# 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.

3-2	APANPIRG/13	
	Report on Agenda Item 3	

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 Thaland, 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 puter 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 33<sup>rd</sup> Session of the ICAO Assembly held at Montreal from 25 September to 5October 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 33<sup>rd</sup> 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 <u>www.austatmsp.gov.au</u> 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 <u>www.airways.co.nz</u> and CAA <u>www.caa.govt.nz</u>, which will be linked to the ICAO Asia/Pacific Regional Office web-site

# $\mathbf{38}^{\mathrm{th}}$ 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 11<sup>th</sup> 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/	ATN G/G	AIDC	CPDLC	GNSS		ADS-B	ADS-C	Remarks
Organization	Boundary Intermediate System (BIS) Router/AMHS			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/	ATN G/G	AIDC	CPDLC	GNSS		ADS-B	ADS-C	Remarks
Organization	Boundary Intermediate System (BIS) Router/AMHS			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/	ATN G/G	AIDC	CPDLC	GNSS		ADS-B	ADS-C	Remarks
Organization	Boundary Intermediate System (BIS) Router/AMHS			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/	ATN G/G	AIDC	CPDLC	GNSS		ADS-B	ADS-C	Remarks
Organization	Boundary Intermediate System (BIS) Router/AMHS			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/	ATN G/G	AIDC	CPDLC	GNSS		ADS-B	ADS-C	Remarks
Organization	Boundary Intermediate System (BIS) Router/AMHS			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/	ATN G/G	AIDC	CPDLC	GNSS		ADS-B	ADS-C	Remarks
Organization	Boundary Intermediate System (BIS) Router/AMHS			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/	ATN G/G	AIDC	CPDLC	GNSS		ADS-B	ADS-C	Remarks
Organization	Boundary			NPA Supplemental Means	En-route			
	Intermediate System			(S)	Supplemental			
	(BIS) Router/AMHS			Primary means	Means			
				( <b>P</b> )	(S)			
					Primary means			
					( <b>P</b> )			
VIETNAM	ATN BIS Router	ATN based	Planned for	Planned for NPA (S) for 2004.	Implemented as (S)		FANS 1/A ADS-C	Most of air space in
	planned for 2003 and	AIDC planned	2004.		planned for 2004.		planned for 2004.	Hanoi and Ho-Chi-
	AMHS in 2005.	between Ho-						Minh FIRs covered
		Chi-Minh and						by RADAR.
		Bangkok in						
		2005.						

### 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	Completed
		-		<b>ATN</b> Transition	Completed development of the Plan
				Task Force	
2	Incorporation of CNS/ATM	To reflect regional agreement for the	APANPIRG/13	All	On-going
	Material into Regional ANP	implementation of CNS/ATM facilities and			CNS/MET SG/5 established
	& FASID	services and the determination of priorities for			Working Group to incorporate
		financing.			CNS/ATM materials in the
					Regional Procedure Part CNS
					FASID.
3	Revised South China Sea	Successful implementation of this important	1 November	ATS/AIS/SAR	Implemented
	ATS Route Implementation	route structure alleviates airspace congestion and	2001		
		provides a project model for similar route			
		structure activity elsewhere in the Region.			
4	WGS-84 Implementation	To achieve uniformity in aeronautical data	Immediate	ATS/AIS/SAR	Implementation is monitored at
		publication across the Region in order to ensure	(Effective Date		each meeting using the uniform
		a standard reference system for CNS/ATM.	was 1 Jan 1998)		format for the reporting of WGS-84
					implementation.
					Report progress to APANPIRG/13.

No.	Key Priority	Description	Milestone	Sub-group	Status
5	<b>RVSM</b> Implementation	To provide more efficient flight profiles and to	Phase 1:	ATS/AIS/SAR	Phased implementation.
		increase airspace capacity in conjunction with	21 Feb 2002 –		<b>RVSM</b> Implemented in the Pacific
		the implementation of CNS/ATM.	Western		24 Feb 2000.
			Pacific/South		
			China Sea		
			Dhase 2.		
			$31 \text{ Oct } 2002_{-}$		
			Hong Kong FIR		
			and Sanva AOR		
			Vientiane.		
			Hanoi. Jakarta.		
			Ujung Pandang,		
			Bali FIRs.		
			Phase 3:		
			27 Nov 2003-		
			Asia to Europe		
			South of the		
			Himalayas		
			and beyond		
6	RNP Implementation	Global standard for navigation is seen as a	RNP-10/South	ATS/AIS/SAR	Phased implementation.
		prerequisite for many CNS/ATM	China Sea 2001. DND $10/$		CENDAC, CED & Tagman Sag
		implementation activities.	KINP-10/	CNS/ATM/IC	CEMPAC, CEP & Tasinan Sea.
			Australia -		
			29 Nov 2001		Implemented
			RNP-10/Bay of		Implemented
			Bengal/Arabian		
			Sea 28 Nov		
			2002		

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	<ul> <li>Phased implementation.</li> <li>Revised Regional CNS/ATM</li> <li>Guidance Material developed containing ADS section.</li> <li>Implementation focus and timetable need to be developed.</li> <li>States are gaining experience in the use of ADS</li> </ul>
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	<ul> <li>Phased implementation Sub-groups to develop plan and report progress to APANPIRG/13</li> <li>GNSS Implementation Workshop was held in May 2001.</li> <li>States are encouraged to implement GNSS for En-route and NPA functions.</li> <li>States advised to participate in the GNSS Measurement Campaign and the result of the campaign presented to the CNS/ATM/IC/SG9.</li> <li>GNSS Implementation checklist was developed and forwarded to States.</li> <li>GNSS strategy was reviewed.</li> </ul>
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	<ul> <li>WAFS Transition Plan and Procedures has been developed and is being successfully implemented.</li> <li>Transfer of responsibility of RAFCs to WAFCs London and Washington has been implemented.</li> <li>Closure of RAFCs has been implemented.</li> </ul>
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	<ul> <li>The first draft of MET Chapter of the Regional CNS/ATM Plan has been developed.</li> <li>METATM TF to develop MET components of the ASIA/PAC CNS/ATM concept/strategy.</li> </ul>
14	Data – link Communications	<ol> <li>Implementation of CPDLC (with HF and/or SATCOM back-up) in oceanic or remote airspace.</li> <li>AIDC to be introduced where ATS automated systems are implemented.</li> </ol>	2002	All	Sub – Groups to review progress of implementation. Implementation focus and time table need to be developed.

APANPIRG/13 Appendix C to the Report on Agenda Item 3

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	APANPIRG/14	All	
		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.		ATS/AIS/SAR	
		c) note the development of separation standards.		ATS/AIS/SAR	
		d) determined a date for the mandatory carriage of the selected ADS-B link by aircraft in the Asia Pacific again.		CNS/MET	
		e) encourage standardization of the selected ADS-B link with transmit only systems that include integrated GPS capability.			

# CONTRIBUTORY BODIES OF APANPIRG and ASSOCIATED GROUPS

Title	SG Responsible	Decision	ToR	Report Date
ADS-B Study and Implementation Task Force	APANPIRG	CNSMET	Appendix K	
		DC6/9		
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	D12/x	Suspended until when needed for	Suspended
	SG		further work	
ANP/FASID Review Working Group	CNSMET 5	D5/24		CNSMET 6
		D6/23		dissolved
AOP Study/Sub Group??	ICAO	DGCA		
		R3.17.6		
APANPIRG 7 Training Task Force	APANPIRG 7			
ASIA/PAC OPMET Exchange Task Force	CNSMET	DD6/17	Appendix R	
(OPMET/E TF)				
ASIA/PAC Volcanic Ash Task Force (VA	CNSMET	DD6/20	Appendix S	
TF)				
ASIA/PAC WAFS Transition Task Force	CNSMET5	D5/16	Appendix Q	
		DD6/16		
ASIA/PACIFIC Area Traffic Forecasting	?			
Group ATA TFG				
Asia/Pacific Safety Management TF	APANPIRG 12	D12/44	APANPIRG 12 Appendix 3B	APANPIRG 13
(Asia Pacific Regional System Performance				
Monitoring Organisation TF)				
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	APANPIR		
		G 9/42		
CNS/ATM Implementation Team			APANPIRG 12	
CNS/ATM Training and Human Resource	APANPIRG 9	D9/39	Report	
Development Task Force				
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	ATS/AIS/SAR	3.1.32		
Performance Working Group	SG RVSM TF			

### 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	overtaken
			Task Force (OPMET/E TF)	
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	ICAO	DGCA		
subgroup		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.

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#### 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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