed by ICAO. In regard to the back-up between the two WAFCs, the meeting was informed that they were able to provide back-up of all SWH charts. The CNS/MET SG/6 meeting was satisfied with the back-up arrangements implemented and agreed to consider this task as completed in the ASIA/PAC WAFS Transition Plan and Procedures.

2.2.92.4 **Medium-level SIGWX charts.** The meeting noted the IATA position on this subject that there was no operational requirement for additional SWM charts in the region.

2.2.92.5 **WAFS products for turbulence and icing forecast.** The CNS/MET SG/6 considered the need for development of specialized WAFS products for turbulence and icing for the Asia and Pacific Regions. It was noted that this issue would be discussed at the MET Divisional Meeting in September 2002. IATA expressed the view that these products would be very useful but it was likely they would be global products rather than regional. The issue was also to be addressed by the IATA MET Group in order to specify better the operational requirements.

Migration to BUFR

2.2.93 The meeting noted the in depth discussion held at the CNS/MET SG/6 on the transition of the SIGWX charts from the pictorial (T4) format to BUFR code products. This was considered the most important outstanding issue for the successful implementation of the final phase of the WAFS. It was recognized that the SADIS users would need software upgrade in order to decode and visualize BUFR products. For ISCS users transition to BUFR would be in parallel with the replacement of the existing STAR4 workstations used by the majority of the ISCS users.

2.2.94 It was noted that due to the different workstations being used to process WAFS products it would not be possible to develop a single software for operational conversion of BUFR products into SIGWX charts. With this clarification the CNS/MET SG/6 meeting agreed to remove the task of "provision to States in the Region of suitable BUFR decoding software" from ASIA/PAC WAFS Transition Plan and Procedures.

2.2.95 Concern was expressed about the standardization of the future SIGWX products based on BUFR code. In this regard the meeting noted the IATA requirement that all SIGWX information, as required by ICAO Annex 3, must be present on SIGWX charts in accordance with the SARPs. IATA was not concerned if there were minor variations in presentation format such as color.

2.2.96 As regards to the provision of SWM information in BUFR it was clarified that the United States would provide SWM in BUFR, quality controlled by a forecaster, only for those limited geographical areas identified in Regional ANPs; the UK would provide global SWM in BUFR, but would only quality control the data over those limited geographical areas identified in Regional ANPs. It was noted that the non-quality controlled SWM forecasts were not subject to a stated aeronautical requirement and would therefore be provided outside WAFS.

2.2.97 Based on the information provided by UK and United States and taking into account that the States should be prepared to handle WAFS data, as of November 2004, in the GRIB and BUFR code forms, it was agreed that the States should be requested to provide information on their plans for upgrading or replacing the equipment used for receiving and processing the WAFS data through the SADIS and ISCS. In this context, the following conclusion was formulated:

Conclusion 13/25 - Regional survey on the States' plans for transition to GRIB and BUFR coded WAFS products

That, ICAO carry out a regional survey to assess the plans of the SADIS and ISCS user States in the ASIA/PAC Regions to upgrade/replace their workstations and software used for handling WAFS data, and the dates the new equipment and the software capability to decode and display GRIB and BUFR data is expected to be operational.

Note. - The survey would be undertaken by the WAFS/T TF of the CNS/MET SG

Training in GRIB and BUFR

2.2.98 The meeting was informed that as a follow up of the APANPIRG Conclusion 12/27 ICAO coordinated with the UK and WMO that a GRIB Training Workshop for the ASIA/PAC SADIS user States would be held in November 2002 at the ICAO Regional Office, Bangkok.

2.2.99 As regards to BUFR it was expected that nearly all States would need training. The meeting was informed that the UK planned to provide training events in all regions concerned, whilst the United States decided most of the training to be done by the vendors of the new WAFS workstations. However, if this training was considered insufficient, the United States planned to provide financial support through the WMO VCP to the States that may need it.

2.2.100 Taking into account the short time left to the target date of the final phase of WAFS the meeting felt that the training in BUFR should be considered as a high priority task. The meeting agreed that the SADIS Provider State be requested to arrange training in the Asia/Pacific Region in co-ordination with ICAO and WMO as early as possible. The UK was on the opinion that the BUFR training would be done separately of the GRIB training due to the fact that the BUFR software for the SADIS workstations had not yet been completed.

2.2.101 Further co-ordination between ICAO and the UK took place on the above subject after the CNS/MET SG/6 meeting. It has been clarified that the advancement in the development of the BUFR modules for the SADIS workstations by the software vendors would make it possible to provide BUFR training along with the GRIB training during the planned Asia/Pacific Training workshop to be held from 18 to 20 November 2002 at the ICAO Bangkok Office. The meeting agreed that the combined GRIB-BUFR workshop would be more efficient in terms of costs to the States and would ensure timely preparation for the implementation of the binary codes.

ASIA/PAC WAFS Transition Plan and Procedures

2.2.102 The meeting reviewed the ASIA/PAC Transition Plan and Procedures as drafted by the CNS/MET SG/6. It was noted that the Plan has been updated to reflect the new developments in the WAFS. Changes were also made regarding the timetable for achieving the final phase of WAFS, based on the information provided by the two WAFCs. The meeting adopted the Plan and formulated the following conclusion:

Conclusion 13/26 - Amended ASIA/PAC WAFS Transition Plan and Procedures

That, the ASIA/PAC WAFS Transition Plan and Procedures be amended as shown in Appendix L to the report to reflect the changes in the plans and schedules of the two WAFCs in transition to the final phase of WAFS.

Future Work Programme for the WAFS Transition Task Force

2.2.103 The meeting noted appreciation expressed by the CNS/MET SG/6 to the WAFS Transition Task Force for the work done and re-iterated the requirements for the Task Force to continue its work until the final phase of the WAFS is implemented in the Asia/Pacific Region. The meeting adopted the updated terms of reference and work programme of the Task Force and formulated the following decision:

Decision 13/27 - TORs of ASIA/PAC WAFS Transition Task Force

That, the TORs and Work Programme for the ASIA/PAC WAFS Transition Task Force be agreed as given in Appendix M to this report.

Exchange of OPMET information

2.2.104 The CNS/MET SG/6 addressed a number of issues related to the OPMET exchange in the Asia/Pacific region and agreed that they needed to be addressed as a high priority matter. It was recalled that the ROBEX scheme was established 30 years ago anb has been successfully applied in the Region throughout the years. A major improvement of the scheme was the establishment of the five regional OPMET data banks: Bangkok, Brisbane, Nadi, Singapore and Tokyo. However, the current trends in the global OPMET exchange required that the scheme be reviewed and updated in order to become adequate to the new communication environment and to overcome the existing deficiencies.

2.2.105 The meeting agreed on the need for extensive changes in the ROBEX scheme and other OPMET regional and interregional exchanges as well as for updating of the regional guidance materials, i.e., the ROBEX Handbook and the ASIA/PAC Regional Interface Control Document (ICD) OPMET Data Bank Access Procedures. This should be done with account to a number of factors like the increased capacity of communication links, availability of satellite broadcast of OPMET data, new requirements for interregional exchange and for monitoring and management of the OPMET data exchange.

2.2.106 Based on the expected volume and complexity of the work to be done on the tasks above the it was proposed to establish under the CNS/MET SG and OPMET Exchange Task Force (OPMET/E TF) with the terms of reference as given in Appendix N. This proposal was supported by the meeting and the following decision was formulated:

Decision 13/28 – ASIA/PAC OPMET Exchange Task Force (OPMET/E TF)

That, an OPMET Exchange Task Force (OPMET/E TF) be established with the terms of reference, work programme and composition as given in the Appendix N to the Report.

2.2.107 It was stressed that a close working relationship with the similar groups from other ICAO Regions should be established in order to plan and implement a seamless OPMET exchange between the Regions according to the stated requirements. In particular, the SADIS Gateway and the EUR Bulletin Management Group (BMG) should be requested to provide assistance based on the rich experience in the OPMET exchange management in the EUR Region.

SIGMET in VOLMET

2.2.108 The meeting noted the discussion during the CNS/MET SG/6 on the possible approaches to include the SIGMET information in VOLMET and the corresponding difficulties. It was emphasized that the introduction of D-VOLMET through a VHF data link would be the most appropriate way to overcome the capacity problem of the voice VOLMET. The meeting recalled that this issue has been discussed several times during the last few years and has also been addressed by the ATS/AIS/SAR SG without specific recommendation. Taking into account the existing requirements for the inclusion of the SIGMET in VOLMET and the possible technical solutions the meeting agreed that the use of the D-VOLMET would eliminate the capacity problem of the voice-VOLMET and formulated the following conclusion:

Conclusion 13/29 - Inclusion of SIGMET in VOLMET

That, States be encouraged to fully implement D-VOLMET to permit suitably equipped aircraft to receive timely SIGMET information amongst other requisite meteorological information.

Uplink/Downlink of OPMET information

2.2.109 The meeting noted the information about the experience of New Zealand in handling aircraft reports by means of ADS and AMDAR systems (a WMO system not subject to a stated aeronautical requirement). The meteorological components of the ADS reports have been stripped out and sent to the meteorological service provider (MetService). The MetService has been forwarding the ADS and manual aircraft reports in the same routine hourly bulletins to the WAFCs via the WMO Global Telecommunications System (GTS). It was reported that currently on average over 300 aircraft reports were received within any given 24 hours and about 150 of these reports were derived from ADS data streams.

2.2.110 The meeting was also informed about further trials in early 2002 at Hong Kong, China with ADS and CPDLC datalinks for automatic weather reporting. During these trials, 57 in-flight weather reports from B777 aircraft and 18 reports from Airbus aircraft were received and analyzed by the Hong Kong Observatory. Analysis of the quality of the meteorological data received was presented to the CNS/MET SG/6. Concern was expressed on the additional telecommunication charges incurred when using FANS-1/A systems and airline company datalinks. The meeting noted that the Hong Kong, China has been exploring the use of SSR Mode-S as alternative datalink for weather reporting.

2.2.111 The CNS/MET SG/6 meeting felt that further information should be made available on the plans of the States to use the datalink applications and to forward the data to the WAFCs since the uplink/downlink of meteorological information was a very important part of the MET component of the CNS/ATM concept. The meeting agreed on the proposal by the CNS/MET SG/6 that it was necessary to carry out a regional survey on this subject and formulated the following conclusion:

Conclusion 13/30 - Regional survey on the current status and future plans of States to process the MET component of ADS Reports

That, ICAO carry out a regional survey to assess the current status and future plans of the States in the ASIA/PAC Regions to process the MET component of the ADS message and forward the data to the WAFCs and to assess if the data is quality controlled.

Note. - The survey would be undertaken by the METATM TF of the CNS/MET SG

Implementation of International Airway Volcano Watch (IAVW)

2.2.112 The meeting was informed on the follow up actions taken on the APANPIRG conclusions 12/30 and 12/32. The proposals made by APANPIRG/12 for a new requirement for 24-hour operations of the Volcanic Ash Advisory Centres (VAACs) and for improvement of the format of the graphical volcanic ash advisories were considered by the ICAO Secretariat and included in the draft proposal for Amendment 73 to Annex 3.

2.2.113 It was recalled that the APANPIRG/12 conclusion 12/31 called for changes in the areas of responsibility of VAACs. The FASID Table MET 3, Part II, renamed as FASID Table MET 3B, was amended accordingly and included in proposed amendment of the ICAO Asia/PAC FASID, Serial No. APAC 02/5-MET that was sent for comments to States. The proposal for the extension of the area of responsibility of the Wellington VAAC south of 60ºS to the Pole has been commented by New Zealand. While it was the intention of New Zealand to endeavour to fulfil its assigned VAAC responsibilities over this area, the maintaining an effective advisory service south of 60ºS was considered not currently feasible.

2.2.114 The meeting expressed concern about the delay in the action on APANPIRG conclusion 11/33, calling for a Special Implementation Project (SIP) for Asia/Pacific Region with an objective to identify and propose solutions to deficiencies related to the implementation of the SIGMET messages for volcanic ash clouds. The ICAO Secretariat advised that the proposal for this SIP had been developed and submitted to the ICAO Headquarters in 2001, however, the Council Standing Group on Implementation did not approve it for the year 2002 due to the high budget of the project. Therefore the SIP proposal was to be revised and submitted again for approval for 2003.

2.2.115 The meeting noted with appreciation informations presented by Australia and Japan on the actions taken to improve the operational performance of the Darwin and Tokyo VAACs and hence the IAVW.

2.2.116 The meeting was advised on a new product issued by Tokyo VAAC for low-level volcanic ash events. It was clarified that Tokyo VAAC has been issuing VA advisories for international air navigation only when a volcanic ash plume raised above 5000 m (16500 ft) and the low-level VA advisories have been issued for the domestic traffic only. The CNS/MET SG/6 meeting agreed that this operational practice was not in accordance with the Annex 3 provisions and that advisory information was required internationally notwithstanding the height of the ash plume. Japan took note on the meeting's advice.

2.2.117 The meeting noted the appreciation expressed by the CNS/MET SG/6 on the work done by the "ad-hoc" Volcanic Ash warning WG, that was created as early as 1994. Taking into account the importance of the tasks, related to the IAVW for the Region, it was proposed to establish under the CNS/MET SG a Volcanic ash Task Force to replace the Volcanic ash ad-hoc WG. Having agreed on this proposal the meeting formulated the following decision:

Decision 13/31 – ASIA/PAC Volcanic ash Task Force (VA TF)

That, a Volcanic ash Task Force (VA TF) be established with terms of reference and work programme as given in the Appendix O to the Report.

2.2.118 The observer from IATA supported the idea that Indonesia and Philippines be invited to participate in this TF. He also stressed on the importance of the volcanic ash warnings and on the need for better understanding of this information by the ATS units that are responsible for its timely and correct delivery to the pilots.

Quality Assurance/Performance Monitoring in MET Field

2.2.119 The CNS/MET SG/6 meeting included this issue for the first time in its agenda. Information on the State's activities in quality assurance (QA) was presented showed that Australia, Hong Kong, China, New Zealand, Singapore, Malaysia, UK and the United States have already introduced or were on a development stage of introducing of quality systems for their aviation MET Services. However, it was recognized that the majority of the States in the Region have not yet started action on this subject.

2.2.120 As a specific part of QA system in the MET field the meeting agreed that TAF verification was very important element of the quality management and expressed concern on the lack of a unified TAF verification methodology. IATA stressed that TAF verification results when provided to the users would contribute to the operational risk analysis. The meeting was informed also about TAF verification activities by WMO Commission of Aeronautical Meteorology (CAeM), which is the body responsible for developing the methods and techniques to be used in TAF verification. The appropriateness of the Attachment E of Annex 3, Operationally Desirable Accuracy of Forecasts, for the purposes of the forecast verification was also addressed. The meeting felt that this table has not been reviewed for a long period and that it should be updated in view of the introduction of the QA requirements in the Annex 3. It was noted that this issue has already been considered by the ICAO Secretariat within the ANC Task No. MET-0101: Aeronautical MET data representation and codes.

2.2.121 The meeting was informed about the first MET Quality Assurance Workshop for the EUR Region that was held in 2002. The workshop was organized by ICAO with the support of Eurocontrol as a part of the work programme of the Meteorology Group of the EANPG. The meeting agreed that QA training for MET personnel was a very important step in the implementation of the new provisions of Annex 3 and formulated the following conclusion:

Conclusion 13/32 – QA MET seminar for ASIA/PAC Region

That ICAO, in coordination with WMO, organizes a seminar on the quality assurance in the provision of meteorological services to aviation in the ASIA/PAC Region during 2003.

2.2.122 In connection with the above training the ICAO Secretariat advised that it was planned that WMO would be included on a permanent basis in the invitation list for the CNS/MET SG meetings in order to provide basis for a better coordination and collaboration on the matters of common interest and in particular on training-related issues.

Tropical Cyclone advisories and SIGMETs

2.2.123 It was recalled that the APANPIRG/12 adopted conclusion 12/26, that the ASIA/PAC TCACs Honolulu, Miami, New Delhi, Darwin, Nadi and Tokyo use the "FK" data designator in the TC advisories and ensure the routing of these bulletins to London for uplink via SADIS. As a follow-up of this conclusion ICAO addressed the issue through WMO Tropical Cyclone groups in the ASIA/PAC Region. However, the Secretariat has been notified that only Tokyo TCAC has been using the "FK" data designator. The meeting noted with appreciation the information provided by the United States that the TCACs Miami and Honolulu have recently implemented the "FK" designator for TC advisories. IATA pointed out that the advisories from TCAC Tokyo, although with a correct data type designator FK, differ significantly to the Annex 3 standard format.

2.2.124 The meeting was informed on the concern expressed by the WMO Tropical cyclone groups in regard to the lack of 6-hour forecast for the position of the TC center in the TC advisories. The lack of information about the maximum surface wind in the outlook part of the TC SIGMETs was also addressed by the WMO members. The CNS/MET SG/6 felt that these issues needed to be addressed further and agreed that the tropical cyclone related issues would be discussed under a separate agenda item at the next CNS/MET SG meeting.

Report on the progress of the METATM Task Force on CNS/ATM

2.2.125 The main findings of this TF so far were that information required in support of ATM could essentially be classified into three types of information - (i) planning, (ii) en-route, and (iii) terminal information. These requirements were broadly covered by Annex 3, however most states were supplementing the Annex 3 products with more detailed information tailored to specific user needs, as well as providing information such as satellite and weather radar data to ATM units. The Task Force has found the requirement for MET information was highly dependent on the ATM systems and procedures in place, which vary widely from State to State. The final report on the subject would be presented at the CNS/MET SG/7.

Terms of Reference and subject Tasks List of the CNS/MET Sub-Group

2.2.126 The meeting reviewed the Terms of Reference (TOR) of the CNS/MET Sub-Group. To be consistent with new definition of deficiency which was approved by the ICAO Council, the meeting proposed to delete the words "shortcoming and" from the TOR. The meeting reviewed Subject/Tasks List and note that of the 38 Tasks 28 Tasks were completed. The subject/Tasks List was updated to indicate the progress of work accomplished by the Sub-Group.

2.2.127 An updated TOR and the Subject/Tasks List are provided in Appendix P to the report on Agenda Item 2.2. The meeting adopted the proposed amendments to the TOR and Tasks List and reached the following decision.

Decision 13/33 - Amendments to the Terms of Reference and the Subject/Tasks List of the CNS/MET Sub-Group

That, the term of reference and subject/Tasks List of the CNS/MET Sub-Group presented in Appendix P to the report on Agenda Item 2.2 be adopted.

TABLE CNS 1A - AFTN PLAN

Explanation of the Table

Column

1 The AFS station or facility of individual State, listed alphabetically. Each circuit appears twice in the Table.

2 Category of circuit

M - Main trunk circuit connecting Main AFTN communication centres.
T - Tributary circuit connecting Main AFTN communication centre and AFTN stations to relay or retransmit AFTN traffic.
S - AFTN circuit which is used to transmit and receive AFTN traffic to and from a Main or Tributary AFTN communication centre directly connected to it and does not relay AFTN traffic except for the purpose of serving national station(s).

3 and 7 Type of circuit provided:

HF High frequency radio teletype
LTT/a landline teletypewriter, analogue (eg. cable, microwave)
LTT/d landline teletypewriter, digital (eg. cable, microwave)
LDD/a landline data circuit, analogue (eg. cable, microwave)
LDD/d landline data circuit, digital (eg. cable, microwave)
SAT/n/a/d satellite link, the number indicates the number of hops in the circuit: Also use/a for analogue or/d for digital appropriate to the tail circuit.

4 and 8 Circuit signalling speed, current or planned.

5 and 9 Circuit protocols, current or planned.

6 and 10 Data transfer code (syntax), current or planned.

ITA-2 International Telegraph Alphabet No. 2 (Baudot code).
IA-5 International Alphabet No. 5 (ICAO 7 - unit code).
CBI Code and Byte Independent (ATN compliant).

11 Target date of implementation

12 Remarks

Note 1: Circuit is required for alternate routing and for national routing for international traffic.
Note 2: Requirements exist for speech and data (S + DX) communication.

TABLE CNS 1A - AFTN PLAN

State/Station	Cat.	CURRENT				PLANNED				Target date of implementation	Remarks
		Type	Signalling Speed	Protocol	Code	Type	Signalling Speed	Protocol	Code		
1	2	3	4	5	6	7	8	9	10	11	12
AMERICAN SAMOA											
PAGO PAGO - S/NSTU											
United States/KSLC	S	LDD/d	2400 bps	X.25	IA-5						
AUSTRALIA											
BRISBANE - M/YBBB											
Christchurch/NZCH	T	LDD/d	2400 bps	X.25	IA-5						Note 2
Honiara/AGGG	S					LTT	75 baud	None	IA-5		internet as interim measure
Jakarta/WIII	S	SAT/d	9600 bps	X.25	IA-5						Note 1,2
Mauritius/FIMP	S	LTT	50 baud	None	ITA-2						
Nadi/NFFN	M	LDD/d	2400 bps	IA-5	IA-5						Note 2
Nauru/ANAU	S					SAT/d	2400 bps	X.25	IA-5		internet as interim measure
Port Moresby/AYPM	S	SAT/d	9600 bps	X.25	IA-5						Note 2
Port Vila/NVVV	S	LTT	300 baud	None	ITA-2						SITA
Santiago/SCSC	M					LDD/d	2400 bps	X.25	IA-5	12/02	Current routing
Singapore/WSSS	M	LDD/d	2400 bps	X.25	IA-5						
United States/KSLC	M	SAT/d	2400 bps	X.25	IA-5						
BANGLADESH											
DHAKA - S/VGZR											
Bangkok/VTBB	S	SAT/d	300 baud	None	IA-5						
Kolkata/VECC	S	HF RTT	50 baud	None	ITA-2	LTT	2400 bps	None	IA-5	12/02	Routing to be proposed via VTBB/VABB
BHUTAN											
PARO - S/VQPR											
Mumbai/VABB	S					SAT/a	50 baud	None	ITA-2	12/02	Dial-up
BRUNEI DARUSSALAM											
BRUNEI - S/WBSB											
Singapore/WSSS	S	LDD/d	2400 bps	X.25	IA-5						
Kuala Lumpur/WMKK	S	LTT	75 baud	None	ITA-2	LDD/d	2400 bps	X.25	IA-5	12/02	Note 1,2
CAMBODIA											
PHNOM PENH - S/VDPP											
Bangkok/VTBB	S	SAT/d	300 baud	None	ITA-2						Note 2
CHINA											
BEIJING - M/ZBBB											
Guangzhou/ZGGG	S	LDD/d	9600 bps	X.25	IA-5						
Karachi/OPKC	M	LTT	50 baud	None	ITA-2	LDD/a	300 baud	None	IA-5	05/03	
Kathmandu/VNKT	S	SAT/d	300 baud	None	IA-5						
Russian Fedration/UHHH	M	SAT/d	2400 bps	None	IA-5						via Khabarovsk
Pyongyang/ZKKK	S	SAT/d	300 baud	None	IA-5						
Seoul/RKSS	S	SAT/d	9600 bps	X.25	IA-5						AMSS Connection 12/01
Tokyo/RJAA	M	LDD/d	9600 bps	X.25	IA-5						
Ulaan Baatar/ZMUB	S	SAT/d	300 baud	None	IA-5						Note 2
Yangon/VYYY	S					SAT/d	300 baud	None	IA-5	12/02	

TABLE CNS 1A - AFTN PLAN

State/Station	Cat.	CURRENT				PLANNED				Target date of implementation	Remarks
		Type	Signalling Speed	Protocol	Code	Type	Signalling Speed	Protocol	Code		
1	2	3	4	5	6	7	8	9	10	11	12
GUANGZHOU-M/ZGGG											
Beijing/ZBBB	M	LDD/d	9600 bps	X.25	IA-5						
Hanoi/VVNB	S					SAT/d	2400 bps	None	IA-5	06/03	
Hong Kong/VHHH	M	LDD/d	2400 bps	None	IA-5						Note 1
Macau/VMMC	S	LDD/d	2400 bps	None	IA-5						
Sanya/ZJSY	S	LDD/d	2400 bps	None	IA-5						
SANYA-S/ZJSY											
Guangzhou/ZGGG	S	LDD/d	2400 bps	None	IA-5						
Hong Kong/VHHH	S	LDD/d	2400 bps	None	IA-5						
TAIBEI - S/RCTP											
Hong Kong/VHHH	S	LDD/d	4800 bps	X.25	IA-5						
Manila/RPLL	S	LTT	75 baud	None	ITA-2	LDD/d	300 baud	None	ITA-2	12/02	Note 1, 2
Naha/ROAH	S	LDD/d	4800 bps	X.25	IA-5						
HONG KONG, CHINA											
HONG KONG-M/VHHH											
Bangkok/VTBB	M	LDD/d	2400 bps	X.25	IA-5						
Guangzhou/ZGGG	S	LDD/d	2400 bps	None	IA-5						Note 1
Ho-Chi-Minh/VVTS	S	SAT/d	2400 bps	None	IA-5						
Macau/VMMC	S	LDD/d	2400 bps	None	IA-5						
Manila/RPLL	S	LDD/d	300 baud	None	ITA-2						
Sanya/ZJSY	S	LDD/d	2400 bps	None	IA-5						Note 1
Taibei/RCTP	S	LDD/d	4800 bps	X.25	IA-5						
Tokyo/RJAA	M	LDD/d	9600 bps	X.25	IA-5						
MACAU, CHINA											
MACAU - S/VMMC											
Hong Kong/VHHH	S	LDD/d	2400 bps	None	IA-5						
Guangzhou/ZGGG	S	LDD/d	2400 bps	None	IA-5						
COOK ISLAND											
RAROTONGA-S/NCRG											
Christchurch/NZCH	S	LDD/d	2400 bps	None	IA-5						
DPR KOREA											
PYONGYANG-S/ZKKK											
Beijing/ZBBB	S	SAT/d	300 baud	None	IA-5						
FIJI											
NADI - M/NFFN											
Brisbane/YBBB	M	LDD/d	2400 bps	X.25	IA-5						Note 2
Christchurch/NZCH	S	LDD/d	2400 bps	X.25	IA-5						Note 2
Funafuti/NGFU	S					LDD/d	2400 bps	None	IA-5		dial-up
Noumea/NWWW	S	LDD/d	2400 bps	X.25	IA-5						Note 2
Tarawa/NGTT	S	LDD/d	2400 bps	None	IA-5						

TABLE CNS 1A - AFTN PLAN

State/Station	Cat.	CURRENT				PLANNED				Target date of implementation	Remarks
		Type	Signalling Speed	Protocol	Code	Type	Signalling Speed	Protocol	Code		
1	2	3	4	5	6	7	8	9	10	11	12
United States/KSLC	M	SAT/d	2400 bps	X.25	IA-5						Note 2
Wallis Is./NLWW	S					LDD/a	2400 bps	None	IA-5	when traffic justifies	Current routing via Noumea
FRENCH POLYNESIA (FRANCE)											
PAPEETE/NTAA											
Christchurch/NZCH	S	LDD/d	2400 bps	X.24	IA-5						
INDIA											
MUMBAI - M/VABB											
Bangkok/VTBB	M	SAT/a	2400 bps	X.25	IA-5						
Kolkata/VECC	S	LTT	2x50	None	ITA-2	LDD/d	2400 bps	X.25	IA-5	12/02	
Colombo/VCCC	M	SAT/a	50 baud	None	ITA-2	LDD/d	2400 bps	X.25	IA-5	12/02	
Karachi/OPKC	M	SAT/a	200 baud	None	ITA-2						Note 2
Kathmandu/VNKT	S	SAT/a	50 baud	None	ITA-2						
Muscat Seeb/OOMS	M	SAT/a	300 baud	None	ITA-2	SAT	2400 bps	X.25	IA-5	12/02	Note 2
Nairobi/HKNC	M	SAT/a	50 baud	None	ITA-2	LDD/d	2400 bps	X.25	IA-5	12/02	
Paro/VQPR	S					SAT/a	50 baud	None	ITA-2	12/02	Dial-up
KOLKATA - S/VECC											
Dhaka/VGZR	S	RTT	50 baud	None	ITA-2	LTT	2400 bps	None	ITA-2	12/02	Routing to be proposed via VTBB/VABB
Mumbai/VABB	S	LTT	2x50	None	ITA-2	LDD/d	2400 bps	X.25	IA-5	12/02	
DELHI - S/VIDD											
Tashkent/UTTT	S	SAT/a	50 baud	None	ITA-2						
CHENNAI - S/VOMM											
Kuala Lumpur/WMKK	S	LTT	50 baud	None	ITA-2	LDD/d	2400 bps	X.25	IA-5	12/02	Note 1, 2
INDONESIA											
JAKARTA - S/WIII											
Brisbane/YBBB	S	SAT/d	9600 bps	X.25	IA-5						Note1,2
Singapore/WSSS	S	SAT/d	2400 bps	X.25	IA-5						Note 2
JAPAN											
TOKYO - M/RJAA											
Beijing/ZBBB	M	LDD/d	9600 bps	X.25	IA-5						
Hong Kong/VHHH	M	LDD/a	9600 bps	X.25	IA-5						
Russian Federation/UHHH	M	LTT	2400 bps	None	IA-5						
Russian Federation/UUUU	M	LTT	200 baud	None	IA-5	LDD	2400 bps	None	IA-5	12/03	(Moscow)
Naha/ROAH	S	LDD/d	9600 bps	X.25	IA-5						
Seoul/RKSS	S	LDD/d	9600 bps	X.25	IA-5						Note 2
Singapore/WSSS	M	LDD/a	1200 bps	COP-B	IA-5	LDD/d	9600 bps	X.25	IA-5	12/02	
United States/KSLC	M	LDD/d	9600 bps	X.25	IA-5						
NAHA - S/ROAH											
Taibei/RCTP	S	LDD/d	4800 bps	X.25	IA-5						
Tokyo/RJAA	S	LDD/d	9600 bps	X.25	IA-5						

TABLE CNS 1A - AFTN PLAN

State/Station	Cat.	CURRENT				PLANNED				Target date of implementation	Remarks
		Type	Signalling Speed	Protocol	Code	Type	Signalling Speed	Protocol	Code		
1	2	3	4	5	6	7	8	9	10	11	12
KIRIBATI											
TARAWA - S/NGTT											
Nadi/NFFN	S	LDD/d	2400 bps	None	IA-5						
LAO PDR											
VIENTIANE - S/VLVT											
Bangkok/VTBB	S	SAT/d	300 baud	COP-B	IA-5						Note 2
Hanoi/VVNB	S	SAT/d	9600 bps	None	IA-5						
MALAYSIA											
KUALA LUMPUR-S/WMKK											
Bangkok/VTBB	S	SAT/d	2400 bps	X.25	IA-5						Note 1, 2
Brunei/WBSB	S	LTT	75 baud	None	ITA-2	LDD/d	2400 bps	X.25	IA-5	12/02	Note 1, 2
Chennai/VOMM	S	LTT	50 baud	None	ITA-2	LDD/d	2400 bps	X.25	IA-5	12/02	Note 1, 2
Singapore/WSSS	S	SAT/d	1200 bps	X.25	IA-5						Note 2
MALDIVES											
MALE - S/VRMM											
Colombo/VCCC	S	LTT	50 baud	None	ITA-2	SAT/d	2400 bps	X.25	IA-5	12/02	Note 2
MARSHAL ISLAND											
MAJURO - S/PKMJ											
United States/KSLC	S	SAT/d	1200 bps	X.25	IA-5						
MICRONESIA FEDERATED STATE OF											
CHUUK - S/PTKK											
United States/KSLC	S	SAT/a	1200 bps	X.25	IA-5						
KOSRAE - S/PTSA											
United States/KSLC	S	SAT/a	1200 bps	X.25	IA-5						
PONAPEI - S/PTPN											
United States/KSLC	S	SAT/a	1200 bps	X.25	IA-5						
YAP - S/PTYA											
United States/KSLC	S	SAT/a	1200 bps	X.25	IA-5						
MONGOLIA											
ULAANBAATAR-S/ZMUB											
Beijing/ZBBB	S	SAT/d	300 baud	None	IA-5						Note 2
Russian Federation/UIII	S	LTT	50 baud	None	ITA-2						(Irkutsk)
MYANMAR											
YANGON - S/VYYY											
Bangkok/VTBB	S	SAT/d	300 baud	COP-B	IA-5						Note 2
Beijing/ZBBB	S					SAT/d	300 baud	None	IA-5	12/02	Note 1,2

TABLE CNS 1A - AFTN PLAN

State/Station	Cat.	CURRENT				PLANNED				Target date of implementation	Remarks
		Type	Signalling Speed	Protocol	Code	Type	Signalling Speed	Protocol	Code		
1	2	3	4	5	6	7	8	9	10	11	12
NAURU											
NAURU - S/ANAU											
Brisbane/YBBB	S					SAT/d	2400 bps	X.25	IA-5		VIA Internet as interium measure
NEPAL											
KATHMANDU - S/VNKT											
Beijing/ZBBB	S	SAT/d	300 baud	None	IA-5						
Mumbai/VABB	S	SAT/a	50 baud	None	ITA-2						
NEW CALEDONIA (FRANCE)											
NOUMEA - S/NWWW											
Nadi/NFFN	S	LDD/d	2400 bps	X.25	IA-5						Note 2
NEW ZEALAND											
CHRISTCHURCH-T/NZCH											
Brisbane/YBBB	T	LDD/d	2400 bps	X.25	IA-5						Note 2
Nadi/NFFN	S	LDD/d	2400 bps	X.25	IA-5						Note 1, 2
Niue/NIUE	S										Currently by FAX
Papeete/NTAA	S	SAT/d	2400 bps	X.25	IA-5						
Rarotonga/NCRG	S	LDD/d	2400 bps	None	IA-5						
Tongatapu/NFTF	S					LDD/d	2400 bps	None	IA-5	12/02	
USA/KSLC	S					LDD/d	9600 bps	X.25	IA-5	11/02	
NIUE IS											
NIUE - S/NIUE											
Christchurch/NZCH	S										Currently by FAX
PAKISTAN											
KARACHI - M/OPKC											
Beijing/ZBBB	M	LTT	50 baud	None	ITA-2	LDD/a	300 baud	None	IA-5	05/03	
Mumbai/VABB	M	SAT/a	200 baud	None	ITA-2						Note 2
Kabul/OAKB	S	SAT/d	300 baud	None	IA-5						Note 2
Kuwait/OKBK	M	SAT/a	50 baud	None	ITA-2						
PALAU											
KOROR - S/PTRO											
United States/KSLC	S	SAT/d	1200 bps	X.25	IA-5						
PAPUA NEW GUINEA											
PORT MORESBY-S/AYPM											
Brisbane/YBBB	S	SAT/d	9600 bps	X.25	IA-5						Note 2
PHILIPPINES											
MANILA - S/RPLL											
Hong Kong/VHHH	S	LDD/d	300 baud	None	ITA-2						Note 2
Singapore/WSSS	S	LDD/d	300 baud	None	ITA-2						Note 1, 2
Taibei/RCTP	S	LTT	75 baud	None	ITA-2	LDD/d	300 baud	None	ITA-2	12/02	Note 1, 2

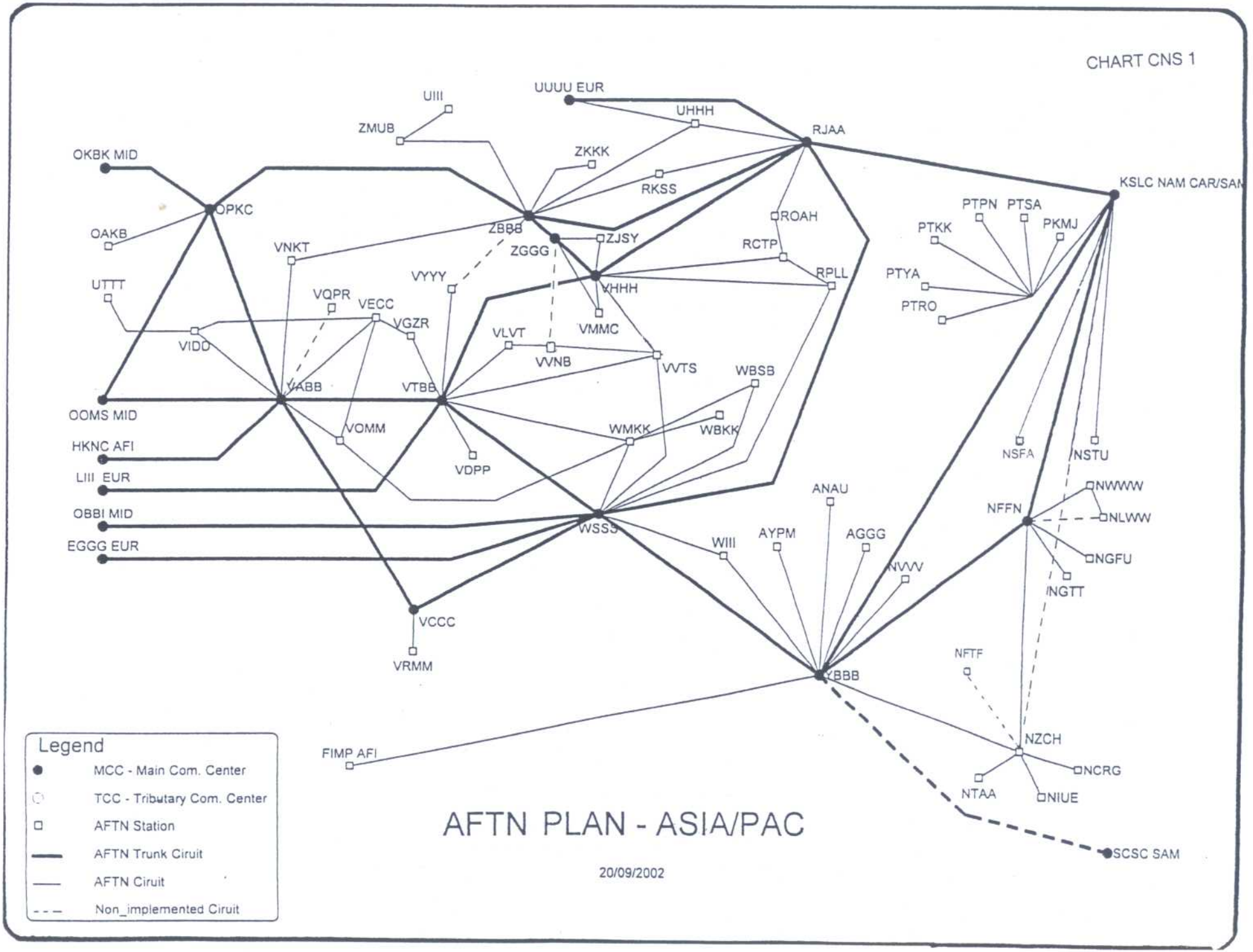
TABLE CNS 1A - AFTN PLAN

State/Station	Cat.	CURRENT				PLANNED				Target date of implementation	Remarks
		Type	Signalling Speed	Protocol	Code	Type	Signalling Speed	Protocol	Code		
1	2	3	4	5	6	7	8	9	10	11	12
REPUBLIC OF KOREA											
SEOUL - S/RKSS											
Beijing/ZBBB	S	SAT/d	9600 bps	X.25	IA-5						AMSS Connection 12/01
Tokyo/RJAA	S	LDD/d	9600 bps	X.25	IA-5						Note 2
SAMOA											
APIA - S/NSFA											
USA/KSLC	S	LDD/d	2400	X.25	IA-5						
SINGAPORE											
SINGAPORE-M/WSSS											
Bahrain/OBBI	M	LTT	200 baud	None	ITA-2	SAT/a	2400 bps	X.25	IA-5	12/02	
Bangkok/VTBB	M	LDD/d	1200 bps	X.25	IA-5						Note 2
Brisbane/YBBB	M	LDD/d	2400 bps	X.25	IA-5						
Brunei/WBSB	S	LDD/d	2400 bps	X.25	IA-5						
Colombo/VCCC	M	LTT	75 baud	None	ITA-2	LDD/d	2400 bps	X.25	IA-5	12/02	
Ho-Chi-Minh/VVTS	S	SAT/a	300 baud	None	IA-5						
Jakarta/WIII	S	SAT/d	2400 bps	X.25	IA-5						Note 2
Kuala Lumpur/WMKK	S	SAT/d	1200 bps	X.25	IA-5						Note 1,2
London/EGGG	M	LDD/d	1200 bps	X.25	IA-5						
Manila/RPLL	S	LDD/d	300 baud	None	ITA-2				IA-5		
Tokyo/RJAA	M	LDD/a	1200 bps	COP-B	IA-5	LDD/d	9600 bps	X.25	IA-5	12/02	
SOLOMON IS.											
HONIARA - S/AGGG											
Brisbane/YBBB	S					LTT	75 baud	None	IA-5	12/02	VIA Internet as intermedium measure
SRI LANKA											
COLOMBO - M/VCCC											
Mumbai/VABB	M	SAT/a	50 baud	None	ITA-2	LDD/d	2400 bps	X.25	IA-5	12/02	
Male/VRMM	S	LTT	50 baud	None	ITA-2	SAT/d	2400 bps	X.25	IA-5	12/02	Note2
Singapore/WSSS	M	LTT	75 baud	None	ITA-2	LDD/d	2400 bps	X.25	IA-5	12/02	
THAILAND											
BANGKOK - M/VTBB											
Mumbai/VABB	M	SAT/a	2400 bps	X.25	IA-5						
Dhaka/VGZR	S	SAT/d	300 baud	None	IA-5						
Ho-Chi-Minh/VVTS	S	SAT/d	2400 bps	None	IA-5						
Hong Kong/VHHH	M	LDD/d	2400 bps	X.25	IA-5						
Kuala Lumpur/WMKK	S	SAT/d	2400 bps	X.25	IA-5						Note 1, 2
Phnom Penh/VDPP	S	SAT/d	300 baud	None	ITA-2						Note 2
Rome/LIII	M	SAT/d	2400 bps	X.25	IA-5						
Singapore/WSSS	M	LDD/d	1200 bps	X.25	IA-5						Note 2
Vientiane/VLVT	S	SAT/d	300 baud	COP-B	IA-5						
Yangon/VYYY	S	SAT/d	300 baud	COP-B	IA-5						Note 2
TONGA											
TONGATAPU - S/NFTF	S										
Cristchurch/NZCH						LDD/d	2400 bps	None	IA-5	12/02	

TABLE CNS 1A - AFTN PLAN

State/Station	Cat.	CURRENT				PLANNED				Target date of implemen-tation	Remarks
		Type	Signalling Speed	Protocol	Code	Type	Signalling Speed	Protocol	Code		
1	2	3	4	5	6	7	8	9	10	11	12
TUVALU											
FUNAFUTI - S/NGFU											
Nadi/NFFN	S					LDD/d	2400 bps	None	IA-5		Dial-up, When traffic justify, Note 2
UNITED STATES											
USA-M/KSLC											
Apia/NSFA	S	LDD/d	2400 bps	X.25	IA-5						
Brisbane/YBBB	M	SAT/d	2400 bps	X.25	IA-5						
Christchurch	S					LDD/d	9600 bps	X.25	IA-5	11/02	
Chuuk/PTKK	S	SAT/d	1200 bps	X.25	IA-5						
Koror/PTRO	S	SAT/d	1200 bps	X.25	IA-5						
Kosrae/PTSA	S	SAT/d	1200 bps	X.25	IA-5						
Majuro/PKMJ	S	SAT/d	1200 bps	X.25	IA-5						
Nadi/NFFN	M	SAT/d	2400 bps	X.25	IA-5	LDD/d				12/02	
Pago Pago/NSTU	S	SAT/d	2400 bps	X.25	IA-5						
Ponapei/PTPN	S	SAT/a	1200 bps	X.25	IA-5						
Tokyo/RJAA	M	LDD/d	9600 bps	X.25	IA-5						
Yap/PTYA	S	SAT/d	1200 bps	X.25	IA-5						
VANUATU											
PORT VILA - S/NVVV											
Brisbane/YBBB	S	LTT	300 baud	None	ITA-2						SITA
VIET NAM											
HANOI-S/VVNB											
Vientiane/VLVT	S	SAT/d	9600 bps	None	IA-5						
Ho-Chi-Minh/VVTS	S	SAT/d	9600 bps	None	IA-5						
Guangzhou/ZGGG	S					SAT/d	2400 bps	None	IA-5	06/03	
HO-CHI-MINH - S/VVTS											
Bangkok/VTBB	S	SAT/d	2400 bps	None	IA-5						
Hanoi/VVNB		SAT/d	9600 bps	None	IA-5						
Hong Kong/VHHH	S	SAT/d	2400 bps	None	IA-5						
Singapore/WSSS	S	SAT/a	300 baud	None	IA-5						
WALLIS IS. (FRANCE)											
WALLIS - S/NLWW											
Nadi/NFFN	S					LDD/A	2400 bps	None	IA-5		Current routing via Noumea

CHART CNS 1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ZKKK
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RKSS
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OPKC
ROAH
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PKMJ
OAKB
ZJSY
PTKK
VNKT
ZGGG
RCTP
RPLL
PTYA
UTTT
VYYY
VHHH
VQPR
VECC
PTRO
VGZR
VMMC
VIDD
VLVT
VVNB
VVTS
WBSB
OOMS MID
VABB
VTBB
VOMM
WMKK
WBKK
HKNC AFI
NSFA
NSTU
VDPP
LIII EUR
ANAU
NWWW
NFFN
OBBI MID
WSSS
AYPM
AGGG
NLWW
EGGG EUR
WIII
NVVV
NGFU
NGTT
VCCC
VRMM
NFTF
YBBB
NZCH
FIMP AFI
NCRG
NTAA
NIUE
SCSC SAM
Legend
MCC - Main Com. Center
TCC - Tributary Com. Center
AFTN Station
AFTN Trunk Ciruit
AFTN Ciruit
Non_implemented Ciruit
AFTN PLAN - ASIA/PAC
20/09/2002

INTERNATIONAL CIVIL AVIATION ORGANISATION

ASIA PACIFIC OFFICE

ATN DOCUMENTATION TREE

April 2002

Version 1.0

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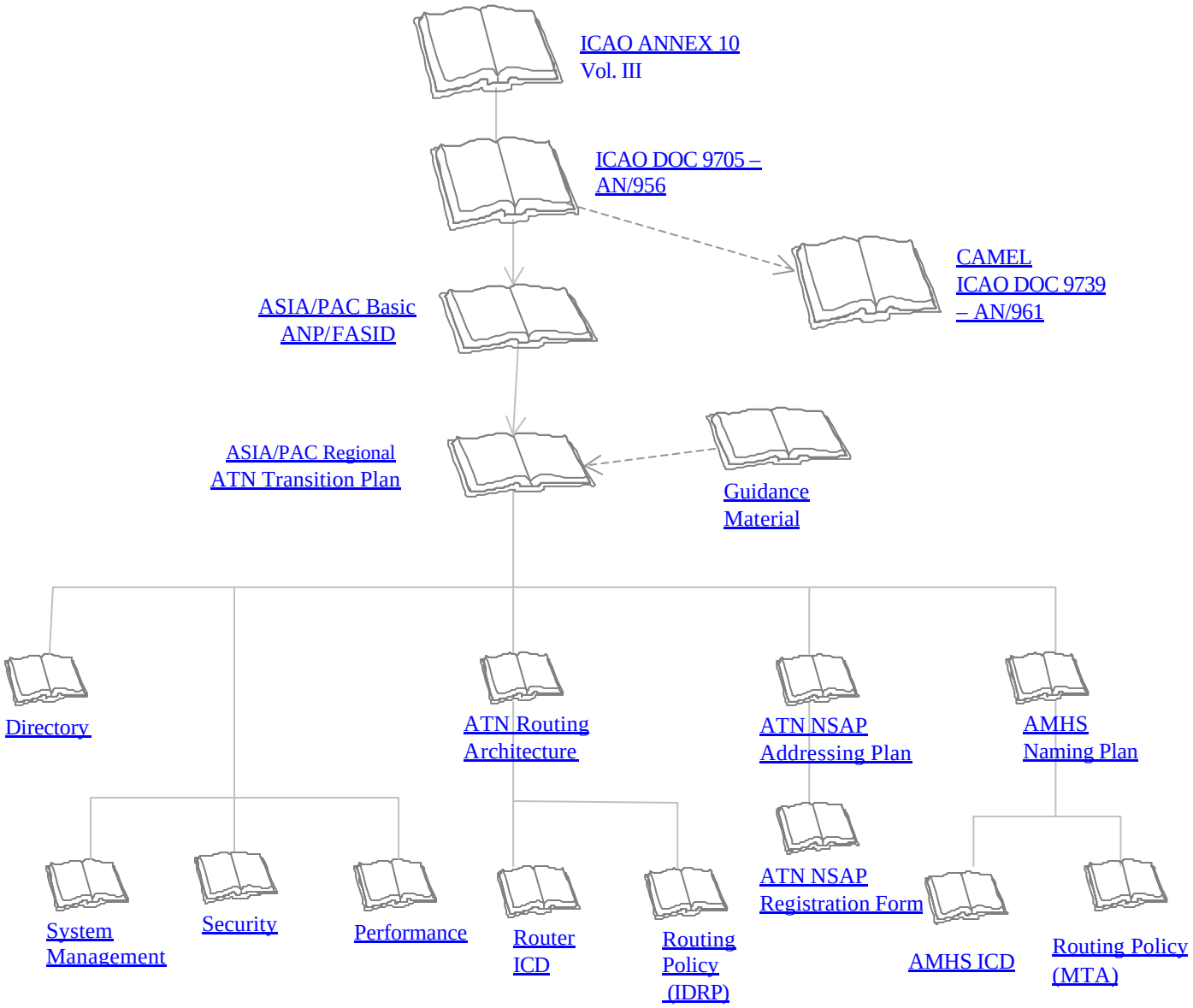
Table of Contents

1 Scope

This document has been developed to serve as index and hierarchy of all documentations associated with the ATN in the Asia Pacific Region. A hierarchical representation of the relationships between the various documents is presented in section 2 “Documentation Tree”, with associated document descriptions located in section 3 “Documentation Profiles”.

2 Documentation Tree



3 Documentation Profiles

3.1 ICAO Annex10 Vol. III

Title:

International Standards and Recommended Practices, Aeronautical Telecommunications, Annex 10 Volume III.

Latest Version: March 2001

Purpose:

This ICAO document defines the Standards and Recommended Practices (SARPs) for the Aeronautical Telecommunications Network (ATN).

Contents:

Subjects covered by the document:

- Part I – Digital Data communication Systems.
  - Chapter 1 – Definitions.
  - Chapter 3 – Aeronautical Telecommunication Network.
  - Chapter 4 – Aeronautical Mobile-Satellite Service.
  - Chapter 6 – VHF Air-Ground Digital Link (VDL).
  - Chapter 8 – AFTN.
- Part II – Voice Communication Systems.
  - Chapter 2 – Aeronautical Mobile Service.
  - Chapter 4 – Aeronautical Speech Circuits.
  - Chapter 5 – Emergency Locator Transmitter (ELT) for search and rescue.

3.2 Manual of Technical Provisions for the Aeronautical Telecommunication Network - ICAO DOC 9705 – AN/956

Title:

Manual of Technical Provisions for the Aeronautical Telecommunication Network (ATN).

Latest Version: 3rd Edition

Purpose:

This ICAO manual contains detailed technical information and serves to further elaborate on the ATN standards as defined in Chapter 3 of Annex 10, Volume III, Part I.

Contents:

Subjects covered by the document:

- Sub-Volume I – Introduction and System Level Requirements.
- Sub-Volume II – Air-Ground Applications.
- Sub-Volume III – Ground-Ground Applications.
- Sub-Volume IV – Upper Layer Communications Services (ULCS).
- Sub-Volume V – Internet Communications Services (ICS).
- Sub-Volume VI – ATN Systems Management Provisions.
- Sub-Volume VII – ATN Directory Service.
- Sub-Volume VIII – ATN Security Service.
- Sub-Volume IX – ATN Identifier Registration.

3.3 Comprehensive Aeronautical Telecommunications Network Manual (CAMEL) - ICAO DOC 9739 – AN/961

Title:

Comprehensive Aeronautical Telecommunications Network (ATN) Manual.

Latest Version: 1st Edition - 2000

Purpose:

This document provides guidance material in support of the ATN SARPS as defined in Annex 10, Vol. III and Doc. 9705.

Contents:

Subjects covered by the document:

- Components, functionality and concepts of the ATN.
- ATN Internet lower layer routing protocols.
- ATN Upper layer application protocols.
- ATN subnetworks and corresponding SNDCF's layers.
- Air-ground applications, ADS, CPDLC, CM, FIS.
- Ground-Ground applications ATSMHS, AIDC.

3.4 Routing Policy (IDRP)

To be developed.

3.5 Routing Policy (MTA)

To be developed.

3.6 Directory

To be developed.

3.7 System Management

To be developed.

3.8 Performance

To be developed.

3.9 Security

To be developed.

3.10 Router ICD

To be developed.

3.11 ATN Ground-Ground Transition Plan

Title:

ASIA/PAC ATN Transition Plan.

Latest Version: 1.0

Purpose:

This document describes the transition activities that are to be performed by States in the region for a coordinated migration from AFTN to the new ATN environment.

Contents:

Subjects covered by the document:

- Existing ground infrastructure.
- ATN End system applications.
- ATN Traffic, both ground-ground and air-ground communication paths.
- ATN routing architecture.
- ATN backbone trunks.
- Interconnection of ATN routers.
- Transition activities.

Remarks:

Subsequent to discussions stemming from the CNS/MET SG/5 meeting much of the document's contents has been included into the CNS FASID. This document will under go no further revisions.

3.12 ATN Routing Architecture

Title:

ASIA/PAC ATN Routing Architecture.

Latest Version: 1.0

Purpose:

This document presents the routing architecture for the ground-ground infrastructure to eventually replace the existing AFTN. It is intended that this architecture will also be suitable for the accommodation of the air-ground communications traffic at some later time.

Contents:

Subjects covered by the document:

- Routing Domain Fundamentals.
- Router Fundamentals.
- ASIA/Pacific regional routing architecture.
- Routing domains.
- ATN Transition.

3.13 ATN NSAP Addressing Plan

Title:

ASIA/PAC ATN Addressing Plan.

Latest Version: 1.0

Purpose:

This document presents recommendations for the assignment of ATN NSAP addresses within the region. It also defines the methods by which values are assigned to each field of the NSAP Address and specifies the assumptions upon which the addressing format has been defined.

Contents:

Subjects covered by the document:

- NSAP Address structure adopted by states of the ASIA/PAC Region.
- Recommendations for the values of each field of the NSAP address.
- Authority responsible for NSAP field assignments.

3.14 AMHS Naming Plan

Title:

ASIA/PAC AMHS Naming Plan.

Latest Version: 1.0

Purpose:

This document presents recommendations for the AMHS naming conventions to be adopted by AMHS users within the region.

Contents:

Subjects covered by the document:

- MF-Addressing scheme.
- XF-Addressing scheme.
- Conventions for use of MF-Addressing Format.
- Conventions for use of XF-Addressing Format.
- General use of X.400 O/R Addresses.

3.15 ATN NSAP Registration Form

Title:

ASIA/PAC ATN NSAP Registration Form.

Latest Version: 1.0

Purpose:

This document specifies the information that is required for registration of devices that are to connect to the ATN environment within the Region.

Contents:

Subjects covered by the document:

- Registration of NSAP Addresses for ATN Routers and ATN End-System.
- Registration of Communication Circuits for ATN Routers and ATN End-Systems.

3.16 Guidance Material for Ground Elements in ATN Transition

Title:

Guidance Material for Ground Elements in ATN Transition.

Latest Version: 2.0

Purpose:

This document contains guidance material for ATN transition planning within the ASIA/PAC region.

Contents:

Subjects covered by the document:

- ATN overview
  - Ground-ground service components.
  - Air-ground service components.
  - ATN security service.
  - ATN system management.
  - ATN directory.
- Planning Issues to be considered
  - ATM operational concept.
  - Transition planning.
  - Implementation planning.
  - Proposed regional planning activities for transition.
  - Proposed State planning activities for transition.
- Guidance material for ground based elements
  - Integration of new and existing infrastructure.
  - Message service definition, benefit and procedure in inter-domain operation.
  - Guidance for administrative domain definition.
  - Guidance for architectural design of ATN ground elements.
  - Connection for inter-domain operation and guidance material.
  - Identification of traffic type, quality of service with respect to inter-domain operation.
  - Performance issues of reliability, maintainability, and reliability with respect to inter-domain operation.
  - Transition paths and transitional procedure in inter-domain operation.
  - Cost analysis of ATN ground elements in transitional development for inter-domain operation.
  - ATN security solution.

3.17 AMHS ICD

Title:

ICD for ATS Message Handling System (AMHS) in Asia/Pacific Region

Latest Version: 1.0

Purpose:

This ICD has been developed in order to facilitate interoperability between States in the deployment of AMHS within the ASIA/PAC region.

Contents:

Subjects covered by the document:

- AMHS functions.
- Network configuration.
- Protocol specification overview.
- AMHS specifications.
- Upper layer specifications.
- Lower layer specifications.
- AHMS PICS.

3.18 Facilities and Services Implementation Document (FASID)

Title:

Facilities and Services Implementation Document.

Latest Version: To be advised.

Purpose:

This document contains elements of Part IV, CNS of the ASIA/PAC FASID.

Contents:

Subjects covered by the document:

- Table 1A, AFTN/Data Circuit Plan.
- Table 1B, ATN Router Plan.
- Table 1C, ATSMHS Routing Plan.
- Table 1D, AIDC Circuit Plan.

Checklist for Implementation of Ground/Ground ATN Network Infrastructure[1]
Phase I: Initial Network Deployment for Ground/Ground Applications

No.	Items to check	References	Remarks
1.	**Establish ATN Implementation Team (AIT).** Designation of Programme/Project Manager and required staff. Secure funding support.		AIT membership may include representatives from: - CAA/ATS Service provider(s); - Operations and engineering units; - Industry; - Airlines; - Aeronautical communication service provider(s); - Telecommunication service providers
2.	**State Plan.** Develop a phase plan with target date for the implementation of ATN infrastructure based on the regional planning documents and the ATN Standards and Recommended Practices (SARPs) and Guidance Material. Secure budget to support: - Trials/demonstrations, - Phased implementation, - Human resources and training.	ANNEX 10 Vol. III - Doc. 9705-AN/956 *Manual of Technical Provisions for the ATN*; - Doc. 9739-AN/961 *Comprehensive Aeronautical Telecommunication Network Manual*; Table CNS –1B of ASIA/PAC FASID ASIA/PAC Region ATN Transition Plan.	Second Edition of Doc. 9705.

No.	Items to check	References	Remarks
3.	**Determine network architecture, policy.** Consider factors such as: (a) Redundancy (no single point of failure); (b) Status and position within the regional ATN network; (c) Number and type of intra-State facilities to be connected (ATS, AOC, *etc.*); (d) Site geographical locations; (e) Security, availability, integrity (Quality of Service) requirements (depending on application type); (f) Projected circuit loadings *vs.* capacity of existing circuits; (g) Router loading; which will determine: - network topology, type and media, - network infrastructure requirements, - intra-State routing domains (AOC, ATS *etc.*) and routing policies	Interface Control Documents (ICDs) for ATN End Systems. Asia/Pacific Regional ICD: ATN Ground-Ground BIS Router. Asia/Pacific ATN Routing Architecture Plan. Asia/Pacific ATN Addressing Plan Table CNS –1B of ASIA/PAC FASID ASIA/PAC Region ATN Transition Plan.	(a) May require multiple routers at each network node and divers connectivity between nodes. (b) Backbone sites have greater requirements for availability and throughput. (c) Will AOCs be permitted access to the ATN backbone through ATS routers? (d) Affects network topology, choice of subnetwork, physical communications medium/media. (e) QoS and Security issues influence use of communications service provider, public network/leased line *vs.* dedicated private connection, *etc.* (f) Determine bandwidth requirement, including growth capacity (g) Avoid “choke points” that place excessive load on a single node. Local network deployment may use ATN BIS, ATN IS or OSI IS routers. Choice of router type depends on cost, capability, suitability for application requirements (aeronautical grade *vs.* commercial communications grade) *etc.* Commercial network simulation packages can help analysis of network performance under normal and abnormal conditions
	Develop ATN address allocation plan. Designate responsible agent for administering address allocation and registration of addresses with ICAO.		

No.	Items to check	References	Remarks
4.	**Equipment Acquisition and Evaluation.** Conduct laboratory tests with proposed BIS, IS and ES to ensure connectivity and performance. Begin deployment at different network sites as tests proceed, and pre-operational testing.	ICDs.	Equipment Protocol Implementation Conformance Statements (PICS) can help evaluation of equipment compatibility and can assist in creating ICDs. Verify network performance: throughput, effects of failures *etc*.
5.	**Inter-State ATN router inter-connection.** Coordination with States concerned for agreement on implementation of inter/intra regional connections including technical interface, routing policy and target dates. The following aspects should be considered: - Applications to be supported. - Capability to support air/ground applications. - Use of existing circuits. - Connectivity and integrity. - Security. - Alternate routing capability. - System reliability. - QoS. Capacity and predicted load demand.	Asia/Pacific Region ATN Transition Plan. Asia/Pacific ATN Routing Architecture Plan. Asia/Pacific ATN Addressing Plan Asia/Pacific Regional BIS Router ICD. Applicable ES ICDs.	For AMHS, there is no need to provide two separate physical lines to support existing AFTN service and to introduce new AMHS circuit, as both requirements can be satisfied using one physical link given adequate capacity and QoS.
6.	**AMHS inter-connection.** - Provide AMHS/AFTN gateway while transitioning between ATFN and AMHS; - Follow the ASIA/PAC AMHS naming convention, detail arrangements for AMHS naming plan for MF-Addressing and XF-Addressing Scheme; - Register all PRMDs with ICAO Regional Office; - Conduct close coordination with States concerned. Establish date for phasing out of AFTN connections, once sufficient route diversity has been established in ATN network.	- PRMD value shall be selected as prescribed in Doc. 9705.	Inter- and intra-regional connections should be based on bilateral agreements and in compliance with AMHS SARPs, technical specification and ICD.

List of Abbreviations:

AFTN	Aeronautical Fixed Telecommunication Network
AMHS (ATSMHS)	ATS Message Handling System
ATN	Aeronautical Telecommunication Network
ATS	Air Traffic Service
BIS	Boundary Intermediate System
ES	End System
FASID	Facilities and Services Implementation Document
ICD	Interface Control Document
IS	Intermediate System
PICS	Protocol Implementation Conformance Statements
SARPs	Standards and Recommended Practices

List of References:

List of References:

[1]	ICAO Annex 10 Volume III, DOC. 9705-AN/956 *Manual of Technical Provisions for the Aeronautical Telecommunications Network*	Second Edition of 9705.
[2]	ICAO Annex 10 Volume III, DOC. 9739-AN/961 *Comprehensive Aeronautical Telecommunication Network Manual*	
[3]	Asia/Pacific Regional Interface Control Document (ICD): ATN Ground-Ground Boundary Intermediate System (BIS) Router	Draft rev. 1.1 (not yet approved)
[4]	Asia/Pacific FASID	
[5]	Asia/Pacific Region ATN Transition Plan.	
[6]	Asia/Pacific ATN Addressing Plan	
[7]	ATN Routing Policy for Asia/Pacific Region.	Draft (not yet approved)
[8]	Asia/Pacific ATN Routing Architecture Plan.	
[9]	AMHS ICD in Asia/Pacific Region	

[1] This document comprises a checklist for the deployment of an ATN Ground Network to support initial ground-ground ATN applications, notably ATSMHS/AMHS, based on the Standards and Recommended Practices (SARPs) specified by Edition 2 of ICAO Doc. 9705-AN/956.

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 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.	Completed
3		Subject: ATN major elements. Task: Provide performance and functional requirements of ATN.	A	1) Develop ATN Technical Documents. - Security - Performance - System Management	~~2003~~ 2003 2003 2003
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	Development of detail description for the existing tables and Charts for the G/G part of the CNS FASID. 1) Table CNS 1B – ATN Router Plan 2) Table CNS 1C – ATS MHS 3) Table CNS 1D – AIDC Routing Plan	 Completed ~~2002~~ 2003 ~~2002~~ 2003

No.	Ref.	Task	Priority	Action Proposed/In Progress	Target
6		Subject: ATN Documentation Task: Development of ATN Routing Documentations and ICDs.	A	Development of ATN Documents: 1) A Router ICD 2) A Routing Policies (IDRP/MTA) 3) Directory of Service 4) An AMHS ICD 5) An AIDC ICD	~~2002~~ 2003 ~~2002~~ 2003 ~~2002~~ 2003 Completed ~~2005~~ 2004
7		Subject: Use of the public Internet Task: Develop guidance material for the use of the public internet technology to support AFTN, where required	A	Study the possibility of using the public Internet and develop guidance material for its use to support low speed AFTN stations, as an interim measure, with particular emphasis on security and reliability.	2003
8		Subject: Use of IP Task: Develop guidance material for the use of IP as a Sub-Network for ATN	B	In accordance with the work being performed by ATNP, develop guidance material for the support of IP as a Sub-Network of the ATN, with particular emphasis on system compatibility between adjacent centers and security	2005

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 provision of terrestrial-based navigation facilities, non-precision and precision approach and landing have been implemented in most cases;

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

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

e) feasibility of GBAS systems to support category II and III operations in 2006;

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 that augmented GNSS- based systems will be available to support Category I operations from end of year 2004;

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 aircraft equipage.

The 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 GBAS to support Category I operations where appropriate;

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

d) Introduce applicable Required Navigation Performance (RNP) for approach, landing and departure operations in accordance with ICAO provisions.

e) Conduct necessary on-going GNSS and RNP education and training for operational personnel 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 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 system performance;

6) Airworthiness and operational approvals allowing the current GNSS to be used 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 systems;

8) Augmentation systems include both satellite-based (SBAS) and ground-based systems (local and regional) augmentation;

9) 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 Air Navigation Plan for CNS/ATM Systems;

3) Implementation shall be in full compliance with ICAO SARPs and PANS;

4) Introduce the use of GNSS as primary means of navigation in remote/oceanic areas;

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

6) States are encouraged to implement future GNSS approvals based on TSO C145/146 receiver standards or equivalents;

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-coordinated 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, including RNP, 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.

Note1: Identified SBAS systems are EGNOS, MSAS and WAAS. The MSAS is expected to be available for providing augmentation for the Asia/Pacific region;

ADS-B STUDY AND IMPLEMENTATION TASK FORCE

Terms of Reference

Conduct a study for the selection of ADS-B link for use in the Asia/Pacific Region. The work to be addressed should include:

- review the available link technology* for ADS-B and recommend the most suitable technology for selection as a preferred link for implementation in the Asia/Pacific Region in the near term and long term taking into account cost /benefit studies;

- identify and quantify near term and long term benefits of ADS-B;

- develop a recommended implementation plan including a recommended target date of implementation taking into account availability of SARPs and readiness of airspace users and ATS providers for a coordinated implementation of service and benefits.

Note:

1. The Task Force, while undertaking the task, should take into account of the work being undertaken by OPLINK, SAS and AMC Panels with a view to avoid any duplication.

2. The Task Force should complete its work and present the result to the ATS/AIS/ SAR/ SG, CNS/MET/ SG and to the APANPIRG/14 meetings to be held in 2003.

3. In assessing the readiness of airspace users, take into account business aviation usage

* The link to be considered are SSR-Mode S ES1090 MHz, VDL Mode 4 and UAT.

PART IV
COMMUNICATIONS, NAVIGATION AND SURVEILLANCE (CNS)

1. INTRODUCTION

1.1 This part of the Asia and Pacific Basic Air Navigation Plan (ANP) contains elements of the existing system and the basic planning principles, operational requirements and planning criteria related to Communications, Navigation and Surveillance (CNS) system and are considered to be minimum necessary for effective planning of CNS facilities and services in the ASIA/PAC region. A detailed description of the facilities and services to be provided by States in order to fulfill the requirements of the Basic ANP is contained in the ASIA/PAC Facilities and Services Implementation Document (FASID). During the transition and pending full implementation of the CNS/ATM system, it is expected that the existing requirements will gradually be replaced by new CNS/ATM system requirements. Furthermore, it is expected that some elements of the CNS/ATM system will be subject to amendment, as necessary, on the basis of experience gained in their implementation.

1.2 This Standards, Recommended Practices and Procedures to be applied are contained in:

a) Annex 10 – *Aeronautical Telecommunications and*

b) *Regional Supplementary Procedures – Communications* (MID/ASIA and PAC SUPPS, Part 2 of Doc. 7030)

1.3 Background information which is of importance in the understanding and effective application of the plan, is contained in the Report of the Third Asia/Pacific Regional Air Navigation Meeting (Doc. 9614, ASIA/PAC/3 (1993)) on Agenda Items 10, 11 and 12.

1.4 Relevant Recommendations and/or Conclusions of ASIA/PAC/3 RAN Meeting and Regional Planning Groups, where applicable, are shown within brackets to indicate the source.

2. COMMUNICATIONS

2.1 *General*

2.1.1 The plan and details of the operational requirements for communications are contained in the Tables CNS-1A, CNS-1B, CNS-1C, CNS-1D, CNS-IE and CNS-2 and associated Charts of Part IV of ASIA/PAC FASID.

2.2 The Aeronautical Fixed Service comprises:

a) the Aeronautical Fixed Telecommunication Network (AFTN);

b) Ground elements of the Aeronautical Telecommunication Network (ATN). The data communications sub-networks and associated systems supporting the ground-ground applications of the aeronautical telecommunication network (ATN), namely the ATS message handling services (ATS MHS) and ATS Inter-Facility Data Communication (AIDC);

c) gateways that will allow inter-operation between AFTN and ATS MHS.

d) ATS direct speech circuits; and

e) Meteorological operational circuits, networks and broadcast systems.

2.2.1 *Aeronautical Fixed Telecommunication Network (AFTN)*

2.2.1.1 States should ensure that telecommunication agencies engaged in providing aeronautical circuits be impressed of the need for:

a) high reliability terrestrial links connecting aeronautical facilities and

common carrier terminals inclusive of priority restoration of service commensurate with the requirements of a safety service; and

b) rapid restoration of circuits in the event of breakdown.

[ASIA/PAC/3, Conc. 10/1]

2.2.1.2 States operating AFTN circuits which do not function satisfactorily 97 per cent of the time during which the circuit is scheduled to be in operation, should exchange monthly circuit performance charts on the form provided in Appendix A of Agenda Item 10 of ICAO Doc. 9614, ASIA/PAC/3 (1993). Where a circuit consistently achieves 97 per cent reliability, the exchange of performance charts may cease. The circuit performance charts should be exchanged directly between the correspondent stations, with copies to the Administrations concerned and to the ICAO Regional Office. States should also identify the causes for inadequate circuit performance and take necessary remedial measures.
[ASIA/PAC/3, Con. 10/2]

2.2.1.3 States responsible for the operation of AFTN circuits which are not adequately meeting transit time requirements should record transit time statistics on the 23rd day of each third month (January, April, July and October) of each year, in accordance with the existing practices, for the AFTN circuits and terminals under their jurisdiction which do not meet the specified transit time criteria. The data recorded should be exchanged directly between the correspondent stations, with copies to Administration concerned and to the ICAO Regional Office.
[ASIA/PAC/3 Conc. 10/3]

2.2.1.4 States operating AFTN circuits should:

a) record AFTN statistics in the form contained in Appendix B of Agenda Item 10 of ICAO Doc. 9614, ASIA/PAC (1993) from 23 to 25 April and October each year;

b) exchange the circuit loading data for each circuit with each correspondent station, provide a copy to ICAO Regional Office; and

c) evaluate circuit loading and take appropriate remedial action when occupancy level exceeds permissible levels specified in the *Manual on the Planning and Engineering of the Aeronautical Fixed Telecommunications Network*, Doc. 8259-An/936)

[ASIA/PAC/3, Conc. 10/4]

2.2.1.5 States concerned should take positive measures to ensure system reliability and provide adequate management and supervision of facilities to eliminate system failure, and to ensure data integrity and timely delivery of messages.
[ASIA/PAC/3, Concl. 10/5]

2.2.1.6 The AFTN entry/exit points:

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

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

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

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

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

[APANPIRG/11 Conc. 11/6]

2.2.1.7 *Technical aspects of Aeronautical Fixed Telecommunications Network (AFTN) rationalization.*

2.2.1.7.1 The main trunk circuits interconnecting main AFTN communication centers should be provided by LTT facilities, operate at a modulation rate commensurate with operational requirement, and employ international alphabet number 5 (IA-5) and character-oriented data link control procedures – system category B, or bit-oriented data link control

procedures as defined in Annex 10, Volume III, Part I, Chapter 8.

2.2.1.7.2 Also the tributary circuits interconnecting tributary AFTN communication centers with main AFTN communication centers, with other tributary AFTN communication centers, or with AFTN stations should be provided with LTT facilities where available and feasible, and preferably operate at a modulation rate commensurate with operational requirement and employ IA-5 code and procedures and an appropriate controlled circuit protocol.
[ASIA/PAC AFS RPG/3, Rec. 3/1]

2.2.1.8 To support data communication requirements and to provide needed data integrity and minimal transit time, the CCITT X.25 protocol should be used between AFTN COM Centres and Main Tributary COM Centres in the ASIA/PAC Region.
[APANPIRG/4, Conc. 4/27 and
APANPIRG/7, Conc. 7/14]

2.2.1.9 States consider implementing digital communication networks or circuits in a co-ordinated manner in order to meet current and future Aeronautical Fixed Service (AFS) communication requirements for data/voice communications and to facilitate the introduction of ATN.
(APANPIRG Concl. 11/14)

2.2.2 ATN Infrastructure Transition and Implementation

2.2.2.1 The ATN Transition Plan outlines the requirements to increase bandwidth and upgrade protocols for those trunk circuits that will support main data flow of traffic in the ASIA/PAC region. The plan also provides target dates for implementation of Backbone Boundary Intermediate Systems (BBIS) and Boundary Intermediate System (BIS) in the ASIA/PAC region.
(APANPIRG, Concl. 12/14)

2.2.2.2 ATN development should be introduced in an evolutionary and cost-effective manner based on available ICAO SARPs materials and regional ATN technical and planning documents. The ATN infrastructure transition is expected to be implemented in three phases as follows:

- Phase 1, Upgrade of existing AFTN circuits where necessary to support the introduction of the ATN BBISs;
- Phase 2, Implementation of the ATN Regional BBISs; and
- Phase 3, Implementation of supporting ATN BISs.

2.2.3 *ATS Direct Speech Circuits*

2.2.3.1 ATS direct speech communications
[ASIA/PAC/3, Conc. 5/21]

States concerned should assign a high priority to the establishment, in accordance with Annex 11, 3.6.1.1, of efficient direct-speech communications between ATS units serving adjacent areas in order to permit proper use of air-ground frequencies and further implementation of the air traffic control service.

2.2.3.2 Voice switching centers should be provided at the following locations:

1) Auckland	2) Bangkok
3) Beijing	4) Mumbai
5) Calcutta	6) Guangzhou
7) Jakarta	8) Karachi
9) Lahore	10) Kuala Lumpur
11) Chennai	12) Nadi
13) Tokyo	14) Brisbane

[ASIA/PAC/3, Rec. 10/15]

2.2.3.3 Dissemination of World Area Forecast System (WAFS) products in the ASIA/PAC region will be accomplished by satellite broadcast.
[ASIA/PAC/3, Rec. 10/19]

2.2.4 *ATS Inter-facility Data Communication (AIDC) Circuits*

State consider implementing the ATN application ATS Interfacility Data Communication (AIDC) in order to enable the exchange of ATS messages for active flights related to flight

notification, flight coordination, transfer of control, surveillance data and free (unstructured) text data.

2.3 Air/ground communications

2.3.1 *Aeronautical Mobile Service and Aeronautical Mobile Satellite Service*

2.3.2 *Frequency utilization list*

2.3.2.1 States in the ASIA/PAC region should co-ordinate, as necessary, with the ICAO Asia and Pacific Regional Office all radio frequency assignments for both national and international facilities in the 190-526.50 kHz, 108-117.975 MHz, 960-1215 MHz and 117.975-137 MHz bands. The ICAO Asia and Pacific Regional Office, based on the information provided for this purpose by States, will issue, frequency lists No. 1, 2 and 3 at periodic intervals.
[ASIA/PAC/3, Conc. 11/4, 11/15 and 12/9]

2.3.3 *HF en-route communications*

2.3.3.1 States should be urged to co-ordinate on a national basis with the appropriate interested authorities, a programme directed towards achieving the elimination of the interference currently being experienced on some of the frequencies allocated to the Aeronautical Mobile (R) Service in the Region. When reviewing methods for developing such a national programme, consideration should be given to the procedures in Article S15 of the ITU Radio Regulations.

2.3.3.2 In the case of an unidentified interfering station, States should notify the Regional Office concerned, utilizing the procedure and the Report Form* developed by the Fifth Session of the Communications Division (1954) updated by the Communications Divisional Meeting (1978), Doc. 9239, Agenda Item 5. However, in the case of persistent harmful interference to an aeronautical service which may affect safety, it should be immediately reported to ICAO, and to the ITU using the prescribed format, for appropriate action.
[ASIA/PAC/3, Concl. 11/6]

* The harmful Interference Report Form is provided in Attachment B to CNS part IV of FASID.

2.3.4 *Air-Ground elements of ATN*

2.3.4.1 With the implementation of the air-ground applications of ATN, it is important to ensure that transit response times are kept to a minimum level so as not to affect the overall response time that it takes for traffic such as ADS reports and CPDLC messages to be delivered to their final destination. This also reflects the need to ensure that critical ground links within the Region are capable of handling this information efficiently.

2.3.4.2 One important factor with air-ground traffic is the generation of routing information caused by aircraft that will move between various ATN routing domains. As aircraft move through various coverage media and FIR boundaries the ATN Routing Backbone will be notified of the changing routing data for each mobile aircraft in the region. To allow this routing information to be propagated within the region will require a minimum number of backbone routers to be implemented which protect all other ATN routers from being inundated with routing information.
[ASIA/PAC ATN Transition Plan]

3. **NAVIGATION**

3.1 *General*

3.1.1 The plan and details of operational requirements for radio navigation aids are contained in the Table CNS-3 and associated of Part IV of ASIA/PAC FASID.

3.1.2 States should continue to provide ICAO with information on their flight inspection activities for inclusion in the ASIA/PAC Catalogue of Flight Inspection Units and circulation to States in the Regions and to the ASIA/PAC Air Navigation Planning and Implementation Regional Group (APANPIRG).
[ASIA/PAC/3, Conc. 12/8]

3.1.3 The development of the radio navigation aids plan, and its subsequent documentation in relevant air navigation plan (ANP) publications, defines the respective radio navigation aid

requirements at each location without reference to discrete frequency assignments. The ICAO Regional Office will continue to maintain its frequency selection and co-ordination role, including the maintenance and promulgation of Frequency List Nos. 1 and 2 in a timely and periodic manner.
[ASIA/PAC/3, Conc. 12/9]

3.2 *Radio navigation aid requirements*

3.2.1 States which have not yet done so should install VHF omni directional radio range (VOR) supplemented by distance measuring equipment (DME) as the primary aid for en-route navigation and, except in specified circumstances, delete any parallel requirement for a non-directional radio beacon (NDB) from the air navigation plan.
[ASIA/PAC/3, Rec. 5/22]

4. SURVEILLANCE

4.1 *General*

4.1.1 The plan and details of operational requirements for surveillance are contained in Table CNS 4 of ASIA/PAC FASID.

4.1.2 Surveillance systems for terminal and en-route air traffic control purposes should be installed, maintained and operated at those international aerodromes and en-route area control centers, whenever it is necessary to improve the safe and expeditious handling of air traffic and where the traffic density and associated complexity of operation, system delays, meteorological conditions and/or transition from oceanic to continental airspace would justify these installations.
[ASIA/PAC/3, Rec. 5/28]

4.1.3 Where different systems are used for navigation and position determination within the same controlled airspace, the ground facilities involved should be collocated and/or oriented so as to provide compatible fight paths and to ensure, as far as practicable, a fully integrated air traffic control pattern.
[ASIA/PAC, Rec. 7/14]

4.1.4 The Asia and Pacific region is characterized by use of:

a) SSR Mode A/C and, in the near future, Mode S in some terminal and high density continental airspace;

b) ADS in some parts of the region; and

c) The diminishing use of primary radar.

4.1.5 Automatic Dependent Surveillance (ADS) is becoming available over the oceanic and continental airspace of the Asia and Pacific regions. SSR (augmented as necessary with Mode S) will continue to be used in terminal areas and in some high-density airspace.

4.2 *Automatic Dependent Surveillance (ADS)*

4.2.1 *Co-ordination of activities related to the implementation of ADS*

4.2.1.1 The introduction of air-ground data links, together with sufficiently accurate and reliable aircraft navigation systems, present the opportunity to provide surveillance services in areas which lack such services in the present infrastructure, in particular oceanic areas and other areas where the current systems prove difficult, uneconomic, or even impossible, to implement. ADS is a function for use by ATS in which aircraft automatically transmit, via a data link, data derived from on-board navigation systems. As a minimum, the data should include the four-dimensional position. Additional data may be provided as appropriate. The ADS data would be used by the automated ATC system to present information to the controller. In addition to areas which are at present devoid of traffic position information other than pilot provided position reports, ADS will find beneficial application in other areas, including high-density areas, where ADS may serve as an adjunct and/or back-up for secondary surveillance radar and thereby reduce the need for primary radar. Also, in some circumstance, it may even substitute for secondary radar in the future. As with current surveillance systems, the full benefit of ADS requires supporting complementary two-way pilot-controller data and/or voice communication (voice for at least emergency and non-routine communication).

4.2.1.2 States should closely co-operate in the development of procedures for the implementation of

ADS in the Region and participate to the extent possible in trials and demonstration related to the implementation of ADS.
[ASIA/PAC/3, Conc. 14/21]

4.3 *Secondary Surveillance Radar (SSR)*

4.3.1 *Implementation of surveillance systems*

4.3.1.1. Implementation of surveillance systems should be pursued as an enhancement to air traffic services where so required and the use of secondary surveillance radar (SSR) alone, in accordance with the *Regional Supplementary Procedures* (Doc. 7030), should be considered as a cost-effective alternative to primary surveillance radar.
[ASIA/PAC/3, Rec. 14/20]

PART IV
COMMUNICATIONS, NAVIGATION AND SURVEILLANCE (CNS) SERVICES

INTRODUCTION

1. The standards, Recommended Practices and Procedures to be applied are listed in paragraph 1.2, Part IV – CNS of the ASIA/PAC Basic ANP. The material in this Part comp lements that contained in Part I – BORPC of the ASIA/PAC Basic ANP and should be taken into consideration in the overall planning process for the ASIA/PAC region.

2. This Part contains a detailed description/list of the facilities and/or services to be provided to fulfill the basic requirements of the Plan and are as agreed between the provider and user States concerned. Such agreement indicates a commitment on the part of the State(s) concerned to implement the requirement (s) specified. The element of the ASIA/PAC Facilities and Services Implementation Document (FASID), in conjunction with the ASIA/PAC Basic ANP, is kept under constant review by the Asia and Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) in accordance with its schedule of management, in consultation with user and provider States and with the assistance of the ICAO Asia and Pacific Office.

AERONAUTICAL FIXED SERVICE (AFS)
(FASID Tables CNS-1A, 1B, 1C, 1D and IE
Charts CNS-1, 2 and 3)

3. Table CNS-1A, 1B and Charts CNS-1, CNS-2 show the requirements and implementation status for AFTN circuits and ATN Router connection ~~plan~~. ATS message handling system (AMHS) and ATS inter-facility data communication (AIDC) routing plans in the ASIA/PAC region are show in Table CNS-1C and 1D. The requirement and implementation status of ATS direct speech circuits is shown in Table CNS-1E and Chart CNS-3

3.1 Inter-regional and intra-regional routing of AFTN messages is contained in the ASIA/PAC AFTN Routing Directory. ICAO Asia and Pacific Office continues to maintain its coordinating role for amendments to the Directory and publish updated editions. States are required to co-ordinate any change in the routing with the ICAO Asia and Pacific Office well in advance to allow sufficient time to examine the proposal and finalize required details.

3.2 The regional Interface Control Documents (ICDs) are published by the ICAO Asia and Pacific Office, as required, to ensure standardization of controlled circuit protocols used for AFTN and ATS direct speech circuit signaling system. The ICDs published are as follows:

1) Character Oriented Data Link control Procedures System Category-B (APANPIRG, Concl. 5/14);

2) X.25 protocol for AFTN (APANPIRG, Concl. 7/14;

3) PSS1 Signaling System for digital ATS speech circuit network (APANPIRG, Concl. 8/17; and

4) Radar Data Exchanges (APANPIRG, Concl. 9/17);

5) AMHS ICD;

6) Router ICD.

3.3 Aeronautical Telecommunication Network

3.3.1 The Guidance Material for ATN Transition adopted by APANPIRG provides technical guidance for regional transition planning, primarily focusing on ATN initial ground-to-ground applications.

(APANPIRG, Concl. 10/11 and 11/18)

ATN Transition Plan

3.3.2 The ATN Transition Plan outlines the requirements to increase bandwidth and upgrade protocols for those trunk circuits that will support main data flow of traffic in the ASIA/PAC region. The plan also provides target dates for implementation of Backbone Boundary Intermediate Systems (BBIS) and Boundary Intermediate System (BIS) in the ASIA/PAC region.
(APANPIRG, Concl. 12/14)

Regional ATN Planning Documents

3.3.3 The ASIA/PAC ATN ATS Message Handling System Addressing Plan; ATN Network Service Access Point (NSAP); NSAP Address Registration Form and ATN Routing Architecture Plan provide guidance to States.
(APANPIRG, Concl. 12/13)

3.3.3.1 The ATN ATS Message Handling System Addressing Plan provides planning and technical guidance to States in the assignment and registration of addresses and names for transition of ground Aeronautical Fixed Telecommunication network (AFTN) services to the ATS Message Handling System (AMHS) within the ASIA/PAC region. The ASIA/PAC ATN AMHS Naming Plan aligns itself with the global AMHS naming scheme.

3.3.3.2 The ATN Network Service Access Point (NSAP) Addressing Plan and NSAP Address Registration Form provide guidance for States to assign regional NSAP addresses in a consistent manner within the ASIA/PAC region. Each field of the NSAP address is described with the recommended method of assigning value. This is important so that consistency in the use of NSAP addresses is obtained and efficiency in routing is maintained. Fields with purely local State matter are identified. ICAO ASIA/PAC Regional Office is the temporary allocation authority of the ADM field.

3.3.3.3 The regional ATN Routing Architecture is based upon the need for ground-ground infrastructure to eventually replace the existing AFTN infrastructure. For this reason, the routing architecture uses the existing AFTN infrastructure as a guideline for the positioning of ATN equipment. The ATN routing architecture is designed primarily for the ground-ground environment. However, it is intended that the architecture will also be suitable as the routing architecture for the introduction of the air-ground communication requirements.

3.3.4 Until a formal registration authority is established within ICAO, the ICAO ASIA/PAC Regional Office will maintain a local register within the region for registering all Private Management Domains (PRMDs).

3.4 A Form for recording AFTN circuit loading statistics with the instruction for use of the Form, is provided in Attachment A (APANPIRG, Concl. 4/23)

AERONAUTICAL MOBILE SERVICE (AMS) AND AERONAUTICAL MOBILE SATELLITE SERVICE (AMSS)
(FASID Table CNS-2, Chart CNS-4)

4. Table CNS-2 shows the requirements and implementation status of aeronautical mobile services (AMS) and aeronautical mobile satellite service (AMSS) for HF VHF and satellite data links in the ASIA/PAC region. Chart CNS-4 shows radio telephony networks and the Appendix to Chart CNS-4 shows HF allotment areas and specific frequencies allocated to each network.

4.1 The ICAO Asia and Pacific Office continues to maintain its frequency selection and co-ordination role including the maintenance and promulgation of VHF frequency list (List No. 3) in the band 118 to 137 MHz, at appropriate periodic intervals. (ASIA/PAC/3 Concl. 11/4)

4.2 HF interference reporting Form specified in Conclusion 11/6 of ASIA/PAC/3RAN Meeting is provided in Attachment B.

4.3 A list of frequency designators to be included in HF air-ground communication log in accordance with provision of para 5.2.3.3 of Annex 10 Vol. II is provided in Attachment C.

AERONAUTICAL RADIO NAVIGATION SERVICE

(FASID Table CNS-3, Charts CNS-5A, 5B, 6A and 6B)

5. Table CNS-3 lists, State-by-State in alphabetical order, requirements for ground based and satellite based radio navigation aids for various functions. Charts CNS-5A and CNS-5B provide locations where radio navigation aids are located in the Asia and Pacific regions, respectively. Chart CNS-6A and CNS-6B p provide locations where radio navigation aids for final approach and landing functions are located in the Asia and Pacific regions, respectively.

5.1 The ICAO Asia and Pacific Office, continues to maintain its frequency selection and coordination role including maintenance and promulgation of frequencies in the bands 108 to 137 MHz and 960 –1215 MHz bands, assigned to national and international aeronautical radio navigation facilities. Updated Frequency Lists No. 1 and 2 of radio navigation aids are published at periodic intervals (ASIA/PAC/3, Concl. 11/5 and 12/9).

5.2 The detailed description of flight inspection units available in the ASIA/PAC region is contained in the Catalogue of Flight Inspection Units published by the ICAO Asia and Pacific Office.

SURVEILLANCE SERVICE (FASID Table CNS-4)

6. Table CNS-4 contains information on the radar, facilities and ADS workstations that required for en-route and terminal surveillance in the ASIA/PAC region.

FASID TABLE MET 7 – 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	X	X
French Polynesia (France)	Meteo France	Information received from France via satellite	X		
Indonesia	Meteorological and Geophysical Agency	Soekarno – Hatta International Airport	X	X	X
Japan	Japan Meteorological Agency	Kokusai Denshin Denwa Co.	X	X	X
Kiribati					
Malaysia			X		
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	Backup only X	 X
Niue					
Papua New Guinea	Meteorological Department	Port Moresby Intl. Airport	X	X	X
Philippines	Department of Meteorology	Manila	X	X	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	Shanghai Intl. Airport	X	X	X
	Hong Kong Observatory	Hong Kong Intl. Airport	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, Watty	X	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
Pakistan	Meteorological Department	Karachi Intl Airport	X	X	X
Republic of Korea	Korea Meteorological Administration	Incheon 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 2002-2006

TABLE 1

ICAO REGION: ASIA
MAIN ROUTING(S): AFTN, Direct Line (GTS) (E.G CAPSIN AND AFTN/GTS)

	Current 2002	Projected 2003	Projected 2004	Projected 2005	Projected 2006
ALPHANUMERIC OPMET DATA					
Number of **FC bulletins** issued per day	298	300	300	310	310
Average number of stations per FC bulletin	6	6	6	6	6
Number of **FT bulletins** issued per day **	372	375	375	380	380
Average number of stations per FT bulletin	6	6	6	6	6
Number of **SA bulletins** issued per day	1643	1650	1670	1700	1700
Average number of stations per SA bulletin	6	6	6	6	6
Number of **SP bulletins** issued per day	0	50	50	50	50
Number of **SIGMET bulletins** issued per day	16	50	50	50	50
(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	**2329**	**2425**	**2445**	**2490**	**2490**
Average size of OPMET bulletin (bytes)	**312**	**350**	**350**	**350**	**350**
TOTAL ESTIMATED OPMET DATA VOLUME PER DAY (BYTES)	**727K**	**849K**	**856K**	**872K**	**872K**

CURRENT AND PROJECTED T4 FACSIMILE CHART VOLUMES 2002-2006

TABLE 2

ICAO REGION: ASIA
MAIN ROUTING(S):GTS

(E.G CAPSIN AND AFTN/GTS)

T4 FACSIMILE CHART INVENTORY	Current 2002	Projected 2003	Projected 2004	Projected 2005	Projected 2006
WMO Header/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)					
WMO Header/Chart name					
Time of issue of chart (UTC)					
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)					
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 100-250, high>FL250)
(*1 octet = 8 byte = 1 character)

CURRENT AND PROJECTED BUFR DATA VOLUMES 2002 -2006
TABLE 3

ICAO REGION: ASIA
MAIN ROUTING(S):GTS (E.G CAPSIN AND AFTN/GTS)

BUFR SIGWX MESSAGES	**Current 2002**	**Projected 2003**	**Projected 2004**	**Projected 2005**	**Projected 2006**
WMO Header					
Time(s) of issue of data (UTC)	**No Requirement**	**No Requirement**	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, 0000, 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, 0000, 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)			1200,1800,0000, 0600	1200,1800,0000, 0600	1200,1800,0000, 0600
TOTALS					
Total number of BUFR messages per day			**12**	**12**	**12**
Average size of messages (bytes*)			**15K**	**15K**	**15K**
TOTAL ESTIMATED VOLUME OF BUFR MESSAGES PER DAY (BYTES)			**180K**	**180K**	**180K**

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

CURRENT AND PROJECTED AIS DATA VOLUMES 2002 – 2006(Subject to statement of an operational requirement)

ICAO REGION: ASIA **TABLE 4**

MAIN ROUTING(S): AFTN (E.G CAPSIN AND AFTN/GTS)

AIS (Subject to statement of an operational requirement)	**Current 2002**	**Projected 2003**	**Projected 2004**	**Projected 2005**	**Projected 2006**
ALPHANUMERIC AIS DATA (e.g. NOTAMs)					
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)					

ASIA/PAC WAFS Transition Plan and Procedures

5th Edition - July 2002

ASIA/PAC WAFS Transition Plan and Procedures

5th Edition - July 2002

Introduction

1. The 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 Regions involves:

a. Production and dissemination by the WAFCs of global forecast winds, temperatures, tropopause height, tropopause temperature and humidity in GRIB format.

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 Regions, 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). 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.

e. The production and distribution (via satellite broadcast) by WAFC London of Global SWM in BUFR format (in raw form, i.e. not quality controlled except over limited geographical areas where required by PIRGS), and the production and distribution (via satellite broadcast) by WAFC Washington of quality controlled SWM in BUFR format over limited geographical areas where required by PIRGs.

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

SIGWX Charts

3. The table below shows the status of the SIGWX charts and responsible WAFCs.

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

F	Washington (SWH)
I	Washington (SWH)
M	Washington (SWH)

4. There will be an ongoing requirement for NMSs to monitor the quality of WAFC products, at least until the Final Phase of WAFS.

5. 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 accidental release of radio active material and SIGMETs are made available to the WAFCs in a timely manner.

6. The SIGWX charts produced by WAFC Washington are also available on the US NWS Aviation Weather Center Internet site at: http://www.nws.noaa.gov/iscs. All WAFC London products are available on a password controlled internet-based FTP site, together with appropriate GRIB and BUFR decoding facilities.

7. 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:

WAFC Washington

i. NWS/Aviation Weather Center
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

WAFC London

i. The Met. Office
Attention: Mr. Nigel Gait
Civil Aviation Branch
Sutton House
London Road Bracknell
Berkshire RG12 2SY, United Kingdom
ii. E-mail addressed to: nigel.gait@metoffice.com
iii. Fax number: +44 (1344) 854 156

Distribution of WAFS Products

8. Most States in the Asia/Pacific Regions are receiving wind, temperature and humidity 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 are available via the Internet and through bilateral arrangements with neighbouring national meteorological services.

9. In the Final Phase of WAFS, the two WAFCs will distribute by satellite broadcast Global, quality controlled SWH, and quality controlled SWM for limited geographical areas (Note: WAFC London will also distribute by satellite broadcast SWM in raw form, i.e. not quality controlled, outside the limited geographical areas). Once suitable decoding and visualization software has been acquired by States in the Asia/Pacific Regions, 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.

Note: It shall be noted, that the non-quality controlled SWM data is not subject to a stated operational requirement and would be distributed outside WAFS.

Indicative Timetable for Achieving the Final Phase of WAFS

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

Volcanic Ash Advisory Centres (VAACs)

11. 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)

12. 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	WAFC London products on access controlled internet site	completed
2	The establishment of back-up distribution arrangements for WAFS products	completed
3	Training in the operational conversion of GRIB forecasts to Wind / Temp charts	late 2002 (SADIS) early 2004 (ISCS)
4	All states that receive GRIB products capable of converting GRIB forecasts to Wind / Temp charts	mid 2004
5	Removal of T4 Facsimile Wind / Temp charts from the satellite broadcast	late 2004
6	Training in the operational conversion of BUFR to SIGWX charts	late 2003 (SADIS) early 2004 (ISCS)
7	States having the ability to operate the decoding software to convert BUFR SIGWX messages into graphical format	mid 2004
8	The satellite distribution by the two WAFCs of global SWH and of SWM for limited geographical areas(*) in BUFR format	2003 (SADIS) early 2004 (ISCS)
9	Removal of T4 Facsimile SIGWX products from the satellite broadcast	late 2004

(*) WAFC London will also distribute by satellite broadcast SWM in raw form, i.e. not quality controlled, outside the limited geographical areas. It is noted, however, that the non-quality controlled SWM data is not subject to a stated operational requirement and would be distributed outside WAFS.

ASIA/PAC WAFS TRANSITION TASK FORCE

1. Terms of Reference

Expedite the implementation of the final phase of World Area Forecast System (WAFS) in the Asia and Pacific Regions and develop the transition plans.

2. Work Programme

The work to be addressed by the ASIA/PAC WAFS Transition Task Force includes:

(a) Planning and coordinating the replacement of Wind/Temp charts in T4 facsimile format by GRIB encoded products.

(b) Planning and coordinating the replacement of SIGWX charts in T4 facsimile format by BUFR encoded products.

(c) Coordinating the provision of assistance to States to ensure the final phase of WAFS can be effectively implemented in the Asia and Pacific Regions.

(d) Keeping the Asia/Pacific WAFS Transition Plan and Procedures up to date.

The work is expected to be carried out primarily by correspondence.

3. Composition

(a) The Task Force is composed by experts from:

Australia; Hong Kong, China (Chairman); India; Japan; New Zealand; United Kingdom and United States.

(b) IATA is invited to participate in the work of the Task Force.

ASIA/PAC OPMET EXCHANGE TASK FORCE (OPMET/E TF)

1. Terms of Reference

Review the OPMET exchange schemes in the ASIA/PAC Region and develop proposals for their optimization taking into account the current trends in the global OPMET exchange; update the regional guidance material related to OPMET exchange and develop monitoring and management procedures; liaise with similar groups in other ICAO Regions.

2. Work Programme

The work to be addressed by the ASIA/PAC OPMET Exchange Task Force includes:

(a) to examine the existing requirements and any new requirements for the OPMET exchange in ASIA/PAC regions and to assess the feasibility of satisfying these requirements, taking into account the availability of the data;

(b) to review the ROBEX scheme and other OPMET exchange schemes and based on this review to prepare proposal for updating and optimizing of the schemes;

(c) to review and update the procedures for interregional exchange and for transmission of the regional OPMET data to the satellite broadcasts providers (ISCS and SADIS);

(d) to review and amend the regional guidance materials on the OPMET exchange and to include procedures for the exchange of all required OPMET message types: SA, SP, FC, FT, WS, WC, WV, FK, FV, UA;

(e) to develop procedures for monitoring and management of the OPMET information, based on the procedures used at the OPMET data banks; EUR OPMET update procedure to be used as the bases for development of similar procedure for the ASIA/PAC Regions.

3. Composition

(a) The Task Force is composed by experts from:

Australia (Rapporteur), China, Fiji, Japan, Singapore, Thailand, United Kingdom and United States.

(b) IATA is invited to participate in the work of the Task Force.

ASIA/PAC VOLCANIC ASH TASK FORCE (VA TF)

1. Terms of Reference

(a) monitor the operational efficiencies of the IAVW within the ASIA/PAC regions.

(b) continually seek ways to improve the operational efficiencies of the IAVW within the ASIA/PAC regions.

2. Work Programme

The work to be addressed by the ASIA/PAC Volcanic Ash Task Force includes:

(a) review procedures for notification of volcanic activity from observing sources or aircraft to the ACCs, MWOs and VAACs in the region and to propose actions for their improvement;

(b) investigate the deficiencies in the dissemination of the VA advisories, NOTAMs and SIGMETs and to propose actions for their improvement;.

(c) investigate the need of the States for guidance and/or training related to the implementation of IAVW.

(d) follow the development of the graphical warnings for VA and to coordinate the regional activities on this matter

(e) report on its work to the CNS/MET SG/7.

The work is expected to be carried out primarily by correspondence.

3. Composition

(a) The Task Force is composed by experts from:

Australia, Japan (Rapporteur), New Zealand, United Kingdom, United States.

(b) IATA is invited to participate in the work of the Task Force.

TERMS OF REFERENCE OF THE

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 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 CNS/MET 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 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
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

No	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
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	APANPIRG 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

No	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
12	RAN/3 C. 12/6	Subject: Provision of cost effective and operationally acceptable approach and landing guidance Task: 1) ILS/MLS transition planning 2) Action on the outcome of the Spec. om/Ops		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 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.	NAV/SUR	Completed
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

No	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
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. TF)	Completed Completed
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

No	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
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
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 unauthorized intrusion into aeronautical HF bands, 2) Work actively with State Telecommunications Authorities to ensure ICAO positions are supported and aviation views are included in WRC deliberations.	ICAO States	Completed Completed

No	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
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
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	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. TF/3	Completed
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. TF COM/MET/NAV/SUR	Completed ~~On going~~ Completed Completed Completed
28	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	CNS/MET States concerned	~~On going~~ Completed ~~On going~~ Completed

No.	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
29	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 an implementation of the procedures for OPMET exchange to support the ISCS and SADIS broadcasts. - Develop the new procedure for dissemination of OPMET messages, as listed in Annex 1 to the SADIS User Guide, to the WAFCs London and Washington to meet IATA requirements. - Planning for implementation of the new procedures	CNS/MET SG with assistance of OPMET WG	Completed Completed ~~2002~~ 2003 on-going
30	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).	CNS/MET	On-going
31	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.	CNS/MET	2003
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.	CNS/MET Task Force Volcanic Ash	On going

No.	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
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.	CNS/MET 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 Presentation of the WP on the subject to the CNS/MET/SG/6 2) Develop procedures for utilization of the available MET data by operational units, MET offices and WAFCs	CNS/MET New Zealand CNS/MET	2003 ~~2002~~ Completed 2004
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	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	CNS/MET CNS/ATM IC SG	On-going On-going On-going On-going

No.	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
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 States.	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	CNS/MET	On-going
37	C 12/24	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~~ Completed 2004 2003 2004
38	C12/36	Subject : Lack of ATM requirements for MET components of the ASIA/PAC CNS/ATM Plan. Task : Developing the MET Chapter for the ASIA/PAC CNS/ATM Plan.	A	1. Development of the initial draft of the MET Chapter. 2. Development of the MET components of the CNS/ATM concept/ strategy. 3. Inclusion of ATM requirements for MET information in the CNS/ ATM Plan.	CNS/MET SG with assistance of MET WG on CNS/ATM Plan CNS/MET SG with assistance of the METATM TF	Completed ~~2003~~ Completed 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 Bay of Bengal ATS Co-ordination Group did not meet in 2002, as was the case in 2001, as their primary work was integrated into the EMARSSH Task Force meetings, which is detailed in Agenda Item 2.1 of this Report.

2.3.3 The meeting noted the work 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. These important groups were instituted on either a bi-lateral or multi-lateral arrangement, to deal with ATC issues especially items such as ATS routes and procedures. 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 including the Polar Route Network.

2.3.4 In regard to this informal meeting, the meeting was advised that attendance by ICAO Officers incurred considerable time and expenses from the Regional Office resources and questions were raised as to the benefits gained in the overall regional programme.

2.3.5 The meeting was sympathetic to the constraints of the Regional Office, but was clearly of the view that ICAO attendance added considerable value to the work of such informal ATS Co-ordination Groups. Thus the meeting sought the continued support of the Regional Office. The meeting also considered that a review be made to ensure there was no excessive overlap by these informal groups.

2.3.6 The meeting was further advised that as a result of a decision of the Fourth Meeting of the ICAO Informal Trans-Asia/Trans-Siberia/Cross Polar Routes High Level Steering Group (ITASPS/4) meeting held in Paris, France in January 2001, Three Special Meetings between China, Mongolia, Russian Federation and IATA under the auspices of ICAO were conducted to study possibilities for further improvements in the alignment and use of cross-polar routes at their south ends.

2.3.7 The meeting was advised that two Special Coordination Meetings on Afghanistan were held in 2002. The first meeting was held in Dubai, U.A.E. on 9-10 May 2002. The purpose of this meeting was to review the present situation regarding the provision of Air Traffic Services within Afghanistan, including the authorization and promulgation of AIS (including NOTAM issue) and to develop a Contingency Air Traffic Management plan for the Kabul FIR, due to the lack of air traffic services within the Kabul FIR due to military action that had taken place as a result of the tragedy in the US on 11 September 2001.

2.3.8 A Second Special Coordination Meeting on Afghanistan was held in Bangkok, Thailand at the ICAO Regional Office on 29-30 August 2002, to discuss civil/military issues in and around the Kabul FIR in the theatre of military operations involving the Coalition Forces.

2.3.9 The meeting was advised that further meetings of this nature under the auspices of ICAO between the States concerned, the Coalition Forces and IATA would be scheduled every six months to continue the civil/military coordination which will ensure the safety of all aircraft in the

area concerned. It was agreed that the next meeting would be held in March 2003 at a date and venue to be decided.

2.3.10 The meeting was advised that with the present increase in military activity within and adjacent to the Asia Pacific Region, a heightened awareness in civil/military coordination is required. States need to exercise vigilance and continue their coordination with their neighbouring States as well as ICAO advising of any new activity or increase in military activity which may affect civil international operations.

2.3.11 The meeting was also advised that consideration should be given to convening a Regional Civil Military Seminar and, if necessary Sub-regional workshops on this subject, where there has been an increase in military operations.

2.3.12 The meeting noted the cooperative work achieved as a result of these two Special Coordination meetings on Afghanistan and gave their strong endorsement to the following conclusion.

Conclusion 13/34 – Strengthening the Civil/Military Coordination Programme

That, due to an increase in military activity within and adjacent to the Asia Pacific Region,

1. States are urged to:

   a) remain vigilant with regard to military activity within or near their area of responsibility;

   b) continue effective civil/military coordination with military authorities concerned; and,

   c) advise and coordinate with adjacent States and ICAO of any significant increase in military activity which may have an affect on international aircraft operations.

2. ICAO to arrange an Asia/Pacific Regional Seminar on Civil/Military Coordination and, if considered necessary, to follow-up with sub-regional Civil/Military Co-ordination Workshops in areas as deemed appropriate.

SUMMARY OF ATS CO-ORDINATION GROUPS' ACTIVITIES

1. Special ATS Co-ordination Meeting between China, Mongolia, The Russian Federation and IATA (CMRI)

1.1 Three meetings have been held by the group to date to study possibilities for further improvements in the alignment and use of cross-polar routes at their south ends was arranged by ICAO Asia/Pacific. The last meeting was held in Beijing, China on 9-11 April 2002. There has been significant progress in work by States concerned to increase the number of entry/exit points from Cross-Polar routes (CPR) into/out of China.

1.2 Nevertheless, the lack of a procedure to allow the airline to change to a different international route/entry point into China on the day of flight, does not allow the airline the option to effectively manage the critical elements of flight planning for these Cross-Polar operations. Therefore, airlines flying CPR flights today choose an entry point that allows the greatest number of cross-polar options into their single approved Chinese point of entry. The only intersection that allows transitions from all four cross-polar tracks, is INTEK on A575.

1.3 Until these flight-planning issues are resolved, the Cross-Polar Track System cannot realise its potential as a viable route system for long range non-stop service between Asia and North America. Unfortunately, many of the routes developed over TELOK, MORIT, or SIMLI could not be used because the operational and/or commercial risks are too high if only one of these points mentioned above were to be designated as the single point of entry into China. If 4-5 of these border-crossing points could be pre-approved by China then most flight plan requirements would be covered.

1.4 The ICAO secretariat suggested that an interim solution which would allow an airline up to three approved border crossings into China per scheduled flight should be considered. IATA advised that the solution offered by ICAO would greatly benefit flight operations and if combined with a favourable air transport agreement with China, Russia and Mongolia should transform the cross-polar tracks into a marketable track system with new city pair services between Asia and North America.

1.5 China advised that they would consider the ICAO interim proposal and report back to ICAO with its findings.

2. 11th Meeting of the Russian/American Coordinating Group for Air Traffic Control (RACGAT) 12 – 15 November 2001, Moscow, Russian Federation

2.1 The meeting was attended by representatives of the SCAA of Russia, the United States FAA, the Civil Aviation Bureau of Japan, the Civil Aviation Authority of Mongolia, NAV CANADA, International Civil Aviation Organization (ICAO), International Air Transport Association (IATA), Russian State ATM Corporation, the Russian Main Air Traffic Flow Management Center (MATFMC), Russian meteorological services, Russian ATC Enterprises from Northern Siberian and Far East Regions of the Russian Federation, Anchorage ARTCC, FAA Alaskan Region, Cathay Pacific Airways, Japan Airlines, All Nippon Airways, U.S. Airlines (United, Northwest, Continental, UPS), the Russian air carriers (Aeroflot, KrasAir, Sibir Air, Transaero, Volga-Dnepr) and The Boeing Company.

2.2 Discussion of action items took place in the Air Traffic Services (ATS) and Air Traffic Control Modernization Committee (AMC) Sub-groups. An Air Traffic Flow Management (ATFM) sub-group was created by the ATS sub-group to address ATFM issues.

2.3 The Russian Federation Representative advised that RACGAT gains growing interest of the users who actively participate in decision-making process. Within the framework of the group several projects have been launched, including operations over the Arctic Ocean along Cross Polar routes. The project proved to be attractive to the world aviation community and in the Russian Federation. President of the Russian Federation Mr. V. Putin had been made aware of the project. Various companies have operated over 1,000 flights, mainly North to South via RFE, and backwards via NORAC routes. Representatives of the Users who participate in RACGAT meetings did not limit themselves to establishing the routes, they followed these activities till their implementation. The flights have demonstrated some shortcomings: quality of communication in some areas, volcanic activities, and necessity of air traffic management. Attractiveness of these routes will increase with availability of properly equipped aircraft. However, efficiency of these routes also depends on the enhancement of their alignment within Mongolia and China. Further development of the route structure will ensure the growth of passenger interest and better evaluate RACGAT activities.

2.4 The US advised that work continues despite the tragic events on September 11 and their effects on the aviation industry. In the past few weeks, dramatic reductions in demand occurred across many of the airways that RACGAT is concerned with. The US stated that the objective in this meeting was to accomplish the technical work that improves the safety and efficiency of the air traffic management system. He advised the meeting of specific objectives identified by the United States to improve service in the near-term: Kamchatka Four and Polar 4A, volcanic activity reporting within our respective meteorological weather systems, the progress made between Russia, Mongolia and China toward adding capacity across their common FIR borders, improving the state of communication systems between our respective regions and to refining the operating agreements to take advantage of the lessons we learn together in operating this air traffic system. Steve advised the group that these goals or tasks cannot be achieved without their participation. He encouraged all participants to add their ideas in the search for solutions.

2.5 Outstanding action items were discussed in sub-group meetings who then reported back to the Plenary Meeting of RACGAT/11. A list of action items is listed below:

a) R1-ATS-2 - SCAA and JCAB will evaluate Kamchatka Four as a new route 100nm north of R220

b) R3-ATS-5 - To allow aircraft to transition between assigned altitudes (to/from meters-feet) on G-583 in Russian airspace where the aircraft is laterally separated from R-220

c) R7-ATS-4 - Ensure funding for the Kamchatka Volcano Eruption Response Team (KVERT)

d) R9-ATS-1- Establish a general aviation VFR route between Nome, Alaska, to Providenya Bay in the Chukotka region.

e) R10-ATS-1- New Transition Route from Polar 4 to B337 via UESO direct to BA (NDB) direct to ODORA. Altitudes requested are 9600 meters, 10,600 meters, and 11,600 meters

f) R10-ATS-2 - To provide availability for FANS equipped aircraft to operate on A218 at 9600 meters west of Mys Schmidta. **Completed and closed**

g) MR5-ATS-3 - Assess the feasibility of Reduced Vertical Separation Minima (RVSM) within Oceanic Airspace Delegated to Russian Federation

h) R11-ATS-1 - New Routes for Investigation in Regions

i) New Route segments proposed by IATA at RACGAT/11:

i) LISKI – Pevek - Oymiakon – Chagda
ii) N72°00 W168°58.4 – Pevek – Omolon – Takhtayamsk
iii) N72°00 W168°58.4 – VIKBI
iv) Chokurdah – Oymiakon – Okhotsk – Okha – LIKON – AKSUN
v) Okhotsk – Nikolaevsk-na-Amure

j) R11-ATS-2 - Expand Available Altitudes Between LISKI and Mys Schmidta to Include 9600 Meters

k) R11-ATS-3 - Evaluate Use of A218 West of Mys Schmidta by Non-FANS-Equipped Aircraft

l) R11-ATS-4 - Evaluate and propose possible ways of improving the NOTAM exchange in order to support the flights on Cross-polar and RFE routes. **Completed and closed**

3. 6th Mini-Russian-American Coordinating Group for Air Traffic Control (RACGAT) Meeting, 20-23 May 2002

3.1 The Mini-RACGAT/6 meeting was held in St. Petersburg, Russia, on 22-25 April 2002. Mr. Yuri Averianov of the State Civil Aviation Authority of Russia (SCAA) and Mr. Steve Creamer of the Federal Aviation Administration (FAA) chaired the meeting.

3.2 The meeting was attended by representatives of the SCAA of Russia, the United States FAA, the Civil Aviation Bureau of Japan, the Civil Aviation Authority of Mongolia, NAV CANADA, International Civil Aviation Organization (ICAO), International Air Transport Association (IATA), Russian State ATM Corporation, Russian ATC Enterprises from North West, North East, Chukotka, Kamchatka, Northern Siberian and Far East Regions of the Russian Federation, , FAA Alaskan Region, Cathay Pacific Airways, Japan Airlines, U.S. Airlines (United, Northwest, Continental, Delta), and Jeppesen.

3.3 The Representative from the United States gave the national and regional reports for United States and Anchorage ARTCC. A report was given on the Anchorage airspace delegation issue. After careful consideration, Anchorage will not delegate a portion of their Arctic FIR to NAV CANADA. The shape of the airspace demands careful coordination, communication and procedures with Russia and NAV CANADA. The United States reported on several technical issues including RVSM and reduction of longitudinal separation. The FAA has submitted an amendment to ICAO DOC 7030 to reduce the longitudinal separation from 20 minutes to 10 minutes within the Anchorage Arctic FIR. Reduction of ATFM separation has also been accomplished. On 21 March the Anchorage ARTCC has the ability to adjust the slot time allocations in the RFE from 25 to 20 minutes. Anchorage is still using 25 minutes over LISKI via A218. Anchorage is awaiting ICAO amendment approval to reduce separation. Mr. Creamer also reported on work with ARINC at Barrow, Alaska. A HF Data link facility is operational and Anchorage is working on exploring voice capability. The system would not be air traffic certified, however the facility could be used as a back-up facility. The US also advised the meeting of the work on ADS-A in Anchorage airspace and the implementation of a new Flight Data processing system in Nov 2001.

3.4 The Russian Federation Representative advised that the technical modernization plans that serve the cross-polar and RFE routes was a complicated task, including new buildings and technology including CNS/ATM. Radar sites will be equipped with secondary RADAR. Plans include installation of 11 node and 77 end-user satellite stations to provide communications between ACCs. It also involves remote VHF relay stations, HF systems, VOR and DME installation.

3.5 He reported on RVSM implementation in Kalinigrad on 24 March 2002. This year, the SCAA plans to test RVSM in Rostov FIR over the "high seas." In conclusion, Yuri advised that several new link routes were submitted for approval, however not all have been approved due to coordination requirements with MOD.

3.6 The following outstanding action items were discussed:

a) SCAA and JCAB will evaluate Kamchatka Four as a new route 100nm north of R220

b) Install permanent satellite voice line between Anchorage ARTCC and ACCs at Petropavolvsk-Kamchatsky and Anadyr

c) To allow aircraft to transition between assigned altitudes (to/from meters- feet) on G-583 in Russian airspace where the aircraft is laterally separated from R-220

d) Install AIDC systems (system of interaction between air traffic controllers in the data transmission mode)

e) Ensure funding for the Kamchatka Volcano Eruption Response Team (KVERT).

f) Air-ground communication requirements for polar routes

g) HF air-ground data link system

h) Installation of additional remote VHF stations.

i) Implement a VFR general aviation route between Wales, Alaska, direct to Providenya on the Chukotka peninsula at a minimum altitude of 1500 meters.

j) Establish voice communications between the ACCs of Chita, Blagoveshchensk, Khabarovsk, Irkutsk, Kyzyl, Barnaul, Vladivostok and their adjacent ACC's in China, Mongolia and North Korea

k) Develop a new transition route from Polar 4 to B337 for aircraft destined Japan, Republic of Korea, China and Hong Kong

l) Study the availability for FANS equipped aircraft to transient A218 at 9600 meters west of Mys Schmidta. **Completed and closed**

m) Investigate options for back-up interfacility communications for Anchorage and the RFE centers

n) Implement interim and final solutions to transmit MET information for operations on polar and RFE routes

o) Assess the feasibility of Reduced Vertical Separation Minima (RVSM) within Oceanic Airspace Delegated to Russian Federation

p) Develop Catalogue for New Routes for Investigation in Regions. **Completed and closed**

q) Expand Available Altitudes Between LISKI and Mys Schmidta to Include 9600 Meters

r) Evaluate Use of A218 West of Mys Schmidta by Non-FANS-Equipped Aircraft

s) Evaluate and propose possible ways of improving the NOTAM exchange in order to support the flights on Cross-polar and RFE routes. **Completed and closed**

t) Develop an interfacility communications architecture that supports polar, RFE, and associated routes. This architecture should be harmonized with national modernization plans

u) Identify weather requirements to support VFR General Aviation route B369, including requirements for MET products from Providenya Bay and Lavrentiya airports

v) Identify the means of exchange of volcanic ash information

w) Identify appropriate flight level assignment to address RVSM and the feet/meter conversion issue while maintaining conventional vertical separation at the common Anchorage/Magadan and Anchorage/Murmansk FIR boundary

x) Standardize separation minima in the Arctic Region between SCAA, NAV CANADA and FAA

y) The MATFMC, ATCSCC and NAV CANADA Flow Management will compile data on flights using the Cross-polar and trans-east routes for use in traffic analysis and forecasting

z) Investigate Increased Access to B233 for Flights Operating During Weekdays

4. 17th Meeting of the Informal Pacific ATC Co-ordinating Group (IPACG/17) 15 - 19 April 2002, San Francisco, California, U.S.A.

4.1 Some notable items which were discussed at this meeting included:

50 NM ADS Longitudinal Separation Minimum in the NOPAC and CENPAC

4.2 JCAB briefed on the implementation of 50 NM automatic dependent surveillance (ADS) longitudinal separation minimum in the North Pacific (NOPAC) and Central Pacific (CENPAC) airspace. JCAB advised that the Oceanic ATC Data Processing System (ODP-3) required a software upgrade and system evaluation prior to a phased implementation of 50 NM longitudinal separation minimum. The initial plan is to replace controller-pilot data link communications (CPDLC) waypoint reporting with ADS waypoint reporting. The application of 50 NM longitudinal separation minimum for step climbing and descending aircraft will be introduced in 2003 within Tokyo oceanic airspace. JCAB intends to implement the 50 NM longitudinal separation minimum using ADS for aircraft at cruise when MTSAT-1R becomes operational in 2004.

Implementation of RNP10 in the Japan/Hawaii PACOTS

4.3 JCAB presented a working paper describing a plan for the implementation of RNP10 in the Japan/Hawaii PACOTS. The implementation plan proposed that Tokyo ACC and Oakland ARTCC could begin generating tracks on the Japan/Hawaii PACOTS with at least 50 NM separation on 3 October 2002. The tracks would be expanded to a minimum of 2 degrees 100 NM track spacing if convective weather was forecasted.

Enhancement of airspace capacity between Hong Kong, Tokyo and beyond to North America.

4.4 IATA requested the group's consideration for additional ways to enhance airspace capacity for aircraft departing from Hong Kong and Taipei entering Naha and Tokyo ACC's airspace bound for North American destinations. JCAB agreed to consider the possibility of reducing the 15-minute requirement and will study the parallel route issue and present their progress at the next meeting.

4.5 Various issues were discussed at the Fans Interoperability Team (FIT) Meeting. These included:

a) Uplinks with Multiple Message Elements;
b) North and Central Pacific Operations Manual;
c) Status of New JCAB CRA and CRASA;
d) Problem Report Summary;
e) CPDLC Auto Transfer;
f) Statistical Analysis on CPDLC Message Type;
g) Statistical Analysis on CPDLC Response Time to ATC Clearances;
h) CPDLC Altitude Reports; and,
i) ADS Emergency

Proposed Seminar on Datalink Operations

4.6 JCAB proposed that it would be beneficial for the operators and providers if a seminar on datalink operation were held. IATA strongly supported the proposal and suggested that the NCPOM should be used for such a seminar.

5. 16th Meeting of the Informal South Pacific ATS Coordinating Group (ISPACG)

5.1 The sixteenth meeting of the Informal South Pacific ATS Coordinating Group (ISPACG) was hosted by Le Service d'État de l'aviation Civile en Polynesie Française (SEAC) and held at the Beachcomber Intercontinental Hotel, Papeete, French Polynesia, from 11-15 February 2002.

5.2 Accomplishments of the meeting

a) Agreed to a trial in which RNP-10 would be required on PACOTS Tracks 20, 21, W and X;

b) Agreed to include a standard clause on data management in the letters of agreement;

c) Reviewed the lost communication procedures and identified differences for resolution;

d) Reviewed existing contingency plans and agreed that they are adequate;

e) Satisfactorily resolved concerns from airlines regarding reductions in distance-based longitudinal separation though application of the time-based "Rule of 11's"; and

f) Development of a capacity enhancement/action table for use by ISPACG to track the progress toward implementation of operational benefits to airspace users. This table is included as part of the report and is to be reviewed and updated for the next meeting as on ongoing agenda item.

6. Special ATS Coordination Meeting on Afghanistan (SCM/AFG/1), Dubai, UAE – 9/10 May 2002

6.1 On 9-10 May 2002, a Special ATS Coordination Meeting between States concerned and the Coalition Forces, was held in Dubai, United Arab Emirates under the auspices of ICAO. The purpose of the meeting was to review the present situation regarding the provision of Air Traffic Services within Afghanistan, including the authorization and promulgation of AIS (including NOTAM issue) and to develop a Contingency Air Traffic Management Plan (CATMP) for Transit of the Kabul FIR by International Civil Aircraft. The meeting was attended by Afghanistan, I.R. Iran, Pakistan, Tajikistan, United States of America, the Coalition Forces (CF) including the Regional Air Movement Control Centre (RAMCC), United Nations Joint Logistics Centre, ICAO MID and APAC offices and the International Airline Transport Association (IATA).

6.2 This meeting was extremely productive and allowed all parties, to better understand the CF requirements with respect to Afghanistan and adjacent airspace. A revised NOTAM procedure was agreed to assist in identifying the lower airspace requirements and restrictions compared to ATS routes within the band of airspace between FL310 and FL390, previously released to the Afghanistan Ministry of Civil Aviation and Tourism for transiting international civil aircraft to operate through the Kabul FIR by the CF. The meeting was also presented with a Draft Contingency Air Traffic Management Plan (CATMP) for Transit of the Kabul FIR by International Civil Aircraft. This plan required changes to the present route structure which had been previously agreed to by the CF within the same band of flight levels plus some additional necessary adjustments. The meeting should note that subsequently, the CATMP has been agreed to by the CF, approved by the President of the ICAO Council in accordance with ICAO procedures and implemented on AIRAC date of 5 September, 2002.

7. Special Coordination Meeting on Afghanistan (SCM/AFG/2) Bangkok, Thailand, 29–30 August 2002

7.1 At the request of the President of the ICAO Council, the ICAO APAC office held the second Special Coordination Meeting on Afghanistan (SCM/AFG/2) Bangkok, Thailand, 29 – 30 August 2002. The purpose of this meeting was to endeavour to better understand the civil/military requirements for airspace in and adjacent to the Kabul FIR and to find solutions to current problems that would continue the safety and efficiency of operations in accordance with ICAO Standards by international civil aircraft operating in this area.

7.2 The meeting was attended by Afghanistan, India, Oman, Pakistan, United States of America, members of the CF operating airspace in Afghanistan and the International Airline Transport Association (IATA).

7.3 Over the past three months, there had been four reported serious incidents between international civil aircraft and military transport or combat aircraft in or close to the Kabul FIR. On all occasions, the military aircraft involved was flying at the same IFR altitude as the civil aircraft with no known ATC clearance, crossing ATS routes which had been reserved for civil aircraft by agreement with the CF.

7.4 All of these occasions required the civil passenger aircraft to take avoiding action, either by following the TCAS resolution advisory (RA), or by an ATC instruction to change heading.

7.5 ICAO Annex 2, Appendix 3 para b) to the Convention on International Civil Aviation lists the altitudes for VFR Flight above FL290 as even altitudes, e.g. FL300, FL320, FL340 etc. It therefore seemed appropriate that, in order to harmonize civil and military operations for the benefit of all concerned, when military aircraft have an urgent operational requirements to cross routes which have been allocated to international transiting aircraft through the Kabul FIR or within an adjacent FIR, they do so either at FL290 and below or if necessary, at even VFR altitudes above FL290.

7.6 Under the current arrangements control authority rests with the CF for the Kabul FIR. The Coalition had delegated five ATS routes or corridors through the Kabul FIR with restricted flight levels bands to be managed by MOCAT for international civil overflights operating between Asia and Europe. Two routes, V838 and V888 (FL 310-390) are the primary trunk routes where the incidents described above had occurred.

7.7 At the SCM/AFG/1 meeting at Dubai, the CF representative pointed out that strict procedures were in place for military aircraft that were required to operate the ATS routes (corridors) delegated to MOCAT. All such aircraft, when under the control of the Airborne Early Warning (AEW) aircraft, were not permitted to climb or descend within a radius of 20 NM around the civil aircraft. If this could not be achieved, the military aircraft would change level outside the lateral limits of the ATS route(s) concerned.

7.8 It was pointed out by the representative of CF that under Article 3 of the Convention on International Civil Aviation, the annexes to the Convention were not applicable to State aircraft, and that Contracting States undertake, when issuing regulations for their State aircraft that they will have due regard for the safety of navigation of civil aircraft. In this regard, the meeting was advised that the US voluntarily applies the Convention and annexes to its State aircraft operations. The meeting noted that State aircraft operating over sovereign territory comply with ICAO provisions to obtain approval to operate and that they follow published ATS procedures including filing of flight plans. In international airspace, State aircraft operate under the principle of due regard and in visual conditions. The meeting discussed the preferred option of military aircraft operating above FL 290 in non-RVSM international airspace to fly at FLs in accordance with Annex 2 – *Rules of the Air*, Tables of Cruising Levels, Appendix 3, paragraph b) for VFR flights, i.e. even flight levels. This would allow 1000 ft vertical separation between military and civil aircraft. The CF representative advised that he would recommend to the Coalition Forces Air Component (CFAC) that the Annex 2 provisions on selection of VFR cruising levels in Appendix 3, paragraph b) be adopted for CF aircraft operating under due regard.

7.9 It was noted that arrangements have been agreed between CAA Pakistan and the CF to establish corridors of airspace in the Pakistan FIRs to accommodate Coalition aircraft operations. Effective coordination and communication procedures are in place, and there has been a significant reduction of incidents since these improvements were introduced.

7.10 The Coalition representative reiterated that, whenever operations permit, flight plans and traffic information would be provided to the ATC authority for international airspace in a timely manner. Further, in regard to follow up to be taken by the CF for incidents involving CF/civil aircraft, arrangements need to be established, whereby incident reports received by ATS providers and IATA are channeled through ICAO to the Office of the Executive Director of the Department of Defense Policy Board on Federal Aviation.

7.11 IATA advised the meeting that the airways delegated to MOCAT by the CF for civil operations (V838, V888, A466 and V876) met the basic needs for long-haul civil aviation. However, the restriction of FL310 to FL390 for operation on V838, V888 and to a lesser extent on A466 limited westbound operations, as very few aircraft could reach FL350 by the Lahore/Kabul FIR boundary and that FL390 was virtually unusable for the heavy flights westbound for Europe. Therefore, IATA requested that CF consider a FL280 - FL370 corridor on at least V838/V888 (named L750/N644 effective 5 Sept). The CF advised the meeting that if FL390 was given back to them, it would be very useful for their operations. They requested if IATA would consider relinquishing this level. Unfortunately, the CF could not commit to release any lower flight levels back to civil operations but would consider the request based on their operational requirement. IATA stated they would coordinate this request with airlines concerned and would advise the CF as well as ICAO.

7.12 With regard to future routes, the CF representative advised that they would consider all requests made through MOCAT and, as operations permit, would approve additional routes and flight levels.

7.13 The representative of MOCAT provided information on the prevailing conditions in Afghanistan concerning the status of the civil aviation infrastructure and air navigation facilities. It was noted that as a result of 23 years of war most of the airports, communications and navigation aids, VSAT system, runways, taxiways, terminal buildings, meteorological stations, fire fighting equipment and stations, and other essential facilities were destroyed or severely damaged. Some recovery had taken place and the VSAT was now operating at Herat, Kabul and Mazar-I-Sharif. Improvements were being made to some terminal buildings, especially at Kabul Airport. MOCAT has a plan to rehabilitate the civil aviation infrastructure as soon as funding is obtained. The meeting was advised on the need for improvements to equipment to provide flight safety and air navigation services, and funding was urgently required to support these needs.

7.14 Afghanistan further advised that with the opening of a limited number of ATS routes for transiting international civil aircraft through the Kabul FIR, air navigation charges have been re-established which has given consequential revenue to Afghanistan. Under the circumstances of bringing peace to Afghanistan, the action being taken by the CF is fully supported and it is understood that they would return the airspace control to MOCAT as soon as circumstances permit.

7.15 AIS arrangements for preparation and distribution of NOTAMs for Afghanistan were reviewed. It was confirmed that MOCAT did not have an AIS capability and their AFTN system based on VSAT was only partially operational. Earlier difficulties with handling NOTAMs, as reported at the SCM/AFG/1 Meeting at Dubai, had been largely overcome. The Civil Aviation Authority of Singapore (CAAS) had provided assistance to RAMCC to distribute their NOTAMs and will continue to assist both the CF and Afghanistan MOCAT in AIS matters.

7.16 The meeting considered its future role and it was agreed that this forum provided an essential means of coordination and information exchange and should continue on a regular basis. It was suggested that two meetings a year should be arranged under the auspices of ICAO, and for the next meeting to be held in the spring of 2003. The US DOD and ICAO will coordinate a suitable time and venue for this meeting and advise other participants accordingly.

Summary of Action to be taken

7.17 In summary, the meeting agreed to the following actions:

a) the CF representative will recommend to CFAC that the Annex 2 provisions on selection of VFR cruising levels in Appendix 3, paragraph b) be adopted for CF aircraft operating under due regard;

b) for all flights arriving and departing in the Kabul FIR via published VFR ATS routes, the CF will reinforce the operation of existing procedures;

c) when operations permit, CF aircraft operating under due regard will advise the appropriate ATC unit on the radio frequency in use for the airspace concerned;

d) the CF will give priority to re-establishing a liaison link in Kabul with MOCAT; and

e) as this forum provided an essential means of coordination and information exchange between civil and military providers and users, two meetings a year should be arranged under the auspices of ICAO. The next meeting to be held in

the spring of 2003. The US DOD and ICAO will coordinate a suitable time and venue for this meeting and advise other participants accordingly.

8. Tenth Meeting of the South East Asia ATS Coordination Group (SEACG/10) – Denpassar, Indonesia, 18 – 22 March 2002

8.1 Due to the limited time that was available, the SCS/TF/7 post implementation meeting agreed that follow-up action on several outstanding items be addressed at the SEACG/10 in order to maintain the continuity of work pertaining to ATS operations in the South China Sea area. It was recognized that the following tasks would need to be further discussed:

a) update on development of communication and surveillance in Sanya AOR;

b) update on monitoring of aircraft navigation errors for RNP 10 operations over the South China Sea;

c) weather deviation procedures proposed by Hong Kong, China;

d) remedial action by Indonesia on SIDs/STARs for Jakarta (both Soekarno-Hatta and Halim) which were not aligned with the new route structure;

e) change proposals to the route structure; and

f) flight planning procedures proposed by Malaysia.

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

8.2 An essential aspect of the SCS project was the establishment of RNP 10 monitoring arrangements along four of the routes, *i.e*. L625, M771, N884 and N892. Hong Kong China, Philippines and Singapore were made responsible for the collection of relevant data concerning flight operations along these routes. These States were also required to forward the data collected, each month, to the Civil Aviation Authority of Singapore (CAAS), which is the monitoring authority for RNP 10 operations over the South China Sea.

8.3 Singapore provided the meeting with the latest report as follows:

a) no unintended lateral or longitudinal deviation was recorded since RNP 10 monitoring began on 2 November 2001; and,

b) there was, however, one incident reported, which involved an aircraft operating for about 10 minutes in the eastbound direction on a westbound RNAV route in the South China Sea. This incident was assessed by an expert group at RVSM/TF/13 as a violation of the flight's clearance. The Task Force agreed that the circumstances of the event did not involve any operational or ATC loop error.

Weather Deviation Procedures for South China Sea Airspace

8.4 The meeting was presented with a proposal to establish a set of common ATC operating procedures to cater for weather deviation situations on RNAV Routes P901, L642, M771, N892 and L625 within the airspace where Hong Kong, Sanya, Manila and Ho-Chi-Minh ACCs are responsible for provision of air traffic services.

8.5 The procedures would be supplementary to the relevant procedures laid down in the ICAO Regional Supplementary Procedures of Middle East/Asia (Doc7030/4 MID/ASIA/RAC-4). They would be applicable before and after 1930 UTC 31 October 2002, when Hong Kong and Sanya ACCs would join the other ACCs in the South China Sea region in RVSM implementation.

8.6 In view of the frequent occasions of tropical cyclones and inclement weather in the South China Sea area, extensive weather deviations can be expected, particularly during the summer months. As the newly established RNAV routes within the South China Sea area are designed with 60 NM minimum lateral separation standard and transit a number of FIRs/AOR, the workload induced to pilots and ATC under weather deviation scenarios can be significant. The phased implementation of RVSM on different dates further complicates the issue. The need to establish a standard set of weather deviation procedures within the South China Sea area had therefore been identified by the SCS/TF as one of the outstanding tasks requiring urgent attention. It was necessary to finalize the procedures before the onset of the next typhoon season.

8.7 There were two scenarios provided; one for small scale, localized weather deviations and the second for large scale, extensive weather deviations which would normally be associated with a typhoon, which frequent the area in the summer months, known as *The Typhoon Season*.

8.8 With regard to large scale weather deviations, a Flight Allocation Scheme during these times was developed.

8.9 With regard to Small Scale Weather Deviations, procedures would be left to the ACC concerned with appropriate coordination as required if this deviation was likely to impact on an adjacent FIR.

Change Proposals to the Route Structure and Associated Procedures

8.10 The SCS/TF decided not to change any of late proposals in the South China Sea ATS route structure leading up to the implementation date of 1 November 2001, but to wait till after the route system had settled down before looking at these issues.

8.11 The three main areas of concern were:

a) Hong Kong – Jakarta – Hong Kong;

b) Brunei – Middle East/Europe – Brunei; and

c) alternate routing due congestion of many inbound and outbound routes to/from Kuala Lumpur over PEKAN (PK).

Hong Kong – Jakarta – Hong Kong

8.12 As a result of the revised South China Sea route structure, airlines operating on this route segment are suffering severe operational penalties with regard to excessive flight times. On a round trip between the two locations additional penalty is approximately 30 minutes. This was not only a cost in fuel but also causes additional costs in maintenance on the aircraft as well as affecting flight crew limitations.

8.13 Considerable time was spent in looking at various options to accommodate a more direct route between these locations. The possible impact, such as disruptions to traffic flying on other South China Sea routes associated with flight safety were also considered. Singapore was of the view that the most viable option was as follows:

a) Hong Kong - Jakarta route:
L642-ENBOK-MONBO-N892-MELAS-LUSMO-G220

b) Jakarta - Hong Kong route:
G220-LUSMO-L625-ARESI-DULOP-M771

8.14 Compared to the current routings, the savings in terms of distance under this option would be as follows:

a) Hong Kong - Jakarta: 91 NM

b) Jakarta - Hong Kong: 84 NM

8.15 The meeting agreed that affected States would look into whether the proposed route could be implemented in their respective FIRs. IATA was asked to work with these States to arrive at a viable solution.

Brunei – Middle East/Europe – Brunei

8.16 A request from Brunei Darussalam on behalf of Royal Brunei Airlines to shorten the route from Brunei Darussalam to Phuket for their flights to/from the Middle East and Europe was proposed.

8.17 The new route for aircraft flying from Brunei Darussalam to the Middle East/Europe was an increase of 110 NM one way and a time penalty of 16 minutes with approximately 700 kg excess fuel over the route previously flown.

8.18 Various options to overcome the additional distance being flown by these aircraft were discussed. Brunei Darussalam advised that they would have further discussions with Royal Brunei Airlines and advises States, ICAO and IATA on the outcomes. IATA advised that they would pursue this matter on behalf of Royal Brunei Airlines; however, the Sub-Group was advised that Royal Brunei Airlines would not pursue this matter for the time being.

Alternative routing into Kuala Lumpur from the South China Sea

8.19 Due to the congestion over PEKAN (PK) of inbound and outbound aircraft to/from Kuala Lumpur, Malaysia proposed an alternative route for arriving aircraft from Hong Kong to Kuala Lumpur. Although this proposal would reduce congestion over PK, IATA suggested that a more direct routing via a parallel route to the present PK-VKL route should also be considered.

8.20 It was agreed that the new parallel route proposal proceed which would relieve the problems in the PK area. Malaysia and Singapore would coordinate arrangements to introduce this parallel route scheme into/out of Kuala Lumpur.

Proposed changes to RNAV routes N892 and L625

8.21 During discussions on weather deviation procedures mentioned above, especially with regard to large deviations by aircraft in the typhoon season, it was suggested that consideration should be given to straightening both N892 and L625 so that they would be direct lines between MABLI and Hengchun on N892 and between LUSMO and MEVIN on L625. This would allow an increase in the distance between the routes and give more flexibility to ATC in coping with weather deviations.

8.22 As this would require an in-depth look into the present route structure, SEACG/10 decided to hold over this suggestion to a later appropriate date.

Flight Planning Procedures

8.23 The current repetitive flight plan (RPL) format does not provide for a field where information regarding RNP10 and RVSM capability may be inserted. Obtaining such essential information from individual aircraft increases controller workload.

8.24 It was noted that if an aircraft scheduled to fly under RPL suffers a degradation in the aircraft's system resulting in the aircraft's inability to comply with RNP10 and/or RVSM requirements, the RPL shall be replaced with a FPL.

8.25 In this connection, *Procedures for Air Navigation Services-Rules of the Air and Air Traffic Services* (PANS-RAC, Doc 4444) addresses relevant procedures in Appendix 2-Flight Plan, Section 7-Instructions for the completion of RPL listing form, Item Q, which states:

> "*INSERT* items of information as required by the appropriate ATS authority, items normally notified in Item 18 of the ICAO flight plan and any other information pertinent to the flight of concern to ATS."

Implementation of RVSM in the Western Pacific/South China Sea Area

8.26 This subject is detailed in the RVSM section mentioned in another part of this report.

Implementation of Radar Handover Procedures

8.27 States within South East Asia have been making significant efforts to develop safe and efficient air traffic control systems on a sub-regional basis in order to meet the ever-increasing demand of air transportation in the region.

8.28 As part of ATC modernization system upgrade, many States have installed new radars or plan to do so. Consequently, a major part of South East Asia airspace is now covered by radar, except for the middle section of the South China Sea.

8.29 The *Procedures for Air Navigation Services-Air Traffic Management* (PANS-ATM, Doc 4444) states that States should, to the extent possible, facilitate the sharing of radar information in order to extend and improve radar coverage in adjacent control areas (paragraph 8.1.5) and that States should, on the basis of regional air navigation agreements, provide for the automated exchange of co-ordination data relevant to aircraft being provided with radar services, and establish automated coordination procedures (paragraph 8.1.6) in Chapter 8, Radar Services.

8.30 PANS-ATM states that transfer of radar control should be effected whenever practicable so as to enable the uninterrupted provision of radar service (paragraph 8.7.5.1).

8.31 Transfer of radar control, in other words radar handover, is commonly in use not only between adjacent ATC units in the same State but also between adjacent States even where different radar systems are used. This procedure enables air traffic controllers to provide continuous service for aircraft and to apply further reduced longitudinal separation when agreed on through Letters of Agreement between the ATC units concerned. This leads to better utilization of airspace and enhancement of efficiency of ATC operations in a cost-effective manner.

8.32 Areas were identified where States could apply radar hand-over procedures at a common FIR boundary. An action plan was developed to implement radar handover procedures where this is currently not applied.

Dissemination of Aeronautical Information

8.33 Considerable discussion took place on the importance of accurate and timely notification of changes to AIS information. current aircraft navigation systems and automated ATM systems are driven by databases, which are dependent on accurate information. Consequently, corrupt or erroneous information can have an adverse affect on flight safety. Similarly, if accurate changes are not received in sufficient time, then databases cannot be upgraded and airlines and ATS Providers could find themselves using inconsistent and/or out of date data.

8.34 In reviewing the "Lessons learned" from recent major regional changes involving several States, the importance of timely, accurate and integrated dissemination of changes to aeronautical information cannot be over-emphasized. It was recognized that late delivery of essential aeronautical information, and in some instances, publication of inaccurate data, could compromise the safe implementation of major changes to the air traffic service system.

COM Action Plan

8.35 The status of implementation of the COM Action Plan was reviewed. It was noted with appreciation that most of the COM action items were implemented in time established by SEACG.

Implementation of the new CNS/ATM systems in the Region

8.36 States gave an update on their progress in the implementation of the New CNS/ATM systems.

8.37 Hong Kong, China sought continued cooperation and support of all parties concerned in their effort to work with other ATC authorities regarding the feasibility of conducting joint trials/evaluations and/or sharing experience on CNS/ATM development and implementation.

New Air Traffic Control Center in Ho-Chi-Minh

8.38 Viet Nam advised that a feasibility study of Ho-Chi-Minh ATC system and a new building for ACC was completed. In support of ATM automation, ADS/CPDLC functions as well as AIDC will be integrated into the new system with radar data and flight plan data. The installation of equipment in the new building of Ho-Chi-Minh ATC center is scheduled to be completed before the end of 2004. From the year 2005, Ho-Chi-Minh ACC and Tan Son Nhat Approach Unit will be located in this new ATC center.

Review Functions of SEACG

8.39 The meeting reviewed the composition of the Group. Recognizing that the South East Asia area is situated in the centre of the major traffic flow *South-East Asia and China, Republic of Korea and Japan* (AR-9) listed in Chapters 6 and 10 of *the Asia/Pacific Regional Plan for the New CNS/ATM Systems,* it was considered beneficial if other States pertaining to AR-9 are involved in the future discussions of SEACG. ICAO was requested to take appropriate follow-up action.

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AGENDA ITEM 2.4: OTHER AIR NAVIGATION MATTERS

Agenda Item 2.4 Other Air Navigation Matters

Statement of Basic Operational Requirements and Planning Criteria (BORPC)

2.4.1 The meeting was presented with a Statement of Basic Operational Requirements and Planning Criteria as contained in Part I of the ASIA/PAC Basic Air Navigation Plan and FASID document that was approved by the President of the Council on 11 August 2001.

2.4.2 The statement of BORPC provides operational and planning criteria which forms the basis for development of the Air Navigation Plans. The meeting noted the need for changes to the MET part as contained in section 9 of the BORPC as a result of the closure of the Regional Area Forecast Centres (RAFCs) and new provisions in regard to the exchange of OPMET data included in Amendment 72 of Annex 3, that became applicable on 1 November 2001. The meeting formulated the following conclusion:

Conclusion 13/35 – Amendment to the Statement of BORPC

That, ICAO is invited to consider amendment to the MET part of the Statement of BORPC, as shown in Appendix A to the Report on Agenda Item 2.4

Aerodrome Certification and Expansion of IUSOAP to Annex 14

2.4.3 The meeting was informed that the requirement for aerodrome certification arose from Amendment 4 to Annex 14 Vol I adopted by the Council during the 10th meeting of the 162nd session on 13 March 2001 and became applicable on 01 November 2001.

2.4.4 With the global trend towards greater autonomomy and privatisation of airports, the meeting noted that the role of the airport operator had changed hands from State to the private sector. However, the role of regulatory agencies and the States remain unchanged. Under Article 28 of the Chicago Convention, States remain responsible for the provision of adequate and safe aerodrome facilities and services in accordance with SARPs developed by ICAO. Therefore the need to ensure safety by the provision of adequate facilities has assumed greater emphasis.

2.4.5 Amendment 4 included a new section §1.3 that introduced the requirement for aerodromes to be certified. As of 01 November 2001, aerodromes open to public use should be certified under appropriate regulatory framework (Recommend Practice). Aerodromes used for international operations shall be certified under appropriate regulatory framework as from 27 November 2003 (Standard). Amendment 4 also included provisions on the establishment of a safety management system at aerodromes. A Recommended Practice on establishing a safety management system has become applicable on 1 November 2001. The new Standard would require a safety management system to be in operations in certified aerodromes from 24 November 2005.

2.4.6 The meeting also took note the decision of the 33rd Assembly to expand the IUSOAP into, inter alia, Annex 14 with the commencement of audit to be carried out in 2004.

2.4.7 The meeting was briefed on the outcome of the Aerodrome Certification workshop carried out in collaboration with Civil Aviation Safety Authority, Australia in Brisbane from 26 – 30 August 2001 where 42 participants from 16 countries in the Asia Pacific region took part.

In the light of the above, the meeting formulated the following conclusion:

Conclusion 13/36 : AerodromeCertification

That, States:

i) are urged to take appropriate steps to establish the necessary legislation and regulatory procedures needed for certification of aerodromes;

ii) where safety management system in aerodromes has been introduced, to share its experience and provide assistance through hosting of conferences, seminars and workshops.

Need for Adequate Resources for Regional Traffic Forecasting Groups

2.4.8 The meeting was advised that the Asia Pacific Area Traffic Forecasting Group (APA TFG) held its Tenth Meeting in Bangkok in June 2001 and prepared its eighth set of forecasts. However, the events of 11 September necessitated a review of this work. Having regard to the increased demands on forecasting groups and the need to allow the market to reach a reasonable degree of stability, it was explained that the APA TFG will meet in Bangkok on 30 September to 4 October 2002. The normal sequence of preparing forecasts will resume in 2003 and the group expects to continue making its important contribution to APANPIRG.

2.4.9 It was pointed out that the work of the regional TFGs has been expanding continuously over the past several years based on the needs determined by the respective PIRGs. The committee was reminded that the TFGs were created to facilitate the requirements of the PIRGs, but in practice the vast majority of the work in some of the TFGs is being carried out by the Secretariat. While some of the demands have been accommodated, the new requests for data cannot all be met without additional resources and expertise provided by States, or additional funding to the Secretariat.

2.4.10 The meeting noted that, against this background, ICAO's forecasting activities were reviewed at the 166th Session of Council on 3 June 2002 and a strategy will be pursued whereby all of the TFGs will be largely self-reliant in the long-term as regards the development of forecasts and business cases, with the Secretariat support limited to that of providing coordination.

2.4.11 The meeting noted the roles and function of the APA TFG and was informed that China had been invited to join the group along with the existing members approved by the Council: Australia, Canada, Chile, Japan, Singapore and the United States. In view of the importance of traffic forecasts and the need to provide the APA TFG with adequate resources, the meeting endorsed the following conclusion:

Conclusion 13/37 - Need for Adequate Resources for Traffic Forecasting Groups

States provide adequate resources for the APA TFG, which should include the designation of suitable experts to participate in the development of forecasts and regularly attend TFG meetings along with the provision of data and other information required for the development of forecasts

Eleventh Air Navigation Conference (AN-Conf/11)

2.4.12 The APANPIRG was apprised that the Council of ICAO had agreed to convene the Eleventh Air Navigation Conference (AN-Conf/11) in Montreal from 22 September to 3

October 2003. The meeting noted that the agenda of the conference enveloped wide spectrum of issues related to CNS/ATM systems and covered *interalia* the following:

Agenda Item 1: Introduction and assessment of a global air traffic management operational concept
Agenda Item 2: Safety and security in air traffic management
Agenda Item 3: Air traffic management performance targets for safety, efficiency and regularity and the role of required total system performance (RTSP) in this respect
Agenda Item 4: Capacity-enhancement measures
Agenda Item 5: Review of the outcome of the ITU World Radio Conference (2003) (WRC-2003) and its impact on aeronautical electromagnetic spectrum utilization
Agenda Item 6: Aeronautical navigation issues
Agenda Item 7: Aeronautical air-ground and air-to-air communications

2.4.13 In relation to agenda item 1.3 - "the need for a global air navigation plan", the meeting noted that the Secretariat was currently developing an electronic data base that would contain ATS routes and facilities/services as reflected in Basic ANP and FASID. This database, which would be presented to the Conference, would be accessible to all users and expected to be kept current through the changes incorporated by Regional Offices as and when an approved amendment to ANP/FASID is available. Furthermore, under this agenda item, the conference is scheduled to discuss the present air navigation planning processes so as to identify the most appropriate methods to meet the future implementation planning needs including the option of having one global air navigation plan/process instead of the present practice of several regional plans/processes. In discussing the agenda of the Conference, the APANPIRG reflected that there was a need for developing a regional position on various subjects and as such participation in the Conference was strongly endorsed.

2.4.14 As a result of the analysis of the agenda of the AN-Conf/11, the meeting allocated different agenda items to the relevant APANPIRG Sub-Groups for them to study the subject items and taking into account the State's position develop and present the regional perspective to APANPIRG/14 scheduled for 4-8 August 2003. Accordingly, the following Decision was formulated:

Decision 13/38 : Developing an Asia/Pacific Regional Position for AN-Conf/11

That, the subjects of the following agenda items of AN-Conf/11 be studied and taking into account the State's position Subgroups develop and present the regional perspective to APANPIRG/14 scheduled for 4-8 August 2003.

Agenda Items 1, 2.1, 3 and 4: ATS/AIS/SAR SG
Agenda Items 2.3, 2.4 and 2.5 : CNS/ATM IC SG
Agenda Items 2.2, 5,6 and 7: CNS/MET SG

2.4.15 The APANPIRG was of the view that, it would be useful if an ALLPIRG meeting be convened before the Conference to review the working papers and provide regional input as appropriate.

ICAO Asia/Pacific Regional Office support for technical cooperation to Afghanistan

2.4.16 The meeting was informed of support provided by the ICAO Asia/Pacific Regional Office for technical cooperation to Afghanistan for the period 28 December 2001 to 17 July 2002. After 23 years of armed conflict in Afghanistan, this had led to major destruction to the civil aviation

infrastructure and substantial loss of trained and qualified personnel in all disciplines of the civil aviation industry. Following the terrorist attacks on the United States on 11 September 2001, the Taliban regime was removed from the government of Afghanistan by the Coalition Forces. The Bonn Conference established an Interim Administration that took over the government of Afghanistan on 21 December 2002

2.4.17 At the request of the Minister of Civil Aviation and Tourism, Afghanistan, ICAO carried out a fact finding mission from 28 December 2001 to 3 January 2002 to assess the condition of civil aviation in Afghanistan. The Technical Cooperation Bureau (TCB) undertook the mission with the assistance of the Asia/Pacific and Middle East Regional Offices. Recognizing that the reconstruction of the civil aviation infrastructure and the provision of air navigation services was essential to the rehabilitation of the Afghanistan economy and to support the humanitarian effort, ICAO gave the highest priority to obtain accurate and up-to-date information, and to reassure the Afghan authorities of ICAO's willingness to provide all possible assistance to restore civil aviation services in Afghanistan.

2.4.18 In addition, the Ministry of Civil Aviation and Tourism (MOCAT) had given high priority to reopening the Afghanistan airspace (Kabul Flight Information Region (FIR)), which had been closed due to military action by the Coalition Forces. The Kabul FIR is strategically located on the main ATS routes between Asia and Europe and losses of approximately US$350,000 per day were estimated by the international airlines previously using the airspace. Also, MOCAT was losing approximately US$1million per month returns from air navigation charges for aircraft transiting the Kabul FIR. Subsequently, three ATS routes with restricted flight levels (FL310 to 390) were opened in mid-February 2002 by MOCAT under the existing airspace arrangements agreed with the Coalition Forces. Later, two additional routes were opened.

2.4.19 The mission confirmed the findings of two previous ICAO missions in 1995 and 2000 that the civil aviation infrastructure was in a serious state of disintegration and that further deterioration had occurred. Based on these findings, at the invitation of MOCAT, ICAO submitted a project for US$38 million to rehabilitate the national civil aviation infrastructure. Due to funding difficulties, the project was scaled down to approximately US$8 million to meet the immediate rehabilitation requirements for Kabul International Airport. This did not include repairing runways, other paved surfaces, airport buildings, utilities, and training. Due to funding and administrative problems, the project implementation date of 1 July was delayed and with arrangements resolved in late August, the project is expected to be implemented in the near term.

2.4.20 MOCAT requested ICAO to continue to provide technical assistance, and the Asia/Pacific Office assigned a RO ATM to the Kabul mission until mid-July. The objective of the mission was to facilitate the establishment of ICAO rehabilitation projects and to assist MOCAT with its day to day operations. In addition, the mission provided assistance to the United Nations Assistance Mission to Afghanistan (UNAMA) on civil aviation matters, in particular to the UN air operations, and coordinated with the military authorities on airspace and airport operations.

2.4.21 The meeting noted that with the Regional Office providing technical assistance to Afghanistan, its resources had been seriously stretched with major projects at a critical stage of implementation planning, e.g. EMARSSH and RVSM. In this regard, the Regional Office requested assistance from Air Services Australia for an ATM officer to work at the Regional Office. During the period February to July 2002, Airservices Australia assigned an ATM officer to the Regional Office. The meeting recognized and expressed its appreciation to Australia for its assistance.

2.4.22 The meeting recognized the importance to Afghanistan and the international aviation industry for civil aviation services to be restored, in particular the urgent need for training. In this regard, the meeting was informed that the Indian Government had made a commitment to provide assist to Afghanistan to the extent possible, and in the civil aviation sector, three Airbus 300-B had

been donated to Ariana Afghan Airlines. One aircraft had been delivered and flight crews and engineering personnel were being trained in India. Also, an offer had been made to MOCAT for controller training in India. The meeting was further informed that the Japan Government through the Japan International Cooperation Agency had carried out civil aviation needs assessments and once the report is reviewed, the Japan Civil Aviation Bureau may be asked to provide assistance. Singapore advised the meeting that they would be interested to consider providing training assistance in some civil aviation disciplines. ICAO informed the meeting that a coordinated approach should be adopted by States and ICAO could assist States provide the maximum benefits for MOCAT.

2.4.23 The meeting expressed its appreciation to States providing assistance to Afghanistan, and urged States to donate funding and/or in-kind support for civil aviation in Afghanistan, in particular for training of civil aviation personnel.

2.4.24 IATA informed the meeting that with the helpful contributions made by Lufthansa of two new HF radios, Singapore Airlines for free cargo transport and to Nortel Dasa Satcom who donated replacement parts for the damaged VSATs, they were able to reinstall HF radios, repair three VSAT stations with their corresponding VHF radio sites, the Kabul FIC AFTN terminal and the VSAT direct speech circuits with Pakistan and Uzbekistan. A further two VSAT and/or VHF sites are not as yet operational. A technical visit to Kandahar is required to ascertain the status of the VSAT and VHF radio which links back to Kabul FIC. In addition, a VHF site located on a large hill overlooking Kabul is also unserviceable, limiting the Kabul VHF coverage to not more than 100NM. When this site is repaired, it will extend the VHF range to over 200NM. Notwithstanding this, the advisory service on the four routes under the control of MOCAT air traffic controllers is adequate. However, IATA remains concerned that the controllers are near retirement age and there is an urgent need to train Afghan nationals as controllers.

2.4.25 IATA consulted airlines on their requirements for Afghanistan and concluded that international en route flights over Afghanistan do not require any ground based radio navigation aids. The Ministry of Civil Aviation and Tourism had developed GPS non-precision approach (NPA) procedures, designed by Airway Corporation New Zealand, for the Afghan airports of Herat, Jalalabad, Kabul, Kandahar and Mazar-I-Sharif. However, MOCAT do not have the means to flight check these procedures and the airlines would be grateful if States could assist in arranging a qualified flight check of these instrument approaches. NPA approaches using GPS as sole means of navigation require an alternate airport with conventional instrument procedures and IATA is currently studying this requirement.

2.4.26 The opening of Afghanistan airspace to international civil flights had its share of problems, the most noted being confusing NOTAMs and some air proximity incidents with large military aircraft flying at IFR altitudes. The ICAO Asia/Pacific Office was instrumental in organising two very important meetings to help resolve these issues and IATA expressed its appreciation to ICAO for their leadership role in addressing and helping to resolve these important operational issues.

Part I

STATEMENT OF BASIC OPERATIONAL REQUIREMENTS AND PLANNING CRITERIA (BORPC) FOR REGIONAL AIR NAVIGATION PLANNING

(Approved by the Air Navigation Commission on 17 June 1999)

1. INTRODUCTION

1.1 On 17 June 1999, the Air Navigation Commission approved this Statement of Basic Operational Requirements and Planning Criteria which is appropriate to all the ICAO regions except the European Region.

1.2 The Commission has considered that in planning the facilities and services related to the communications, navigation and surveillance/air traffic management (CNS/ATM) systems, the Global Air Navigation Plan for CNS/ATM Systems, accepted by the Council, provides the framework to be followed. Among the information included in the Global Plan, the Statement of ICAO Policy on CNS/ATM Systems Implementation Chapter 2 (ICAO's Planning Structure for CNS/ATM) and Chapter 3 (Global Planning Methodology) are considered particularly pertinent to regional planning. The importance of planning on the basis of homogeneous areas and major traffic flows, as referred to in the Global Plan, is also stressed.

1.3 The Commission has also considered it unnecessary to repeat in this statement any pertinent requirements already contained in the Convention, Annexes or Procedures for Air Navigation Services.

2. GENERAL (APPLICABLE TO BOTH INTERNATIONAL COMMERCIAL AIR TRANSPORT AND INTERNATIONAL GENERAL AVIATION)

2.1 Air navigation facilities, services and procedures recommended for the area under consideration should form an integrated system designed to meet the requirements of all international civil aircraft operations. The plan should meet the requirements of all operations planned to take place in the area during the next five years, but not necessarily limited to that period, taking due account of the long-term planning and implementation strategies regarding the communications, navigation and surveillance/air traffic management (CNS/ATM) systems and its possible effects on adjacent regions.

2.2 Traffic forecasts have a special role in planning the implementation of CNS/ATM systems. The forecasts represent the demand for future ATM. Forecasts of aircraft movements within homogeneous ATM areas and along major international traffic flows form the basis for planning of the infrastructure and arrangements which will supply the required level of ATS. A uniform strategy has been agreed by ICAO for the purpose of preparing traffic forecasts in support of the regional planning process.

2.3 The planning should be based on traffic forecasts and should take account of the following normal ranges of operating characteristics of the aircraft listed therein. However, the table of aircraft operations referred to in ICAO Doc 8144 (Directives to Regional Air Navigation Meetings and Rules of Procedure for their Conduct) could be used in the absence of traffic forecasts. The system should be sufficiently flexible to accommodate aircraft operational characteristics outside the normal range.

2.4 Aircraft, engaged or planned to be engaged, in international operations have been grouped into the following categories:

a) supersonic turbo-jet aeroplanes;

b) subsonic turbo-jet aeroplanes;

c) multi-engine turboprop aeroplanes;

d) piston-engine aeroplanes and single-engine turboprop aeroplanes with:

1) a normal cruising speed of more than 260 km/h (140 kt) (type A); and
2) a normal cruising speed up to 260 km/h (140 kt) (type B);

e) helicopters; and

f) other aircraft (V/STOL, gliders, balloons, etc.). ***Note.)*** *Group f) to be included only to the extent that it requires consideration in regional planning.*

2.5 The normal operating characteristics listed below for each group of aircraft should be taken into account in the development of facilities, services and procedures to the extent that relevant categories operate, or will operate, within the system.

2.6 **Supersonic turbo-jet aeroplanes**

a) *Climb performanc*e: At subsonic speed 20-50 m/s (4 000 - 10 000 ft/min); at supersonic speed 8-16 m/s (1 500 - 3 000 ft/min) during transonic acceleration up to 13 100 m (FL 430); at supersonic cruising speed 2 – 8 m/s (500 – 1 500 ft/min) above 13 100 m (FL 430).

b) *Speed range in cruising flig*ht: At subsonic speed (Mach 0.95); at supersonic speed above 13 100 m (FL 430) Mach 1.7 - 2.0.

c) *Range of desirable cruising level*s: At subsonic speed 7 600 – 11 200 m (FL 250 - 370); at supersonic cruise-climb technique speed 15 240 - 18 280 m (FL 500- 600).

d) *Descent performanc*e: At supersonic speed: 20 - 25 m/s (4 000 - 5 000 ft/min); at subsonic speed 15 - 20 m/s (3 000 - 4 000 ft/min).

e) *Contingency performanc*e: If unable to obtain or maintain supersonic speed, SST aircraft will use the values shown in a) or d) above against subsonic speed.

2.7 **Subsonic turbo-jet aeroplanes**

a) *Climb performanc*e: 8 – 25 m/s (1 500 – 5 000 ft/min).

b) *Speed range in cruising flig*ht: 780 – 1020 km/h (420 – 550 kt) (Mach 0.71 - 0.92).

c) *Range of desirable cruising level*s: 8 250 – 13 700 m (FL 270 – 450).

d) *Descent performanc*e: 10 – 25 m/s (2 000 – 5 000 ft/min).

2.8 **Multi-engine turboprop aeroplanes**

a) *Climb performanc*e: 5 – 15 m/s (1 000 – 3 000 ft/min).

b) *Speed range in cruising flight*: 460 – 650 km/h (250 – 350 kt).

c) *Range of desirable cruising level*s: 5 200 – 8 250 m (FL 170 – 270).

d) *Descent performanc*e: 8 – 15 m/s (1 500 – 3 000 ft/min).

2.9 **Piston-engine aeroplanes and single-engine turboprop aeroplanes**

a) *Climb performanc*e:

1) Type A: 2 – 10 m/s (500 – 2 000 ft/min);
2) Type B: 2 – 5 m/s (500 – 1 000 ft/min).

b) *Speed range in cruising flight*:

1) Type A: 260 – 460 km/h (141 – 250 kt);
2) Type B: 110 – 260 km/h (60 – 140 kt).

c) *Range of desirable cruising level*s:

1) Type A: up to 6 100 m (FL 200);
2) Type B: up to 3 050 m (FL 100).

d) *Descent performanc*e:

1) Type A: 5 – 10 m/s (1 000 – 2 000 ft/min);
2) Type B: 2 – 5 m/s (500 – 1 000 ft/min).

2.10 **Helicopters**

a) *Climb performanc*e: up to 8 m/s (1 500 ft/min).

b) *Speed range in cruising flight*: up to 370 km/h (200 kt).

c) *Range of desirable cruising level*s: up to 3 050 m (FL 100).

d) *Descent performanc*e: up to 8 m/s (1 500 ft/min).

Note 1.) *Further to 1.3 above, it is emphasized that the values given 1.3.3 to 1.3.7 represent average values covering the majority of aircraft types in each category. Also, depending on circumstances (e.g. load, stage length of a flight) considerable deviations from them may occur for specific flights.*

Note 2.) *Performance of military aircraft not covered by the above values may be considerably in excess of those quoted. It is, however, assumed that in such cases national arrangements will be made to cater for these aircraft.*

2.11 Planning should not include an aerodrome or other facility or service used only by operators of the State in which the aerodrome or other facility or service is located unless such planning is required to protect the integrity of the plan.

2.12 Planning for facilities and services, in addition to meeting the operational requirements, should take into account the need for:

a) efficiency in operation; and

b) economy in equipment and personnel, with due consideration being given to capability for future expansion without major redesign or replanning.

2.13 Planning should take into account the need for an adequate number of technically trained and competent personnel to be employed in the system to supervise, maintain and operate air navigation facilities and services and should result in recommendations, as necessary, to meet such need.

2.14 The facilities, services and procedures recommended for implementation should not result in imposing on flight crew or ground personnel, employed in the system developed in accordance with the plan, a workload level that would impair safety or efficiency.

2.15 Special operational features of the area under consideration, such as those which may have been associated with causal factors noted in accident investigation reports and incident reports, should be taken into account, particularly if there are indications, such as those given in the "recommendations" of aircraft accident investigation reports and incident reports, that special measures are called for to prevent recurrence of accidents and incidents from the same cause or causes.

2.16 Planning for facilities and services should normally provide for their availability on a 24-hour basis. In cases where part-time availability is deemed adequate to meet the operational requirements, a brief description of the circumstances should be given in the plan. Lighting aids should be planned when use of the aerodromes at night or during low-visibility conditions is expected.

2.17 It is essential that the over-all plan:

a) satisfy the requirements of all aircraft, including domestic and military traffic to the extent that it may affect international traffic;

b) ensure compatibility of facilities, services and procedures with those recommended for operations in adjacent areas;

c) ensure that operators have access to information necessary to exercise effective operational control;

d) provide for speedy exchanges of necessary information between the various units providing air navigation services and between such units and operators; and

e) take account of aircraft performance and navigational capability in specifying requirements for the carriage of airborne equipment, as well as having due regard for the operational environment.

2.18 In the development of the plan, full cognizance should be taken of the cost-effectiveness of the recommended facilities, services and procedures. Planning should be directed towards facilitating implementation of essential improvements required for existing and anticipated operations in the region. The objective should be to expedite the eradication of current deficiencies in the air navigation facilities and services. Project management techniques should be employed for the implementation of communications, navigation and surveillance (CNS) facilities and services to facilitate the phased introduction of air traffic management (ATM) system enhancements.

3. AERODROMES

3.1 International commercial air transport operations

3.1.1 Regular aerodromes and their alternates should be determined to meet the needs of the flights listed in the table of aircraft operations or the use, as approved by the Council, of traffic forecasts. When studying the requirements for alternate aerodromes, the guiding principle should be that, to the greatest practicable extent, the requirements for alternate aerodromes be satisfied by regular aerodromes used for international aircraft operations. Additionally, consideration should be given to provisions to meet the requirement of en-route alternate aerodromes for extended-range twin-engine operations, as and when necessary.

3.1.2 Physical characteristics, visual aids, and emergency as well as other services should be determined for each regular and alternate aerodrome required for international operations and should include runway length and strength, as well as the aerodrome reference code(s) selected for runway and taxiway planning purposes.

3.1.3 Where at an aerodrome, planning for Category II or III operations, as the case may be, is not a requirement during the plan period but such operations are contemplated at a time beyond the plan period, planning should take into account the possible requirement for Category II or III operations so that at least one runway and the related ground-air environment may be provided in the future to accommodate such operations.

3.1.4 In cases where the extension or development of an aerodrome to meet infrequent critical operations would entail disproportionate expenditures, alternative solutions should be explored.

Note.) *If it is found that the full operational requirements cannot be met at an aerodrome, then the maximum practicable development to facilitate operations should be recommended and the relevant reasons for this included in the report.*

3.1.5 At alternate aerodromes, the physical characteristics should be determined in accordance with the landing requirements of the diverted critical aircraft and the take-off requirements for the aircraft for a flight to the aerodrome of intended destination. To ensure safe taxiing operations, a specified taxiway route should be determined for the diverted critical aircraft.

Note.) *Where more than one alternate aerodrome is available, the requirements should be based on the types of aircraft each is intended to serve.*

3.2 International general aviation (IGA)

3.2.1 Aerodromes, in addition to those required for international commercial air transport operations, should be determined to meet the needs of the IGA flights listed in the table of aircraft operations or the use, as approved by the Council, of traffic forecasts.

3.2.2 Physical characteristics, visual aids, and emergency as well as other services should be determined for each aerodrome to meet at least the needs of the most commonly used aircraft operated or intended to be operated at the aerodrome by IGA and should include runway length and strength, as well as the aerodrome reference code(s) selected for runway and taxiway planning purposes.

4. AIR TRAFFIC MANAGEMENT

4.1 Air traffic management should enable aircraft operators to meet their planned times of departure and arrival and adhere to their preferred flight profiles with minimum constraints without compromising agreed levels of safety. The air traffic services to be provided, the airspace organization, the associated facilities, and the required navigation performance should be determined on the basis of an agreed network of ATS routes and the type, density and complexity of traffic.

4.2 Airspace management

4.2.1 The airspace structure and organization should include a network of ATS routes established so as to enable aircraft to operate along, or as near as practicable to, the preferred flight path, in both the horizontal and vertical planes, from the departure aerodrome to the destination aerodrome. ATS routes based on area navigation, also including flexible routes, should be recommended where appropriate and feasible. ATS routes shall be great circles between significant points, wherever possible. Standard instrument arrival routes (STARs) should be established when the density of air traffic justifies their application in a TMA and to facilitate the description of the route and procedure in air traffic control clearances. Standard instrument departure routes (SIDs) should be established for each instrument runway. SIDs and STARs should be laterally segregated to the extent possible.

4.2.2 Whenever the circumstances warrant, the airspace organization should be designed to support the ultimate goal of allowing each aircraft to fly its own optimized flight path. The airspace organization should be indicated in accordance with the ICAO airspace classification.

4.2.3 Airspace restrictions should be subject to a continuing review procedure with the object of eliminating them or reducing their restrictive effects to a minimum, with particular emphasis on the need to achieve effective civil/military co-ordination. Permanent segregation of airspace should be avoided. Temporary airspace reservations, where necessary to cater for large formation flights or other military air operations, should be minimized in time and space, closely co-ordinated, and promulgated in a timely manner. Military operations should not only be promulgated in a timely manner but also through international dissemination (international NOTAM).

4.2.4 Planning for routes required for supersonic aircraft should take account of areas that are to be protected from the adverse effect of sonic boom and of the possible need for the pilot-in-command to avoid any hazardous meteorological conditions which may be encountered in the area in which transonic acceleration is planned. To cater for such circumstances, an alternative route or routes should be available, and alternative points for starting transonic acceleration may be required.

4.3 Air traffic services

4.3.1 Flight information service and alerting service should be provided throughout the area under consideration. The plan of flight information regions (FIRs) should provide for the least number of FIRs compatible with efficiency of service and with economy. In this connection, the evolutionary introduction of CNS/ATM systems should be taken into account and consideration should be given to co-operative efforts for introducing more efficiency in airspace management by reducing the number of FIRs. In delineating FIR boundaries, due consideration should be given to:

a) the need for adequate air-ground communications coverage from the location of the FIC/ACC;

b) the need to minimize frequency changes and position reporting by aircraft, and coordination between FICs/ACCs; and

c) the need to minimize problems relating to climbing and descending traffic at major aerodromes located in the vicinity of FIR boundaries.

4.3.2 Area control service should be provided for IFR flights along all ATS routes to be used by international aircraft operations, except where the type and density of traffic clearly do not justify the provision of such service. Flights by supersonic aircraft, during the transonic and supersonic phases of flight, should be provided with air traffic control service ensuring separation from all other flights. Controlled airspace, in the form of airways, control areas of larger dimensions and terminal control areas, should be recommended to encompass all relevant ATS routes. In delineating control area boundaries, due account should be taken of the factors listed in 4.3.1 above.

4.3.3 Approach control service should be provided at all aerodromes used for international aircraft operations and equipped with navigation aids for instrument approach and landing, except where the type and density of traffic clearly do not justify the provision of such service. Controlled airspace, in the form of terminal control areas and control zones, should be recommended to encompass at least the climb to cruising level of departing aircraft and the descent from cruising level of arriving aircraft.

4.3.4 Aerodrome control service should be provided at all regular and alternate aerodromes to be used for international commercial air transport operations. Aerodrome control service should also be provided at those additional aerodromes used by international general aviation aircraft where the type and density of traffic warrant it. At aerodromes used by international general aviation aircraft, where the type and density of traffic clearly do not justify the provision of aerodrome control service, the provision of aerodrome flight information service by a unit located at the aerodrome should be recommended.

4.3.5 Air traffic advisory service should not be recommended as part of the plan. Where provided (to IFR flights in advisory airspace or on advisory routes), its replacement by air traffic control service at the earliest possible time should be recommended.

4.3.6 The air traffic services system and procedures should:

a) permit the most efficient use to be made of the airspace by all users and provide for the most expeditious handling of the various types of traffic;

b) be so designed that the number of air-ground communications contacts, frequency changes and SSR code changes required of aircraft, and the amount of coordination required between ATS units, are kept to a minimum;

c) ensure the prompt and timely transmission to all aircraft concerned of information on hazardous weather conditions, operational flight information and other available information affecting the safety and efficiency of flight;

d) require the use of uniform altimeter setting procedures throughout the area under consideration when operating below the established transition level or climbing up to the established transition altitude; and

e) establish a common transition altitude on an area basis and, where possible, on a regional basis.

4.3.7 Information on destination weather, the integrated operational status of facilities associated with the runway in use, and the runway conditions, should be provided to aircraft (in voice or data format) by the transmission of operational flight information service (OFIS) messages, including VOLMET, or by the appropriate area control centre or flight information centre upon request, prior to commencement of descent or, in the case of supersonic aircraft, prior to the deceleration/descent phase. Where this information is transmitted in voice format, a discrete frequency should be assigned for this purpose. Air-ground data links are particularly efficient for this type of service, as well as for clearance delivery, and should be recommended when a sufficient number of aircraft are appropriately equipped.

4.3.8 The flight plan to be submitted for a flight by a supersonic aircraft should provide, within the existing flight plan format, the specific information on transonic and supersonic flight phases necessary for ATS purposes.

4.3.9 Procedures should be developed to facilitate ATC handling of descent by aircraft from cruise necessitated by solar cosmic radiation.

4.3.10 To assist in the prevention of controlled flight into terrain (CFIT), efforts should be made to implement a minimum safe altitude warning (MSAW) system or equivalent.

4.3.11 To assist in the prevention of CFIT, every effort should be made, in co-operation with the operators, to identify locations at which unwanted ground proximity warning system (GPWS) warnings occur. These warnings can occur due to conflict between ATS procedures, or operator procedures, and the characteristics of the terrain and/or those of the GPWS equipment in use. Effort should further be made, with co-operation between the ATS authority and the operators to eliminate the occurrence of unwanted GPWS warnings by appropriate adjustment of ATS and/or operator procedures.

Note.– Where adjustment of procedures is not possible, or is not effective, it may be possible to eliminate unwanted warnings, at a specific location, by GPWS envelope modulation. This possibility will be based on technical data of the equipment manufacturer and will be proposed by the operator for acceptance by the operator's authority.

4.4 **Air traffic flow management**

4.4.1 Air traffic flow management should be provided to ensure an optimum flow of air traffic to, from, through or within defined areas during times when demand exceeds, or is expected to exceed, the available capacity of the ATS system, including relevant aerodromes. However, this should not preclude the need for planning airspace to adequately meet demand.

5. **SEARCH AND RESCUE**

5.1 Planning for search and rescue service should take into account, to the maximum practicable extent, existing facilities even if they are provided for purposes not connected with search and rescue. Such planning should take into account the delimitation of maritime search and rescue regions.

5.2 A single SAR point of contact (SPOC) should be designated for each SRR to facilitate co-operation with the associated mission control centre (MCC) of the COSPAS-SARSAT* system.

***Note**.) A SPOC may be an aeronautical or a maritime RCC.*

5.3 Where aircraft of the long-range (LRG) and longer-range categories are required for the provision of air coverage of large oceanic search and rescue regions, but such aircraft cannot be made available by the State responsible for search and rescue services, specific cooperative arrangements should be made for the deployment of such aircraft from other locations in an attempt to meet the requirements for sufficient air coverage of the appropriate regions.

5.4 Search and rescue organization, plans, procedures, operations, and equipment should be in accordance with the provisions of volumes 1, 2 and 3 of the International Aeronautical and Maritime Search and Rescue manual (Doc 9731), to the extent practicable.

6. COMMUNICATIONS

6.1 Aeronautical fixed service (AFS) planning and engineering

6.1.1 The AFS recommended should be designed to meet the agreed requirements for AIS, ATS, MET, SAR and aircraft operating agencies for voice, message and data communications.

6.1.2 The planning of the aeronautical fixed telecommunication network (AFTN) should be based on the guidance material contained in the *Manual on the Planning and Engineering of the Aeronautical Fixed Telecommunication Network* (Doc 8259) and taking into account the predominating characteristics for conditions in the region or area concerned.

6.1.3 a) If a meteorological operational telecommunication network is recommended, it should be designed so as to meet transit time criteria as follows:

In the peak season of the year, even in the average peak hours, at least 95 per cent of the messages should achieve transit times of less than the following:

SIGMET, AIRMET, volcanic ash and tropical cyclone advisory messages and special air-reports	5 minutes
Amendments to aerodrome forecasts	5 minutes
Aerodrome reports/landing forecasts/aerodrome forecasts/selected special reports:	
from 0 to 550 NM	5 minutes
for distances exceeding 550 NM	10 minutes

*COSPAS - Space system for search for vessels in distress
SARSAT - Search and rescue satellite-aided tracking

b) If international OPMET data banks are recommended, transit time for request/reply should be less than 5 minutes.

6.1.4 Aerodrome forecast messages originated by meteorological offices in the region should be available, at all locations in the region to which they are addressed, at least 30 minutes before their period of validity commences.

6.1.5 The dissemination means for WAFS products should be such as to guarantee availability of these products throughout the region at international aerodromes and other locations as appropriate to meet operational needs.

6.1.6 Planning of ATS ground to ground communication networks comprising direct and switched ATS speech circuits should take account of operational voice-communication requirements. It should also take into account relevant ICAO documentation with regard to the application of analogue and digital voice switching and signalling systems.

6.1.7 With the introduction of automation in air traffic management many coordination functions will be accomplished through data interchange between ATM systems using ATN applications such as ATS Interfacility Data Communication (AIDC) or ATS message handling service (AMHS), for example. As such, the planning for ATN should include the provision of AFTN/AMHS gateways to facilitate the exchange of information between existing and newly established networks.

6.1.8 For planning of AFS, attention should be paid to the establishment of institutional arrangements for the implementation by States of co-ordinated digital networks, using appropriate technology to meet, in an integrated way, current and future communication requirements.

6.2 **Aeronautical mobile service (AMS) and aeronautical mobile satellite service (AMSS)**

6.2.1 Air-ground data link and voice communications facilities should be recommended to meet effectively and reliably the agreed requirements for air traffic services as well as, to the extent required, all other classes of traffic acceptable on the AMS. The facilities should employ voice and data communications links based on available transmission media (e.g. HF, VHF, satellite). This decision should be based on system performance and economical criteria to comply with operational needs.

6.2.1.1 Regional planning should take into account AMSS ground earth station (GES) redundancy requirements in co-ordination with the AMSS service provider(s) with a view to avoiding an unnecessary proliferation of facilities.

6.2.2 ATIS and VOLMET or OFIS broadcasts should be recommended only if overloading of air-ground channels due to request/reply communications has occurred, or is expected to occur. When justified by the number of aircraft suitably equipped, data links should be recommended for these functions, as well as for clearance delivery.

6.2.3 Aerodromes having a significant volume of international general aviation traffic should be served by stations of the AMS, and such stations should operate on frequencies within the bands normally used by aircraft constituting this traffic.

6.2.4 Selective calling (SELCAL) devices should be employed, wherever possible and necessary, at aeronautical stations.

6.2.5 An air-to-air VHF communication channel (INTERPILOT) is approved for use over remote and oceanic areas, provided users are out of range of VHF ground stations, to enable pilots to exchange the necessary operational

information. The recommendation for use of frequency 123.45 MHz for this purpose has been adopted by the Council of ICAO with an applicability date of 4 November 1999.

6.3 **Frequency assignment plans**

6.3.1 Frequency assignment work should be done in accordance with the method proposed by the ASIA/PAC/2 RAN Meeting (1983) (Recommendation 6/1, which was approved by the Council of ICAO on 28 June 1983, refers) and using the relevant ICAO Regional Office Frequency Lists.

7. NAVIGATION

7.1 **General**

7.1.1 The planning of navigation aids should be based on a system basis, recognizing that the requirements for both long range and short range navigation may be met by different navigation systems having area navigation capability, including the global navigation satellite system (GNSS), and it may be practicable to establish ATS routes not provided with ground station-referenced aids for suitably-equipped aircraft. For routes or areas which require that aircraft achieve an acceptable level of navigation accuracy, the requirement should be specified e.g. in the form of a required navigation performance (RNP) type to support a selected horizontal separation minimum, or a minimum aircraft system performance specification (MASPS) to support a selected vertical separation minimum. The navigation systems should meet the needs of all aircraft using it and form an adequate basis for the provision of air traffic services.

7.1.2 Where aircraft are using different systems for navigation and position determination within the same controlled airspace, the facilities involved should, in so far as practicable, be located and oriented to enable a fully integrated air traffic control structure to be established.

7.1.3 Planning should take into account the need of civil aircraft for sufficiently accurate navigation guidance to remain clear of restricted, prohibited and danger areas as required.

7.2 **International commercial air transport operations**

7.2.1 **En-route aids**

7.2.1.1 The en-route aids to be recommended should provide navigation assistance to permit en-route navigation on the agreed air traffic services route network with the accuracy required.

7.2.1.2 It is expected that GNSS will ultimately meet all requirements for en-route navigation. Planning for other en-route aids should take due account of the need for a gradual transition towards the use of GNSS in lieu of en-route ground-based navigation aids. Pending implementation of GNSS, VOR supplemented as necessary by DME should be installed as the primary aid for this purpose.

7.2.1.3 Where VOR is used, supplemented as necessary by DME, a total navigation error value for VOR of ±5E (95 per cent probability) should be assumed for planning purposes. However, the specific value of VOR radial signal error for individual facilities/radials should be obtained by flight checking, and if these values are worse than ±3E, appropriate precautions should be taken in respect of the routes concerned.

7.2.1.4 Long-distance radio navigation aids continue to be provided where required.

7.2.2 **Terminal area aids**

7.2.2.1 It is expected that GNSS will ultimately meet all requirements for terminal navigation. Planning for other terminal aids should take due account of the need for a gradual transition towards the use of GNSS in lieu of terminal area ground-based navigation aids.

7.2.2.2 The terminal area aids to be recommended should permit navigation for approach, holding and departure to be carried out with the accuracy required. Where VOR is used as the primary aid, it should be so located as to permit the most efficient approach and air traffic control procedures and to give the pilot maximum assistance in adhering to requisite patterns. Whenever possible, VORs should be located and operated so that they can serve both the requirements for en-route and terminal navigation guidance, including holding. Where the provision of VORs for the holding is not practicable, NDBs can be used for this purpose. Consideration should be given to the provision of DME to be collocated with VORs whenever this is required to ensure necessary ATC flexibility in the routing of air traffic in a given TMA and when improved accuracy in navigation is a prerequisite to such flexibility.

7.2.3 Non-visual aids to final approach and landing

7.2.3.1 The standard non-visual aids to final approach and landing, supporting precision approach and landing operations, shall comply with general provisions in Annex 10, Volume I, 2.1, and their introduction and application are expected to be in line with the strategy contained in Attachment B to Volume I.

7.2.3.2 In planning the requirements for aids to final approach and landing, each aerodrome should be considered in relation to its traffic, its weather conditions and other aspects of its physical environment. In addition, the following two aspects should be taken into consideration in the determination of specific requirements:

a) *The aerodynamic and handling characteristics of the aircraft*

Turbo-jet aeroplanes have need for precise approach path guidance during approach and landing, irrespective of weather conditions. Such guidance should be provided to runways intended to serve these aeroplanes as follows:

1) On a runway having significant traffic the facilities to be provided should be an ICAO standard non-visual aid to final approach and landing, complemented by a visual approach slope indicator system. When a standard non-visual aid cannot be implemented in the first instance, this should not delay the installation of a visual approach slope indicator system.

2) On a runway not having significant traffic, the facilities to be provided should at least include a visual approach slope indicator system.

b) *Routine auto-coupled approaches*

Where auto-coupled approaches are to be made on a routine basis, an ICAO standard non-visual aid to final approach and landing, i.e. ILS or MLS, should be provided as appropriate to the type of operation planned at the aerodrome. In the case of an ILS of facility performance Category I, the ILS should be of Category II signal quality, without necessarily meeting the associated reliability and availability criteria for backup equipment and automatic

change-over of facility performance Category II, but it should be adjusted and maintained to the greatest possible extent and accuracy, and its performance characteristics should be published in AIPs or other suitable documents.

7.2.3.3 **Non-precision instrument approach procedures**

7.2.3.3.1 Non-precision instrument approach procedures can be based on aids other than the standard non-visual aids (see 6.2.3.1 above) which should also support SIDs and STARs. These approach procedures should be constructed whenever possible in accordance with the concept of the stabilized approach; to provide an equivalent three degree final approach glide path; to eliminate stepped approaches; and to provide a final approach fix.

7.2.3.3.2 Particular account should be taken of 6.2.3.3.1 in the design of non-precision instrument approach procedures for use with GNSS which should also support SIDs and STARs.

7.3 **International general aviation**

7.3.1 Short-distance aids

7.3.1.1 Appropriate aids such as GNSS for short-distance navigation should be provided to serve the additional aerodromes referred to in 2.2.1 where the density of traffic and the meteorological conditions so warrant, due account being taken of the airborne equipment carried by aircraft. These aids should, as appropriate, be located so as to permit instrument approaches.

7.4 **Flight testing of visual and non-visual navigation aids**

7.4.1 Cooperative arrangements for the flight testing of visual and non-visual navigation aids (Annex 10, Volume I, Chapter 2, paragraph 2.7) should be recommended where flight testing on a national basis would be impracticable or uneconomical.

8. **SURVEILLANCE**

8.1 Surveillance systems should provide an adequate support to ! and meet the needs of ! ATM. A table of radar facilities, together with an associated chart, is considered to be a useful tool in the planning and implementation of surveillance systems, including automatic dependent surveillance (ADS).

8.2 Surveillance should be provided as an integral part of air traffic control where practicable and desirable or necessary in the interest of safety, efficiency and economy of operations, in particular for those areas where traffic density and/or the multiplicity or complexity of ATS routes create constraints. Primary and/or secondary surveillance radar systems may be used to fulfil this requirement. When technology permits, provided that the required level of safety is maintained, automatic dependent surveillance (ADS) may be used in airspace where surveillance by radar is either impracticable or cannot be justified in terms of traffic volumes and air safety.

8.3 Provision should also be made for the use of surveillance systems for the purpose of monitoring air traffic and identifying civil aircraft in areas where they might otherwise be intercepted.

Note.) *This requirement does not constitute a justification or operational requirement for installation of new radars. Since interceptions would normally only take place under*

existing military radar control, this should be interpreted as a requirement for a State to make better use of existing measures and to improve civil/military coordination.

9. METEOROLOGY

9.1 World area forecast system (WAFS) - Regional aspects

9.1.1 Planning for regional aspects of the WAFS should be undertaken, with particular reference to user States' requirements for WAFS products, service areas and areas of coverage of charts to be included in flight documentation.

9.1.2 Areas of coverage of charts to be provided under the WAFS should be selected so as to ensure the required coverage for flights departing aerodromes in each service area~~, whilst minimizing, as far as practicable, the workload of regional area forecast centres (RAFCs) and the occupancy of telecommunication channels~~.

~~9.1.3 The transmission of RAFC products normally should be completed nine hours before validity time. The time period should be adjusted so as to meet the needs of the majority of the flight stages for which the charts are required.~~

9.1.~~4~~3 Requirements for the issuance of medium-level significant weather (SIGWX) charts (FL 100 – 250) under the WAFS should only be specified for limited geographical areas having a large number of international flight operations using those flight levels and for extended-range operations.

9.1.~~5~~6 Requirements for upper air wind/temperature charts for flight levels additional to flight level 340 should only be specified where such flight levels are used by a significant number of flight operations.

9.1.~~4~~5 Where a significant number of SST operations form part of the regional plan, a requirement for SIGWX and upper air wind/temperature charts covering flight levels appropriate to those operations should be specified.

9.2 Meteorological services to be provided

9.2.1 The meteorological service to be provided for operators and flight crew members should be specified for each regular aerodrome.

9.2.2 Aerodrome forecasts and amendments should be exchanged to meet the needs of current flight operations, including flights under centralized operational control. Aerodrome forecasts for the aerodromes of departure and destination and their respective alternates, and en-route alternates, including those for extended-range operations, should be disseminated so as to be available at departure aerodromes and at stations designated to provide OFIS (including VOLMET) broadcasts for aircraft in flight.

9.2.3 The determination of the aerodromes at which landing forecasts are required should take into consideration relevant operational and climatological factors, including the weekly number of flights requiring those forecasts and the incidence of adverse weather conditions.

9.2.4 For international general aviation, information concerning weather conditions at aerodromes of destination and at relevant alternate aerodromes and concerning en-route weather conditions should be made available or should be easily procurable.

ASIA/PAC BASIC ANP - BORPC **1-0-15**

9.3 **Meteorological observations and reports**

9.3.1 Routine ~~M~~meteorological observations and reports should be made at hourly intervals. However, the intervals should be half-hourly at aerodromes where the volume of traffic and the variability of weather conditions so justify, and/or they are required for any OFIS (including VOLMET) broadcasts which may be recommended and relevant OPMET bulletin exchange schemes.

9.3.2 Routine reports in the METAR code and ~~selected~~ special reports in the SPECI code shall be disseminated to international OPMET data banks and the centres designated by regional air navigation agreement for the operation of aeronautical fixed service satellite distribution system, in accordance with regional air navigation agreement. These reports should be exchanged to meet the needs of current flight operations. Reports for final destinations and departure and destination alternates should be disseminated so as to be available at departure aerodromes within about two hours' flying time from the aerodrome to which those reports refer. In addition, they should be disseminated to be available for transmission to aircraft in flight up to a distance from the aircraft corresponding to two hours' flying time. For extended-range operations and flights conducted under centralized operational control, reports for final destinations, departure, en-route and destination alternates for the whole route should be exchanged so as to be available at the aerodrome of departure using, to the extent possible, services of international operational meteorological (OPMET) data banks and/or predetermined AFTN distribution.

9.3.3 Routine reports for significant observing stations along and adjacent to the route* should be disseminated so as to be available at the departure aerodrome for up to a distance corresponding to two hours'* flying time from the aerodrome, and for aircraft in flight for a distance corresponding to two hours'* flying time from the aircraft.

9.3.4 Arrangements should be made for the provision of reports of runway visual range for ~~precision approach runways and for runways used for take-off~~ all runways intended for Category II and III instrument approach and landing operations during periods when the visibility or runway visual range is less than 1 500 metres.

9.4 **Aircraft reports and SIGMET information**

9.4.1 For international air routes having a high density of air traffic, air-reporting exemption or designation procedures should be developed to reduce the frequency of routine air-reports commensurate with the minimum requirements of meteorological offices. The procedures should be included in the *Regional Supplementary Procedures* (Doc 7030).

9.4.2 SIGMET messages, as well as special air-reports which have not been used for the preparation of a SIGMET, should be disseminated to meteorological watch offices so as to enable them to be made available for aircraft prior to departure and aircraft in flight for the route ahead up to a distance corresponding to two hours' flying time. In the case of non-stop flights operating on especially long routes, SIGMETs and special air-reports for the whole route should be made available at the departure aerodrome and for transmission to aircraft in flight. In addition, SIGMET messages shall be transmitted to international OPMET data banks and the centres designated by regional air navigation agreement for the operation of aeronautical fixed service satellite distribution system, in accordance with regional air navigation agreement.

9.4.3 Notwithstanding the requirements stated in ~~8~~9.4.2, SIGMETs and special air-reports related to tropical cyclones and volcanic ash clouds should be available at departure aerodromes for the whole route for non-stop flights intending to cross areas which may be affected by these phenomena.

* With possible exceptions for certain routes

9.4.4 Arrangements should be made for the transmission to ATS units of information on hazardous weather conditions, including SIGMET information, special air-reports, wind shear warnings, aerodrome warnings and thunderstorms, with a view to ensuring the adequate and timely availability of such information for ground-to-air transmission, including VOLMET broadcasts.

9.5 **International Airways Volcano Watch (IAVW) - Regional aspects**

9.5.1 Planning for regional aspects of the IAVW should be undertaken, including the designation of volcanic ash advisory centres (VAAC) responsible for providing advisory information to meteorological watch offices, ~~and~~ area control centres, and flight information centres serving flight information regions in their area of responsibility on the occurrence, extent and forecast movement of volcanic ash in the atmosphere. Arrangements should be made for the transmission of volcanic ash advisories to other VAACs whose area of responsibility may be affected, world area forecast centres, international OPMET data banks, international NOTAM offices and centres designated by regional air navigation agreement for the operation of aeronautical fixed service satellite distribution system.

9.6 **Tropical Cyclone Watch**

9.6.1 A tropical cyclone advisory centre (TCAC) should be designated for regions affected by tropical cyclones. The TCAC should be responsible for monitoring the development of tropical cyclones in the region and providing advisory information to meteorological watch offices regarding the position, forecast direction and speed of movement, central pressure and maximum surface wind near the centre of the tropical cyclones. Arrangements should be made for the transmission of tropical cyclone advisories to other TCACs whose area of responsibility may be affected, world area forecast centres, international OPMET data banks and centres designated by regional air navigation agreement for the operation of aeronautical fixed service satellite distribution system.

10. **AERONAUTICAL INFORMATION SERVICES AND AERONAUTICAL CHARTS**

10.1 The designation of international NOTAM offices and their areas of responsibility should be based on maximum efficiency in the dissemination and exchange of aeronautical information/data by telecommunications and on optimum use of the aeronautical fixed service (AFS).

10.2 Arrangements for the international exchange of elements of the Integrated Aeronautical Information Package and aeronautical charts should be established to meet the needs of all forms of international civil aviation.

10.3 Arrangements for the transmission and exchange of NOTAMs should be examined with a view to recommending measures to ensure that adequate information is available to users in a timely manner, and that its presentation is efficient as to format and selective as to contents.

10.4 The advantages of using AIS automation integrated systems should be considered when planning the exchange of aeronautical information/data.

10.5 Priority for the planning and implementation of AIS aerodrome units should be based on aerodrome designation (RS, RNS, RG, AS and EAS) as set out in the Basic ANP AOP-1 table.

10.6 Pre-flight information bulletins (PIBs) originated by AIS aerodrome units should be available at each designated international airport at least one hour before each flight in order to meet the operational requirements of users.

ASIA/PAC BASIC ANP - BORPC **1-0-17**

10.7 The World Geodetic System - 1984 (WGS-84) should be implemented in support of GNSS-based operations and to assist in the prevention of CFIT (paragraph 4.3.1 refers). The status of WGS-84 implementation should be the object of periodic examination.

— END —

AGENDA ITEM 3: CNS/ATM IMPLEMENTATION AND RELATED ACTIVITIES

Agenda Item 3: CNS/ATM Implementation and Related Activities

CNS/ATM Implementation Co-ordination Sub-Group

3.1 The meeting reviewed the report of the ninth meeting of the Communications Navigation Surveillance and Air Traffic Management Implementation Co-ordination Sub-Group (CNS/ATM/IC/SG/9), as well as working papers covering CNS/ATM implementation matters. The meeting expressed its appreciation for the work progressed by the Sub-Group.

3.2 The meeting noted that while the Region has been recognized for its achievements that were on going, there is a need to determine what is to be carried out and how, and identify where and when the developments in CNS/ATM should be achieved in a timely manner. It was recognized that the CNS/ATM/IC/SG fulfilled this purpose and had an important role in the planning and implementation of CNS/ATM systems in the Asia/Pacific Region.

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

3.3 The meeting was advised of the results of a review by ICAO requested by the Air Navigation Commission to ensure that the *Guidance Material on CNS/ATM Operations in the Asia/Pacific Region* was in accordance with the SARPs and PANS, and in particular with the procedures contained in Amendment 1 to the *Procedures for Air Navigation Services — Air Traffic Management* (Doc 4444, PANS-ATM). The review emphasized the need to identify and highlight material that was included as a result of differences between the FANS-1/A implementation and the progress of ICAO panels in developing the operational and technical requirements for ATS data link applications, e.g. ADS and CPDLC. In this regard, the detailed technical analysis of the *Guidance Material* carried out found a significant number of anomalies in relation to the amendment referred to above, as well as amendments to Annex 10 — *Aeronautical Telecommunications*, Volume II — *Communication Procedures.*

3.4 In regard to material where differences in procedures may not be able to be aligned or removed for technical reasons (e.g. differences between the displayed text of CPDLC messages as contained in the PANS-ATM and those used as part of the FANS-1 and FANS-A packages), the meeting noted that an explanation should be provided as to why the *Guidance Material* did not specifically duplicate the procedures contained in another ICAO document. Also, the differences should be highlighted to the extent that, should a State agree to accept the guidance, the appropriate authority would be made aware of what the differences entailed. Such action would also support the Annex 15 — *Aeronautical Information Services* requirement for States to include in their AIPs a list of significant differences between the national regulations and practices of the State and the related SARPs and Procedures

3.5 ICAO had expressed some concern that increasing numbers of another level of guidance material, developed by informal ATC coordinating groups, were also being developed and published to advance standardized ATM procedures. These include the South Pacific Operations Manual (SPOM), the Indian Ocean Operations Manual (IOOM) and the North and Central Pacific Operations Manual (NCPOM). The meeting was informed that IPACG and ISPACG, who were responsible for the NCPOM and SPOM respectively, had agreed, due to the similarity of the material, to merge these two documents into a Pacific operations manual. The question was raised as to why this material could not be contained in the *Guidance Material.* The meeting was informed that the *Guidance Material* contained more stable longer term material, whereas the operations manual changed more frequently in light of experience gained in operations. Furthermore, the amendment process for the *Guidance Material* was considered to be too lengthy to meet user requirements for the operations manual.

3.6 The meeting recognized the importance of regional material being compatible with ICAO SARPs and PANS, and agreed that all such documents should be brought up to date to the extent possible and to clearly identify any differences in line with the advice given by ICAO. In regard to revising the *Guidance Material*, this task is on the work programme of the ATS/AIS/AIS Sub-Group. In referring this matter to the Sub-Group, the meeting included the action items suggested by ICAO contained in **Appendix A** to the Report on Agenda Item 3.

Asia/Pacific Regional Plan for the New CNS/ATM Systems – Draft Issue 6

3.7 The meeting reviewed the Asia/Pacific Regional Plan for the New CNS/ATM Systems – Draft Issue 6 and noted that there were several editorial corrections required to align the Regional Plan with the Global CNS/ATM Plan. The meeting was advised that the Secretariat had undertaken this extensive work and after further updating from this meeting, revised Draft Issue 6 of the plan would be distributed to States and International Organizations.

3.8 The meeting noted that there were some changes by States to the timelines within the plan. These would be reflected in the revised Draft Issue 6 to the Plan. The meeting formulated the following Conclusion:

Conclusion 13/39 – Asia/Pacific Regional Plan for the New CNS/ATM Systems

That, the updated Asia/Pacific Regional Plan for the New CNS/ATM Systems be adopted and circulated for use by States and International Organizations.

CNS/ATM Implementation Planning Matrix

3.9 The meeting considered the draft CNS/ATM implementation matrix prepared in accordance with Conclusion 11/37 of APANPIRG/11. The matrix contained the implementation status of CNS elements such as ATN, AIDC, CPDLC, GNSS and ADS. The matrix would be reviewed by APANPIRG and its Sub-Groups on a regular basis to assess progress of implementation. The matrix would be further developed progressively to include implementation status of major CNS/ATM elements covering all ASIA/PAC FIRs.

3.10 It was noted that GPS non-precision approach (NPA) was implemented at various airports in the Federated States of Micronesia with the assistance of the United States FAA. It was agreed that the Secretariat would collect details and include them in the matrix.

3.11 The meeting reviewed and updated information in the matrix. It was agreed to include additional information on SBAS and GBAS and separate columns for ADS-C and ADS-B. It was also recognized that the status, such as trial or demonstration or operational use should be reflected including the name of the location where such facilities were provided. The matrix is provided in **Appendix B** to the Report on Agenda Item 3.

Comparative Analysis of Regional Developments in the Air Navigation Field

3.12 The matrix on the comparative analysis of regional developments in the air navigation field presented to the ICAO Council was noted by the meeting. The matrix was developed to provide a snapshot comparative analysis of regional developments and to enhance the planning and implementation of a cohesive, global air navigation infrastructure of facilities and services. It was expected that the CNS/ATM Implementation Matrix developed by APANPIRG would provide significant input to the matrix on regional developments as this task was going to be an ongoing exercise to review implementation.

GNSS Implementation Team (GIT)

3.13 The meeting noted activities of the GNSS Implementation Team (GIT) formed under the Satellite Navigation and Communication Advisory Committee of the Transportation Working Group of the Asia Pacific Economic Co-operation in promoting implementation of GNSS in the Asia/Pacific.

Selection of GPS receiver Standard for GNSS Implementation

3.14 The meeting noted information provided on the selection of a GPS receiver for the introduction of GPS based GNSS IFR procedures. In this regard, it was necessary for a State to first select the GPS receiver standard on which the operational rules and procedures would be based. At present, only the US FAA TSO C129 and the TSO C145/146 standards were available, and the C146 standard was for stand alone receivers. It was noted that the C129 receiver has been available since the early 1990s. While the C145/146 standard has been released, at present there were no commercially available receivers certified to this standard, although it is expected that these would be available in 2002.

3.15 The meeting noted that the main difference between the C129 and the C145/146 receivers was the lack of a fault detection and exclusion and less human factors integration in the C129 receiver. In addition, the C145/146 standard would permit development of operational use approvals that would allow operations without conventional navigation aid carriage.

3.16 It was noted that for States who were planning to implement GPS based IFR operations, there were significant operational and cost benefits in basing the approvals for these operations on the C145/146 standard rather than the C129 standard. For States that already had C129 approvals in place, the C145/146 equipment could utilize the instrument approach designs. Adoption of the C145/146 receiver standard would provide additional operational benefits; however there would be a significant cost to already equipped operators to upgrade their aircraft fitments.

3.17 In view of the foregoing, the meeting formulated the following Conclusion:

Conclusion 13/40 – Selection of GPS receiver standard for GNSS implementation

That States,

a) should give consideration for future GNSS operational approvals and associated operational implementation based on the TSO C145/146 receiver standard; and

b) use of TSO C129 remains a valid standard but should not be considered as the basis for future implementation of GNSS.

Status of CNS/ATM Implementation

Australia

3.18 A project was initiated to conduct an operational trial of ADS-B for ATC surveillance. The objectives of the trial were to provide and demonstrate operational benefits to airline and airspace users of ADS-B; to provide first hand operational experience of ADS-B for ATC surveillance and the use of ADS-B for separation in the Australian environment including the development of procedures and training; to provide cost-benefit information and practical information prior to deployment of

ADS-B for radar like surveillance within Australia. It was expected that engineering would be ready in late 2002 and operational use in early 2003.

China

NESATC project

3.19 The project called North, East and South ATC (NESATC) will establish three major ATC centers in Beijing, Shanghai and Guangzhou, commonly known as the big triangle area of China. The project will build a same standard, reliable and modernized ATCC with integrated CNS/ATM systems' functions. The project, which commenced in 2000, will take about three years to complete.

Air-Ground VHF data link network application

3.20 The network consists of one network management data process system (NMDPS) and 80 RGS stations, which have been operational since August 2001. The airworthiness regulator issued a requirement to Airlines in China for their aircraft equipped to be with data link capability not later than 1 January 2005. A FANS ground workstation installed at Harbin in North East China is ready to provide services for the Polar routes. D-ATIS trials in Beijing airport have also been conducted.

CARSNIMS Phase 2

3.21 The second phase of China Air-route Navigation Initial Monitor System (CARSNIMS) project was started in the end of 2000. It has provided data for the GPS joint measurement campaign. The feasibility study and preliminary design for the China Satellite Navigation Test Bed (CSTB) will be conducted in the second half of 2002. Provision of integrity signal to en-route ATCCs for reference and decision-making is also being considered.

Communication modernization project

3.22 The feasibility study on the aeronautical telecommunication was completed and system design is being conducted. The communication infrastructure will be upgraded to ATN SARPs based infrastructure. It is expected to have the nation-wide backbone to be established by the end of year 2004 will meet the NESATC project needs and other applications such as ATN trials.

Hong Kong, China

3.23 Trials on CNS/ATM system elements had been conducted with particular attention paid to the characteristics of dense air traffic, hilly terrain, and vast airspace over waters. The following systems were tested: D - ATIS/D -VOLMET and PDC via data-link; ADS/CPDLC trials with different type of aircraft including B747, B777 and A340, and downlink of meteorological data; ATN/AMHS trials with Thailand, Japan and Australia; GNSS En-route applications; SATCOM; AIDC technical trial with Guanghzou; ATM functions including MSAW, conflict alerts for both Approach and En-route and Flow Control Management. Further trials are being considered including SMGCS, VDL Mode2 and SSR Mode S data-link etc.

ATN Trials

3.24 Preliminary ATN trials with adjacent ATS authorities had been conducted since October 2000. The aims of the trials were on connectivity, integrity, functionality and interoperability of the ground-to-ground routers and AFTN/AMHS gateway systems. Results indicated that the longest average message transit time was 13 seconds, which was better than the typical delivery times of 1 and 2 minutes respectively for the current Hong Kong/Tokyo (9600bps) and Hong Kong/Bangkok (2400 bps) AFTN circuits. The main problems encountered during the trials were due

to the inter-networking protocols of IS-IS and ES-IS, which were not clearly defined in the present ICAO ATN technical specifications.

Fiji

EUROCAT 2000X ATM Oceanic System

3.25 The Eurocat 2000X ATM Oceanic system was commissioned on 28 December 2001 at the new ATM centre next to Nadi Air Traffic Control Tower. Functionality includes FDP, Conflict Probe, ADS, CPDLC, Electronic strips, Air Situation Display, etc. Safety Case(s), Safety Management Plan, etc. were developed as part of the overall Safety Management System of the Eurocat implementation.

ATS Disaster Recovery/Contingency Plan

3.26 The new ATS Disaster Recovery/Contingency Plan for Operations in the Nadi FIR caters for short-term outages, medium and extended outages. Backup procedures include use of HF, procedural system, reclassification of Oceanic Airspace and procedures for TIBA and Y2K routings.

Message Switching System and ATN Trials

3.27 A Unified Message Switching System (UMSS) was commissioned at the new ATM Centre in August 2001. The system is performing very well. The voice and data circuit between Fiji and USA will be upgraded to 64Kbps to cater for existing AFTN requirements and also planned testing on ATN. New Zealand and Australia AFTN circuits currently using existing voice and data links (NZ AFTN circuit is X.25 @ 2.4Kbps; Australia AFTN circuit is X.25 @ 4.8Kbps).

3.28 ATN tests being planned in 2002/2003 for implementation of ATN BIS router in 2005. Routers and gateways will be used for AMHS/ATN testing.

3.29 Limited AIDC tests conducted in September 2001 with Australia and more tests to be conducted. Also tests with NZ and USA are currently being planned.

RNP10 and GNSS Operations

3.30 Planning and consultation had being carried out with industry for RNP10 (50/50NM) implementation in June 2002 in the Nadi FIR.

3.31 Additional NPA procedures for GNSS based operations will be developed and implemented by end of 2002.

ADS-B

3.32 A study is currently being conducted to provide a Cost Benefit Analysis on the implementation of ADS-B in Fiji. Trials are planned for 2003 and implementation in 2004.

Japan

Recent CNS/ATM Activities

3.33 The Japan Civil Aviation Bureau (JCAB) introduced data link and satellite technology. JCAB modernized airports and air navigation systems in accordance with development plan for every five years starting 1967 in order to cope up with traffic demands. JCAB expanded their air navigation systems including FDP, RDP. JCAB is developing a new plan to promote implementation of the CNS/ATM system which would commence immediately upon completion of

the seventh plan in March 2003. The MTSAT project is the core element of the new plan. JCAB is conducting MSAS flight tests. The interim analysis showed very high accuracy. It was stated that MTSAT will be launched in summer of 2003 and AMSS function will be in operation in 2004 and MSAS will be available in 2005.

Nepal

3.34 Nepal provided information on their existing and future CNS/ATM systems. The AFTN COM Centre is equipped with fully automatic message switching system and linked to Beijing via VSAT and Mumbai via satellite link. Requirements for direct speech circuit with Lasha is implemented using VSAT. IDD hotline is used for ATS speech circuit with Kolkata, Delhi and Varanasi which will be upgraded to VSAT link in future. A network of 18 NDB, 6VORs, 7DMEs and five locator beacons are maintained. A PSR/SSR has been provided since September 1998 for approach control. CNS/ATM implementation plan has been prepared for implementation in three phases. WGS 84 surveys have been completed and incorporated in AIP Nepal. Priority has been given to the implementation of GPS based navigation throughout the country for en-route and non-precision approaches. GPS departure procedures for six airports are being developed. Details of the strategies for enhancement of ATM, ASM and surveillance functions have been adopted.

Philippines

3.35 The Master Plan for CNS/ATM systems completed in March 2000 identified high priority CNS/ATM elements requiring immediate implementation. The new CNS/ATM Systems Development Project was formulated; the detailed design stage of which will commence in May 2002 and the project completion is expected in the 2007. The ATM automation system would be an integrated system consisting of Air Traffic Management Functions, Safety Measure Function, Weather information functions, ATM data recording and Controller's training functions.

Communication/Navigation/Surveillance

3.36 The communications system includes one ATN System in Manila ATM Centre, one set of Voice Switching and Control System (VSCS), D-ATIS, AMHS, VHF RCAG facilities and 26 VSAT remote stations with VSAT hub station at Manila. The navigation system would utilize SBAS and GBAS while the surveillance system would utilize ADS and three new SSR radars. Two Ground Monitor Stations (GMS) for using SBAS will be installed and one GBAS will be installed at NAIA for Category I precision approaches. A consolidated ADS function will be intergraded in the ATM Automation System.

ICAO policies and practices related to CNS/ATM systems

3.37 The meeting noted the consolidated statement of the 33rd Session of the ICAO Assembly held at Montreal from 25 September to 5 October 2001, which adopted Resolution A33-15 – Consolidated statement of continuing ICAO policies and practices related to Communications, Navigation and Surveillance/Air Traffic Management (CNS/ATM) Systems.

VHF radio interference problem

3.38 The meeting noted information provided by the United States that the critical air traffic control communications frequency operated around 134.000 MHz had experienced several cases of interference caused by unauthorized use of "high power cordless telephones". It had been determined that the cause of this interference was due to the illegal use of "high power cordless telephones" imported for sale in the United States. Such telephones are advertised with a range of up to 50 kilometres at power levels as high as 30 watts.

3.39 It was noted that unauthorized use of an aeronautical band posed a safety threat to international civil aviation and should be curbed. The meeting further noted that the 33rd ICAO Assembly discussed the matter and agreed that Contracting States should be vigilant regarding the new source of radio frequency interference and notify ICAO accordingly. ICAO had brought such frequency interference to attention of the concerned States in the region. Also, most of the national radio regulatory authorities were also informed of this new source of radio frequency interference and its potential impact on aviation safety.

FMS Arrival Procedure Trial at Auckland International Airport

3.40 The meeting was provided with information on the results of the ongoing FMS trial at Auckland International Airport. The trial had proven that it was possible to design a safe and operationally acceptable arrival procedure based on a constant descent path concept. This type of procedure provides multiple benefits for the operators (time/fuel savings, flight planning), ATC (predictable aircraft tracking, traffic sequencing, reduced need for radar vectoring), community in general and the environment (reduced levels of noise and air pollution). The meeting recognized the considerable information provided concerning operational aspects of the new arrival procedure concept.

Update on the regulatory reform program in the Civil Aviation Safety Authority, Australia

3.41 The meeting was provided with an update on the Regulatory Reform Program (RRP) within the Civil Aviation Safety Authority (CASA). The RRP was established under the auspices of the Minister for Transport and Regional Services, Charter Letter and Policy Statement on Aviation Reform, which called for the reform process to be conducted at a measured pace, with publicly defined goals and target deadlines. The objective of the RRP was to develop a complete suite of aviation regulations to replace those that currently existed, and to provide stakeholders with advance notice of the important regulatory reforms. The meeting noted that the primary purpose of the RRP is to produce Civil Aviation Safety Regulations (CASRs), that maintain or enhance safety and which are clear, concise and unambiguous.

Key priorities for implementation of CNS/ATM systems for the Asia/Pacific Region

ADS Broadcast (ADS-B)

3.42 The meeting noted that ADS-B offered the potential for Asia Pacific to significantly increase ATC surveillance capabilities at a low cost. In this regard, it was further noted that an ADS-B ground station could be deployed for less than 15 percent of the cost of a radar. Also, ADS-B supports the provision of additional information direct to the pilot such as Cockpit Display of Traffic Information (CDTI).

3.43 It was noted that ICAO had formalized two ADS-B data links with SARPs in Annex 10 (Mode S Extended Squitter and VDL mode 4), and that there was also a proposal to standardize a third data link, known as the Universal Access Transceiver (UAT). Furthermore, it was noted that the three data links were not inter-operable.

3.44 In regard to the use of the Mode S extended squitter, it was noted that the aircraft TCAS II system uses a Mode S transponder and with a software change and linking of the aircraft navigation system, it could provide the extended squitter transmission. Manufacturers have demonstrated extended squitter software upgrades to existing Mode S transponders.

3.45 The meeting recognized that to realize the benefits of ADS-B, aircraft avionics need to be deployed and ground system provided. In this regard, it was noted that the users had placed

utmost importance on both providers and users realizing the safety and economic benefits of implementing CNS/ATM capability, in particular existing systems. Achieving immediate benefits would gain support from users to invest in the next generation of CNS/ATM systems.

3.46 The meeting recognized, in light of the substantial developments and operational trials taking place, and the safety and economic benefits of ADS-B, that a new task for ADS-B needed to be added to the list of the Key Priorities of the CNS/ATM Implementation in the Asia/Pacific Region. In view of the foregoing the meeting formulated the following Conclusion:

Conclusion 13/41 – Inclusion of ADS-B on the list of Key Priorities of the CNS/ATM Implementation in the Asia/Pacific Region

That, a task on ADS-B be included on the list of Key Priorities of the CNS/ATM Implementation in the Asia/Pacific Region.

3.47 The meeting reviewed and updated the Key Priorities, which is provided in **Appendix C** to the Report on Agenda Item 3.

Development of a Framework for Inter-Regional Coordination (IRC) Meetings

3.48 The meeting recalled that following a Recommendation of ALLPIRG/3, the First Inter-Regional Co-ordination Meeting (IRCM/1), between Asia/Pacific, Middle East and the EUR/NAT Regional Offices, as well as the Regional Affairs Office at ICAO Headquarters, was held at the Asia/Pacific Regional Office from 11 to 13 October 2000. It was noted that IRCM/1 discussed the development of an Inter Regional Co-ordination Framework (IRC-F). The purpose of the framework was to facilitate inter-regional coordination between respective air navigation regions, currently served by the seven Regional Offices of ICAO.

3.49 The meeting recognized that as air navigation continued to evolve into an increasingly seamless systems infrastructure, IRC would form a vital activity in enhancing the pace of implementation. In the course of developing the IRC-F, it was agreed that care should be exercised so as not to create additional structured layers. Rather, maximum advantage should be taken of the current mechanisms in effecting IRC.

Business Planning and Reporting

3.50 The meeting was informed that the New Zealand CAA, while recognising that its planning systems were complex due to the nature of its relationship with Government and its status as a Crown Owned Entity, it had been successful in its business planning activities. It was intended that further development of the planning system under the control of the CAA would be undertaken in the 2002/2003 period, and that this development would bring an even sharper focus and better results to the CAA's safety risk management endeavours.

Air Traffic Management strategic planning

Australia

3.51 The meeting noted information on an overview of the Australian Air Traffic Management Strategic Plan. The view was expressed that, in the past, Air Navigation Service providers established ground infrastructure and services, with little direct consultation with airspace users. In adopting ATM strategic planning, however, it was recognized that the major advancements promised by new technologies required co-coordinated introduction of equipment, techniques and procedures by airlines, airports, ATM Service providers and other members of the aviation community.

3.52 The meeting noted that the strategic management framework adopted by Australia incorporated a systematic and collaborative approach by all ATM stakeholders to ATM planning and implementation. The meeting was further advised that the Australian Air Traffic Strategic Plan had been published on the Internet at www.austatmsp.gov.au and that a link to this site would be placed on the ICAO Asia/Pacific Regional Office web-site.

New Zealand

3.53 The meeting noted the strategic planning process for the evolution of ATM in the New Zealand environment. The framework for this process was known as the New Zealand ATM Direction, which documents the general requirements for systems, infrastructure, procedures and rules necessary for a dynamic and progressive aviation industry.

3.54 The ATM Direction, which was currently in draft form, would provide a common basis for planning for all sectors of the industry. The ATM Direction was owned by the industry not by any one stakeholder, and covers a fifteen-year time frame with annual renewals. The plan when published would be available on the websites of Airways www.airways.co.nz and CAA www.caa.govt.nz, which will be linked to the ICAO Asia/Pacific Regional Office web-site

38th Conference of the Directors General of Civil Aviation Asia/Pacific Region related to CNS/ATM

3.55 The meeting noted that under Action Item 38/4, States were strongly urged to have the designated contact person involved in the preparation at a national level for WRC-2003 and to arrange attendance at the APT Conference Preparatory Group Meeting for WRC-2003 to protect aviation interests. It was noted that the Regional Preparatory Group Meeting for WRC-2003 referred to in the Action Plan was held in Bangkok from 15 to 16 November 2001 and was well attended. It was also noted that the Regional Office had already taken follow up action on this Action Item by drawing attention of Administrations to this Action Item.

3.56 The meeting noted that under Action Item 38/5, all States were strongly urged to take appropriate measures and fully cooperate in the resolution of deficiencies on a high priority basis and report the corrective action taken to the ICAO Regional Office well in time for review by APANPIRG. The meeting was advised that ICAO had issued a State Letter drawing attention of States concerned to notify ICAO of actions taken in accordance with the Action Items agreed including Action Item 38/5. However, the meeting noted that notification of specific action taken by concerned States were yet to be received.

3.57 The meeting further noted Action Item 38/8, which stated that in view of the near CFIT accident of flight NZ60 on 29 July 2000 and lesson learnt with regard to ILS system failure, the Conference had urged that the Directors General disseminate information pertaining to the incident to bring it to the attention of all operators, air navigation service providers and other agencies and report back to ICAO on the action taken within six months.

Proposed Transonic Flights

3.58 The meeting noted that the CNS/ATM/IC/SG/12 had considered the proposed introduction of a transonic cruise commercial air transport aircraft sometime after 2005-2006. In this regard, it was noted that consideration would need to be given to include transonic cruise planning criteria in the BORPC section of ANPs. It was recognized that lead-time was necessary to permit the timely planning of airspace requirements to accommodate this new category of aircraft. Accordingly, the Sub-Group would continue to monitor developments and take appropriate action.

Environmental Issues Related to Implementation of CNS/ATM Systems

3.59 The meeting was provided with information about Airservices Australia's environment policy and its implementation, with a review of environmental achievements over the past year. Particular note was taken of the estimate that improved air traffic management efficiencies in Australia can achieve reductions of between 6 and 12 percent in carbon dioxide emissions and annual fuel cost savings to the aviation industry of at least $43.8 million. The meeting considered such information was highly valued in presenting a strong case for ongoing implementation of the ICAO CNS/ATM system.

3.60 The meeting noted the CNS/ATM/IC/SG decision taken at its Ninth Meeting, to form a CNS/ATM Working Group to develop Terms of Reference for an Environmental Task Force. This action was taken to give effect to ALLPIRG Conclusion 4/8 that ICAO Regional Offices and PIRGs support ICAO/CAEP efforts to expand the methodology for the quantification of CNS/ATM environmental benefits to each region by collecting data, as necessary.

3.61 Since the working group proposed by the CNS/ATM/IC/SG had not yet had the opportunity to make progress on this matter, the meeting discussed activities it considered should be pursued by the Environmental Task Force.

3.62 It was pointed out that most of ICAO's environmental work is undertaken by the Committee on Aviation Environmental Protection (CAEP). The meeting was advised that CAEP has developed its modeling capabilities beyond the parametric model used by the group in its initial CNS/ATM studies. Having achieved success with applications of the model in Europe and the US, CAEP plans to apply the model to other regions, subject to funding and on the collection and harmonization of a database. The meeting was told that a questionnaire is almost ready to be sent to the ICAO regions to collect data that can be used by any of the models being developed for future emissions modeling and to avoid repetition of data requests in the future.

3.63 The meeting also was advised that CAEP's first regional workshop held in Madrid on 21-22 May 2002 was very successful and that there was unanimous support for additional workshops to be held in other regions.

3.64 The meeting agreed that the necessary actions on environmental matters could be undertaken within the existing CNS/ATM/IC/SG. The meeting also welcomed the prospect of a CAEP regional workshop in the Asia/Pacific region in 2003 and agreed that the Terms of Reference for the CNS/ATM/IC/SG should include an ongoing role in the dissemination of information to Contracting States about ICAO's work on the environmental benefits of CNS/ATM. The meeting urged States to further support ICAO's work on environmental matters through the well developed structure of CAEP Working Groups.

Future work programme

3.65 The meeting noted the information provided by the Chairpersons of APANPIRG's three active Sub-Groups, ATS/AIS/SAR, CNS/ATM/IC and CNS/MET, who met in December 2001 and September 2002 and considered co-ordination between the Sub Groups and other bodies which contribute to APANPIRG. Following an attempt to identify all work in progress from established and disestablished constituted bodies and a review of the major meeting reports from which issues that warranted consideration within APANPIRG and its Sub-Groups, a tabulated list identifying the work in progress and issues for inclusion in work programs was developed. The table is provided at **Appendix D** to the Report on Agenda Item 3.

3.66 In regard to the above, the meeting acknowledged the value of the work carried out and that the tabulated list was a useful overview to keep track of the activities of the bodies concerned. It was noted that further work was required to complete the table, and that this would be

completed by the Sub-Groups. The meeting agreed that the table would be included in the APANPIRG reports and formulated the following decision:

Decision 13/42 – Inclusion of a table of APANPIRG contributory bodies and associated groups in the APANPIRG report

That, a table of APANPIRG contributory bodies and associated groups be included in the report of APANPIRG meetings and be updated periodically by the APANPIRG Sub-Groups.

Terms of reference

3.67 The meeting reviewed the Terms of Reference (TOR) for the CNS/ATM/IC/SG as agreed by APANPIGR/12. It was considered that the CNS/ATM/IC/SG/9 meeting had been very productive and that delegates had found considerable value from the discussions on a wide range of material presented for consideration. The meeting observed that while the TORs had been expanded to include training, environmental issues and the use of business case studies, there was also a need for future discussions to be more directed towards implementation to realize the full benefits of the planning. The establishment of target dates for actions items would also assist States in determining future work priorities.

3.68 To achieve these improvements in future meetings, it was agreed that providing additional guidelines in the form of explanatory notes for each agenda item would be beneficial and should be attached to the meeting notification. These guidelines could be directed to specific topics and provide an indication as to the depth and future use to be made of the material being presented. It was considered that this would be helpful to States in their preparation of papers, which should be posted on the ICAO Asia/Pacific web-site.

3.69 The meeting observed that implementation of CNS/ATM needed to be accelerated to derive early benefits and that the Sub-Group's activities were important to achieve this objective. The meeting was therefore of a strong view that this Sub-Group should continue to carry out its functions per TORs revised by APANPIRG/12.

3.70 In light of the environmental issues considered above, the meeting agreed to amend the Terms of Reference of the Sub-Group to include more specific requirements to address environmental issues, and formulated the following Decision.

Decision 13/43 – Amendment to the Terms of Reference of the CNS/ATM//IC/SG

That the revised TORs of the CNS/ATM/IC/SG be adopted as shown in **Appendix E** to the Report on Agenda Item 3.

Advanced Technologies and Oceanic Procedures (ATOP)

3.71 The meeting noted information provided by the United States on the Advanced Technologies and Oceanic Procedures (ATOP) program. The ATOP program is a single, integrated oceanic system with common procedures, training, and support scheduled for the three Air Route Traffic Control Centers (ARTCC) that manage the United States oceanic airspace in Oakland, New York and Anchorage.

Seminar on data link operations

3.72 The meeting noted information on a seminar on data link operations to be held by JCAB in Tokyo, Japan from 3 to 4 October 2002 in cooperation with Airservices Australia, FAA,

Airbus, Boeing and ARINC. The seminar will address how the data link system works and what operators and providers should understand for data link operations. In addition, the seminar will emphasize flight crew training and States' registry agencies to improve data link operations. The meeting recognized the valuable contribution this seminar would make to understanding data link communications and encouraged States to attend.

Transfer of APARMO responsibilities/functions from FAA to AEROTHAI for RVSM monitoring for Asia

3.73 The meeting recalled that for the Asia/Pacific Region, the Asia Pacific Approvals Registry and Monitoring Organization (APARMO) was established by the APANPIRG as the RVSM regional monitoring agency. This is a criterion for the implementation of RVSM as specified in the ICAO *Manual of Implementation of a 300 m (1000 ft) Vertical Separation Minimum between FL 290 and FL 410 inclusive* (Doc. 9574). The required services of APARMO have been generously provided by the FAA at the FAA William J. Hughes Technical Center.

3.74 However, at the 11th RVSM Task Force Meeting, in Kuala Lumpur, Malaysia, 30 April-4 May 2001, it was informed that the FAA would no longer be able to provide the services associated with the APARMO for the Asia Region due to other domestic and international commitments.

3.75 The meeting also recalled that the APANPIRG/12 noted that the RVSM Task Force had been in the process of identifying a new organization to provide the services associated with the APARMO as quickly as possible to allow for an adequate transition period. After consideration, the APANPIRG/12 agreed that this matter should be left to the decision of the Task Force, with a view to finalization at the RVSM Task Force meeting scheduled in September 2001 in Indonesia.

3.76 The APANPIRG/12 meeting also noted the offer by Aeronautical Radio of Thailand (AEROTHAI) to assist ICAO in the continuation of the safety assessment program for the implementation of RVSM and other monitoring requirement as determined by the APANPIRG. The operating expenses would be provided on a cost-recovery basis of AEROTHAI's operating expenses.

3.77 The meeting was advised that there were no other official offers extended to the APANPIRG, the Asia/Pacific Airspace Safety Monitoring Task Force (APASM/TF) or at the subsequent RVSM Task Force meetings from member States.

3.78 In preparation for the transfer of responsibilities/functions of APARMO for the Asia Region from the FAA, AEROTHAI has been making internal preparation to support the responsibility as the monitoring agency, and provided the meeting with updated information relating to their progress in the following aspects:

a) Memorandum of Agreement (MOA) between the FAA and AEROTHAI, subject: Transition of Asia Pacific Approvals Registry and Monitoring Organization;

b) Training on aircraft height-keeping performance monitoring, airspace safety assessment, database maintenance and management, and other aviation-related disciplines;

c) Establishment of State RVSM Approvals database; and

d) Aircraft height-keeping monitoring performance infrastructure.

3.79 The meeting was informed that the infrastructure was expected to be in place and ready by 31 October 2002.

3.80 Thailand assured the meeting that once its infrastructure was established and training conducted, AEROTHAI would be able to assume the responsibilities/functions required for an RVSM regional monitoring agency.

3.81 The United States provided the meeting with additional supporting information and advised that should additional services be required, the FAA and AEROTHAI agreed to appropriately amend the MOA.

3.82 The meeting was pleased to see the progress being made between the FAA and AEROTHAI in the transition of APARMO responsibilities in support of further RVSM implementation in the Asia Region, and expressed its support for the arrangements.

3.83 The meeting also expressed its appreciation for the FAA's efforts in the past, which has led to the successful implementation of RVSM in the Pacific in February 2000 and in the Western Pacific/South China Sea area in February 2002 (phase 1).

Report of the Airspace Safety Monitoring Task Force (APASM/TF)

3.84 The meeting recalled APANPIRG/12 Decision 12/44 established the Asia Pacific Airspace Monitoring Task Force (APASM/TF) to develop an airspace safety system performance monitoring structure for the Asia/Pacific Region.

Decision 12/44 – Establishment of a Task Force to Develop an Airspace Safety System Performance Monitoring Structure for the Asia/Pacific Region

That**,** a Task Force be established reporting to APANPIRG to develop an airspace safety system performance monitoring structure and funding mechanism for the Asia/Pacific Region in accordance with ICAO provisions. The composition, guiding principles and Terms of Reference of the Task Force are as shown in the Appendix B to the Report on Agenda Item 3.

3.85 The Task Force held three meetings and one working group meeting at the Asia/Pacific Regional Office on the following dates: 12 - 14 December 2001, 5 – 8 March 2002, 22 - 24 July 2002 and 21 - 23 August 2002.

3.86 The meeting noted that the Task Force reviewed its draft Terms of Reference (TOR) and guiding principles established by APANPIRG/12 and revised its TORs. The Task Force was of the view that the organization and structure to be developed by the Task Force should have airspace safety as the primary focus. This would be in line with the provisions on ATS safety management in Annex 11, Chapter 2. These provisions require States to establish ATS safety management programmes, which shall provide for continuous monitoring and regular assessment of the safety level achieved.

3.87 It was further noted that the original wording of the TOR limited the Task Force to establishing a "system performance monitoring organization". The Task Force agreed to change this to an "airspace safety monitoring organization", which had a more focused application, and that this term would better reflect the work envisioned of a regional safety monitoring agency. The revised TORs are provided in **Appendix F** to the report on Agenda Item 3. In light of the foregoing, the Task Force adopted the following the TOR:

To develop an airspace safety monitoring organization and structure for the Asia/Pacific Region, and to coordinate with other regional monitoring organizations to ensure inter-regional harmonization.

3.88 The meeting noted that the Task Force took into account the ASIA/PAC FASID, which provided general guidelines on the establishment and provision of a multinational ICAO ASIA/PAC air navigation facility/service. The FASID defines a multinational air navigation facility/service as:

> *"A facility/service specifically identified as such and included in the ICAO ASIA/PAC Regional Plan for the purpose of serving international air navigation in airspace extending beyond the air space serviced by a single State in accordance with the ASIA/PAC Regional Plan."*

3.89 The Task Force agreed that an airspace safety monitoring organization for the ASIA/PAC Region fits this definition and to use the FASID guidance in establishing the framework for the organizational structure.

3.90 Further, the FASID states that proposals for such a multi-national facility/service should be supported by material relating to the following aspects:

a) Purpose of the proposal and operational and technical justifications;
b) Financial implications and cost effectiveness;
c) Managerial implications; and
d) Alternative solutions

3.91 The Task Force developed a plan to establish the organizational structure and proposed method of funding a regional airspace safety monitoring organization using a business plan approach. The *Plan for Establishment of an Asia Pacific Regional Airspace Safety Monitoring Agency* (RASMA) is presented at Appendix x to the Report on Agenda item 3

3.92 The meeting noted that the initial objective was to provide a robust and functional management team to ensure that the services of the RASMA were provided to all regional airspace and safety authorities, air traffic service providers and aircraft operators, in an efficient and cost effective manner.

3.93 The Task Force recommended that the following objectives be established for the RASMA:

a) Provide data collection and analysis services to States to enable them to meet their airspace safety management requirements;

b) Contribute to meeting the quantitative safety goal for Asia Pacific Region;

c) Contribute to fostering the safe implementation of CNS/ATM initiatives within the Asia Pacific Region; and

d) Provide a regional comprehensive airspace safety monitoring structure.

3.94 The meeting recalled that States have the responsibility to oversee airspace operations and safety. With respect to the implementation of reduced separation minima, airspace safety monitoring and safety assessments have been carried out by several different organizations:

a) the United States Federal Aviation Administration (FAA) performs airspace safety monitoring, data collection and safety assessment in support of the ICAO Reduced Vertical Separation Minimum (RVSM) Task Force as the Asia Pacific Approvals Registry and Monitoring Organization (APARMO). The FAA has also provided airspace safety assessments and oversight for

the implementation of both vertical and lateral separation minima in various parts of the region. The assessments, based on sound mathematical and analytical practices, have been accepted by States in their decisions to implement new separation minima;

b) other States, for example Australia, have also successfully provided safety assessment services to States and ATS providers through either agreements between States, such as the Informal South Pacific ATS Co-ordinating Group (ISPACG), or at the request of the ICAO Asia Pacific Regional Office for areas such as the South China Sea and the Bay of Bengal;

c) ICAO has also made arrangements with individual States for the ongoing overview of safety data for specific parts of the region, one example being Singapore for the South China Sea; and

d) other States, such as Thailand, India and Japan, have indicated a willingness to provide regional or sub-regional safety monitoring and/or oversight services.

3.95 It was further noted that additional, considerable experience had been gained in the system performance monitoring and enhancement of data link equipment and procedures used to provide communications for air traffic control services. The States that are signatories to ISPACG and the IPACG have carried out the latter function co-operatively by their respective central reporting agencies (CRAs) and FANS Interoperability Teams (FITs). States and aircraft operators concerned with CRA and FIT activities have expressed satisfaction with the standards of the services provided.

3.96 The meeting recalled that APANPIRG/12 considered the existing safety arrangements as described above, and the safety requirements necessary for future regional airspace planning, implementation and operation of reduced separation minima, CNS/ATM systems and related airspace changes. In view of the provisions in ICAO Annex 11 – *Air Traffic Services*, with respect to ATS safety management, APANPIRG/12 recognized that States would be required to implement systematic and appropriate safety management programmes to ensure that safety was maintained in the provision of ATS within airspaces and at aerodromes.

3.97 In addition, States within the Asia/Pacific Region decided through APANPIRG that it would be in their best interests of safety, efficiency and administration to consider consolidating all airspace safety monitoring activities into one central agency. It was expected that adequate resources to establish and operate a regional airspace safety monitoring agency would be available in the region from various States and commercial entities, but at present there was no centralized management of these resources.

3.98 The Task Force determined that the RASMA would identify the appropriate technical expertise available, and contract out on behalf of signatory States the responsibility for performing the functions associated with airspace safety monitoring and safety assessments in international airspace. It would also be expected that the agency may be asked to provide services within the sovereign airspace of some States. In this regard, it was noted that this was secondary to its primary function to assist States make arrangements for international airspace. However, consideration could be given to assist States concerned if requested.

3.99 The meeting noted that the Task Force developed the plan for the establishment of the RASMA based on a business plan approach. This plan sets out the details of the necessary organizational structure and functions of the RASMA to achieve APANPIRG objectives and proposes a method to obtain funding to support the organization.

3.100 It was recognized that the stakeholders to be served by RASMA were a diverse group,

not all of which have a financial obligation, or in some cases a financial capability, to contribute to its operation. All, however, have an interest in the output of the agency in terms of the safety assurance product in order to meet ICAO provisions or to use the airspace for international operations by their national aircraft. It was envisaged by the Task Force that RASMA would be in a position to assist those stakeholders as required. It was expected that benefits in the form of better utilization of airspace, through the safe and timely implementation of CNS/ATM applications would transform directly into cost savings to both the airspace users and ATM providers.

3.101 Furthermore, it was expected that in the short term, operational support for the present airspace safety monitoring and safety assessment services for the region would continue to be provided under the existing financial arrangements. However, it was anticipated that it may be necessary to find sources of funding to continue some of these services.

3.102 For the long term, the Task Force considered that RASMA would be a not-for-profit and cost effective regional airspace safety and monitoring agency that was capable of assisting States in providing for all airspace safety monitoring and safety assessment needs of the Asia Pacific Region.

3.103 The meeting considered that funding arrangements were of significant importance. In this regard, it was recognized that the cost of some airspace safety monitoring services could be recovered either directly or indirectly from the users of the airspace. The region has, on a collective basis, already been successful in establishing aircraft height-keeping performance monitoring services on a "user pays" basis. The Task Force proposed that resources to meet airspace safety monitoring and assessment obligations would be provided through a user charges levy based on a unit cost per flight in the Asia Pacific Region. Operating charges to airlines would be based on each aircraft movement originating from/within the Asia/Pacific Region. The provision of safety monitoring services through RASMA would need to be cost effective to the industry as a whole.

3.104 The meeting recognized that not all States would be in a position to provide funding for RASMA activities, and it was clarified that the Task Force expected that there would be no cost to States, as all costs would be met through user charges. In this regard, the meeting recognized that considerable detailed work remained to resolve outstanding matters related to funding, such as how costs would be determined, the amount of the charge, and how these would be applied.

3.105 The meeting noted that the Task Force proposed that RASMA would be managed by a professional management team to provide the necessary services to meet the objectives of RASMA. Furthermore, it was envisaged that a five-member core team would be appointed through APANPIRG for a fixed term from those States that have extensive experience in conducting airspace safety monitoring and safety analysis. Membership to the core team should include qualified management, financial, technical and operational expertise. In addition, the core team should have a member appointed by aircraft operators, and from the Asia Pacific Regional Office.

3.106 The Task Force had determined that the role of the core team would be to establish and undertake a work program to support agreed regional requirements for airspace safety management as requested by member States. In order to accomplish this, the core team would identify and employ resources to perform the appropriate airspace safety monitoring and safety assessment functions in the airspace concerned. Further, the core team would also be responsible to oversee the monitoring activities and report the results to the appropriate States.

3.107 The meeting noted that the Task Force had envisaged that a RASMA Office would need to be established requiring the services of the following full time staff: a Technical Officer – Airspace Safety Management and Liaison; and a Financial/Administrative Officer. Also, RASMA would required to utilize the services of professional advisers, such as a contracting officer, legal adviser, accountant, and auditor, from time to time.

3.108 In considering the alternatives to establishing a RASMA, the meeting recognized that with the ongoing implementation of reduced separation and CNS/ATM systems such as ADS and CPDLC, there would be an increase in monitoring requirements and further proliferation of monitoring groups. Under existing conditions, States would be responsible to make the necessary arrangements to continue performing safety monitoring and safety assessment tasks. The RASMA was intended to relieve States, if so requested, of making such arrangements, carrying out the work, and to take follow-up action. At the same time, a centralized approach would be more cost effective and efficient.

3.109 The meeting recognized that it would be necessary for further activities and detailed work to complete the requirements for establishing and implementing the agency. The Task Force suggested that these activities would include, but not be limited to, the following:

a) Specify obligations of States and identify those States wishing to enter into a multinational administrative agreement for airspace safety monitoring and safety assessment services;

b) Based on a), determine initial requirements for airspace safety monitoring and safety assessment services, including applicable geographical areas;

c) Identify States and agencies available to provide airspace safety monitoring and safety assessment services;

d) Determine need for additional States/agencies to provide airspace safety monitoring and safety assessment services;

e) Determine funding requirements based on services and proposed costs for States and agencies providing the services and propose a recommended funding arrangement;

f) Specify procedures for selecting a Core Team and RASMA staff;

g) Prepare a proposal for amendment of the Asia/Pacific Regional Plan; and

h) Formalize terms under which the services of the RASMA are to be provided in one or more multinational administrative agreements, taking into account the guidelines provided in the FASID.

3.110 It was the opinion of the APASM/TF that accomplishment of the tasks identified in the FASID and above would require additional specialized expertise, which would need to be made available to the Task Force in its ongoing work.

3.111 The meeting recognized the significant amount of work achieved by the Task Force and expressed its appreciation for the progress made. However, it was also recognized that this task, was of considerable magnitude with no comparable precedent on which to learn and build. Therefore, there were many issues still unclear to the meeting.

3.112 A lengthy discussion ensued on a wide range of issues. The meeting was concerned that if RASMA was not operating by the deadline imposed by Annex 11 of 27 November 2003, whereby States were required to establish an acceptable level of safety and safety objectives applicable to the provision of ATS within airspaces and at aerodromes, this could prevent further implementation of airspace changes. The meeting was informed that RASMA would have no effect on this deadline, as this was an obligation for the State, and RASMA was not replacing a State's responsibility for the airspace. However, it was desirable that RASMA be established as soon as practicable in order to assist States to meet this obligation. In view of the considerable work still to be

done, the meeting was of the view that the RASMA would not be established before the APANPIRG/14 meeting. The meeting agreed that once the plan was completed, it would need to be circulated to States and international organizations for comment.

3.113 With regard to the new provisions in Annex 11 and the need for States to establish safety management programmes to ensure that safety is maintained in the provision of ATS, the view was expressed that many States may have difficulty in meeting this requirement. In this regard, it was considered that there should be a concerted effort made by ICAO and APANPIRG to assist States obtain the necessary expertise to fulfill this obligation and to find out how many States were concerned. The meeting recognized that the Annex 11 provisions had introduced new requirements that would cause States to take action to put in place the necessary regulatory and safety management arrangements. The meeting was advised that ICAO is presently developing guidance material on safety management, which was expected to be available early next year. Also, consideration is being given to holding seminars and workshops. Further, States are encouraged to inform ICAO of any assistance they may require.

3.114 In the light of the foregoing, the meeting formulated the following conclusion:

Conclusion 13/44 – Support for States to establish safety management systems to meet the obligation of Annex 11

That, ICAO and States with safety management expertise support the implementation of Annex 11 safety management system requirements through holding seminars, workshops and the provision of guidance material.

3.115 Concern was expressed regarding how charges would be applied and funding distributed to pay for RASMA and contracted services. The meeting was informed that there would be no change to present arrangements and existing collection mechanisms could continue to be used. It was suggested that an extra charge for the safety services could be levied on aircraft per kilometer on routes or in airspace were RASMA services apply. The meeting was reminded that the RASMA plan recommended that operating charges to airlines would be based on each aircraft movement originating from/within the Asia/Pacific Region. Also, it was a basic principle in the Plan that RASMA would need to be cost effective.

3.116 The meeting sought clarification on the role of RASMA in providing safety monitoring services vis a vis State responsibility for the airspace under its authority. The meeting was advised that RASMA was not being proposed as a sort of safety oversight agency. If the term "monitoring agency" implied such a role, the name could be changed, and this would be looked at by the Task Force. It was emphasized that States who use RASMA services retain the authority over the airspace and decide whether or not they want to enter an arrangement with RASMA for airspace safety data collection and/or provision of assessment services.

3.117 The meeting was reminded that APANPIRG/12 had identified an urgent need to establish RASMA but also recognized that immediate monitoring arrangements would be met through existing arrangements. Also, States had a number of options to manage their safety requirements, they could do it themselves, enter into bi-lateral agreements or contract services to commercial companies.

3.118 The meeting was advised of ICAO's position in regard to collection of air navigation charges. The Council had decided to encourage States to consider participating in joint charges collection agencies, whenever this is advantageous and consistent with ICAO's *Policies on Charges for Airports and Air Navigation Services*. ICAO could assist States to establish joint ventures. ICAO's role would not be that of an operator on behalf of States but as an organizer or coordinator for the States in establishing the joint charges collection agency bringing it to full operational status.

3.119 It was recognized that a lively and in depth discussion had helped clarify issues on this complex subject. The meeting acknowledged that the work of the Task Force was incomplete and needed to continue. The timeline was not constrained by the Annex 11 applicability date of 27 November 2003, however, the RASMA plan needed to be completed as quickly as possible. Also, it was important that this work was thoroughly done and all parties concerned consulted. The meeting noted that a special meeting of regional monitoring agencies was being held at ICAO Headquarters in early November. Some of the Task Force members would be attending that meeting and the opportunity could be taken to confer with the experts present and with ICAO experts especially on legal and financial matters.

3.120 After considerable discussion, the meeting arrived at a consensus that the Task Force should continue its work, that there was a need to establish a centralized monitoring agency for the Asia/Pacific Region and that current implementation planning should not be impeded. The meeting reviewed and amended the Terms of Reference of the Task Force taking into account the recommendations of the Task Force described above. In light of the foregoing, the meeting formulated the following conclusion:

Conclusion 13/45 – Continuation of the work of the Asia Pacific Airspace Safety Monitoring (APASM) Task Force to develop a Regional Airspace Safety Monitoring Agency (RASMA) for the Asia/Pacific Region

That**,** the APASM Task Force continue as a priority the development of an Asia Pacific Region RASMA in accordance with ICAO provisions. The amended Terms of Reference and composition of the Task Force are shown in the Appendix x to the Report on Agenda Item 3.

3.121 The United States advised the meeting that regrettably they were no longer able to be the Chairperson for the Task Force but would continue to fully support its work. The meeting was advised that Australia would be prepared to take over this role. The meeting expressed its appreciation to the United States for the excellent leadership provided and thanked Australia for offering to take over this position.

Report on the Global and Regional developments in the modernization of air navigation systems

3.122 The meeting was presented with an overview of global developments in the modernization of air navigation systems that took place in 2002, which this year was expanded to include regional developments. The meeting noted the following:

a) Release of the second edition of Global Air Navigation Plan for CNS/ATM Systems.

b) Summary of work of ICAOs Planning and Implementation Regional Groups (PIRGs).

c) Development status of Standards and Recommended Practices (SARPs) and guidance material detailed in **Appendix X** to the report on Agenda Item 3.

d) Work programmes of various Panels and Study Groups engaged in CNS/ATM related activities detailed in **Appendix X** to the report on Agenda Item 3.

e) Comparative analysis of regional developments in air navigation systems detailed in **Appendix X** to the report on Agenda Item 3.

3.123 The meeting was informed that the Commission in reviewing the report made the following general observations:

a) all elements of the CNS/ATM systems have been standardized to the extent necessary to expedite their implementation. Current work on standardization entails emerging concepts/technologies and the refinement of existing provisions;

b) the translation of SARPs into definite implementation plans is gradual, incremental and progressive, taking into account differing requirements by States, subregions and regions;

c) the pace of implementation of CNS/ATM systems is generally and understandably slower than originally expected (using the implementation objective plans shown in the Global Plan as a baseline). Furthermore, regional plans for implementation of ACAS II prior to the globally agreed date of 1 January 2003 have proven impractical;

d) planning activities by all PIRGs are based on homogeneous ATM areas and major traffic flows; it is expected by 2004 that all the regions would be implementing RVSM covering some of the major traffic flows;

e) early implementation of certain air-ground data links (both on board aircraft and on the ground) namely aeronautical mobile-satellite service (AMSS), VDL Mode 2 and HFDL, have essentially been driven by the need for enhanced communication capacity for aeronautical operational control (AOC). ATS communications will be gradually accommodated as regional ATM scenarios evolve; and

f) PIRGs are continuously striving to facilitate the seamlessness between adjacent regions through the interregional coordination mechanism. However, in many cases, implementation plans will need to be better supported by solid operational and economical justification.

3.124 The meeting, noting that the Council requested PIRGs to enhance their efforts to support CNS/ATM systems implementation plans with appropriate and adequate operational and economical analysis, included these requirements in the APANPIRG work programme.

Updated version of CNS/ATM Implementation Planning Matrix

State/ Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	GNSS		ADS-B	ADS-C	Remarks
				NPA Supplemental Means (S) Primary means (P)	**En-route Supplemental Means (S) Primary means (P)**			
AUSTRALIA	ATN tests were conducted. BIS Router and Backbone BIS Router will be implemented by 2004. and AMHS in 2005.	AFTN based AIDC Implemented between Brisbane and Auckland.	Implemented to support FANS1/A equipped aircraft.	Implemented (S) 260 GPS NPA Final 26 aerodromes to be completed 2002.	Developed en-route as (P) for approval to use in domestic airspace.	ADS-B trial being conducted.	FANS 1/A ADS-C implemented.	
BANGLADESH								
BHUTAN	ATN BIS Router planned for 2005							
CAMBODIA								
CHINA	ATN BIS Router will be implemented by 2005.	AIDC between ACCs within China are being implemented.	Implemented to support ATS Route L888 and polar routes. Trial on HF data link conducted for use in western China.		Implemented in certain airspace as (S).		FANS 1/A ADS-C implemented to support L888 and polar routes.	
HONG KONG, CHINA	AMHS and BBIS tests were conducted with Japan and Thailand for implementation in 2004 Trial with Australia being conducted.	Trial on the AFTN based AIDC with Guangzhou China commenced. Implementation planned for 2002/2003.	Trials continuing for CPDLC. D-ATIS D-VOLMET and PDC implemented. VDL Mode-2 trial planned for 2002.		Implemented in certain airspace as (S).		FANS 1/A Trials continuing for ADS-C.	

State/ Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	GNSS		ADS-B	ADS-C	Remarks
				NPA Supplemental Means (S) Primary means (P)	En-route Supplemental Means (S) Primary means (P)			
MACAO, CHINA								
COOK ISLANDS								
DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA								
FIJI	ATN BIS Router will be implemented in 2005.	Implementation of AFTN based AIDC with Brisbane and Auckland in 2002.	FANS-1. Implemented since 1997.	NPA procedures for (S) to be completed in Dec. 2002.	Implemented as (S).	ADS-B trials in 2002/2003 Implementation in 2004.	ADS-C implemented in oceanic airspace using EUROCAT 2000 X.	
FRANCE French Polynesia Tahiti		Implementation of limited message sets with adjacent centres under discussion.	FANS-1. Implemented since 1996.				FANS 1/A ADS-C implemented since March 1999.	
INDIA	ATN BIS router and BBIS router planned for implemented at Mumbai in 2005.		FANS-1. Implemented at Kolkata and Chennai.		SBAS(S). Planned for 2005.		FANS 1/A ADS-C implemented at Kolkata and Chennai.	
INDONESIA	ATN BIS router planned implementation in 2005.	AFTN based AIDC planned for implementation between Brisbane and Jakarta in 2004.	FANS-1/A. CPDLC in Jakarta, Ujung Pandang FIRs planned for 2004.	Planned for implementation in 2002as (S). Procedure to be completed in 2006.			FANS 1/A ADS-C trial planned for Jakarta and Ujung Pandang FIRs for 2004.	

State/ Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	GNSS		ADS-B	ADS-C	Remarks
				NPA Supplemental Means (S) Primary means (P)	En-route Supplemental Means (S) Primary means (P)			
JAPAN	ATN BBIS will be implemented in 2002. Router Tests are progressing. AMHS implementation between Japan and USA. Hong Kong planned for 2004.	AIDC based. AFTN procedure implemented with USA.	FANS1/A system Implemented in Tokyo FIR.				FANS 1/A. ADS-C implemented in Tokyo FIR.	
KIRIBATI								
LAO PDR	ATN BIS Router planned for implementation with Bangkok in 2002.		FANS-1/A Planned for Bay of Bengal and South China Sea areas. Equipment is under test operation.		Implemented as (S).		FANS-1/A. ADS-C planned for Bay of Bengal and South China Sea areas. Equipment under test operation.	
MALAYSIA	ATN BIS Router planned for 2005.	ATN based. Planned for AIDC 2005.	Planned for Bay of Bengal and South China Sea areas.	NPA (S) at KLIA planned for 2003.			FANS 1/A ADS-C planned for Bay of Bengal and South China Sea areas.	
MALDIVES								
MARSHALL ISLANDS				NPA (S) implemented at Majuro Atoll.				
MICRONESIA FEDERATED STATES OF								
Chuuk				NPA(S) implemented				

State/ Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	GNSS		ADS-B	ADS-C	Remarks
				NPA Supplemental Means (S) Primary means (P)	En-route Supplemental Means (S) Primary means (P)			
Kosrae				NPA(S) implemented				
Pohnpei				NPA(S) implemented				
Yap				NPA(S) implemented				
MONGOLIA	ATN BIS Router planned for 2005.		Function available. Regular trials are conducted.	GPS procedures are being developed.	Implemented as (P).	ADS-B trial in progress implementation planned for 2002/2003.	FANS 1/A ADS-C implemented since August 1998.	
MYANMAR								
NAURU								
NEPAL	BIS Router planned for 2005.			Development of arrival procedure and NPA as (S) completed. Departure procedure is being developed.	Implemented as (S).			
NEW ZEALAND	BIS Router planned for 2005	AFTN based AIDC implemented between New Zealand and Australia. Tests with Fiji and USA planned for 2002.	FANS/1A. Implemented				FANS 1/A Implemented ADS-C.	
PAKISTAN	Implementation of ATN considered for Phase II (2005-2010).							RADAR coverage provided in Karachi and Lahore FIRs.
PAPUA NEW GUINEA								

State/ Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	GNSS		ADS-B	ADS-C	Remarks
				NPA Supplemental Means (S) Primary means (P)	En-route Supplemental Means (S) Primary means (P)			
PHILIPPINES	ATN BIS Router planned for 2005. Implementation for AMHS also planned.		D-ATIS and CPDLC Planned for 2006.				FANS 1/A ADS-C planned for 2006.	
REPUBLIC OF KOREA	ATN BIS planned for 2005.	AFTN based AIDC implemented between Incheon ACC and Seoul APP.					FANS 1/A ADS-C planned for 2002.	
SINGAPORE	ATN BIS Router planned for 2005.		Implemented since 1997. Integrated in the ATC system in 1999. D-ATIS implemented since February 2000.		Implemented (S).		FANS 1/A ADS-C implemented since 1997. Integrated with ATC system in 1999.	
SRI LANKA	ATN BIS Router Planned for 2005.		CPDLC implemented since November 2000.	NPA (S) planned for 2003.			FANS 1 /A ADS-C implemented since November 2000.	GPS based domestic route structure being developed.
THAILAND	ATN G/G system implemented for domestic services. BBIS/BIS Routers planned for 2002. AMHS test with Hong Kong conducted.	ATN based AIDC Implemented in Domestic Sector.	FANS-1/A Implemented.		Implemented as (S).		FANS 1/A ADS-C Implemented.	
TONGA								
UNITED STATES								

State/ Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	GNSS		ADS-B	ADS-C	Remarks
				NPA Supplemental Means (S) Primary means (P)	En-route Supplemental Means (S) Primary means (P)			
Anchorage				NPA(S) implemented	En-route (P) implemented	ADS-B trials continuing.	FANS/1-ADS-C 2004.	
Fairbanks				NPA(S) implemented				
Guam (Agana NAS)				NPA(S) implemented				
Guam (Anderson)				NPA(S) implemented				
Honolulu Intl.				NPA(S) implemented	En-route (P) implemented		FANS 1/A ADS-C planned for Dec. 2004	
Johnston Atoll				NPA(S) implemented				
Kahului				NPA(S) implemented				
Oakland	ATN BBIS will be implemented in 2002. Router Tests are progressing. AMHS implementation between Japan and USA in 2004.	Implemented using AFTN procedure. ATN AIDC planned for 2005.	FANS-1 2001. Phase I ATN CPDLC implemented in Sept 2001. Phase IA planned for implementation at 20 en-route centres in USA for en-route function in 2006/2007 time frame.	NPA (S) implemented	En-route (P) implemented		FANS-1/A ADS-C planned for Dec. 2004.	
Saipan				NPA (S) implemented				
VANUATU								

State/ Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	GNSS		ADS-B	ADS-C	Remarks
				NPA Supplemental Means (S) Primary means (P)	En-route Supplemental Means (S) Primary means (P)			
VIETNAM	ATN BIS Router planned for 2003 and AMHS in 2005.	ATN based AIDC planned between Ho-Chi-Minh and Bangkok in 2005.	Planned for 2004.	Planned for NPA (S) for 2004.	Implemented as (S) planned for 2004.		FANS 1/A ADS-C planned for 2004.	Most of air space in Hanoi and Ho-Chi-Minh FIRs covered by RADAR.

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

No.	Key Priority	Description	Milestone	Sub-group	Status
1	ATN Transition	The development of an ATN transition plan is required.	2001	CNS/MET ATN Transition Task Force	Completed Completed development of the Plan
2	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/13	All	On-going CNS/MET SG/5 established Working Group to incorporate CNS/ATM materials in the Regional Procedure Part CNS FASID.
3	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.	1 November 2001	ATS/AIS/SAR	Implemented
4	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 using the uniform format for the reporting of WGS-84 implementation. Report progress to APANPIRG/13.

No.	Key Priority	Description	Milestone	Sub-group	Status
5	RVSM Implementation	To provide more efficient flight profiles and to increase airspace capacity in conjunction with the implementation of CNS/ATM.	Phase 1: 21 Feb 2002 – Western Pacific/South China Sea Phase 2: 31 Oct 2002- Hong Kong FIR and Sanya AOR Vientiane, Hanoi, Jakarta, Ujung Pandang, Bali FIRs. Phase 3: 27 Nov 2003- Asia to Europe South of the Himalayas and beyond	ATS/AIS/SAR	Phased implementation. RVSM Implemented in the Pacific 24 Feb 2000.
6	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/ Australia - Indonesia 29 Nov 2001 RNP-10/Bay of Bengal/Arabian Sea 28 Nov 2002	ATS/AIS/SAR & CNS/ATM/IC	Phased implementation. RNP-10 is implemented in NOPAC, CENPAC, CEP & Tasman Sea. Implemented

No.	Key Priority	Description	Milestone	Sub-group	Status
7	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/13	ATS/AIS/SAR	Phased implementation. Revised Regional CNS/ATM Guidance Material developed containing ADS section. Implementation focus and timetable need to be developed. States are gaining experience in the use of ADS.
8	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/13	All	Sub-groups to identify requirements.
9	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	ICAO Position presented at APT meetings in Sept.2000 and June 2001. State letter issued to follow up APANPIRG Conclusion 11/24, Regional Preparatory Group Meeting for WRC-2003 was held in Bangkok from 15 to 16 November 2001 in conjunction with AMCP WG-F meeting held from 19 to 27 November 2001in Bangkok.

No.	Key Priority	Description	Milestone	Sub-group	Status
					States were encouraged to participate in the APT Meetings to be held from 10-15 June in Thailand and 2-7 September in Republic of Korea.
10	GNSS Implementation	To implement GNSS in accordance with the Asia Pacific Regional Strategy.	Phase 1- 2003	All	Phased implementation Sub-groups to develop plan and report progress to APANPIRG/13 GNSS Implementation Workshop was held in May 2001. • States are encouraged to implement GNSS for En-route and NPA functions. • States advised to participate in the GNSS Measurement Campaign and the result of the campaign presented to the CNS/ATM/IC/SG9. • GNSS Implementation checklist was developed and forwarded to States. • GNSS strategy was reviewed.
11	Airspace Management	To implement revised ATS route structures for the major traffic flows.	Phase 1: November 2001 Indonesia/ Australia	ATS/AIS/SAR CNS/MET	Phased implementation. Report progress to APANPIRG/13.

No.	Key Priority	Description	Milestone	Sub-group	Status
			Phase 2: Asia to Europe via South of the Himalayas, 28 Nov 2002		
12	Final phase of WAFS	To implement transition to the final phase of WAFS to support the CNS/ATM system.	2004	CNS/MET SG	• WAFS Transition Plan and Procedures has been developed and is being successfully implemented. • Transfer of responsibility of RAFCs to WAFCs London and Washington has been implemented. • Closure of RAFCs has been implemented.
13	MET Chapter 8 of the ASIA/PAC Regional Plan for New CNS/ATM System	To develop MET components of the ASIA/PAC CNS/ATM concept/strategy To develop MET Chapter of the Regional CNS/ATM Plan	2003 2004	CNS/MET with assistance of the ATS/AIS/SAR SG METATM TF	• The first draft of MET Chapter of the Regional CNS/ATM Plan has been developed. • METATM TF to develop MET components of the ASIA/PAC CNS/ATM concept/strategy.
14	Data – link Communications	1. Implementation of CPDLC (with HF and/or SATCOM back-up) in oceanic or remote airspace. 2. AIDC to be introduced where ATS automated systems are implemented.	2002 2005	All All	Sub – Groups to review progress of implementation. Implementation focus and time table need to be developed.

No.	Key Priority	Description	Milestone	Sub-group	Status
15	ADS-B	Validate the selection of an ADS-B link in the Asia/Pacific by conducting a cost benefit study including a) the cost impact on avionics of mandatory carriage of the ADS-B link selected b) identified and quantified specific benefits such as reduced separation standards, optimum altitude. c) note the development of separation standards. d) determined a date for the mandatory carriage of the selected ADS-B link by aircraft in the Asia Pacific again. e) encourage standardization of the selected ADS-B link with transmit only systems that include integrated GPS capability.	APANPIRG/14	All ATS/AIS/SAR ATS/AIS/SAR CNS/MET	

CONTRIBUTORY BODIES OF APANPIRG and ASSOCIATED GROUPS

Title	SG Responsible	Decision	ToR	Report Date
ADS-B Study and Implementation Task Force	APANPIRG	CNSMET DC6/9	Appendix K	
AFS Management Task Force	CNS/MET			Dissolved
AIDC Review Task Force	APANPIRG	D5/1	To be reconvened by CNSMET DD6/24	ATS/AIS/SAR SG/13
AIS Automation TF	ATS/AIS/SAR SG	D12/x	Suspended until when needed for further work	Suspended
ANP/FASID Review Working Group	CNSMET 5	D5/24 D6/23		CNSMET 6 dissolved
AOP Study/Sub Group??	ICAO	DGCA R3.17.6		
APANPIRG 7 Training Task Force	APANPIRG 7			
ASIA/PAC OPMET Exchange Task Force (OPMET/E TF)	CNSMET	DD6/17	Appendix R	
ASIA/PAC Volcanic Ash Task Force (VA TF)	CNSMET	DD6/20	Appendix S	
ASIA/PAC WAFS Transition Task Force	CNSMET5	D5/16 DD6/16	Appendix Q	
ASIA/PACIFIC Area Traffic Forecasting Group ATA TFG	?			
Asia/Pacific Safety Management TF (Asia Pacific Regional System Performance Monitoring Organisation TF)	APANPIRG 12	D12/44	APANPIRG 12 Appendix 3B	APANPIRG 13
ATN Transition Task Force	CNSMET		CNSMET 5 Appendix K CNSMET 6 Appendix H	
Bay of Bengal Task Force	ATS/AIS/SAR SG			

CONTRIBUTORY BODIES OF APANPIRG and ASSOCIATED GROUPS

Title	SG Responsible	Decision	ToR	Report Date
Business Case TF	APANPIRG 12		Report 3.82	
Chairmen's Meeting			Last meeting was December 2001	
CNS/ATM Guidance Material TF	ATS/AIS/SAR	APANPIRG 9/42		
CNS/ATM Implementation Team			APANPIRG 12	
CNS/ATM Training and Human Resource Development Task Force	APANPIRG 9	D9/39	Report	
Cooperative Development of Operational Safety and Continuing Airworthiness Programme – South East Asia (COSCAP)				
Cooperative Development of Operational Safety and Continuing Airworthiness Programme – South Pacific (COSCAP)				
Cooperative Development of Operational Safety and Continuing Airworthiness Programme – North East Asia (COSCAP)				
EMARSSH TF	ATS/AIS/SAR			
Environmental Issues Task Force	APANPIRG		ALLPIRG/4 IC SG to action	
Forum of Aviation Officials				
GNSS Task Force	CNSMET			Completed
Informal Trans-Asia/Trans-Siberia/Cross-Polar Routes High level Steering Group (ITASPS)				
IPACG				
ISPACG				
LTMP WG Long Term Monitoring Performance Working Group	ATS/AIS/SAR SG RVSM TF	3.1.32		

CONTRIBUTORY BODIES OF APANPIRG and ASSOCIATED GROUPS

Title	SG Responsible	Decision	ToR	Report Date
MET Working Group on the CNS/ATM	CNSMET5	D5/29		Dissolved
METATM Task Force on CNS/ATM Plan	CNSMET5	D5/30	CNSMET 5 p40 and Appendix 1G	CNSMET6
NAV/SUR TF	CNS/MET			Finished
Operations Manual				Dissolved APANPIRG 8??
OPMET Working Group	CNS/MET	?	See ASIA/PAC OPMET Exchange Task Force (OPMET/E TF)	overtaken
Pacific Aviation Safety Office (PASC)				
RACGAT				
RVSM Implementation Task Force	ATS/AIS/SAR SG			
Safety Regulation and Oversight Office				
SCS Task Force	ATS/AIS/SAR SG			
Shortcomings and Deficiencies TF or subgroup	ICAO	DGCA R3.18.2		
SSR Code Assignment Working Group	ATS/AIS/SAR			
SSR Code Management TF	ATS/AIS/SAR	D11/3		Suspended
Working Group on Volcanic Ash	CNS/MET			

ISSUES

Airports

- Surface movement and runway incursions
- RESA Runway end safety areas

CNS/MET

CNS/ATM IC

- APEC GNSS Implementation Team
- Asia Pacific SBAS testbed

Environment

- Chapter 3 noise
- Emissions

Accident Rates

- COSCAPs functions
- CFIT and ALAR (approach landing accident reduction)

SAR

- biennial SAR meeting in place of continuation in the ATS/AIS/SAR SG

Technical Panels and Study Group

- update and feedback to be presented at each subgroup

ASIA/PACIFIC Groups

- established consolidated list of task forces and working groups
- list to include establishment , Terms of Reference, membership, meeting schedules and reporting arrangements

ATS/AIS/SAR

- review of guidance material phraseology particularly chapter 6

**COMMUNICATIONS, NAVIGATION, SURVEILLANCE
& AIR TRAFFIC MANAGEMENT
IMPLEMENTATION CO-ORDINATION SUB-GROUP (CNS/ATM/IC/SG)**

TERMS OF REFERENCE

1. Review and update, on a regular basis, the "Asia/Pacific Regional Plan for the New CNS/ATM Systems" and ensure the harmonization with the Global Air Navigation Plan for CNS/ATM Systems;

2. Develop, based on the research and development, trials and demonstrations being carried out in the Asia/Pacific as well as other regions, regional guidance material for the implementation of CNS/ATM systems;

3. Co-ordinate the plans of States, international organizations, airlines and industry for the implementation of the ASIA/PAC Regional Implementation Plan for the CNS/ATM systems under development and implementation;

4. Identify key priorities for implementation of CNS/ATM for the ASIA/PAC region, co-ordinate and monitor implementation;

5. Review and identify intra and inter-regional CNS/ATM co-ordination matters and where appropriate recommend actions to address these issues;

6. Co-ordinate and harmonize the establishment and operation of ASIA/PAC system performance monitoring agencies for implementation of CNS/ATM systems and reduced separation minima, and co-ordinate with other regional monitoring agencies; and

7. Develop guidance material for the applicability of the ICAO ATM Concept in the Asia/Pacific Region, taking into account national planning;

8. Develop business cases for various options of CNS/ATM implementation taking into account environmental benefits; and

9. Develop a framework for regional training plans for the introduction of CNS/ATM systems and to include this material in the "Asia/Pacific Regional Plan for the New CNS/ATM Systems".

10. To monitor environmental issues relating to the implementation of CNS/ATM systems, in particular, the work of the ICAO's Committee on Aviation Environmental Protection (CAEP), to disseminate relevant information to Contracting States, and to carry out appropriate coordination with Contracting States.

……

APASM TASK FORCE
REVISED TERMS OF REFERENCE

- Specify obligations of States and identify those States wishing to enter into a multinational administrative agreement or other appropriate arrangements for airspace safety monitoring and/or safety assessment services

- Determine initial requirements for airspace safety monitoring and safety assessment services, including applicable geographical areas

- Identify States and agencies available to provide airspace safety monitoring and safety assessment services

- Determine need for additional States/agencies to provide airspace safety monitoring and safety assessment services

- Determine funding requirements based on services and proposed costs for States and agencies providing the services and propose a recommended funding arrangement

- Specify procedures for selecting Core Team and RASMA Staff

- Prepare a proposal for amendment of the Regional Plan as called for by the FASID

- Formalize terms under which the services of the RASMA are to be provided in one or more multinational administrative agreements, taking into account the guidelines provided in the FASID

- Report to APANPIRG/14

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AGENDA ITEM 4: DEFICIENCIES IN THE AIR NAVIGATION FIELDS

Agenda Item 4: Deficiencies in the Air Navigation Field

Single Definition and the Revised Uniform Methodology for the Identification, Assessment and Reporting of Air Navigation Deficiencies

4.1 The meeting noted that, during a recent review of Uniform Methodology by the ANC, it became evident that some parts of the methodology were being interpreted in different ways. It was recognized that the difficulties arose due to the use of two definitions.

4.2 APANPIRG/13 noted that the Commission developed a new single definition for Council consideration which along with consequential editorial changes to the Uniform Methodology was approved on 30 November 2001.

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

4.3 The meeting noted the above new definition and adopted the revised uniform methodology.

Resolution of Air Navigation Deficiencies

4.4 It was brought to the attention of the APANPIRG that, while discussing the ways and means of resolving the air navigation deficiencies, the Council, taking into account the comments of ANC, observed that many regional air navigation deficiencies continue to persist for a number of years thus causing concern. While recognizing that the non-availability of funds was one of the obstacles in eliminating the deficiencies by the States, the Council agreed that the States should be reminded of their responsibility under Article 28 of the Chicago Convention for providing safe air navigation services. Furthermore, States should increase their efforts in overcoming the delay in mitigating the air navigation deficiencies identified by Planning and Implementation Regional Groups (PIRGs) related to the safety issues covered by the Global Aviation Safety Plan (GASP), particularly in the field of maintenance of air navigation facilities and to accord priority to this matter through the allocation of adequate financial and human resources.

Ways to deal with deficiencies in future programme

4.5 The meeting recalled that the APANPIRG Sub-groups have been dealing with the deficiencies in their respective air navigation fields as a part of their TORs and Subject Tasks Lists. It was considered that this practice should be intensified in the future with a higher focus on prioritization and monitoring of the corrective actions taken by States and Organizations responsible.

4.6 A delegate expressed the view that APANPIRG being a high level aviation body, the reporting and review of deficiencies as noted by the Sub-groups at APANPIRG meetings should be undertaken with a focus on identification of regional trends and identifying helpful assistance for resolution of deficiencies since they are safety factors.

4.7 The meeting also recognized the need for Asia/Pacific Regions to develop a safety analysis that would result in allocation of appropriate priority in addressing deficiencies taking into account associated risk factors.

4.8 The meeting also considered the need for improvement of the regional procedures in applying the Uniform Methodology for Identification, Assessment and Reporting of Air Navigation Deficiencies. It was noted that the existing Methodology does not clearly specify what subjects or requirements, including SARPs, should be considered when PIRGs develop a list of deficiencies and this has been left at the discretion of the PIRGs. Another problem the APANPIRG had been facing was the lack of precise procedures for validation and assessment of the reported deficiencies as well as for monitoring of the corrective actions.

4.9 In view of the above, the meeting agreed to set up of a Task Force to assist APANPIRG and the Secretariat in their future work on this subject. In this regard the meeting formulated the following Decision:

Decision 13/46 – Establishment of a Task Force on Deficiencies in the Air Navigation Field

That,

a) an APANPIRG Task Force be established with Terms of Reference and composition shown in Appendix A to the Report on Agenda Item 4;

b) the Task Force develop detailed regional procedures for identification, assessment, reporting and monitoring of the status of air navigation deficiencies as a supplement to the Uniform Methodology; and

c) the Task Force report its results to APANPIRG/14.

4.10 Australia, India, Japan, Malaysia, Mongolia, Philippines, Singapore, IATA, IFALPA and IFATCA had volunteered to be members of the proposed Task Force.

4.11 The meeting recognised the importance of expeditious resolution of deficiencies by the States in the region and requested the Secretariat to bring this issue to the urgent attention of the 39th DGCA Conference in Cebu, Philippines by way of presentation of a discussion paper.

4.12 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 deficiencies. The updated information is attached in the Appendix B to the Report on Agenda Item 4. Paragraphs below detail updates received during the meeting.

4.13 The meeting was advised that in the field of ATS/AIS/SAR, the following progress has been made since APANPIRG/12:

i) five (5) entries related to ATS routes including the revised South China Sea route structure were removed from the previous list because they were implemented or requirements in the ANP were amended/added to/deleted;

ii) three (3) States implemented the new AIP format and they were removed.

4.14 In the CNS field, of the four (4) deficiencies identified in the list of deficiencies, States concerned had taken actions to correct one (1) deficiency and the remaining three (3) were expected to be corrected by the end of 2002.

4.15 In the MET field, of the seven (7) deficiencies identified in the list of deficiencies two were resolved and two other States have also taken corrective action since the last APANPIRG meeting. It was expected that the newly formed OPMET Exchange Task Force under the CNS/MET SG would assist in monitoring deficiencies related to the OPMET information and in determining of corrective actions on those deficiencies. The deficiencies related to the implementation of the IAVW were to be addressed by means of a Special Implementation Project planned for year 2003.

4.16 In the AOP field, the meeting was informed that despite a State letter and a reminder sent by the ICAO Regional Office to States for review, validation and comments, the responses received from States had generally been disappointing. States were advised to pay greater attention to this matter and to report the actions taken by them to the ICAO Regional Office. The meeting was apprised that forty-one (41) deficiencies were identified and reflected in the list of deficiencies. Based on additional information provided at the meeting and corrective actions taken by States concerned, six (6) deficiencies were identified as being completed.

4.17 The meeting requested States and users sources to provide regular updates on the list of deficiencies including instances where actions have been taken by States for the resolution of deficiencies.

APANPIRG Task Force on deficiencies in the air navigation fields

1. Draft Terms of Reference

a) Review the current practices relating to the identification, assessment and reporting of air navigation deficiencies in the Asia/Pacific Region based on the Uniform Methodology;

b) Based on a) above, develop specific procedures related to various steps in dealing with deficiencies, such as: identification, collection and validation of information, safety assessment and prioritization, development of action plans, reporting and monitoring of the corrective actions; and

c) Based on the results from b) above, develop concise guidelines to be used by all concerned involved in the resolution of the air navigation deficiencies.

2. Composition

It is proposed that a focused Task Force comprising of not more than 12 members, consisting of the Chairpersons of the three APANPIRG Sub-groups or their nominees, other members who are willing to participate and experts from IATA and IFALPA be established.

Note: The work of this Task Force is expected to be carried out primarily by correspondence with one or two meetings before APANPIRG/14 as necessary.

AIR NAVIGATION DEFICIENCIES IN THE ATS/AIS/SAR FIELDS IN THE ASIA/PACIFIC REGION

Identification		Deficiencies			Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action****
ATS routes								
A202	Hong Kong, China/Japan	Partially implemented	24/11/93	Hong Kong-Bangkok segment was implemented on 1 November 2001. Japan has proposed the deletion of the requirement for Chitose-Hong Kong segment in consultaition with Hong Kong, China.	Japan- co-ordinate the deletion with IATA	Hong Kong, China/ Japan	HongKong-Bangkok segment 1/11/2001; Hong Kong-Chitose segment TBD	B
A203	China/Hong Kong, China	Not implemented	24/11/93		China - consider implementation	China/Hong Kong, China	TBD	B
A211	Indoensia	Partially implemented	24/11/93	ICAO has requested Malaysia to co-ordinate the early implementation of A211 with States concerned. Malaysia has advised at SEACG/10 of the implementation of the route within Malaysia on 29 November 2001.	Indonesia - implement the missing segement ICAO- coordinate the implementation with Indonesia	Indonesia ICAO	29/11/2001 (by Malaysia) TBD by Indoensia	B
A218	China/Russian Federation	Partially implemented	24/11/93	ICAO has taken action to co-ordinate with China/Russian Federation for implementation of Harbin-Ekimchan segment and to amend ANP. APAC 99/1-ATS was approved on 26/1/00.	China/Russian Federation - consider implementation	China/Russian Federation	TBD	B

AIR NAVIGATION DEFICIENCIES IN THE ATS/AIS/SAR FIELDS IN THE ASIA/PACIFIC REGION

Identification		Deficiencies			Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action****
A223	Japan	Not implemented	24/11/93	Japan has advised that a domestic route network covers the route; thus will propose the deletion of the requirement.	Japan- co-ordinate the deletion with IATA	Japan	TBD	B
A335	China/Mongolia/Russian Federation	Not implemented	24/11/93	China and Mongolia advised that this segment is covered by other ATS routes propoerly; thus will propose its deletion from ANP.	China, Mongolia - propose ANP amendment	China/Mongolia	TBD	B
A341	Indonesia/Malaysia	Partially implemented	24/11/93	ICAO has requested Indonesia to co-ordinate implementation with Malaysia. Malaysia has advised that the existing route B584 fulfils sufficiently the requirement and would propose the deletion of the requirement for Syrabaya-Kota Kinabalu segment.	Indonesia/Malaysia - consider full implementation	Indonesia/Malaysia	12/2001	B
A450	Indonesia/United States	Partially implemented	24/6/94	ICAO has requested Indonesia to co-ordinate implementation with United States. United States has agreed to the implementation, and a response from Indonesia is being awaited.	Indonesia/United States - consider full implementation	Indonesia/United States	TBD	B
A469	Viet Nam	Implemented as W9 before. As of 1 Nov 2001 implemented as L643.	19/8/94	ICAO has requested Viet Nam to implement as A469. Viet Nam advised that W9 was replaced with L643 on 1 November 2001.	Viet Nam - propose deletion of the requirement as A469 ICAO- process ANP amendment	Viet Nam ICAO	TBD	B

AIR NAVIGATION DEFICIENCIES IN THE ATS/AIS/SAR FIELDS IN THE ASIA/PACIFIC REGION

Identification		Deficiencies			Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action****
~~A470~~	~~China/Viet Nam~~	~~Partially implemented~~	~~19/8/94~~	~~Co-ordination is in progress among States and ICAO through SCS/TF. Mersing-Hong Kong segment was deleted from the ANP requirement, and the rest was implemented on 1 November 2001.~~	~~ICAO - continue on-going implementation co-ordination related to the revised South China Sea route structure with States~~	~~China/Viet Nam~~	1/11/2001 **Completed**	~~B~~
A473	India/Nepal	Not implemented	16/3/99	India and Nepah have advised that realignment is being co-ordinated and the route is to be implemented in Oct 2002.	India/Nepal- implement the route	India/Nepal	10/2002	B
A581	Thailand	Partially implemented	17/2/97	China, Lao PDR and Thailand proposed an amendment to ANP. ICAO processed APAC99/11 in co-ordination with China/Myanmar/Thailand. APAC99/1 was approved on 15 December 2000.	Thailand - implement accordingly.	Thailand	11/2002	B
A584	United States	Partially implemented	24/6/94	ICAO has requested United States to implement the missing segment. United States has proposed deletion of the missing segment, and the proposal is under preparation.	ICAO - process an amendment in co-ordiantion with United States	United States ICAO	TBD	B
B201	Fiji/New Zealand	Not implemented	24/11/93	Fiji/New Zealand have advised that they agreed to delete the requirement, ICAO will process ANP amendment.	Fiji/New Zealand - propose an amendment to delete the requirement in ANP	Fiji/New Zealand ICAO	TBD	B
B204	Maldives	The requirements for this route are not detailed in ANP	24/1/96		Maldives - propose an amendment to ANP to add the route	Maldives	TBD	B

AIR NAVIGATION DEFICIENCIES IN THE ATS/AIS/SAR FIELDS IN THE ASIA/PACIFIC REGION

Identification		Deficiencies			Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action****
B212	Japan/Rep of Korea	Not implemented	24/11/93	Japan is considering implementation as a conditional route and will coordinate with Rep of Korea	Japan/Rep of Korea - consider implementation	Japan/Rep of Korea	TBD	B
B213	China	Not implemented	24/11/93		China - consider implementation	China	TBD	B
B456	Papua New Guinea	Partially implemented	24/11/93	Papua New Guinea has advised that they will formally propose ANP amendment for deletion of the missing segment.	Papua New Guinea - propose an amendment to ANP. ICAO-process ANP amendment.	Papua New Guinea ICAO	TBD	B
B591	China	Partially implemented	22/7/97	Co-ordination is in progress among States and ICAO	ICAO - continue on-going implementation co-ordination related to the Revised South China Sea route structure with States	China	TBD	B
G211	Malaysia	Not implemented	24/11/93	ICAO has requested Malaysia to implement G221. Malaysia has advised that G211 would be replaced with EMARSSH routes; thus would propose the deletion of the requirement when an ANP amendment relating to EMARSSH is prepared.	Malaysia - propose deletion ICAO- process ANP amendment	Malaysia ICAO	28/11/2002	B
~~G348~~	~~India~~	~~Implemented~~	~~2/3/99~~	~~Bhutan has advised that route segment in Bhutan airspace has been implemented.~~ ~~India has advised that the missing segment was implemented on 27 December 2001.~~	~~India - implement the route~~	~~India~~	27/12/2001 **Completed**	~~B~~

AIR NAVIGATION DEFICIENCIES IN THE ATS/AIS/SAR FIELDS IN THE ASIA/PACIFIC REGION

Identification		Deficiencies			Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action****
G461	Indonesia	Implemented with different route specification	24/11/93	ICAO co-ordinated with Indonesia to amend ANP requirement. APAC00/1-ATS was approved on 15 January 2001.	Indonesia-implement the requirement accordingly.	Indonesia	TBD	B
~~G466~~	~~Malaysia~~	~~Partially implemented~~	~~22/7/97~~	~~Co-ordination is in progress among States and ICAO. Route requirement was amended in relation to SCS route structure and was implemented on 1 November 2001.~~	~~ICAO - continue on-going implementation co-ordination related to the Revised South China Sea route structure with States Malaysia - consider implementation~~	~~Malaysia~~	1/11/2001 **Completed**	~~B~~
G473	Cambodia /Philippines Thailand/Viet Nam	Partially implemented	24/11/93	Co-ordination is in progress among States and ICAO	ICAO - continue ongoing implementation co-ordination related to the Revised South China Sea route structure with States	Cambodia /Philippines Thailand/Viet Nam	TBD	B
G589	DPR Korea/ Rep of Korea	Not implemented	24/11/93		DPR Korea/ Rep of Korea - consider implementation	DPR Korea/ Rep of Korea	TBD	B
~~R207~~	~~Lao PDR~~	~~Partially implemented as W29~~	~~24/11/93~~	~~Lao PDR promulgated the missing segment as R207 in April 2002~~	~~Lao PDR - consider promulgation of the route with route designator R207~~	~~Lao PDR~~	25/4/2002 **Completed**	~~B~~
R216	China/Kazakhstan	Not implemented	24/11/93		ICAO - co-ordinate with States for implementation and report the outcome to EAAR	China/Kazakhstan	TBD	B

AIR NAVIGATION DEFICIENCIES IN THE ATS/AIS/SAR FIELDS IN THE ASIA/PACIFIC REGION

Identification		Deficiencies			Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action****
R221	Russian Federation	R221 was implemented on 19 April 2001 in Malaysia in accordance with the requirement in ASIA/PAC ANP. The same route designator in use in Russian Federation	24/11/93	ICAO has requested Russian Federation to delete R221 and promulgate the route as R466 in AIP. Input from Russia is being awaited.	ICAO - co-ordinate with Russian Federation to redesignate the route as R466 as already assigned as a matter of priority	Russian Federation	TBD	A
R333	China	Not implemented	24/11/93	China is considering future implementation	China - consider implementation	China	TBD	B
R335	China/Hong Kong, China	Not implemented	24/11/93		China - consider implementation	China/Hong Kong, China	TBD	B
R345	Cambodia/Lao PDR/Thailand	Not implemented	24/11/93	Cambodia has advised that the requirement is no longer valid and will propose the deletion of requirement in consultation with Lao PDR and Thailand.	ICAO - continue ongoing implementation co-ordination related to the Revised South China Sea route structure with States Camodia- coordinate the deletion with IATA as well as Lao PDR and Thailand	Cambodia/Lao PDR/ Thailand	TBD	B
R455	Indonesia	Partially implemented	24/11/93	ICAO has requested Malaysia to co-ordinate the implementation of R455 with States concerned. Malaysia has advised that R455 was implemented within Malaysia on 29 November 2001.	Indoensia - implement the requirement	Indonesia	29/11/2001 (by Malaysia) TBD by Indoensia	B
R459	Indonesia	Implemented as W51 and W36	24/11/93	ICAO has requested Indonesia to implement as R459	Indonesia - consider promulgation of the route with designator R459 in AIP	Indonesia	TBD	B

AIR NAVIGATION DEFICIENCIES IN THE ATS/AIS/SAR FIELDS IN THE ASIA/PACIFIC REGION

Identification		Deficiencies			Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action****
R466	Russian Federation	Implemented as R221 in Russian Federation. Route requirement is listed in EUR/NAT ANP	24/11/93	ICAO has requested Russian Federation to delete R221 and promulgate the route as R466 in AIP, 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 ICAO	TBD	A
R579	Indonesia/Malaysia	Not implemented	24/11/93	ICAO has requested Malaysia to co-ordinate with Indonesia for implementation. Malaysia considered there was no longer requirement due to a low traffic movement; thus will propose the deletion.	Indonesia/Malaysia - consider implementation	Indonesia/Malaysia	12/2001	B
R593	India/Oman	Not implemented	24/11/93	India has advised that the implemetation of R593 is being considered in conjunction with the implementation of RVSM in November 2003.	India - consider implementation ICAO - co-ordinate with Oman for implementation and report the outcome to SWACG	India/Oman (SWACG) ICAO	11/2003	B
~~Revised South China Sea Route Structure~~	~~Cambodia/China/ Hong Kong, China/Malaysia Philippines/Singapore/ Thailand/Viet Nam~~	~~Implemented~~	~~22/7/97~~	~~Co-ordination is in progress among States and ICAO. States concerned agreed to implement SCS route structure on 1 November 2001.~~	~~ICAO - continue on-going implementation co-ordination related to the Revised South China Sea route structure with States through SCS/TF.~~	~~Cambodia/China/ Hong Kong,China/Malaysia/ Philippines/Singapore/ Thailand/Viet Nam~~	1/11/2001 **Completed**	
WGS-84								
WGS-84	Bhutan	Not implemented	2/7/1999	Data conversion completed, but not published		Bhutan		A

AIR NAVIGATION DEFICIENCIES IN THE ATS/AIS/SAR FIELDS IN THE ASIA/PACIFIC REGION

Identification		Deficiencies			Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action****
WGS-84	Cambodia		28/6/2001	Cambodia has previously informed ICAO that their WGS-84 conversion had been completed. Cambodia has now informed ICAO of flaws in their conversion and their intention to start all over again.		Cambodia		A
WGS-84	China	Not implemented * implemented in the Sanya AOR as of 1 Nov 2001	2/7/1999	Differences to Annex 15 - *Aeronautical Information Services* are notified		China		A
WGS-84	DPR Korea	Not implemented				DPR Korea		A
WGS-84	French Polynesia	Implemented at main airports		in progress		French Polynesia	2003	A
WGS-84	Kiribati	Not implemented				Kiribati		A
WGS-84	Lao PDR	Partially implemented				Lao PDR	TBD	A
WGS-84	Malaysia	Partially implemented		in progress		Malaysia	December 2002	A
WGS-84	Nauru	Not implemented		Conferring with consultant		Nauru		A
WGS-84	Philippines	Implemented at main airports		on-going		Philippines	2003	A
WGS-84	Solomon Islands	Not implemented				Solomon Islands	1999	A
WGS-84	Vanuatu	Implemented at main airports	2/7/1999			Vanuatu	1999	A

AIR NAVIGATION DEFICIENCIES IN THE ATS/AIS/SAR FIELDS IN THE ASIA/PACIFIC REGION

Identification		Deficiencies			Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action****
Type of ATS								
Area Control Services	India	Some ATS route segments in part of Mumbai FIR are subject to Advisory Services	24/11/93	Co-ordination in progress through BBACG	India - implement Area Control Services	India		A
Area Control Services	Sri Lanka	Several ATS route segments are subject to Advisory Services	24/11/93	Co-ordination in progress through BBACG	Sri Lanka - implement Area Control Services	Sri Lanka		A
Airspace Classification								
Airspace Classification	China	Not implemented	7/7/99			China		A
Airspace Classification	Cook Islands	Not implemented	7/7/99			Cook Islands		A
Airspace Classification	DPR Korea	Not implemented	7/7/99			DPR Korea		A
Airspace Classification	Japan	Not implemented	7/7/99		Implementation in progress	Japan		A
Airspace Classification	Kiribati	Not implemented	7/7/99			Kiribati		A
Airspace Classification	Lao PDR	Not implemented	7/7/99			Lao PDR		A
Airspace Classification	Nauru	Not implemented	7/7/99			Nauru		A
Airspace Classification	Papua New Guinea	Not implemented	7/7/99			Papua New Guinea	mid 2001	A
Airspace Classification	Republic of Korea	Not implemented	7/7/99			Republic of Korea		A
Airspace Classification	Samoa	Not implemented	7/7/99			Samoa		A

AIR NAVIGATION DEFICIENCIES IN THE ATS/AIS/SAR FIELDS IN THE ASIA/PACIFIC REGION

Identification		Deficiencies			Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action****
Airspace Classification	Solomon Islands	Not implemented	7/7/99			Solomon Islands		A
Airspace Classification	Sri Lanka	Not implemented	7/7/99			Sri Lanka		A
Airspace Classification	Tonga	Not implemented	7/7/99			Tonga		A
Airspace Classification	Viet Nam	Not implemented	7/7/99			Viet Nam		A
AIP Format								
AIP Format	China	Not implemented	7/7/99	Implementation in progress		China	March 2002	A
AIP Format	Cook Islands	Not implemented	7/7/99			Cook Islands		A
AIP Format	Fiji	Not implemented	7/7/99			Fiji	Sep 2002	A
~~AIP Format~~	~~India~~	~~Not implemented~~	~~7/7/99~~	~~5th edition of AIP India was published in the new Annex 15 format~~		~~India~~	Jan 2002 **Completed**	~~A~~
~~AIP Format~~	~~Indonesia~~	~~Not implemented~~	~~7/7/99~~	~~7th edition of AIP Indonesia was published in the new Annex 15 format~~	~~Implementation in progress~~	~~Indonesia~~	Jan 2002 **Completed**	~~A~~
AIP Format	Kiribati	Not implemented	7/7/99			Kiribati		A
AIP Format	Lao PDR	Not implemented	7/7/99			Lao PDR		A
AIP Format	Myanmar	Not implemented	7/7/99			Myanmar		A
AIP Format	Nauru	Not implemented	7/7/99			Nauru		A
AIP Format	New Zealand	Not implemented	7/7/99	Differences to Annex 15 - *Aeronautical Information Services* are notified		New Zealand		A

AIR NAVIGATION DEFICIENCIES IN THE ATS/AIS/SAR FIELDS IN THE ASIA/PACIFIC REGION

Identification		Deficiencies			Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action****
AIP Format	Papua New Guinea	Not implemented	7/7/99	under development		Papua New Guinea	TBA	A
~~AIP Format~~	~~Philippines~~	~~Not implemented~~	~~7/7/99~~	~~7th edition of AIP Philippines was published in the new Annex 15 format~~		~~Philippines~~	Oct 2001 **Completed**	~~A~~
AIP Format	Samoa	Not implemented	7/7/99			Samoa		A
AIP Format	Sri Lanka	Not implemented	7/7/99			Sri Lanka		A
AIP Format	Tonga	Not implemented	7/7/99			Tonga		A
SAR capability								
SARPs in Annex 12	Cambodia	Annex 12 requirements not implemented. No agreements with adjacent States.	20/2/97		Cambodia - implement Annex 12 requirements and co-ordinate LOA with adjacent States ICAO - assist to develop SAR capability and to co-ordinate with adjacent States	Cambodia		U
SARPs in Annex 12	Cook Islands	Annex 12 requirements not implemented. No agreements with adjacent States.	31/1/95		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		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

AIR NAVIGATION DEFICIENCIES IN AOP FIELD IN THE ASIA/PACIFIC REGION

Identification		Deficiencies			Corrective Action			
Requirements	**State/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Date of completion**	**Priority for action**
	Bangladesh							
RAN 3 **Rec. 4/10**	Dhaka	Rwy Twy and apron markings and marker boards faded.	1999	All markings on paved areas should be inspected and a schedule of painting be established.	(ICAO letter and reminder had been sent to State)		(To be advised earliest)	"A"
	PR China							
RAN 3 **Rec. 4/10**	Guangzhou	Taxi-way lighting inadequate.	1999	Improve taxi-way lighting system.	Inspection carried out by CAAC and found to be in compliance with ICAO requirements	CAAC	Sept 2002	Completed
		Poor markings.		All markings on paved areas should be inspected and a schedule of painting be established.	Actions will be taken and report will be provided to ICAO Regional Office	CAAC	30 Nov 2002	"A"
		Directional markings inadequate.		All markings on paved areas should be inspected and a schedule of painting be established.	Inspection carried out by CAAC and found to be in compliance with ICAO requirements	CAAC	Sept 2002	Completed
	Fiji							
Annex 14 **§ 3.1.9**	Suva Nausori	Rwy width only 30m.	1999	Width of rwy should not be less than 45m.	Rwy can only be extended after Control Tower and Terminal Bldgs relocated. Risk assessment carried out, res-trictions apply eg. acft type & when X-wind exceeds certain limits.	Airports Fiji Ltd	To be determined	"A"

Identification		Deficiencies			Corrective Action			
Requirements	**State/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Date of completion**	**Priority for action**
Annex 14 § 5.3.4		No approach lighting on either rwy.	1999	Where physically practicable, approach lighting system shall be provided.	Due to constraints on land access and availability, this will not bei mplemented in near future. GPS approaches planned.	Airports Fiji Ltd.	To be determined	"U"
Annex 14 § 8.1 & § 8.2		There are frequent power outages affecting the airport lighting and instrument systems.	1999	A secondary power supply should be provided capable of providing power requirements.	New standby plants installed, problem rectified	Airports Fiji Ltd	Completed	
	India							
Annex 14 § 5.3.4	Madras/Chennai	No approach lighting available.	2001	Where physically practicable, approach lighting system shall be provided.	(ICAO letter and reminder had been sent to State)		(To be advised earliest)	"U"
Annex 14 § 5.3.1.2		Runway 25, potential hazard as runway lighting blends with existing road lights and is difficult to differentiate.	2001	Action to be taken to extinguish, screen or modify the lights to prevent confusion.	(ICAO letter and reminder had been sent to State)		(To be advised earliest)	"U"
Annex 14 § 3.8.3		Taxiway Bravo is unusable for aircraft with a wing span exceeding 36 metres.		Twy clearance should be provided to permit safe movement of aircraft. This information needs to be promulgated in the AIP and Jeppesen Manuals.	(ICAO letter and reminder had been sent to State)		(To be advised earliest)	"A"

Identification		Deficiencies			Corrective Action			
Requirements	**State/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Date of completion**	**Priority for action**
	Indonesia							
	Bali	PAPIs on RWY 09 not calibrated.	2001	Calibration required.	(ICAO letter and reminder had been sent to State)		(To be advised earliest)	"U"
Annex 14 § 9.5		Excessive bird activity on the airport with no bird control programme available.	2001	Action to be taken to decrease the number of birds constituting potential hazard to aircraft operations.	(ICAO letter and reminder had been sent to State)		(To be advised earliest)	"A"
	Japan							
Annex 14 § 9.1.14 & 9.2.2	Okinawa/Naha	No adequate RFF facilities for over water areas.	1999	AEP and specialist RFFS to be provided in difficult environment.	(ICAO letter and reminder had been sent to State)		(To be advised earliest)	"A"
Annex 14 § 9.1.14 & 9.2.2	Osaka/Itami	No adequate RFF facilities for over water areas.	1999	AEP and specialist RFFS to be provided in difficult environment.	(ICAO letter and reminder had been sent to State)		(To be advised earliest)	"A"
Annex 14 § 9.1.14 & 9.2.2	Osaka/Kansai	No adequate RFF facilities for over water areas.	1999	AEP and specialist RFFS to be provided in difficult environment.	(ICAO letter and reminder had been sent to State)		(To be advised earliest)	"A"
Annex 14 § 9.1.14 & 9.2.2		Inadequate RFF equipment for water area.	1999	AEP and specialist RFFS to be provided in difficult environment.	(ICAO letter and reminder had been sent to State)		(To be advised earliest)	"A"

Identification		Deficiencies			Corrective Action			
Requirements	**State/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Date of completion**	**Priority for action**
RAN 3 Rec. 4/5	Nagoya/Nagoya	Parking areas and bay numbers are not properly marked.	1999	All markings on paved areas should be inspected and a schedule of painting be established.	(ICAO letter and reminder had been sent to State)		(To be advised earliest)	"A"
		No adequate RFF facilities for over water areas.		AEP and specialist RFFS to be provided in difficult environment.	(ICAO letter and reminder had been sent to State)		(To be advised earliest)	"A"
	Maldives							
RAN 3 Rec. 4/10	Male	Rwy often wet or sandy as a result of sea pray/strong winds. Touchdown rwy 18 has subsidence filled sand.	1996	Surface irregularities may adversely affect the take-off or landing of aircraft.	(ICAO letter and reminder had been sent to State)		(To be advised earliest)	"A"
RAN 3 Rec. 4/10		Apron markings hardly discernible.	1996	All markings on paved areas should be inspected and a schedule of painting be established.	(ICAO letter and reminder had been sent to State)		(To be advised earliest)	"A"
Annex 14 §5.3.4		No approach lighting rwy 18.	1999	Where physical practicable, approach lighting system should be established.	(ICAO letter and reminder had been sent to State)		(To be advised earliest)	"A"

Identification		Deficiencies			Corrective Action			
Requirements	**State/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Date of completion**	**Priority for action**
	Myanmar							
Annex 14 § 5.3.4	Yangon	Rwy 03 – no approach light.	1994	Where physically practical, a simple approach lighting system shall be provided.	PAPI was already installed in 2002. PALS for Rwy 03 included under on-going JBIC loan project.	DCA	PALS will be installed when funds are made available by JBIC.	"A"
Annex 14 § 3.1.6		Rwy length inadequate.	1999	Rwy length should be adequate to meet operational requirements of aeroplanes for which the Rwy is intended.	Present length is sufficient for B767/A300. Extension of Rwy length to 3400 m included under on-going JBIC loan project.	DCA	Rwy will be extended when funds are made available by JBIC.	"A"
RAN/3 Rec. 4.10		RFF Category inadequate.	1996	Level of RFF protection shall be appropriate to the aerodrome category.	To increase RFF level according to ICAO recommendation.	DCA	Not fixed yet.	"A"
RAN 3 Rec. 4/10		Emergency plan to be updated.	1996	Emergency exercises to be carried out and AEP updated.	To carry out emergency exercises and to update AEP.	DCA	Not fixed yet.	"A"
	New Zealand							
AN 3 Rec. 4/10	Wellington	Rwy-end safety area-rwy 16/34 inadequate.	2000	RESA shall be provided and shall extend from the end of a rwy strip to a distance of at least 90 m.	NPRM expected to be issued in July 2002 with rule effective in June 2003.	CAANZ	June 2003	"A"
	Pakistan							
RAN 3 Rec. 4/10	Karachi	Rwy and Taxiway markings inadequate and are not clearly visible at night.	1999	All markings on paved areas should be inspected and a schedule of painting be established.	Action taken.	CAA	Aug 2002	Completed

Identification		Deficiencies			Corrective Action			
Requirements	**State/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Date of completion**	**Priority for action**
	Papua New Guinea							
RAN 3 Rec. 4/10	Vanimo	No Rwy lights.	1999	Where physically practicable, a simple approach lighting system should be provided.	(ICAO letter and reminder had been sent to State)		(To be advised earliest)	"A"
RAN 3 Rec. 4/10		No RFF facilities.	1999	Level of RFF protection shall be appropriate to the aerodrome category.	(ICAO letter and reminder had been sent to State)		(To be advised earliest)	"A"
	Philippines							
RAN 3 Rec. 4/1, 4/2	Manila	Rwy 06/24 surface rough Heavy rubber deposits and very slippery when wet.	1998	Rwy surface to provide good friction characteristics when wet. Rwy friction values to be taken regularly.	(ICAO letter and reminder had been sent to State)		(To be advised earliest)	"U"
RAN 3 Rec. 3/1		No approach lights on rwy 06.	1995	Where physically practicable, a PA1 approach lighting system to be provided.	(ICAO letter and reminder had been sent to State)		(To be advised earliest)	"A"
Annex 14 § 8.4.1 & § 8.4.2		Airport security lax, allowing livestock to stray on to active runways.	1999	Improved airport perimeter fencing and general security within the perimeter of the airport required.	(ICAO letter and reminder had been sent to State)		(To be advised earliest)	"A"

Identification		Deficiencies			Corrective Action			
Requirements	**State/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Date of completion**	**Priority for action**
	Republic of Korea							
RAN 3 **Rec. 4/2**	Kimpo	Rwy slippery when wet.	1999	Rwy surface to provide good friction characteristics when wet.	- Rwy 14L/R grooved	KMOCT/ KAC	Sep, 2002	"A"
					- Rubbers on the rwy removed regularly (three times a year) since 2001 after calibration test.		May 2001	On-going
		Taxiways N1, N2, N3 and N4 as break offs from P5 are not clearly marked and have no proper signage. It is only seen after completing the turn off.	1999	A system of marking and signages to be provided.	- Taxiway P5 signages installed. - Taxiway P5 marking installed.	KMOCT/ KAC	Dec, 1999 Feb, 2001	Completed Completed
Annex 14 **§ 3.8.3**		Taxiway P5 has insufficient wing tip clearances.	1999	To comply with Annex requirements.	Width of taxiway P5 Extended.	KMOCT/ KAC	Oct, 2003	"A"
Annex 14 **§ 5.2**		Ramp areas N1, N2, N3 and N4 signage does not conform to ICAO marking standards.	1999	To comply with Annex requirements.	Ramp area N1, N2, N3 and N4 signages' l letter size (1.5m-4.0 m), location and direction changed.	KMOCT/ KAC	Feb, 2001	Completed

Identification		Deficiencies			Corrective Action			
Requirements	**State/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Date of completion**	**Priority for action**
	Thailand							
Annex 14 § 3.1.21	Bangkok	Parallel taxiway is very rough and almost unusable even at low taxi speeds (5kts).	1999	Despite the completion of the resurfacing the taxiway surface remains undulated.	Parallel taxiway C had already been repaired and now AAT is proceeding to repair parallel taxiway A which has the surface friction.	AAT	June 2001 Beginning of 2003	"A"
	Viet Nam							
Annex 14 § 3.1.22	Ho Chi Minh	Rwy 25L slippery when wet.	1998	Runway surface to provide good friction characteristics when wet.	Upgraded and expanded.	Southern Airport Authority.	2003	"A"
Annex 14 § 5.3.4 & § 5.3.5		Rwy 07R, 25L- no PAPIs, no approach lighting.	1996	Where physically practicable, approach light system shall be provided. PAPI/VASI to be provided to serve the approach to Rwy.	To be advised	Southern Airport Authority.	2003	"A"
RAN/3 Rec. 4.10		Taxiway markings not clear.		All markings on paved areas should be inspected and a schedule of painting be established.	(ICAO letter and reminder had been sent to State)	Southern Airport Authority.	2003	"A"
Annex 14 § 8.4.1 & § 8.4.2		Security is poor near the main taxiway where access to the whole airport poses a risk.		Improved airport perimeter fencing and general security within the perimeter of the airport required.	(ICAO letter and reminder had been sent to State)		(To be advised earliest)	"A"

AIR NAVIGATION DEFICIENCIES IN THE CNS FIELD IN THE ASIA/PAC REGION

Identification		Deficiencies			Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date 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	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 end of 2002.	A
Reliable AFS communications between Kolkata and Dhaka FIRs.	Bangladesh and India	Performance of the Kolkata/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	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 Kolkata 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 yet to be commissioned. Dhaka/Guwahati and Dhaka/Kolkata ATS DSCs. implemented on IDD. India is ready to upgrade the HF RTT circuit to LTT.	CAA Bangladesh and Airports Authority of India	End of 2002	A

Identification		Deficiencies			Corrective action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action****
Adequate and reliable VHF COM	Myanmar	Quality and reliability of RCAG VHF inadequate and unavailability of required coverage	1998	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 2002	A

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PACIFIC REGION

Identification		Deficiencies			Corrective action			
Requirements	**States/ facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action ***
Meteorological observations and reports. Provision of Annex 3, Chapter 4	Solomon I.	Weather information is inadequate and not provided on a regular basis	1996	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. OPMET/E TF to carry out survey	2003	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 Kiribati not regularly provided by MET Centre of Fiji. b) MET observations from Kiribati not available on regular basis.	1998	Reported by the National Weather Service concerned during introduction of the new flight operations.	The TAFs for Tarawa, Kiribati has been provided regularly without any more problems.	Directorate of Civil Aviation, Kiribati. Civil Aviation Authority, Fiji CNS/MET SG OPMET/E TF to carry out survey	Already implemented	A
a) Reporting of information on volcanic eruptions to civil aviation units. Provision of Annex 3. 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	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.	a) Volcanic Ash Warning Study Group (VAWSG) to develop proposal. b) ICAO Regional Office to monitor developments on this subject.	To be determined	A

Identification		Deficiencies			Corrective action			
Requirements	**States/ facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action ***
					c) It is expected that MOU between Air Transportation Office and the Philippines Institute of Volcanology and Seismology will be considered.			
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	VSATs for reception of the ISCS and SADIS satellite broadcasts not installed.	1999	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. CNS/MET SG to monitor and coordinate.	To be determined	A
a) Aerodrome meteorological Office meteorological watch office Provisions of Annex 3, Chapter 3. 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 (MWO) to be established at Phnom-Penh international airport have not been met.	1992	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		Deficiencies			Corrective action			
Requirements	**States/ facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date 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 PDR 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) 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 Task Force to assist Secretariat with development of SIP and its implementation d) CNS/MET SG to monitor.	2003 by means of a SIP (Malaysia notified deficiency was resolved, 2002)	A

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 eleventh meeting.

5.2 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 is now provided over the most of the Bay of Bengal area except for the southern portion where point-to-point communications are not reliable.	On-going
C 3/24		**Implementation of RVSM & RNP in the Pacific Region** That, Australia, New Zealand and United States requested to prepare proposals for the implementation of RVSM and RNP in the Pacific Region based on the work done by the ISPACG.	a) RNP-10 has been implemented in most of the Pacific Region. Central Pacific in October 2002. b) RNP4 implementation being considered. Note: RVSM was implemented in the Pacific Region on 24 February 2000. This action on RVSM was completed.	On-going 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. Noted the Conclusion.	a) Review of Asian States SAR is continuing. The ICAO Regional Office is actively fostering the enhancement of SAR throughout the Region as part of the normal work programme. Deficiencies will be listed as they become apparent.	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 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 * This Task is superseded by Conclusion 11/9.	Closed Closed
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
C 8/9	 ANC	**Co-ordinated Activity – SAR** That, ICAO undertakes co-ordinated activity on a regional basis to improve the level of SAR response throughout the Asia/Pacific Region. Noted the conclusion and requested the Secretary General to take appropriate action.	a) A SAREX and associated SAR seminar focused on the Bay of Bengal area is programmed to take place in 2003: b) A similar project will be organized for the South China Sea and Pacific islands areas.	2003 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 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. Further workshops and seminar will be programmed to be held in 2003/04.	To be completed in 2003/04
	C	Noted the conclusion		
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 (SCS), 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.	The revised South China Sea ATS route structure was implemented on 1 November 2001.	Completed
	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.	States are reminded that CNS/ATM relies on WGS84 as the only datum that can be loaded into the FMS database and is fundamental to the implementation of RNP, GNSS, TAWS and ADS. ICAO Regional Office continues to undertake follow-up action with States concerned. The non-implementation of WGS-84 is listed as a Deficiency.	On-going

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) 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. b) Identify ATS routes where 10-minute longitudinal separation minima can be applied for RNAV equipped aircraft without using MNT.	a) With respect to the application of MNT, an amendment proposal to the Regional Supplementary Procedures (Doc 7030) (APAC-S 00/5), which enables the application of the minimum longitudinal separation of 10 minute using MNT within the whole Asia/Pacific Region, was approved on 21 September 2001. b) Implementation subject to provisions of ICAO separation standards.	Completed 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. States were reminded of this Conclusion at ATS/AIS/SAR/SG/12. The Document of ATS Route Network has been revised and updated.	On-going
C 9/9		**Human Factor in the Provision of ATS** That, a) ICAO consider holding Human Factors seminars in the Asia/Pacific Region which are focused directly on Human Factors associated with the provision of ATS, and; b) States be urged to make regular presentations to Sub-Group meetings regarding "lessons learned" relating to Human Factors associated with the implementation of the new CNS/ATM Systems.	a) The first ATS Human Factors Seminar was conducted in 2000. b) States are urged to provide information to ICAO on lessons learned.	On-going On-going
	ANC	Noted the conclusion		

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
D 9/39		**CNS/ATM Training and Human Resource Development Task Force** That, a CNS/ATM Training and Human Resource Development Task Force be established with the following Terms of Reference: a) Recommend a strategy for a regional approach towards planning the development and implementation of CNS/ATM training; b) Recommend a co-ordination mechanism for the establishment of regional training capabilities in CNS/ATM systems; c) Recommend a framework for regional training plans and consider the applicability of including this material in the Regional Air Navigation Plan; d) Take into consideration the work of ICAO TRAINAIR, the ICAO Regional Human Resources Planning and Training Needs Study Group and the APANPIRG/7 Training Task Force and recommend mechanisms for regional integration of the outputs from these groups.	The Task Force held its first meeting in July 1999. A Regional CNS/ATM Training & Human Resource Development Strategy was developed. Further work may be progressed when the outputs of the ICAO Human Resource Planning and Training Needs Study Group become available.	On-going

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		
C 10/2		**Uniform Promulgation of FIR Boundary Way-points** That, States review their aeronautical materials and that of their adjacent States and, through co-ordination with adjacent States, ensure uniform promulgation of FIR boundary way-points using WGS-84 as the basis of the Datum.	ICAO continues to monitor situation and will co-ordinate with individual States where the uniform promulgation of FIR Boundary way-points has not been achieved.	On-going
C 10/3		**ANP Amendment Proposal to include SIGMET in VOLMET Broadcasts (ASIA)** That, the ASIA/PAC Air Navigation Plan (Doc 9673) be amended to add a requirement for inclusion of SIGMET in VOLMET broadcasts for the Asia Region.	Amendment proposal APAC 99/9-ATS has been drafted. On-going consultation with provider States and users is continuing.	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 10/4		**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) Implementation subject to provisions of ICAO separation standards	On-going
		2) That, Sub-regional ATS Co-ordination Groups concerned place a high priority on items 1) a), b) and c) above.	2) Implementation continues to be co-ordinated through the Bay of Bengal ATS Co-ordination Group (BBACG).	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		**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.	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 conducted the 2nd survey in Aug 2000. b) ATS/AIS/SAR SG recognized a need to establish a transition period to allow operators to use TCAS version 6.04 as an interim measurement before equipping their aircraft with ACAS II completely by 1 January 2002.	Completed On-going
	C	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.		
C 10/37		**Development of General Contingency Plans** That, The Asia Pacific Regional and State Y2K Contingency Plans and SLOAs 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 2003.	To be completed by 2003
C 11/1		**RVSM Minimum Monitoring Requirements** That, ICAO be requested to develop globally applicable short and long-term RVSM minimum monitoring requirements for aircraft.	The ICAO Separation and Airspace Safety Panel (SASP) is studying the short- and long-term objectives for RVSM monitoring.	On-going
	ANC	Noted the conclusion and that SASP is studying the short- and long –term objectives for RVSM monitoring.		

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
C 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.	The Air Navigation Commission on reviewing the report of APANPIRG/11, was of the view that the revised edition of the document should not include material on the application of separation based on ADS until proposed amendments to the Procedures for Air Navigation Services – Rules of the Air and Air Traffic Services (PANS-RAC, Doc 4444), had been approved by ICAO. The revised Guidance Material on CNS/ATM Operations in the Asia/Pacific Region will be published in accordance with the guidance provided by the Air Navigation Commission, as soon as practicable. * This Task is superseded by Conclusions 12/38 and 12/39.	Closed
C 11/6		**Mandatory Carriage and Operation of Pressure-Altitude Reporting Transponders** That, States take immediate steps to mandate the carriage and operation of pressure-altitude reporting transponders within all FIRs in the Asia/Pacific Region.	Two surveys have been conducted in conjunction with the survey relating to the carriage of ACAS II for the purpose of monitoring the implementation status in the Region.	On-going
C 11/7	C	**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. Noted the conclusion and requested the Secretary General to	Two surveys have been conducted. The secretariat continues to monitor the implementation. The result was presented to APANPIRG in the ATS/AIS/SAR/SG/11 Report. Non-implementation of ACAS II after 1 January 2003 is to be identified as Deficiency.	1 January 2003

Report Reference ---------- Conc/Dec No	Action by ANC/ Council	Decision/Conclusion Title/ ANC/Council Action, if any	Action by States/ICAO	Status
		urge States to take action to mandate the carriage of ACAS II by the globally agreed date of 1 January 2003.		
C 11/8		**SAR Capability Matrix** That, a) the "SAR Capability Matrix" be distributed to States for information and action as appropriate; and b) States provide information to ICAO by 30 April 2001 to permit the periodic update of the Matrix.	a) The "SAR Capability Matrix" was distributed to States; b) Updated information was presented at ATS/AIS/SAR/SG/11.	Completed Completed
C 11/9	 C	**Search and Rescue Agreements between States and Establishment of a Search and Rescue Register** That, States are to complete their SAR agreements with their neighbouring States and forward such agreements to the ICAO office to be included in a register on SAR Agreements. Noted the conclusion and requested the Secretary General to urge States to complete SAR agreements with their neighbouring States and forward such agreements to ICAO.	States have been urged to complete their SAR agreements with their neighboring States. Information has been received from some ASEAN States on signed agreements with their neighbours.	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 11/10		**Development of a Revised ATS Route Structure - Asia to/from Europe/Middle East, South of the Himalayas (EMARSSH)** 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.	A Task Force was established, led by a Core Team. Seven sub-regional meetings have taken place. Phase 1 implementation involving Australia, Indonesia, Malaysia and Singapore took place on 29 November 2001. Further Task Force meetings are planned to complete the work. Implementation of the revised route structure is scheduled for AIRAC Date of 28 November 2002.	To be completed on 28 November 2002
	ANC	Noted the conclusion and requested the Secretary General to organize an interregional coordination meeting to address interface issues to ensure end-to-end connectivity in the revised ATS route structure.		
C 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;	a) a set of Principles were adopted and agreed to;	Completed
		b) development of a project plan;	b) a project plan has been formulated;	Completed
		c) form a small project or core team to initiate, develop and lead the project through to implementation;	c) a Core Team was established consisting of Australia, Hong Kong, China, India, Singapore, IATA and ICAO as Chairman of the Core Team;	Completed
		d) plan a number of sub-regional meetings to progress the work; and	d) seven meetings have taken place. Further meetings, including a post-implementation review meeting, are planned; and	On-going
		e) full co-ordination with adjacent regions with regard to the development of the route structure and procedures to be maintained.	e) inter-regional coordination was conducted throughout the planning and implementation of this project.	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 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.	All 5 Principles are being considered in the development and implementation of the revised ATS route structure.	Completed

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OUTSTANDING CONCLUSIONS/DECISIONS IN THE CNS/MET FIELDS

Report Reference Concl./Dec. No.	Action by ANC/Council	Decision/Conclusion/ Action Taken	Action by States/ICAO	Status
C 5/19		**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.	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
	C	Noted the conclusion and requested the Secretary General to take action as appropriate.		
C 9/18		**Operational efficacy of OPMET messages** That, a) ICAO carry out a survey on the operational efficacy of the ISCS/2; and b) Results of the survey be made available to the ISCS/2 provider Stat 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 2004-2005
C 10/19		**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.	Proposal is being studied by the Secretariat with assistance of the WAFSSG. The subject is included in the Agenda of the MET Divisional Meeting, September, 2002.	On-going
	C	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.		

Report Reference Concl./Dec. No.	Action by ANC/Council	Decision/Conclusion/ Action Taken	Action by States/ICAO	Status
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 obtain WAFS products and OPMET data for operational purposes, as well as for the dissemination for 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. It is included in the agenda of the MET Divisional Meeting to be held in September 2002. The United Kingdom implemented the SADIS internet-based service as a back-up to the SADIS broadcast to be provided only to States and users authorized to receive SADIS and ISCS broadcasts. SADIS FTP back-up service has been operational since May 2002.	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.	The ASIA/PAC and global OPMET data is available at the Washington WAFC from the Centres concerned and from London WAFC for the ISCS broadcast.	Completed
C 10/23		**Revision of the ROBEX Scheme** That, in order to facilitate distribution of the ASIA/PAC OPMET information to the WAFC 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. Task to be carried out by OPMET/E TF.	2003

Report Reference Concl./Dec. No.	Action by ANC/Council	Decision/Conclusion/ Action Taken	Action by States/ICAO	Status
C 11/26	ANC	**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. Noted the conclusion and that the Secretary General was developing a policy for the operational use of the Internet by States to access WAFS products as well as OPMET data, and for the dissemination of AIS Information.	The subject matter was discussed by the SADISOPSG/6 and 7. The United Kingdom implemented the SADIS internet-based service as a back-up to the SADIS broadcast to be provided only to States and users authorized to receive SADIS and ISCS broadcasts. SADIS FTP back-up service has been operational since May 2002. A policy for the operational use of the Internet by States is being developed by ICAO. It is included in the agenda of the MET Divisional meeting to be held in September 2002.	On-going
C 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.	The ASIA/PAC Basic ANP and FASID have been approved by the Council. Amendment proposal for FASID circulated to States.	On-going
C 11/33	C	**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. Noted the conclusion and that such project would be put forward for Council approval through established procedures.	The SIP Project Proposal will be put forward for Council approval in 2001. The SIP Proposal is being revised in order to reduce the cost and will be put forward for Council approval in 2002.	2003

AGENDA ITEM 6: DEVELOP FUTURE WORKS PROGRAMME

Agenda Item 6: Future Works Programme

Schedule of Future Meetings

6.1 The meeting noted that the 5th Worldwide Air Transport Conference and the 11th Air Navigation Conference will be held in Montreal from 24 – 29 March 2003 and 22 September – 3 October 2003 respectively, and it was agreed that the tentative schedule of meetings for 2003 and 2004 shall be as follows:

2003

ATN Transition Task Force	7-11 April 2003	Shanghai
ATS/AIS/SAR SG/13	19-23 May 2003	Bangkok
CNS/MET SG/7 and CNS/ATM/IC SG/10	14-21 July 2003	Bangkok
APANPIRG/14	4 - 8 August 2003	Bangkok
ADS-B Study and Implementation Task Force	March 2003	Australia
AIDC Review Task Force	March 2003	Australia
Deficiency Review Task Force	23-27 July	Bangkok

2004

ATS/AIS/SAR SG/14	June 2004
CNS/MET SG/8	July 2004
CNS/ATM IC SG/11	August 2004
APANPIRG/15	September 2004

6.2 The meeting decided on the following provisional agenda for the next meeting:

Provisional Agenda for APANPIRG/14

Item 1: Review of Council and ANC actions on APANPIRG/13 Report

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

2.1 ATS/AIS/SAR Matters
2.2 CNS/MET 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

Commemoration of the events of 11 September 2001

7.1 On Wednesday, 11 September 2002, the Chairman, before commencing the Order of Business for the day, invited the meeting to observe a minute's silence to pay respects and offer prayers in memory of the victims of the 11 September 2001 tragedy that befell New York City.

Agenda, Date and Site for Fifth Worldwide Air Transport Conference

7.2 The meeting was advised that the ICAO Secretariat has been monitoring developments in the air transport field since the Fourth Worldwide Air Transport Conference in 1994 and that it has developed guidance on emerging regulatory issues that are of general interest to Contracting States. The increasing number of calls by Governments and industry for regulatory reform and the consistent view expressed by many parties that this process should be coordinated at the worldwide level by ICAO led the Council to convene this Fifth Worldwide Air Transport Conference and to select as its theme "challenges and opportunities of liberalization".

7.3 Information materials prepared by the Secretariat discussing the agenda, date, and site of the Conference were distributed to participants and on-going preparations for the Conference were highlighted. Participants were invited to visit the ICAO website to obtain reference materials and working papers as they become available. The meeting's attention was drawn to a seminar on the Conference to be held on 17 October 2002 during the forthcoming 39th Conference of Directors General of Civil Aviation of the Asia and Pacific Regions. It was pointed out that this event will provide an opportunity for States to prepare the way for substantive discussions at the Conference and to begin the process of coordinating/harmonizing their inputs.

7.4 The meeting noted the agenda of the Conference. It further noted the regulatory issues that would be addressed and the request to States to consider the ramifications of the Conference in their work programmes.

Global Safety Statistics for Business Aircraft

7.5 The meeting noted that the International Business Aviation Council (IBAC) has embarked on a comprehensive study of accident rates of business aviation with a target date of completion of late Autumn 2002. From the preliminary data certain trends may be observed:

- Business Jet Aircraft with professionally qualified crews have global accident rates comparable to commercial airlines
- Business Jet Aircraft taken in total have approximately twice those of the Business Jets with professionally qualified crews
- Business Turbo-propeller aircraft have accident rates that are significantly higher than Business Jets.

7.6 In response to a question from India the representative from IBAC explained that the data was being collated on the basis both of accidents/flight hour and accidents/departure; but that the basis for comparison throughout the presentation was accidents per departure.

The meeting noted the information provided by IBAC.

Attachment 1

Thirteenth Meeting of the ASIA/PACIFIC Air Navigation Planning and Implementation Regional Group (APANPIRG/13)
Bangkok, Thailand, 9 to 13 September 2002

List of Participants

Name	Title/Organization	Tel.:	Fax No.: E-mail
AUSTRALIA (4)			
Mr. Colin Kuchel	Branch Manager Standards & Environment Airservices Australia P.O. Box 367 Canberra ACT 2601 Australia	Tel: (61-2) 6268-5665	Fax: (61-2) 6268-5695 E-mail: colin.kuchel@airservices.gov.au
Mr. Jeffrey Bollard	Chief Engineer – Technical Standards Standards and Environment Branch Safety and Environment Assurance Airservices Australia 25 Constitution Avenue Canberra, ACT 2601 Australia	Tel: (61-2) 6268-4949	Fax: (61-2) 6268-5695 E-mail: Jeffrey.bollard@airservices.gov.au
Mr. Jim Shirley	Head of Airspace, Air Traffic and Aerodrome Standards Branch Australian Civil Aviation Safety Authority GPO Box 2005 Canberra ACT 2601 Australia	Tel: (61-2) 6217-1299	Fax: (61-2) 6217-1700 E-mail: shirley_j@casa.gov.au
Mr. Walter Dollman	Manager Regulatory Affairs Qantas Airways Limited Qantas Centre Building C/3 203 Coward Street Sydney 2020 Australia	Tel: (61-2) 9691-1195	Fax: (61-2) 9691-1605 E-mail: wdollman@qantas.com.au

Name	Title/Organization	Tel.:	Fax No.: E-mail
BRUNEI DARUSSALAM (1)			
Haji Matnor Bin Haji Salleh	Chief Air Traffic Control Officer Department of Civil Aviation Brunei International Airport Bandar Seri Begawan BB2513 Negara Brunei Darussalam	Tel: (673)(2) 330-765 or (673)(2) 330-142 Ext. 1842	Fax: (673)(2) 331-706/331-157 E-mail: catco@brunet.bn
CHINA (7)			
Ms. Lu Xiaoping	Deputy Director General, Senior Engineer Air Traffic Management Bureau of CAAC P.O. Box 2272 Shilihe Chaoyang District Beijing 100021 China	Tel: (86) 10-6731-8527	Fax: (86) 10-6735-7529 E-mail: LXP@atmb.net.cn
Mr. Li Xin	Deputy Director of Telecommunication Division Air Traffic Management Bureau of CAAC P.O. Box 2272 Shilihe Chaoyang District Beijing 100021, China	Tel: (86) 10-6734-0773	Fax: (86) 10-6731-8478 E-mail: lixin@atmb.net.cn
Mr. CHAO Pao-shu, George	Assistant Director-General of Civil Aviation Civil Aviation Department of Hong Kong Room 6T067, Passenger Terminal Bldg. Hong Kong International Airport Lantau, Hong Kong, China	Tel: (852) 2182-1223	Fax: (852) 2261-2728 E-mail: gpschao@cad.gov.hk
Mr. John T.C. Lau	Assistant Director-General of Civil Aviation (Air Traffic Management) Air Traffic Management Division 4/F Air Traffic Control Complex Hong Kong International Airport Lantau, Hong Kong China	Tel: (852) 2910-6402	Fax: (852) 2910-0186 E-mail: jtclau@cad.gov.hk
Mr. Peter P.K. Leung	Chief Air Traffic Control Officer Air Traffic Management Division 4/F Air Traffic Control Complex Hong Kong International Airport Lantau, Hong Kong China	Tel: (852) 2910-6441	Fax: (852) 2910-0160 E-mail: ppkl@cad.gov.hk

Name	Title/Organization	Tel.:	Fax No.: E-mail
CHINA (Cont'd)			
Mr. Wong Ping-Fai	Chief Electronics Engineer Civil Aviation Department 10/F, Commercial Building, Airport Freight Forwarding Centre 2 Chun Wan Road Hong Kong International Airport Hong Kong, China	Tel: (852) 2591-5001	Fax: (852) 2845-7160 E-mail: pfwong@cad.gov.hk
Mr. Chan Weng Hong	Vice President Civil Aviation Authority of Macao R. Dr. Pedro Jose´ Lobo, 1-3 Ed:f. Luso International, 26º andar Macao, China	Tel: (853) 511-213	Fax: (853) 338-089 E-mail: aacm@macau.ctm.net
DPR KOREA (2)			
Mr. Kim Chon Su	General Manager Air Koryo 942/135.4 Charn Issara Tower 4th Floor Rama 4 Road Bangkok, Thailand	Tel: (01) 628-2816	Fax: (66-02) 267-5009 E-mail: -
Mr. Pak Yun Jip	Station Manager Air Koryo 942/135.4 Charn Issara Tower 4th Floor Rama 4 Road Bangkok, Thailand	Tel: (01) 658-2725	Fax: (66-02) 267-5009 E-mail: -
FIJI (2)			
Mr. Norman H.Y. Yee	Chief Executive Civil Aviation Authority of the Fiji Islands Private Mail Bag Nadi Airport, Fiji	Tel: (679) 6-721-555 Ext. 3320	Fax: (679) 6-721-500 E-mail: ce@caaf.org.fj
Mr. Petero K. Delai	Development Engineer Airports Fiji Limited (AFL) Private Mail Bag Nadi Airport, Fiji	Tel: (679) 6-725-777 Ext. 4725	Fax: (679) 6-722-492 E-mail: peterod@afl.com.fj

Name	Title/Organization	Tel.:	Fax No.: E-mail
FRANCE (1)			
Mr. Pierre Pinson	Chief Technical Division SEAC – BP H1 98800 Noumea New Caledonia	Tel: (687) 26 52 89	Fax: (687) 26 52 06 E-mail: ppinson@canl.nc
INDIA (4)			
Mr. Satendra Singh	Director General of Civil Aviation Directorate General of Civil Aviation Technical Centre Opp. Safdarjung Airport New Delhi – 110003 India	Tel: 91-11-462-0784	Fax: 91-11-462-9221 E-mail: dgoffice@dgca.delhi.nic.in
Mr. K. Ramalingam	Member (Planning) & Operations Airports Authority of India Rajiv Gandhi Bhavan Safdarjung Airport New Delhi – 110003 India	Tel: 91-11-462-8818	Fax: 91-11-461-0847 E-mail: aaimemp@ndf.vsnl.net.in
Mr. S.C. Goswami	Executive Director (Northern Region) Airports Authority of India Indira Gandhi International Airport, Terminal I Palam, New Delhi 110037 India	Tel: 91-11-567-5666	Fax: 91-11-567-5120 E-mail: rednr@ndf.vsnl.net.in
Mr. V.K. Shroff	General Manager (ATC) Airports Authority of India Rajiv Gandhi Bhavan Safdarjung Airport New Delhi 110003 India	Tel: 91-11-462-2810	Fax: 91-11-461-1065 E-mail: -

Name	Title/Organization	Tel.:	Fax No.: E-mail
INDONESIA (1)			
Mr. Rosdi M. Abdullah	General Manager Operation Development 3rd Fl., Garuda Operation Center Soekarno - Hatta Airport P.O. Box 1004, BUSH 19120 Cengkareng - Jakarta Indonesia	Tel: 62-21-550-1521	Fax: 62-21-550-1528 E-mail: rosdi.ma@garuda-indonesia.com
JAPAN (2)			
Mr. Masahiro Kudo	Director for International Policy Coordination Air Traffic Services Systems Planning Division Air Traffic Services Department Civil Aviation Bureau Japan (JCAB) Ministry of Land, Infrastructure and Transport 2-1-3 Kasumigaseki, Chiyoda-ku, 100-8918 Tokyo, Japan	Tel: 81-3-5253-8739	Fax: 81-3-5253-1663 E-mail: kudou-m2ct@mlit.go.jp
Mr. Yoshiki Imawaka	Special Assistant to the Director Office of Aeronautical Satellite Systems Civil Aviation Bureau Japan (JCAB) Ministry of Land, Infrastructure and Transport 2-1-3 Kasumigaseki, Chiyoda-ku, 100-8918 Tokyo, Japan	Tel: 81-3-5253-8743	Fax: 81-3-5253-1663 E-mail: imawaka-y2ys@mlit.go.jp
LAO PDR (1)			
Mr. Sisavath Somsy	Chief of Air Navigation Division Department of Civil Aviation Vientiane/Wattay International Airport P.O. Box 119 Vientiane Lao PDR	Tel: (856-21) 512-164	Fax: (856-21) 512-164 E-mail: -

Name	Title/Organization	Tel.:	Fax No.: E-mail
MALAYSIA (4)			
Mr. Harizan bin Mohd. Yatim	Director Department of Civil Aviation Civil Aviation Training Centre Sultan Abd. Aziz Shah Airport 47200 Subang, Kuala Lumpur Malaysia	Tel: 603-7846-4333	Fax: 603-7846-4282 E-mail: harizan@tm.net.my
Mr. Noor Izhar Baharin	Assistant Director Air Traffic Services Division Department of Civil Aviation Malaysia ATCC Complex Sultan Abd. Aziz Shah Airport 47200 Subang, Kuala Lumpur Malaysia	Tel: 603-7846-5233	Fax: 603-7847-2997 E-mail: izhariah@tm.net.my
Mr. Jamil Khir Mohamed	Assistant Director Air Traffic Services Division Department of Civil Aviation Malaysia ATCC Complex Sultan Abd. Aziz Shah Airport 47200 Subang, Kuala Lumpur Malaysia	Tel: 603-7846-5233	Fax: 603-7847-2997 E-mail: jamilk@tm.net.my
Mr. Zamri Jemain	Manager Telekom Malaysia Berhad Specialised Network Services Jalan Lapangan Terbang 81400 Senai Johor Malaysia	Tel: 607-599-1655	Fax: 607-599-1205 E-mail: izamri@telekom.com.my

Name	Title/Organization	Tel.:	Fax No.: E-mail
REPUBLIC OF MALDIVES (2)			
Mr. Moosa Solih	Assistant Managing Director Maldives Airports Co. Ltd. Male' International Airport Hulhule' Republic of Maldives	Tel: (960) 313-257	Fax: (960) 317-033 E-mail: solih@airports.com.mv
Mr. Mohamed Solih	Chief Air Traffic Services Maldives Airports Co. Ltd. Male' International Airport Hulhule' Republic of Maldives	Tel: (960) 313-308	Fax: (960) 313-258 E-mail: msolih@airports.com.mv
MONGOLIA (2)			
Mr. G. Davaa	Director Aviation Policy & Air Transport Department Civil Aviation Authority of Mongolia Buyant-Ukhaa International Airport Ulaanbaatar - 34 Mongolia	Tel: 976-11-982-020	Fax: 976-11-379-640 E-mail: g_davaa@mcaa.gov.mn
Mr. Ariunbat Ya	Director Aerodrome and Air Navigation Inspection Division Civil Aviation Authority of Mongolia Byuant-Ukhaa International Airport Ulaanbaatar - 34 Mongolia	Tel: 976-11-982-044	Fax: 976-11-379-640 E-mail: ariunbat@mcaa.gov.mn
NEPAL (4)			
Mr. Rajesh R. Dali	Deputy Director General Civil Aviation Authority of Nepal Head Office Babar Mahal, Kathmandu Nepal	Tel: 977-1-262-532	Fax: 977-1-262-324 E-mail: sdali@ccsl.com.np

Name	Title/Organization	Tel.:	Fax No.: E-mail
NEPAL (Con'td)			
Mr. Mohan Adhikari	Chief Air Traffic Services Civil Aviation Authority of Nepal Head Office Babar Mahal, Kathmandu Nepal	Tel: 977-1-257-667	Fax: 977-1-262-156 E-mail: caan@cnsatm.wlink.com.np
Mr. Pradip N. Sharma	Chief CNS/ATM Civil Aviation Authority of Nepal Head Office Babar Mahal, Kathmandu Nepal	Tel: 977-1-265-243	Fax: 977-1-262-516 E-mail: caan@cnsatm.wlink.com.np
Mr. Sayami Narendra Raj	Chief Officer Tribhuvan Int'l Airport Civil Aviation Authority of Nepal Head Office Babar Mahal, Kathmandu Nepal	Tel: 977-1-472-258 or 977-1-472-259	Fax: - E-mail: narendra_sayami@hotmail.com.np www:TIAIRPORT.COM
NEW ZEALAND (3)			
Mr. Rodney Bracefield	Manager Search & Rescue P.O. Box 31441 Lower Hutt New Zealand	Tel: 64-4-560-9400	Fax: 64-4-566-2525 E-mail: bracefieldr@caa.govt.nz
Mr. Mark Hingston	Manager Aeronautical Services Civil Aviation Authority of New Zealand P.O. Box 31441 Lower Hutt New Zealand	Tel: 64-4-560-9400	Fax: 64-4-560-2024 E-mail: hingstonm@caa.govt.nz

Name	Title/Organization	Tel.:	Fax No.: E-mail
NEW ZEALAND (Cont'd)			
Mr. John McConway	Air Traffic Services Policy and Standards Manager New Zealand Airways Sir William Pickering Drive Russley, P.O. Box 14131 Christchurch New Zealand	Tel: 64-3-358-1620	Fax: 64-3-358-6856 E-mail: john.mcconway@airways.co.nz
PHILIPPINES (3)			
Atty. Alan Adena Tan	Assistant Secretary for Administrative and Legal Affairs Department of Transportation and Communications 3rd/F, Unit 34, The Columbia Tower Ortigas Avenue Mandaluyong City Philippines	Tel: (632) 727-7949	Fax: (632) 834-0143 E-mail: -
Mr. Anacleto V. Venturina	Director II, Air Traffic Service Air Transportation Office Department of Transportation and Communications MIA Road, Pasay City Metro Manila, Philippines 1300 Philippines	Tel: (632) 832-0906	Fax: (632) 759-2742 E-mail: avv@ats.ato.gov.ph
Mr. Andrew B. Basallote	Officer-in-Charge Airways Navigation Service Air Transportation Office Department of Transportation and Communications Old MIA Road Corner Pasay City Metro, Manila Philippines 1300 Philippines	Tel: (632) 879-9163	Fax: (632) 759-2739 E-mail: abasallote@ato.gov.ph

Name	Title/Organization	Tel.:	Fax No.: E-mail
REPUBLIC OF KOREA (4)			
Mr. Lee, Se-Young	Deputy Director ATS Planning Division Civil Aviation Safety Authority MOCT 274, Gwahae-dong, Gangseo-Gu Seoul, Republic of Korea 157-771	Tel: 82-2-669-6432	Fax: 82-2-6342-7289 E-mail: secle@moct.go.kr
Mr. Kim, Ji-Chul	Executive Director Korea Airport Corporation Civil Aviation Safety Authority MOCT 274, Gwahae-dong, Gangseo-Gu Seoul 157-711 Republic of Korea	Tel: 82-2-660-2206	Fax: 82-2-660-4200 E-mail: jckim@airport.co.kr
Mr. NAM, Yeoung-Hyun	Assistant Director CNS System Division Civil Aviation Safety Authority MOCT 274, Gwahae-dong, Gangseo-Gu Seoul 157-711 Republic of Korea	Tel: 82-2-662-5263	Fax: 82-2-6342-7299 E-mail: NAM0513@moct.go.kr
Mr. Lee, Hyeong-Man	Manager CNS/ATM Division Korea Airports Corporation Gwahae-dong, Gangseo-Gu Seoul 157-711 Republic of Korea	Tel: 82-2-660-2868	Fax: 82-2-66-4200 E-mail: hmlee@airport.co.kr

Name	Title/Organization	Tel.:	Fax No.: E-mail
SAMOA (1)			
Mr. Alefosio Matulino	Deputy General Manager Samoa Airport Authority Private Bag, Faleolo International Airport Apia, Samoa	Tel: (685) 23 201	Fax: (685) 24 281 E-mail: matulino@lesamoa.net
SINGAPORE (4)			
Mr. Wong Woon Liong	Director-General Civil Aviation Authority of Singapore (CAAS) Singapore Changi Airport P.O. Box 1 Singapore 918141	Tel: (65) 6541-2202	Fax: (65) 6542-1231 E-mail: Wong_Woon_Liong@caas.gov.sg
Mr. Mervyn G. Fernando	Chief Changi Tower Civil Aviation Authority of Singapore (CAAS) Singapore Changi Airport P.O. Box 1 Singapore 918141	Tel: (65) 6541-2420	Fax: (65) 6545-6516 E-mail: mervyn_Fernando@caas.gov.sg
Mr. Kuah Kong Beng	Senior Air Traffic Control Manager (Airspace) Civil Aviation Authority of Singapore (CAAS) Singapore Changi Airport P.O. Box 1 Singapore 918141	Tel: (65) 6541-2457	Fax: (65) 6545-6516 E-mail: kuah_kong_beng@caas.gov.sg
Ms. HONG Lena Nicole	Operations Manager (Air Traffic Services) Civil Aviation Authority of Singapore (CAAS) Singapore Changi Airport P.O. Box 1 Singapore 918141	Tel: (65) 6541-2405	Fax: (65) 6545-6516 E-mail: Lena_Nicole_Hong@caas.gov.sg
SRI LANKA (1)			
Mr. Ananda Senaratne	Assistant Director (ATS) Department of Civil Aviation 64, Galle Road, Colombo 3 Sri Lanka	Tel: 94-1-436-324	Fax: 94-1-440-231 E-mail: anandas@sierra.lk

Name	Title/Organization	Tel.:	Fax No.: E-mail
THAILAND (15)			
Dr. Danai Lekhyananda	Senior Air Transport Economic Advisor Office of the Permanent Secretary Ministry of Transport and Communications Ratchadamnoen-Nok Road Bangkok 10100 Thailand	Tel: (66-02) 283-3139	Fax: (66-02) 281-8958 E-mail: danai@motc.go.th
Mr. Nimitr Sritirat	Senior Engineer Air Navigation Facilities Division Department of Aviation 71 Soi Ngarmduplee, Tungmahamek, Sathorn, Bangkok 10120 Thailand	Tel: (66-02) 287-2634	Fax: (66-02) 287-2634 E-mail: -
Mr. Surasit Jitourtrakul	Senior Electrical Engineer Air Navigation Facilities Division Department of Aviation 71 Soi Ngarmduplee, Rama IV Road Bangkok 10120 Thailand	Tel: (66-02) 287-3194	Fax: (66-02) 287-2634 E-mail: jsurasit@hotmail.com
Mr. Vanchai Srimongkol	Chief of Communication Branch Communication and Air Traffic Control Division Department of Aviation 71 Soi Ngarmduplee, Rama IV Road Bangkok 10120 Thailand	Tel: (66-02) 286-2909	Fax: (66-02) 286-2909 E-mail: svanchai@aviation.go.th
Miss. Tawika Yodnuan	Air Transport Technical Officer Communication and Air Traffic Control Division Department of Aviation 71 Soi Ngarmduplee, Rama IV Road Bangkok 10120 Thailand	Tel: (66-02) 287-0320-9 Ext. 1400	Fax: (66-02) 286-2909 E-mail: tawika@aviaiton.go.th

Name	Title/Organization	Tel.:	Fax No.: E-mail
THAILAND (Cont'd)			
Mr. Takashi Kuratomi	JICA Expert Ministry of Transport and Communication Department of Aviation 71 Soi Ngarmduplee, Rama IV Road Sathorn, Bangkok 10120 Bangkok 10120 Thailand	Tel: (66-02) 287-0320-9 Ext. 1288 or 01-755-3147	Fax: (66-02) 286-4523 E-mail: kuratomi@aviation.go.th
Mr. Kalchit Sungwaranond	Director of Aeronautical Meteorological Division Aeronautical Meteorological Division Control Tower 3rd Floor Bangkok international Airport Bangkok 10210 Thailand	Tel: (66-02) 504-2470	Fax: (66-02) 535-1196 E-mail: -
Mr. Vichit Phuangsombat	Chief of Aeronautical Weather Forecasting Thai Meteorological Department Sub-Division Aeronautical Meteorological Division Bangkok international Airport Bangkok 10210 Thailand	Tel: (66-02) 535-1780	Fax: (66-02) 504-2471 E-mail: -
Mr. Wiboon Kulartyut	Chief Engineer Avionics System Group Technical Department Thai Airways International Public Co., Ltd. 89 Vibhavadi Rangsit Road Bangkok 10900 Thailand	Tel: (66-02) 563-8256	Fax: (66-02) 504-3360 E-mail: wiboon.k@thaiairways.co.th
F.O. Prapont Chittaputta	Senior Air Navigation Instructor Aeronautical Services Division Civil Aviation Training Center 1032/355 Phaholyothin Road Ladyao, Jattujak, Bangkok 10900 Thailand	Tel: (66-02) 272-6029	Fax: (66-02) 272-5288 E-mail: -

Name	Title/Organization	Tel.:	Fax No.: E-mail
THAILAND (Cont'd)			
S.L. Watana Manon	Senior Instructor Aeronautical Services Division Civil Aviation Training Center 1032/355 Phaholyothin Road Ladyao, Jattujak Bangkok 10900, Thailand	Tel: (66-02) 272-6209	Fax: (66-02) 272- E-mail: wat.wx@thaimail.com
Mr. Kumtorn Sirikorn	Vice President Air Traffic Service Operations Bureau Aeronautical Radio of Thailand Ltd. (AEROTHAI) 102 Soi Ngarmduplee Tungmahamek, Sathorn Bangkok 10120, Thailand	Tel: (66-02) 285-9905	Fax: (66-02) 285-9995 E-mail: kumtorn@aerothai.or.th
Mr. Anon Tantrakul	Director Air Traffic Control Navigation Systems Engineering Department Aeronautical Radio of Thailand Ltd. (AEROTHAI) 102 Soi Ngarmduplee Tungmahamek, Sathorn Bangkok 10120, Thailand	Tel: (66-02) 285-9514	Fax: (66-02) 285-9516 E-mail: anonta@aerothai.or.th
Mr. Nuttakajorn Yanpirat	Engineer Vice President Office Air Traffic Service Engineering Bureau Aeronautical Radio of Thailand Ltd. (AEROTHAI) 102 Soi Ngarmduplee Tungmahamek, Sathorn Bangkok 10120, Thailand	Tel: (66-02) 287-8311	Fax: (66-02) 285-9486 E-mail: nuttakajorn.ya@aerothai.or.th
Mr. Prakit Suwannabhokin	General Administrative Manager ATS Operations Bureau Aeronautical Radio of Thailand Ltd. (AEROTHAI) 102 Soi Ngarmduplee Tungmahamek, Sathorn Bangkok 10120, Thailand	Tel: (66-02) 285-9076	Fax: (66-02) 285-9648 E-mail: prakit.su@aerothai.or.th

Name	Title/Organization	Tel.:	Fax No.: E-mail
TONGA (1)			
Mr. ?Ahovaleamapa Faletau	Secretary for Civil Aviation Ministry of Civil Aviation P.O. Box 845 Queen Salote Raod Nuku'alofa Tonga	Tel: (676) 24-144 & (676) 24-045	Fax: (676) 24-145 E-mail: afaletau@mca.gov.to
UNITED STATES (4)			
Ms. Elizabeth Erickson	Director, Asia and Pacific Region Federal Aviation Administration American Embassy 27 Napier Road Singapore 258508	Tel: (65) 6543-1466	Fax: (65) 6543-1952 E-mail: beth.erickson@faa.gov
Mr. Theodore H. Davies	Program Director International Research and Development Office Federal Aviation Administration 800 Independence Avenue SW, Room 928 Washington, DC 20591 U.S.A.	Tel: (1-202) 267-7894	Fax: (1-202) 267-5074 E-mail: ted.davies@faa.gov
Ms. Leslie S. McCormick	Acting Deputy Manager ATS International Staff Air Traffic Services Federal Aviation Administration 800 Independence Ave., SW Washington, DC 20591 U.S.A.	Tel: (1-202) 267-7646	Fax: (1-208) 246-6014 E-mail: Leslie.McCormick@faa.gov
Mr. Eric Harrell	Deputy Program Director Air Traffic Planning and Procedures Program Air Traffic Services Federal Aviation Administration 800 Independence Ave., SW, Room 634 Washington, DC 20591 U.S.A.	Tel: (1-202) 267-9155	Fax: (1-202) 267-5304 E-mail: eric.harrell@faa.gov

Name	Title/Organization	Tel.:	Fax No.: E-mail
VIET NAM (2)			
Mr. Doan Khac Manh	Chief of Staff Civil Aviation Administration of Viet Nam Gialam Airport, Hanoi Viet Nam	Tel: (84-4) 873-1611	Fax: (84-4) 8-271-933 E-mail: ubfai@fpt.vn
Mr. Nguyen Manh Quang	Deputy Chief ATS/AIS Viet Nam Air Traffic Management (CAAV) Gialam Airport, Hanoi Viet Nam	Tel: (84-4) 873-0320	Fax: (84-4) 8-272-597 E-mail: vatmats@hn.vnn.vn
IATA (2)			
Mr. David C. Behrens	Director Operations & Infrastructure Regional Office – Infrastructure (Asia/Pacific) International Air Transport Association 77 Robinson Road #05-00 SIA Building Singapore 068896	Tel: 65- 6239 7161	Fax: 65-6536 6267 E-mail: behrensd@iata.org
Capt. Aric Oh	Management Pilot, Flight Operations Technical International Air Transport Association (Singapore Airlines) 161 Tai keng Gardens Singapore 535433	Tel: 65-6540 3694	Fax: 65 6542-9564 E-mail: aric_oh@singaporeair.com.sg
IFALPA (1)			
Captain Mohsin M. Malik	Regional Vice-President for Asia/West International Federation of Air Line Pilots' Associations 68/II, 9th St. KH.i.Badar Phase 6 D.H.S. Karachi, Pakistan	Tel: 92-21-585-0227	Fax: - E-mail: mnszn@akunet.org

Name	Title/Organization	Tel.:	Fax No.: E-mail
IFATCA (1)			
Mr. Neil Vidler	Technical Representative International Federation of Air Traffic Controllers Associations 1 Highbridge Road, Killara Sydney Australia 2071	Tel: (612) 9366-3174	Fax: (852) 9366-3111 E-mail: vidler_n@casa.gov.au
IBAC (1)			
Mr. James D. Erickson	Technical Representative International Business Aviation Council, Ltd. US Embassy Singapore 27 Napier Road Singapore 258508	Tel: 65-6346-3691	Fax: 65-6346-1795 E-mail: jamesderickson@hotmail.com

International Civil Aviation Organization

THIRTEENTH MEETING OF THE
ASIA/PACIFIC AIR NAVIGATION PLANNING AND
IMPLEMENTATION REGIONAL GROUP (APANPIRG/13)
Bangkok, 9 to 13 September 2002

List of Papers

Paper No	Agenda Item	Title	Presented by
Information Papers			
IP/1	-	Meeting Bulletin	Secretariat
IP/2	3	Environmental Issues Related to Implementation of CNS/ATM System	Australia
IP/3	2.1	ASIA/PAC Air Navigation Plan Amendment APAC 98/8-ATS/COM/MET/SAR/AIS	New Zealand
IP/4	2.2	ADS-B Potential for Asia Pacific	Australia
IP/5	3	Seminar on Datalink Operations	Japan
IP/6	2.4	APANPIRG Year in Review Report	IATA
IP/7	2.1	Search and Rescue Services in Nepal	Nepal
IP/8	3	Development of Air Navigation System	Nepal
IP/9	2.2	GPS and Geo Augmented Navigation	India
IP/10	3	Work Programme Review and Issues	Chairman SG
IP/11	3	ADS-B in Mongolia	Mongolia
IP/12	7	Global Safety Statistics for Business Aircraft	IBAC
IP/13	3	Transfer of APARMO Responsibilities from FAA to AEROTHAI	USA
IP/14	3	National CNS/ATM Plan – Status Update	Fiji

Working Papers

Paper No	Agenda Item	Title	Presented by
WP/1	-	Provisional Agenda	Secretariat
WP/2	1	Review of Council and ANC Actions on the Report of the 12th meeting of the APANPIRG (APANPIRG/12)	Secretariat
WP/3	2.1	ATS/AIS/SAR/SG 12 Report	Chairman SG
WP/4	2.1	Revised ICAO Guidelines on Use of Lateral Offsets	Secretariat
WP/5	2.2	CNS/MET/SG 6 Report	Chairman SG
WP/6	2.2	ICAO Position for WRC 2003	Secretariat
WP/7	2.3	Results of ICAO Co-ordination Groups and Related Meetings	Secretariat
WP/8	2.4	A Statement of Basic Operational Requirements and Planning Criteria (BORPC)	Secretariat
WP/9	2.4	Aerodrome Certification & Expansion of IUSOAP to Annex 14	Secretariat
WP/10	2.4	Need for Adequate Resources for Regional Traffic Forecasting Groups	Secretariat
WP/11	2.4	Agenda, Date, Organization and Site for the Eleventh Air Navigation Conference (2003)	Secretariat
WP/12	2.4	ICAO Asia/Pacific Regional Office Support for Technical Cooperation to Afghanistan	Secretariat
WP/13	3	CNS/ATM/IC/SG 9 Report	Chairman SG
WP/14	3	Revision of Guidance Materials on CNS/ATM Operations in the Asia/Pacific Region	Secretariat
WP/15	3	Establishment of a Regional Airspace Safety Monitoring Agency (RASMA)	Secretariat
WP/16	3	Report on Global and Regional Developments In the Modernization of Air Navigation Systems	Secretariat
WP/17	4	Deficiencies in the Air Navigation Field	Secretariat
WP/18	4	Resolution of Air Navigation Deficiencies	Secretariat

Paper No	Agenda Item	Title	Presented by
WP/19	5	Follow-up action on APANPIRG/12 Conclusions and Decisions	Secretariat
WP/20	5	Status of Outstanding Conclusions and Decisions of APANPIRG	Secretariat
WP/21	6	Future Work Programme	Secretariat
WP/22	2.4	Agenda, date, organization and site for Fifth Worldwide Air Transport Conference	Secretariat
WP/23	2.2	ADS-B Study and Implementation Task Force	Australia
WP/24	3	Environmental Issues Related to Implementation of CNS/ATM System	Australia
WP/25	2.2	ADS-B Study and Implementation Task Force	Fiji
WP/26	2.3	Special Coordination Meeting on Afghanistan Airspace	Secretariat
WP/27	2.1	Assessment of Non-State Approved Operators Using Pacific RVSM Based on an April 2002 Traffic Sample	USA
WP/28	2.1	Summary of EMAARSH TF/8 Meeting	Secretariat
WP/29	2.2	Procedures to ensure Spectrum Availability and Protection Aeronautical Mobile Satellite (R) Service	Japan
WP/30	3	Progress Report & Role of AEROTHAI in Supporting Safety Aspects for RVSM Implementation in Asia Region	Thailand