



INTERNATIONAL CIVIL AVIATION ORGANIZATION

ASIA AND PACIFIC OFFICE

**REPORT OF THE SIXTH MEETING
COMMUNICATIONS, NAVIGATION AND SURVEILLANCE/
METEOROLOGY SUB-GROUP (CNS/MET/SG/6) OF APANPIRG**

BANGKOK, THAILAND 15 – 19 JULY 2002

The views expressed in this Report should be taken as those of the Sub-Group and not of the Organization. This Report will be submitted to the APANPIRG/13 Meeting and any formal action taken will be published in due course as a Supplement to the Report of the APANPIRG Meeting.

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

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1. Introduction

1.1 The Sixth Meeting of the Communications, Navigation and Surveillance/Meteorology Sub-Group (CNS/MET/SG/6) of Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) was held in Bangkok, Thailand from 15 to 19 July 2002.

2. Attendance

2.1 The meeting was attended by 69 experts from Eighteen States, two International Organizations and one communication service provider. A list of participants is in Attachment 1.

3. Opening of the Meeting

3.1 On behalf of Mr. Lalit B. Shah, Regional Director, ICAO Asia and Pacific Office, Mr. K.P. Rimal, welcomed all participants to Bangkok and provided an overview of the objectives and the developments taken place in the CNS and MET fields since the last meeting.

3.2 Mr. Jeffrey Bollard, Chief Engineer of Airservices Australia, opened the meeting and highlighted issues to be addressed by the meeting.

4. Officers and Secretariat

4.1 Mr. Jeffrey Bollard, Chairman of the Sub-Group presided over the meeting.

4.2 Mr. K .P. Rimal, Regional Officer, CNS acted as Secretary of the meeting who was assisted by Mr. Dimitar H. Ivanov, Regional Officer, Aeronautical Meteorology, and Mr. Li Peng, Regional Officer, CNS of the ICAO Asia and Pacific Office, Bangkok.

5. Agenda of the Meeting

5.1 The agenda adopted by the meeting was as follows:

- Agenda Item 1: Review:
a) Terms of Reference and Subject /Tasks List of the CNS/MET/SG
b) status of actions on the report of the CNS/MET/SG/5 Meeting
- Agenda Item 2: Aeronautical Fixed Service (AFS) communications
- Agenda Item 3: ATN transition planning
- Agenda Item 4: Air-ground communications
- Agenda Item 5: Radio Navigation Aids
Maintenance of conventional systems
- Agenda Item 6: Review:
a) Strategy for the provision of Precision Approach and Landing Guidance Systems
b) GNSS strategy
c) GNSS implementation
d) GPS measurement campaign
- Agenda Item 7: Surveillance:
Automatic Dependent Surveillance (ADS) developments

- Agenda Item 8: Preparation for World Radiocommunication Conference 2003 (WRC-2003)
- Agenda Item 9: Consideration of training needs for engineering/technical staff
- Agenda Item 10: Review:
a) implementation of the ISCS and SADIS
b) transition to the final phase of WAFS
- Agenda Item 11: Exchange of OPMET information
- Agenda Item 12: Implementation of International Airways Volcano Watch (IAVW)
- Agenda Item 13: Quality assurance/performance monitoring in MET field
- Agenda Item 14: Regional preparations for the MET Divisional Meeting (2002)
- Agenda Item 15: Deficiencies in the COM/NAV/SUR and MET fields
- Agenda Item 16: Review the CNS and MET parts of ASIA/PAC Basic ANP and FASID
- Agenda Item 17: Future Work Programme
- Agenda Item 18: Any other business

6. Organization, Working arrangement, Language and Documentation

6.1 The working language was English inclusive of all documentation and this report. The CNS and MET Working Groups met separately on 15,16 and 17 July 2002 to deal with the specific tasks. A list of Working Papers and Information Papers presented at the meeting is at Attachment 2.

7. Terms of Reference of the CNS/MET Sub-Group

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.

8. Conclusions and Decisions - Definition

8.1 The CNS/MET Sub-Group of APANPIRG records its actions in the form of draft Conclusions and Decisions with the following significance:

- a) Draft Conclusions deal with matters which, in accordance with the Sub-Group's Terms of Reference, require the attention of States or actions by ICAO in accordance with establishment procedures;
- b) Draft Decisions relate solely to matters dealing with the internal working arrangements of APANPIRG and its contributory bodies; and
- c) Decisions relate solely to matters dealing with internal working arrangement of the CNS/MET Sub-Group only.

Reference No.	Title	Page
Draft Decisions		
6/1	Amendments to the Terms of Reference and the Subject/Tasks List of the CNS/MET Sub-Group	1
6/7	Revision of the Subject/Tasks List of the ATN Transition Task Force	11
6/16	TORs of ASIA/PAC WAFS Transition Task Force	31
6/17	ASIA/PAC OPMET Exchange Task Force (OPMET/E TF)	32
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Draft Conclusions		
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6/11	Preparation for World Radiocommunication Conference – 2003 (WRC 2003)	24
6/12	SADIS strategic assessment tables	26
6/13	Regional survey on the States' plans for transition to GRIB and BUFR coded WAFS products	30
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Reference No.	Title	Page
Draft Conclusions		
6/18	Inclusion of SIGMET in VOLMET broadcasts	33
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- Agenda Item 1: Review:**
a) Terms of Reference and Subject /Tasks List of the CNS/MET/SG
b) Status of actions on the report of the CNS/MET/SG/5 Meeting

Terms of Reference and Subject Tasks List

1.1 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 noted 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.

1.2 An updated TOR and the Subject/Tasks List are provided in Appendix A. The meeting formulated the following draft decision for adoption of the proposed amendments to the TOR and Tasks List.

Draft Decision 6/1 - 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 A be adopted.

Status of Actions on the Report of the CNS/MET SG/5 Meeting

1.3 The meeting carried out a review of the actions taken by APANPIRG, Air Navigation Commission and the Council on Decisions and Conclusions formulated by the fifth meeting of the Sub-Group. Actions taken by States and the ICAO Secretariat were also reviewed. The meeting noted with satisfaction, actions taken on all the Decisions and Conclusions of the fifth meeting. The results of the review in the CNS and MET fields are provided in Appendix B.

Outstanding Conclusions

1.4 The status of implementation of the Outstanding Conclusions of APANPIRG was reviewed. It was noted with appreciation that, of the 16 Outstanding Conclusions, actions on 8 were completed.

1.5 While reviewing the status of Outstanding Conclusions, it was noted that actions were completed on Conclusions 10/12 and Conclusion 11/24. These Conclusions had been superseded by Conclusion 12/12 and Conclusion 11/19. The list of Outstanding Conclusions was updated to indicate progress. The updated list is provided in Appendix C.

Key Priorities in the CNS/ATM Implementation

1.6 The meeting reviewed the Key Priorities for CNS/ATM Implementation and noted that the CNS/ATM/IC/SG/9 meeting had proposed to include a new item on ADS-B in the list of Key Priorities. The details are provided in paragraph 7.10 under Agenda Item 7.

1.7 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 although it is not an element of the CNS/ATM System to be included in the List of Key Priorities. It was noted that this matter would be brought to the attention of ATS/AIS/SAR Sub-Group of APANPIRG.

Agenda Item 2: Aeronautical Fixed Service (AFS) communications

2.1 Under this agenda item, the meeting reviewed the implementation status of AFTN circuits in the ASIA/PAC region based on the reports of the Fourth ATN Transition Task Force meeting and the COM coordination meeting. The main highlights of the AFTN communication improvements during 2001 and early 2002 were as follows:

2.1.1 AFTN Circuits:

- Guangzhou/Sanya 2400 bps circuit was established and became operational on 9 August 2001;
- Hong Kong/Sanya 2400 bps circuit was established and operational on 9 August 2001;
- Hong Kong/Manila circuit was upgraded from dual 75 baud to 300 baud on 21 December 2001;
- Singapore/Manila circuits was upgraded from 75-baud circuits to 300 baud on 30 October 2001;
- Singapore/Jakarta circuit was upgraded to 2400 bps on 10 October 2001;
- Christchurch./Papeete circuit was upgraded to 2400 bps from 300 baud in November 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.

2.1.2 Message Switching System

- An Unified Message Switching System (UMSS) was commissioned at the new Nadi ATM Centre, Fiji in August 2001

2.2 The meeting reviewed and further updated the status of AFTN circuits specified in the Table CNS 1A - AFTN Plan. The updated AFTN Plan with target dates of upgrading of various circuits is provided in Appendix D.

AFTN Circuits Performance

2.3 On the basis of the review of AFTN circuit loading statistics, the meeting identified the need to closely monitor loading and to upgrade capacity of the AFTN circuits. Accordingly, the meeting endorsed the following draft conclusion formulated by the AFTN Transition Task Force.

Draft Conclusion 6/2 - 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. Brunei/Singapore | 5. Mumbai/Nairobi |
| 2. Colombo/Male | 6. Kuala Lumpur/Chennai |
| 3. Colombo/Singapore | 7. Tokyo/Singapore |
| 4. Mumbai/Colombo | 8. Tokyo/Moscow |

2.4 The meeting noted that Mumbai/Paro circuit would be implemented upon commissioning of the new AFTN switch at Paro by the end of 2002.

2.5 Based on the loading statistics provided by Japan for the first week of April, May and June 2002, the loading on the Tokyo/Singapore AFTN circuit was found to be on the higher side. The circuit is, therefore, planned to be upgraded by the end of 2002.

2.6 Regarding the loading of the Tokyo/ Moscow AFTN circuit, Japan informed the meeting that the peak hour circuit occupancy had reached as high as 70 percent. It was informed that Japan would give positive consideration to upgrade the signaling speed of the circuit. It was further noted that the loading on the Tokyo/Khavarovsk circuit was only 2 percent of the circuit capacity. It was therefore agreed that both States would coordinate the appropriate technical solution to upgrade the Tokyo/Moscow circuit from 200 bauds to 2400 bps by the end of 2003. In order to upgrade the Moscow/Tokyo AFTN circuit, Japan and Russian Federation agreed, as an initial step, to find out from their respective telecommunication service providers the cost for the entire circuit. It was noted that the normal practice in the region is to bear cost for half circuit by each administration. It was also agreed that Japan and the Russian Federation will exchange information on cost of leased landline and satellite channel by the end of August 2002 providing ICAO Secretariat copies of their communication.

2.7 Sri Lanka presented AFTN loading statistics for main circuits conducted by Colombo Main AFTN Centre for period from January to June 2002. The average traffic loading over circuits between Colombo and Singapore, Mumbai and Male had reached higher than 40%. According to the result of loading statistics, an urgent need to upgrade these international AFTN circuits was recognized. It was informed that first round of tests had been conducted for the Colombo/Mumbai AFTN circuit in June 2002. Singapore confirmed that the Colombo/Singapore circuit will be upgraded in accordance with the date specified in the AFTN Plan. The meeting was informed that Maldives is also ready for upgrade the Colombo/Male circuit by the end of 2002 as indicated in the AFTN Plan.

Inter-regional AFTN entry/exit point

2.8 The meeting was informed 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 will be made during the fourth quarter of 2002.

2.9 New Zealand informed the meeting 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. New Zealand also informed the meeting of their 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. The meeting agreed to include the requirements for the AFTN circuits in the AFTN Table as the proposal for amendment to Table CNS 1A - AFTN Plan is expected to be processed in accordance with established procedures.

2.10 The United States informed the meeting of their plan to upgrade USA/Fiji AFS communications circuits and establish the USA/New Zealand AFS circuits with configurable voice/data multiplexing platform. The new USA/Fiji circuit will support X.25 AFTN circuit, 8 Kbps compressed voice channel, weather data and ATN service with a 64 Kbps trunk circuit. The planned USA/New Zealand AFS 64 Kbps 4-wire circuit is scheduled to be operational between October and December 2002. The proposed services on this circuit will include ATS voice circuit, X.25 AFTN/AIDC data channel, potential ATN channel and MET services, etc.

2.11 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. The circuit details will be provided to the Secretariat for inclusion in AFTN Table.

Delivery of AFTN Traffic over the public Internet

2.12 The meeting noted that Australia has a number of neighbouring small Island States for which the use of dedicated AFTN facilities are either not available or are uneconomical to operate and maintain such services. Current alternative method to provide AFTN traffic to these countries 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.

2.13 The system implemented in Australia consists of a software application, which operates on a standard PC under Windows NT. The application interfaces to the AFTN switch physically at V24 level providing further isolation from hacking and operates utilizing standard AFTN procedures. Security of the system is maintained by the use of firewalls and encryption. Access for data input is via a Web page utilizing a URL, which is not published and incorporates SSL encryption. Use of this screen requires access to a user logon/password. The current international users of the system are: Honiara (Solomon Is) since March 2001; Dili since February 2002; Diego Garcia since November 2001; Nauru on trials since February 2002. A number of domestic users such as airlines within Australia are using the service. Australia provided details on the use of the public Internet for AFTN connectivity using a gateway (AGATE) designed and built by Airservices Australia to interface to the AFTN. The purpose of the AGATE is to provide an alternative communications medium for AFTN connectivity to sites of low traffic requirements. The system provides for email delivery of traffic to users and provides a WEB based tool for input. The system may be accessed from anywhere in the world that has an Internet Service Provider connection and entered into an arrangement with Airservices Australia for AGATE access. This gateway could also be implemented as an attachment to any AFTN switch enhancing its connectivity.

2.14 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 dissemination of AFTN messages.

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.

2.15 It was 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.

2.16 The Task Force had 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.

2.17 IATA stated that as the ATN is a totally X.25 network, States should therefore be encouraged to establish or upgrade any new AFTN circuits in the Region during 2002 – 2005 only with the X.25 protocol.

2.18 Expert from Russia informed the meeting of a plan of modern fixed communication infrastructure to support new ATM infrastructure under which, number of Russian ATC centers would be reduced to 20 from existing 128 centres. The new satellite based communication infrastructure will be implemented by 2011. The system will support ATS voice ground-ground communication requirement as well as ATN applications.

COM Co-ordination Meeting

2.19 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, China.

2.20 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.

2.21 The meeting reviewed the requirements of AFTN and ATS direct speech circuit plans for the area considered by the meeting. The meeting also reviewed the implementation and current operational status of the concerned circuits.

2.22 The meeting also noted ICAO Assembly Resolution A33-14, Appendix M which calls for States to give priority to the implementation of those facilities and services, the lack of which, would likely to have a serious effect on international air operations.

2.23 The meeting noted that the unreliable AFS communications between Dhaka and Kolkata FIRs is 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. India provided some updated information on the current status including the provision made for a hotline at Kolkata end to support the direct speech circuit between Kolkata and Dhaka. However, no progress had been made so far for upgrading the AFTN circuit between the two stations.

2.24 Serviceability and loading statistics for the concerned circuits were reviewed by the meeting. The meeting noted that the Dhaka/Kolkata HF RTT circuit serviceability in March and April 2002 was indicated much below 50 percent. In this regard, the meeting was advised of the proposal made at the ATN Transition Task Force/4 meeting for the provision of an alternate routing via Bangkok and Mumbai.

2.25 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.

2.26 China had proposed a solution for upgrading 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 would be cheaper 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. Representative from Pakistan agreed to co-ordinate proposal made by China to upgrade the circuit by May 2003.

VSAT technology used for AFS communications

2.27 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. It was noted that the serviceability is higher than those private circuits leased from PTT. The MTBF of VSAT module and parts is pretty high. Some VSAT remote stations have been running for more than six years without failure. MTBF for RF outdoor unit is more than 2 years.

2.28 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 use the VSAT technology especially for those integrated data and voice requirements where two separate data/voice circuits have been implemented or planned. Accordingly, the meeting formulated the following draft Conclusion:

Draft Conclusion 6/3 - Use of VSAT Technology for AFS

That, States in the Bay of Bengal area consider implementing AFS circuits using VSAT technology to meet AFS communication requirements for data/voice communications and to overcome the last mile problem.

Development of an Action Plan

2.29 The meeting noted that the COM coordination meeting developed an action plan with five agreed action items. The action agreed includes reactivation of the VSAT link between Myanmar and China, rerouting of AFTN traffic between Bangladesh and India. The meeting encouraged States concerned to take necessary action to implement the plan in a timely manner.

Agenda Item 3: ATN transition planning

3.1 Under this agenda item 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. The meeting had formulated 1 Draft Decision, 5 Draft Conclusions and 3 Decisions.

3.2 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 E be considered for inclusion in the Second Edition of the ATN Planning Document. In view of the foregoing the meeting endorsed the draft conclusion as follows:

Draft Conclusion: 6/4 - 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 E be adopted and included in the ATN Planning Document.

3.3 The meeting noted that the Task Force referred that the Router Interface Control Document (ICD) and the policy documents to its Working Group B for further review and to complete the documents for consideration by the fifth meeting of the Task Force in 2003.

3.4 The meeting reviewed the ATS Message Handling System (AMHS) ICD developed by the Task Force. The meeting agreed to recommend adoption of the AMHS ICD contained in Appendix F and publish it as Issue 1 and endorsed the following draft conclusion:

**Draft Conclusion 6/5 - ASIA/PAC Interface Control Document (ICD) for
ATS Message Handling System (AMHS)**

That, the ASIA/PAC ICD for AMHS provided in Appendix F be adopted and published as Issue 1.

3.5 It was noted that significant progress had been made to complete the Router ICD. However, it was recognized that it required further review before the Router ICD is forwarded to the Sub Group as a completed item.

3.6 It was also noted that with regard to the Routing Policy Document, the requirements were considered to be essentially complete, in particular, in support of ground-ground routing policy. However, based on issues raised and discussed, it was recognized that the air-ground routing policy needed further examination. It was further agreed that this document should also be subject to a detailed review in conjunction with the Router ICD. It is expected that the documents would be finalized for review by the Task Force at its 5th Meeting in April 2003.

3.7 A checklist for implementation of ATN ground-to-ground network was presented 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 draft conclusion as follows:

**Draft Conclusion 6/6 - Checklist for Implementation of Ground to Ground
ATN Infrastructure**

That, the Checklist provided in Appendix G be adopted and circulated to States to assist in implementation of the Ground-to-Ground ATN infrastructure.

3.8 It was noted that Hong Kong, China had presented an update on their ATN trial programme with Japan, Australia and Thailand. It was informed that during their trials a number of problems were highlighted in the area of interoperability between systems and interpretation of the SARPs. It was agreed that the best course of action would be for States to provide the required information to the Secretary of the ATN Transition Task Force at the ICAO Asia and Pacific Office or to the ATN Panel Secretary, for advice. Alternatively, members of the Working Group B could be approached directly. If the problem were deemed to be an issue for consideration by the ATN Panel then one of the members of the Working Group B who are also a Panel member would forward the information on to the appropriate Rapporteur of the ATN Panel Working Groups for review.

3.9 The Secretariat advised the meeting that the ATN Planning Documents were forwarded to States in the ASIA/PAC and adjacent regions on 20 February 2002 in accordance with Conclusion 12/13 and 12/14 of the APANPIRG. The ATN Planning Documents included:

- ASIA/PAC Regional ATN Transition Plan
- ASIA/PAC Routing Architecture Plan
- ASIA/PAC ATN Network Service Access Point Addressing Plan
- ASIA/PAC ATN NSAP Address Registration Form
- ASIA/PAC ATS Message Handling System Naming Plan

3.10 The United States had presented a paper at the Task Force meeting, which highlighted activities since the last round of ATN Panel Working Group meetings in Hawaii, USA in March 2001. Of particular interest to this meeting was information that the Third Edition of Doc. 9705 - ***Manual of Technical Provisions for the ATN*** had been prepared and posted in the ICAO website.

3.11 It was further noted that the ICAO has published ***Manual of Technical Provisions for the ATN*** Doc. 9705 – Third Edition in CD-ROM in view of the large size of the document.

3.12 It was also noted that the 33rd session of the ICAO Assembly adopted an updated consolidated statement addressing continuing policy and associated practices related to air navigation. The policy states that SARPS and PANS should be drafted in clear, simple and concise language, consisting mainly of broad, mature and stable provisions specifying system-level, functional and performance requirements. The meeting took note of the policy to apply to the extent possible in the development of regional technical documents.

3.13 Fiji provided an update on their modernization programme with a number of systems being upgraded or replaced and indicated possible leasing arrangements being negotiated for ATN routers. Fiji also confirmed readiness in taking responsibility as an ATN Backbone BIS, which is being considered by Working Group B of the Task Force.

3.14 New Zealand also had indicated willingness to be considered as an ATN Backbone BIS under the ATN Transition Plan for the ASIA/PAC Region.

3.15 The meeting expressed concern that too many Backbone BISs were being requested and that a study should take place based on information from AFTN traffic loads between Australia, Fiji, New Zealand and the USA to assist if any further Backbones should be added between centers in the South Pacific and the USA. The information will be assessed by the Working Group B for consideration and to report back to the Task Force with its deliberations at its 5th meeting in 2003. It was agreed that States concerned would collect required statistics and provide the information for review by the Working Group B.

3.16 The meeting was advised by the Secretariat that at the CNS/ATM IC/SG/9 meeting held in Bangkok in March 2002 it was proposed that in order to simplify the formalities, any future ATN trials should be coordinated through the ATN Transition Task Force. The meeting took note of the view expressed.

3.17 Japan presented a paper regarding the possible use of the Internet Protocol (IP) stack in the ATN environment. The paper explained the differences between pure ATN networks, pure IP networks and the use of IP as an ATN subnetwork using capsulation. The meeting was advised that the Third Joint Working Group meeting of the ATN Panel had issued a draft position statement on the use of IP as a subnetwork for ATN, and that WGB of the ATNP will develop an IP SNDCF to enable the transport of ATN packets over IP subnetworks.

Review Table and Chart for the ground-to-ground part of the CNS FASID - ATN Routers

3.19 The meeting noted that the existing sample Tables and Charts for the Ground-to-Ground part of the ATN for ATS MHS Plan and AIDC Plan were expected to be completed by the end of 2002 as identified in the Subject/Tasks list of the ATN Transition Task Force.

3.20 The meeting noted that the Table CNS 1D-AIDC Plan the Task Force had agreed to refer this matter to the Working Group B for review and for completion of details for presentation at the Fifth meeting of the Task Force in April 2003.

3.21 It was recognized by the Sub Group meeting that the Plan would need to be reviewed to ascertain reflection of operational requirements so it was recognized that the Table would be submitted to the ATS/AIS/SAR SG for review of the ATS requirement for AIDC prior to processing of the Table for adoption by APANPIRG. It was noted that after completion of the Table by the Task Force it would be submitted to the ATS/AIS/SAR/SG in 2003 for review.

Review the Subject/Tasks List of the ATN Transition Task Force

3.22 The meeting reviewed the Terms of Reference (TOR) of the Task Force. It did not recognize the need to propose any change to the TOR. 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 approved by APANPIRG/12 meeting. The target date of completion of actions for Tasks No.5 and 6 were revised.

3.23 The meeting identified the need to undertake, 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 agreed that the proposed tasks be added as No. 7

and No. 8 Tasks respectively, in the Subject/Tasks List. The meeting assigned its Working Group B to undertake these new tasks.

3.24 The meeting updated the Subject/Tasks List in light of the above and formulated the following draft decision:

**Draft Decision 6/7 - 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 H be adopted.

3.25 IATA reminded States that by the time of this report receives appropriate approval, the time remaining for implementation, as agreed in 2000 and again in 2001, would be only 30 months for implementation of the ATN ground-to-ground infrastructure. The Secretariat also emphasized the need to take actions by States to ensure implementation within the established target date.

Next Meeting of the Task Force

3.26 The Fifth Meeting of the Task Force will be held in Shanghai, China from 7 – 11 April 2003.

3.27 The meeting also appreciated the offer made by Indonesia to host the Sixth Meeting of the Task Force in Indonesia in 2004. The date and venue of the Meeting will be advised at the Fifth Meeting of the Task Force.

Meeting Documents

3.29 The documents of this meeting including presentations are posted on the ICAO web site. The address is as follows: <http://www.icao.int/apac/>

Agenda Item 4: Air-ground Communications**Required Communication Performance**

4.1 The meeting reviewed a paper presented by Japan regarding ATN Performance on the air/ground communications, which was presented at the Fourth Meeting of ATN Transition Task Force. The paper was also presented for comments to the Twelfth Meeting of ATS/AIS/SAR Sub Group held in Bangkok, Thailand, 24-28 June 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 is a need to assess the various technical options of communication systems against such a set of parameters including cost and benefits analysis.

4.2 The meeting noted that ATS/AIS/SAR Sub Group had requested the Secretariat to circulate the paper to the States and compile the comments received from States for review by CNS/ATM/IC SG/10, ATN Transition Task Force/5 and then ATS/AIS/SAR SG/13 in 2003.

4.3 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 comments received have been referred back to the OPLINK Panel for further study and developing, as appropriate, Standards and Recommended Practices (SARPs), procedures and guidance manual, relating to the use of RCP in the provision of air traffic services.

4.4 The meeting was informed that there are no operational requirements established in the Asia and Pacific region for the air-ground data communications but some parameters for the ATS direct speech circuits and AFTN message transit time between adjacent FIRs have been established.

Communication function of MTSAT

4.5 Japan informed the meeting of the development of MTSAT system. The 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.

4.6 It was informed 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.

4.7 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

4.8 SITA presented a paper on 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.

Air-ground ATN Data Link

4.9 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. In particular the new SITA VHF Ground System (VGS) will have three operating modes:

4.9.1 Plain Old ACARS (POA) allowing for the support of existing airline applications and ACARS avionics. This service will continue to be supported on existing ACARS frequencies;

4.9.2 ACARS Over AVLC (Aviation VHF Link Control) where aircraft use the AEEC 618 protocol over the ICAO VDL standard AVLC link providing 31.5-kilobit per second capacity. This AOA architecture is very similar to the "ACARS over SATCOM " architecture used over the ICAO AMSS standard air-ground link. Aircraft using VDL AOA will obtain increased capacity over the VHF link but will only be able exchange the messages in the same ACARS formats used over the existing VHF analogue link;

4.9.3 VDL Mode 2 suitable for ATN based air-ground applications will be fully ICAO SARPs compliant.

4.10 The meeting noted that SITA has begun transition to VDL Mode 2 and is making close coordination with airlines and ATS providers.

4.11 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.

Agenda Item 5: Radio Navigation Aids Maintenance of conventional systems

5.1 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

5.2 A paper presented by Australia described 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 – Aging equipment is suffering problems of obsolete designs, no manufacturer support, general deterioration of modules, chassis and antennas and difficulties in sourcing replacement component parts.

Spare and Replacement Parts – Difficulties in obtaining parts due to the special nature and relatively small production runs.

Sourcing New Equipment – The sourcing of new equipment was not considered a problem with a competitive and capable market place for new equipment.

Technician Skills - Long term equipment stability and minimisation of intervention has created a challenge in maintaining technician skills. The difficulty is maintaining sufficient numbers of technicians to minimise restoration times whilst ensuring each technician has sufficient exposure to the equipment to maintain the required level of skill.

Site Constraints - Conventional navigation aids require careful site management to ensure that the performance of the facility is not degraded by development encroaching into the protection area around the aid. Protection areas can represent significant cost in terms of lost opportunity for the development of aerodrome support facilities such as terminals, maintenance hangars and cargo terminals.

Flight Inspection - Regular flight inspection of conventional navigation aids contributes to the ongoing cost of operation. Efficient flight inspection practices utilising modern aircraft and calibration equipment and cooperation between States can minimise costs.

Maintenance Tracking and Performance Analysis - The collection of reliable and accurate data is an important corner stone in the analysis of system performance. Analysis can indicate developing maintenance concerns by looking at indicators such as fault occurrence and time to repair. Costing information collected along with the technical details can be employed to develop cost-benefit studies necessary to justify significant maintenance or replacement proposals.

Test Equipment – Test equipment is an important part of the maintenance regime. It needs to be managed effectively to maintain cost and ensure that appropriate calibration standards are achieved.

5.3 The meeting discussed 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.

Radiation of Hazardous and Misleading Information Considerations

5.4 New Zealand presented a paper on an incident involving the radiation of hazardous and misleading information from a glide path in maintenance. The glide path was used by a Boeing 767 aircraft to conduct of an ILS approach. The radiation of Carrier and Sideband Signal (CSB) without the corresponding Sideband Only Signal (SBO) resulted in balance tones and therefore 'on-course' indication independent of the aircraft elevation. The incident was comprehensively investigated by the State authorities and the airline involved. Non aircraft factors identified in by the investigation were:

- ILS systems will create an extreme hazard unless great care is taken to adhere to ICAO standards and guidance material during ILS operation, design, and maintenance.
- need to ensure the integrity of remote ILS transmission indicators, and that the wiring is such that the air traffic controller will be notified immediately when the control (remote) bypass is activated.
- The necessity for maintenance personnel and their managers to ensure that critical items are independently checked and signed off prior to return to service needs to be reinforced.
- There is a need to further educate flight crews, ground technicians and air traffic controllers about ILS systems and their monitoring.
- There is scope for improvement in NOTAM phraseology notifying the status of navigation aids, and further protective measures that can be taken during testing and maintenance.

5.5 ICAO has responded to this particular incident by issuing a State Letter (AN 7/5-01/52 dated 11 May 2001.) drawing the attention of States to factors involved.

5.6 The meeting acknowledged the contribution of the aircraft crew in initiating the investigation by reporting the incident and also the contribution the investigation and subsequent publicity has had to raising the awareness of this safety matter.

5.7 The meeting was also advised that the issue was discussed at the 38th DGCA Conference which developed an Action Item 38/8 calling on States to take necessary action. In response several DGCAs had notified ICAO Regional Office of action taken by them to prevent this kind of incident.

- Agenda Item 6:** **Review:**
- a) Strategy for the provision of Precision Approach and Landing Guidance Systems**
 - b) GNSS strategy**
 - c) GNSS implementation**
 - d) GPS measurement campaign**

6.1 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 as presented by the Secretariat. The Meeting noted that the Strategies should be considered as living documents and they had to be reviewed and updated regularly. The Meeting updated the Strategies and formulated the following draft conclusion:

Draft Conclusion 6/8 - 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 I and J respectively, be adopted and provided to States.

6.2 Australia presented a paper regarding its various GNSS related works such as its proposal presented to the CNS/ATM/IC/SG/9 in March 2002 that future GNSS approvals by States be based on C146 GPS receiver rather than on C129 receiver. This proposal was developed by the CNS/ATM/IC/SG/9 and would be forwarded to APANPIRG for consideration.

6.3 Singapore presented a paper on its 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.

6.4 The meeting expressed appreciation to Singapore and all the participating States for successfully completing the task.

6.5 The Meeting was also updated on the features, schedule and status of Europe's Galileo program. In response to a question raised, the meeting was informed that Galileo has no intention to make the Galileo Safety of Life services for civil aviation a paying service.

6.6 The Russian Federation briefed the Meeting regarding its successful implementation of GNSS NPA at Kurumoch Airport. As a result of this experience, it had defined methodology for developing similar GNSS NPA at other Russian airports. The Meeting was also informed about development in Russia of GBAS equipment for CAT 1 precision approach, in accordance with ICAO GBAS SARPs.

U.S. Satellite Navigation Program Status

6.7 The United States provided information on the current status of their satellite navigation programme as follows:

Constellation

6.7.1 The GPS is being modernized by the addition of two new civil navigation signals in addition to the existing civilian service broadcast at 1575.42 MHz (L1). The first of these new signals will be a Coarse/Acquisition (C/A) code located at 1227.60 MHz (L2) that will be added to the remaining 12 Block IIR satellites and be available for general use in non safety-critical applications. This capability will also be added to all future Block IIF satellites. Current timelines have the first scheduled launch of a Block IIR satellite with L2 occurring in 2003. Block IIF satellites will also broadcast an additional civil signal located at 1176.45 MHz called L5 to support civil safety of life operations. The first scheduled launch of the enhanced Block IIF satellites with L5 onboard is currently scheduled for 2007, with an initial operating capability date in the 2012-2013 timeframe. This new L5 signal falls in a band that is protected worldwide for aeronautical radionavigation, and therefore will be protected for safety-of-life aviation applications.

Wide Area Augmentation System (WAAS)

6.7.2 Current schedules have the initial operating capability for WAAS in December 2003 though efforts are underway for an IOC three to six months earlier. Planning is underway to put a third GEO satellite in orbit to mitigate the loss of geostationary augmentation signals in the event one of the existing INMARSAT-3 GEO satellites is not operational. The third satellite is anticipated to be in orbit by September 2005.

Local Area Augmentation System (LAAS)

6.7.3 The LAAS ground stations are being developed to support Category I, II, IIIa, and IIIb operations. depending on the airport-specific service requirements Current LAAS development schedules show the availability of an initial Category I public use LAAS system by the end of 2004 and a Category III public use LAAS system in the 2006 to 2007 timeframe.

6.7.4 The meeting noted that the operational deployment of LAAS for CAT I is linked to appropriate certification of avionics.

Survey for WGS-84.

6.8 The meeting was informed of a program being conducted by the United States National Imagery and Mapping Agency (NIMA) to assist country in achieve compliance with WGS-84 standards. The agency provides in country assistance to conduct primary surveys to establish accurate positions of aviation relation locations and facilities.

6.9 The benefit for the NIMA co-operatives efforts are:

1. improved flight safety through enhanced information;
2. a common geodetic frame of reference – WGS-84;
3. a very high standard of survey accuracy – one third of a meter; and
4. technology transfer through training and equipment familiarity.

6.10 The Secretariat provided the status of implementation of WGS-84 in the ASIA/PAC region. It was noted that of the 35 States only 12 States were yet to complete the WGS-84 survey.

Flight Inspection

6.11 The Secretariat provided to the meeting 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.

6.12 The meeting discussed the issue of interference as described in the manual as well as the requirement for periodic flight-testing of NPAs.

GRAS – Ground Based Augmentation System

6.13 Australia provided information on the development of SARPs for the Ground Based Regional Augmentation System (GRAS). 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.

6.14 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.

6.15 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)

6.16 The United States informed the meeting 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

**Agenda Item 7: Surveillance:
Automatic Dependent Surveillance (ADS) developments**

7.1 The meeting was informed of Automatic Dependent Surveillance Broadcast (ADS-B) systems being trialed and implemented within the Region.

Australian ADS-B Trial

7.2 Australia provided an update of the progress with the ADS-B Operational trial. The ADS-B ground station has been installed and is operating providing information to the Brisbane Centre. Software changes to the ATC automation system to fully integrate ADS-B data have been developed. The software has passed through factory test and is scheduled for site tests in the next two months. Avionics is being submitted for FAA TSO in October. Installation in aircraft will occur shortly thereafter.

7.3 Preliminary testing of the coverage of the site has been conducted by detecting Mode S short (acquisition) squitter messages (DF11) from overflights. The DF11 messages were correctly decoded from an Air New Zealand aircraft some 290 NM from the ground station. The aircraft was at FL360.

US FAA ADS-B Capstone Programme

7.4 The US provided an update to the FAA ADS-B Capstone Programme. Currently 150 aircraft have been equipped with ADS-B transceivers, multifunction displays and GPS service. Technology being demonstrated in the FAA Capstone Project include: cockpit display of traffic information, controllers in Anchorage began providing ADS-B “radar like” services to aircraft in the Bethel area since 21 January 2001 which is the first use of non-radar surveillance for control purpose in the United States. The same data link that transmits target data to Anchorages also provides weather text and graphic information to the pilots in the Bethel area.

Selection of ADS-B technology

7.5 At the Ninth Meeting of CNS/ATM/IC Sub-Group of APANPIRG, a paper was presented which proposed for fitment of ADS-B to TCAS capable aircraft in ASIA/PAC region. Since the CNS/ATM/IC Sub-Group meeting, there has been considerable activity and interest regarding ADS-B.

7.6 Recent ADS-B activities, decisions and meetings, which have contributed towards the deployment of ADS-B as a surveillance tool are briefly described below:

- 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.

7.7 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.

7.8 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.

ADS-B in Russia

7.9 The Russian Federation provided information on the proposed use of ADS-B in the Russia. The ADS-B system will utilize Russian manufactured equipment using VDL Mode 4 data link. An important part of the project is assessing the application of ADS-B for the purpose of supporting helicopter operations in areas with no radar coverage. The meeting was also informed of the limitations of ADS-C using satellite communications in the far northern latitudes. It is the intention of State Civil Aviation Authority of Russia to utilize HF data link in the very northern latitude and as a backup to satellite communications below 80 degrees North.

Proposed Key Priority

7.10 The proposal by the CNS/ATM IC SG for the inclusion of a new item in the Key Priority List was notified to the meeting. The new item is;

No. 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) conduct studies in the development of separation standards based on aircraft automatic position report;
- d) determined a date for the mandatory carriage of the selected ADS-B link by aircraft in the Asia Pacific Region.
- e) encourage standardization of the selected ADS-B link with transmit only systems that include integrated GPS capability.

7.11 The priority is suggested for assignment to all subgroups and has a target date of APANPIRG/14 (2003).

7.12 The meeting noted the information and considered that it would be appropriate that a Task Force be established subsequent to the acceptance of the new Key Priority by APANPIRG. In view of the foregoing, the following conclusion was developed:

Draft Conclusion 6/9 – ADS-B Study and Implementation Task Force

That,

- a) a multidisciplinary Task Force be established consisting of members from Australia, Hong Kong China, Japan, Mongolia, Singapore, United States, IATA, IFALPA and SITA with the Term of Reference provided in Appendix K; and
- b) the result of the study to be presented to APANPIRG/14 meeting in 2003.

Unauthorized Aircraft Addresses

7.13 Japan presented a paper on analysis of aircraft addresses observed at New Tokyo International Airport and Kansai International Airport. The observations were made using Aircraft Address Monitoring System (AAMS). The AAMS is a tri-lateration receiving system capable on monitoring aircraft position and receiving aircraft addresses coded in the Mode S squitter. Observations have been made during the period 1997 to present and compare aircraft addresses to the standards specified in Annex 10 Volume III. Errors noted were incomplete addresses or addresses from national allocations not consistent with the State where the aircraft was registered.

7.14 The meeting was further informed of difficulties in ensuring 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. In view of this, the meeting formulated the following conclusion:

Draft Conclusion 6/10 – 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 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.

Mode A only transponders

7.15 IATA stated that as the carriage of Mode C and Mode A transponders had been mandated early in this Region, and then globally. In five months time the carriage of ACAS II would also be mandatory. The continuing use of Mode A only transponder by some general aviation aircraft in this region must be prevented by State action if the carriage of ACAS II is to be meaningful globally. IATA suggested that action be taken to de-emphasise reference to Mode A only transponders in future documents so as to clearly indicate that Mode A only transponders are unacceptable.

Agenda Item 8: Preparation for World Radiocommunication Conference 2003 (WRC-2003)

8.1 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. The list of contact persons designated by Civil Aviation Administrations responsible for WRC-2003 preparation in each State was reviewed and updated.

Elements of the ICAO Position for the ITU WRC-2003

8.2 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	allocation 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 epdf 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.

8.3 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. Australia, Hong Kong China, Malaysia, New Zealand, Pakistan, Papua New Guinea, Philippines, Samoa, Singapore, Thailand have advised the Secretariat that appropriate actions has been taken to provide necessary support to ICAO Position at national, regional levels and at WRC-2003. Similar replies from other States were expected.

8.4 It was also noted that in accordance with Conclusion 12/19 formulated by APANPIRG/12 meeting States were urged to provide necessary support to ICAO Position and to arrange attendance at the Asia- Pacific Telecommunity (APT) meetings.

8.5 ICAO Position for WRC 2003 was presented at the Third APT Conference Preparatory Group meeting for WRC 2003 (APG2003-3) held in Bangkok from 10 to 15 June 2002. The Fourth APT APG2003-4 meeting will be 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.

8.6 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 Points should be held in Bangkok towards the end of 2002 to review the APT Provisional Views developed by the fourth meeting to be held in Busan, Republic of Korea in August 2002 and finalize their input to their respective

telecommunication regulators for consideration and submission to the last APT preparatory Group meeting in Tokyo. It was also recognized that the List of Contact points 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 draft conclusion as follows:

**Draft Conclusion 6/11 - 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 WRCs; and
- d) ICAO convene a meeting of designated contact person before the end of 2002 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.

8.7 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 (APG2003) and ITU-R World Radio Communication Conference 2003 (WRC-03).

8.8 The United States of America also presented a paper highlighting the need to support aviation spectrum requirements at the WRC 2003. States were encouraged to participate in ICAO activities.

Runway Incursion

8.9 IATA stated that the band 5091 to 5150 MHz which at the present time is allocated to ARNS and up-links to non-geostationary satellite. A requirement for Runway Incursion Prevention (RIP) system had already been identified and submission had been made to ITU. A presentation had been made in June 2002 at the last APT meeting. 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 band for ARNS at the WRC-2003.

Agenda Item 9: Consideration of training needs for engineering/technical staff

9.1 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.

9.2 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.

9.3 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.

9.4 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.

9.5 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.

- Agenda Item 10:** **Review:**
- a) **implementation of the ISCS and SADIS**
 - b) **transition to the final phase of WAFS**

Progress in implementation of the ISCS and SADIS

10.1 Under this agenda item the meeting examined the current status of implementation of the International Satellite Communication System (ISCS/2) provided by the United States of America and the Satellite Distribution System for information relating to air navigation (SADIS) provided by the United Kingdom as integral part of the ICAO aeronautical fixed service (AFS). The 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 noted that Australia and Singapore should be deleted from the table of SADIS users since they did not receive SADIS broadcast anymore; Malaysia would be added in the list of the ISCS user States since access to ISCS has been approved for Malaysia. It was agreed that FASID Table MET 7 would be amended as shown in Appendix L to the report.

Review of the report of the SADISOPSG

10.2 The executive summary of the report of the seventh meeting of SADISOPSG, held at the ICAO MID Office, Cairo, 9 to 13 June 2002, was presented to the meeting. The meeting noted some important developments of the system and in particular 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. The expert from UK informed that 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 is planned to become operational by the end of this year.

10.3 The meeting was advised that information to States would be distributed through ICAO about the need for software upgrade by SADIS users in order to be able to display SIGWX forecasts in the BUFR code as well as information about the types of SADIS receiving stations which have become or will soon become obsolete.

SADIS Strategic Assessment Tables

10.4 The meeting reviewed the SADIS Strategic Assessment Tables with entries regarding the current and projected data volumes for 2002-2006 as given in Appendix M to the report. The meeting noted the significant increase (49%) in OPMET data volumes since 2001. 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. Based on this discussion the meeting formulated the following draft conclusion:

Draft Conclusion 6/12 - SADIS strategic assessment tables

That,

- a) the ASIA/PAC SADIS strategic assessment tables, as given in Appendix M to the report, be adopted and forwarded to the SADISOPSG for planning the future SADIS bandwidth requirements; and
- b) to invite the SADISOPSG 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.

Implementation of the ISCS

10.5 The meeting noted the comprehensive information provided by the U. S. on their plans for replacement of the STAR4 workstation used by the majority of ISCS user States in the region. The replacement is necessary due to the fact that the STAR4 manufacturer is no longer in business, and software upgrades are no longer supported. It was determined that the STAR4 will not produce SIGWX graphics as it will not handle BUFR code, and it will not produce wind/temperature charts in polar stereographic projection. Thus States currently using this workstation must replace it by early 2004 so they are capable of producing all graphical products required by the SARPs in Annex 3 by late 2004 when both WAFCs are scheduled to terminate issuance of products in T4 format. The United States provided information about six potential workstation vendors that can be used by the States in replacing the STAR4 workstation. The list of these companies is given in the Appendix N. Other workstation manufacturers may meet the minimum standards.

10.6 As a result of the above, WAFC Washington made the decision to delay removal of the wind/temperature charts from the ISCS broadcast originally scheduled for mid 2003, and to remove both the wind/temperature and SIGWX charts simultaneously in late 2004. It was emphasized that the replacement of STAR4 workstations with current technology WAFS workstations will improve significantly the capability to process WAFS data received through ISCS and to allow for production of products tailored to individual users such as charts covering specific routes rather than the standard ICAO Areas.

10.7 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. The United States expects that the majority of training will be provided by the workstation manufacturer at the time the workstation is installed and made operational.

10.8 The meeting was informed by the expert from United States about the internet site for ISCS: <http://www.nws.noaa.gov/iscs>. This site provides information on ISCS, and links to the National Weather Service International Activities Office, NWS Aviation Weather Centre, and other aviation meteorology related sites.

GRIB training

10.9 The meeting was informed that as a follow up of the APANPIRG Conclusion 12/27 ICAO coordinated with the UK that a GRIB Training Workshop for the ASIA/PAC SADIS user States will be held at the ICAO Regional Office, Bangkok in November 2002. It has been stressed that this workshop will cover only GRIB products and another training workshop will be necessary for the BUFR coded products after the workstation software for conversion of BUFR coded products into standard WAFS SIGWX charts is finalised.

Transition to the final phase of WAFS

10.10 The Chairman of the ASIA/PAC WAFS Transition Task Force presented a comprehensive analysis of the status of the transition to the final phase of WAFS in the ASIA/PAC Region. The following issues have been addressed:

10.10.1 **Lead time of SIGWX chart broadcasts.** To ensure that SIGWX charts are available in time to support long haul flights between Asia and Europe, a suggestion about an earlier availability of SIGWX chart broadcasts from WAFC London was discussed by CNS/MET SG/5. WAFC London agreed to increase the lead-time by 3 hours and to make available SIGWX charts about 13 hours before validity time. It was expected that this change would become operational in November 2001, but early in 2002 WAFC London advised that the implementation date of this

change would be deferred to late 2002. The expert from UK informed the meeting that the completion of this task is expected in November 2002, but this was still to be confirmed. The expert from the United States pointed out, that because of communication delays in up-linking data for ISCS satellite broadcast, WAFC Washington Graphical Products are available in a more timely manner via the internet. However, it was also pointed out that at this time the internet is not an approved method to deliver or receive meteorological data for operational use. The expert from UK added that the SADIS products are available on the internet with the same lead time as for the satellite uplink.

10.10.2 SIGWX chart area and projection. With regard to the follow-up action on the APANPIRG conclusions 12/23, the meeting 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 expert from United States presented an example of a proposed chart area “L” for consideration by the meeting. The meeting discussed the need for SIGWX chart “L” to cover the new polar routes over the North Pole that was raised at the WAFS SG meeting in 1999. The example is given in Appendix O. The UNITED STATES. stated there was concern within the WAFCs and IATA that the chart might be too cluttered to be usable during Northern Hemisphere winter. The UNITED STATES. suggested it would provide sample charts from the next winter season to the next WAFS Study Group Meeting. IATA stated that this chart area could be helpful, but that more examples were needed for further evaluation. It was expected that the WAFS SG would review again the requirement for the SIGWX chart “L” and how it could be produced. The United States stated the chart could be made available on its Aviation Weather Centre website, but did not expect it to be added to the satellite broadcast, because States would be able to generate the chart from BUFR.

10.10.3 WAFS backup arrangements. It was noted that the internet based ftp back-up of the SADIS broadcast became operational in May 2002. WAFC Washington makes all WAFS charts from both centres available on internet (<http://aviationweather.noaa.gov>) but it should be noted that this service is not yet considered operational as the provision of aviation meteorological data is subject to the internet policy being developed by ICAO. In regard to the back-up between the two WAFCs, both WAFCs can provide back-up of all SWH charts. It was noted that the UK is producing global BUFR SWH information, which is not yet operational. WAFC Washington can use UK GRIB analysis data as a “hot back-up” for producing of wind and temperature forecasts. The 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.

10.10.4 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.

10.10.5 Migration to BUFR. The meeting discussed in depth the transition of the SIGWX charts from the T.4 format to BUFR code products which is the most important outstanding issue for the successful implementation of the final phase of the WAFS.

It was stressed that although the target date for the transition to BUFR code has not been changed, some deviations existed in the programmes and schedules of the two WAFCs, as follows:

- a) WAFC London has been issuing BUFR coded SIGWX information on a trial basis since 2001. It was expected that the software vendors would finalize their BUFR visualization modules during 2002. It was recognized that the SADIS users would need software upgrade in order to decode and visualize BUFR products. In this regard, guidelines have been developed by WAFC London and provided to the software developers. For the States that develop their own visualization software this guidance material could be obtained from UK on

request. The expert from UK pointed out that in order to produce SIGWX charts from BUFR messages the users would need two software modules – one for decoding of BUFR message into lat/lon positioned values of the coded elements and another for creating images from decoded values. A BUFR decoding module could be obtained upon request. Visualization software packages with different level of sophistication have been developed by the software companies listed in the SADIS web site. The expert from the United States confirmed that the same concept of two modules of software applied for the future WAFS workstations that were intended for the ISCS users. The meeting 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 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. In regard to the certification of vendors’ BUFR software by the WAFCs, information would be made available on the SADIS website as early as possible.

- b) WAFC Washington approach toward the transition to BUFR was different due to the fact that it would be in parallel with the replacement of the existing STAR4 workstations used by the majority of the ISCS users. The users will be able to choose their new workstation from at least 6 vendors. Taking into account the procurement process to be followed by the States, WAFC Washington has changed the schedule for the introduction of GRIB and BUFR products and the removal of T.4 charts from ISCS. The changes are reflected in the ASIA/PAC Transition Plan and Procedures.
- c) Concern was expressed about the standardization of the future SIGWX products based on BUFR code. It was explained that products created by different workstations and software could differ slightly in terms of the final look provided to the users. It was expected that the software vendors would have different de-cluttering and imaging methods while still meeting the basic requirement of automatic SIGWX chart generation without the need of significant manual inputs. On another hand the new software would provide much better flexibility for producing tailor-made products according to the user’s needs. The expert from IATA stated that the IATA requirement was 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 colour.
- d) Representatives from the United States and UK notified the meeting of differences in plans to provide SWM in BUFR. 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 will only quality control the data over those limited geographical areas identified in Regional ANPs.

Based on the information provided by UK and United States the meeting felt that the user States should be requested to provide information on their plans for upgrading or replacing of the equipment used for receiving and processing the WAFS data through the SADIS and ISCS. In this context, the meeting formulated the following draft conclusion:

Draft Conclusion 6/13 - 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 BUFR

10.11 The SADIS and ISCS provider States provided further information on the required BUFR training. It was expected that nearly all States would need such training. Based on the deviations in their transition programmes the two WAFCs would have different approaches to the training to be provided to the user States. The UK planned to provide training events in all regions concerned. United States decided that most of the training would be done by the vendors, selected by the users for their new WAFS workstations. However, if this training is considered insufficient, the United States plans to provide financial support through the WMO VCP to the States that may need it.

10.12 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/PAC Regions in co-ordination with ICAO and WMO as early as possible. In this context, the meeting formulated the following draft conclusion.

Draft Conclusion 6/14 - BUFR Training Workshop

That, the SADIS provider State be invited, in coordination with ICAO and WMO, to arrange the necessary BUFR training for SADIS user States in the ASIA/PAC Regions in 2003.

10.13 **WAFS products for turbulence and icing forecast.** The meeting further 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 by the MET Divisional Meeting in September 2002. Expert from IATA expressed the view that these products would be very useful but it was likely they would be global products rather than regional. The meeting was informed that the issue would be also addressed by the IATA MET Group in order to specify better the operational requirements.

ASIA/PAC WAFS Transition Plan and Procedures

10.14 The meeting reviewed the ASIA/PAC Transition Plan and Procedures and noted that it has been successfully implemented. The documents were updated regarding the timetable for achieving the final phase of WAFS, based on the information provided by the two WAFCs. The meeting formulated the following conclusion:

Draft Conclusion 6/15 - Amended ASIA/PAC WAFS Transition Plan and Procedures

That, the ASIA/PAC WAFS Transition Plan and Procedures be amended as shown in Appendix P 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

10.15 The meeting expressed its appreciation to the WAFS Transition Task Force for the work done and strongly re-iterated the requirements for the Task Force to continue its work until the final phase of the WAFS is implemented in the ASIA/PAC Regions.

10.16 The meeting felt it necessary to update the terms of reference and the work programme of the Task Force in order to provide adequate basis for its future work. Having developed the updated TORs and future work programme for the Task Force, the meeting formulated the following decision:

Draft Decision 6/16 - 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 Q to this report.

10.17 The Task Force is composed by experts from: Australia, Hong Kong, China, India, Japan, New Zealand, United Kingdom and United States. IATA is invited to participate in the work of the Task Force. Mr. SHUN Chi-ming, expert from Hong Kong, China was nominated as Chairman of the ASIA/PAC WAFS Transition Task Force.

Agenda Item 11: Exchange of OPMET information

11.1 Under this agenda item the meeting addressed issues related to the exchange of OPMET information in the ASIA/PAC Region and the interregional OPMET exchange.

Revision of ROBEX scheme

11.2 It was recalled that the ROBEX scheme was established 30 years ago in July 1972. The meeting noted that this scheme 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.

11.3 The meeting noted that there were a number of outstanding conclusions in regard to the OPMET exchange in the ASIA/PAC Region that needed further action, as follows:

- APANPIRG Conclusion 10/23 - Revision of the ROBEX Scheme, stating that: "Based on the AFTN configuration, collection areas of the ROBEX Centres be extended to include all international aerodromes listed in Table MET 1A of the ASIA/PAC Air Navigation Plan (ANP)";
- The need for amendment of the ROBEX Handbook (edition 1998) that has been restated by APANPIRG/11 and APANPIRG/12;
- APANPIRG Conclusion 12/25 – Application of EUR OPMET update procedure in the ASIA/PAC regions, stating that: "That, the procedure similar to the EUR OPMET update procedure be developed and introduced in the ASIA/PAC regions."

11.4 Follow up actions on the above conclusions taken so far have indicated the need for extensive changes in the ROBEX scheme and other OPMET regional 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.

11.5 Based on the expected volume and complexity of the work to be done on the tasks above it was proposed to establish under the CNS/MET SG an OPMET Exchange Task Force (OPMET/E TF) with the terms of reference as given in Appendix R. This proposal was supported by the meeting and the following draft decision was formulated:

**Draft Decision 6/17 – 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 and work programme as given in the Appendix R to the Report.

11.6 It was agreed that the group shall consist of core members - those from States that host OPMET data banks: Australia (Rapporteur), Fiji, Japan, Singapore, Thailand; satellite distribution providers States – United Kingdom and the United States; and China. IATA and WMO participation should also be encouraged. States in the core membership should each have an area of

responsibility. It was expected that the experts from these states would act as focal points for any OPMET/ROBEX related issues within their area of responsibility.

11.7 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. The expert from UK advised that the member of OPMET/E TF from UK should be from the SADIS Gateway and the IATA representative advised to invite an expert from the EUR Bulletin Management Group (BMG) to provide assistance based on the rich experience in the OPMET exchange management in the EUR Region.

11.8 It was expected that this task force would coordinate its activities mainly through correspondence but it was felt that at least one meeting would be necessary in order to review and finalize the material prepared by the TF members. The Secretariat informed that such meeting may be held in February or March 2003 at the ICAO Regional Office. This proposal was noted and further coordination would be carried out through the Secretariat and the Rapporteur of the TF.

SIGMET in VOLMET

11.9 The expert from New Zealand presented to the meeting information on the perspectives on inclusion of SIGMET in VOLMET broadcasts. The information explored different possible approaches to include the SIGMET information in VOLMET and outlined the corresponding difficulties. The meeting was informed about the practice and experience of New Zealand in transmitting the SIGMET information through VOLMET broadcast provided by Auckland. Taking into account the time limitation of the broadcast and the workload of pilots the New Zealand Air Traffic Services has decided to proactively pass amended SIGMET messages to inbound and outbound aircraft within 90 minutes flying time of the aerodrome of departure or arrival. Outside this range SIGMET information was passed on request to pilots. 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 problem and formulated the following draft conclusion:

Draft Conclusion 6/18 - Inclusion of SIGMET in VOLMET broadcasts

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

11.10 The meeting was informed about the experience of New Zealand in receiving aircraft reports from ADS and AMDAR systems. The Airways Corporation receives the full ADS stream of data and uses the positioning components for its air traffic management purposes. Since December 1999, the meteorological components have been stripped out and sent to the meteorological service provider (MetService) for use in its continuing Meteorological Watch Office support of international air navigation. The MetService has been forwarding the ADS and manual aircraft reports in the same routine hourly bulletins to the WAFCS and other interested parties, 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. The amount of aircraft reporting information being made available has been increasing through the spreading use of ADS and AMDAR. However, it was of concern that, while the automatic systems on board the aircraft were limited in the types of meteorological parameters

measured, crews have been increasingly neglecting the manual reporting of significant meteorological information not covered by these automatic systems. The other concern expressed was on the fact that the number of Met Services making use of the meteorological part of ADS messages was very limited.

11.11 The expert from Hong Kong, China informed the meeting about further trials with Automatic Dependent Surveillance (ADS) and Controller-Pilot Data Link Communications (CPDLC) datalinks for automatic weather reporting B777 and Airbus aircraft which were conducted in early 2002. 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 (HKO). Analysis of the B777 ADS data received in the 2002 trial revealed rather large deficiencies in the wind direction in the reports and for the Airbus trial, no abnormal wind reports were found. All temperature reports received from the B777 and Airbus aircraft during the trials were found to be of acceptable quality. The automatic weather reporting was carried out through FANS-1/A systems and airline company datalinks. Under the tight operating environment currently experienced by the aviation industry, airlines have expressed concern over the additional telecommunication charges incurred by these datalink trials. The prospect of airlines' participation in future large-scale trials was uncertain and an alternative datalink was to be identified.

11.12 The SSR Mode-S datalink has been considered as an alternative for weather reporting. The ICAO Manual on Mode S Specific Services (Doc 9688) specified the formats for meteorological routine air reports and meteorological hazard reports. Unlike weather reporting using ADS or CPDLC based on FANS-1/A system, there was no extra cost for using the Mode-S datalink. Hong Kong, China has been exploring the use of such alternative datalink for weather reporting and has been working on possible trials with small aircraft.

11.13 The meeting appreciated the information provided about the datalink applications for meteorological data and felt that further information should be made available on the plans of the States to use these applications and the data received in the provision of MET services to aviation. Since the uplink/downlink of meteorological information was a part of the MET component of the CNS/ATM concept, the meeting agreed that it was necessary to carry out a regional survey on this subject and formulated the following conclusion:

Draft Conclusion 6/19 - 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

Agenda Item 12: Implementation of International Airways Volcano Watch (IAVW)

Status of implementation of international airways volcano watch

12.1 The meeting reviewed the status of implementation of the International airways volcano watch (IAVW) in the ASIA/PAC Regions. It was noted that the volcanic ash advisory centres (VAACs), namely Anchorage, Darwin, Tokyo, Washington and Wellington, have continued to provide the advisory service in the ASIA/PAC Regions.

12.2 The meeting was informed that follow up actions on APANPIRG conclusions 12/30 and 12/32 have been taken and the ICAO Secretariat included the requirement for 24-hour operations of the VAACs and for graphical volcanic ash advisories in BUFR code form in the draft proposal for Amendment 73 of Annex 3.

12.3 It was recalled that the APANPIRG/12 adopted a conclusion for changes in the areas of responsibility of VAACs. 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. New Zealand indicated that the deletion of the southern boundary of the area of responsibility of Wellington VAAC at 60°S was not acceptable and the boundary should be kept as it was. The meeting was of the opinion that further clarification with New Zealand was necessary on this matter.

12.4 The meeting expressed concern about the delay in the action on APANPIRG conclusion 11/33, calling for a Special Implementation Project (SIP) for ASIA/PAC Region with an objective to identify and propose solutions to deficiencies related to the implementation of the IAVW procedures for the provision of SIGMET messages for volcanic ash clouds. The ICAO Secretariat informed the meeting 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. Thus the SIP proposal was to be revised and submitted again for approval for 2003. The meeting advised the Secretariat that the scope of the project should be reduced significantly so as to include only those States in the Region with high volcanic activity. It was not necessary to arrange visits to the States hosting VAACs since the main deficiencies were related to the issuance of SIGMETs by the MWOs. The Secretariat took note of this advice.

12.5 The expert from Australia presented to the meeting an overview of action taken to improve the operational performance of the Darwin VAAC and hence the IAVW. Information was provided on the on-going research in the development of new satellite algorithms used for the identification of volcanic ash clouds and sulfur dioxide gas. As a part of the effort to further improve the operational performance of the Darwin VAAC a new position in the Darwin VAAC for a volcanic ash warning specialist has been created. The meeting noted also the work undertaken by the Bureau of Meteorology to develop an integrated volcanic ash advisory preparation system. In addition, the expert from Australia provided information on the multi-disciplinary Vulcan-Aus Group that included representatives from the Bureau of Meteorology, airlines, Airservices Australia and research institutes. The objective of the Group was to continually seek ways to increase operational safety and reduce flying costs in areas where volcanic ash may be present, by improving the effectiveness of the International Airways Volcano Watch (IAVW), especially in the Asia/Pacific area. The meeting was advised that the Group was open to expand its membership.

12.6 The expert from Japan provided information about the recent activities of Japan for IAVW. The meeting noted with appreciation that in March 2002, JMA started a new regime for volcano services including the establishment of four Volcano Observations and Information Centers, which operated on a 24-hours basis. Each of the Centers has the responsibility to observe volcanic

activities of 15-30 volcanoes out of about 80 active volcanoes in Japan with seismometers, microphones, cameras, GPSs and to issue volcano information as necessary. It immediately provides Tokyo VAAC with information of a volcanic eruption with a telegram through an internal communication network of JMA.

12.7 The meeting noted the information for a new product issued by Tokyo VAAC for low-level volcanic ash events. It was clarified that Tokyo VAAC was issuing VA advisories for international air navigation only when a volcanic ash plume raised above 5,000m (16500 ft). The low-level VA advisories have been issued for the domestic traffic only. In the ensuing discussion the meeting agreed that this operational practice of Tokyo VAAC was not in accordance with the Annex 3 provisions which did not specify any threshold value for the height of the volcanic ash plume for issuance of VA advisories. The IATA representative and other participants stressed that volcanic ash could be hazardous even at low heights and advisory information was required internationally notwithstanding the height of the ash plume. The expert from Japan took note on the meeting's advice.

12.8 It was recalled that the Volcanic Ash warning ad-hoc working group had been established by decision of the COM/MET SG/2 Meeting, held in 1994. The meeting noted with satisfaction that the Volcanic Ash warning WG has been providing an excellent input to the COM/MET and CNS/MET sub-groups throughout the years and expressed gratitude to its members for the fine work done.

12.9 Since this WG was created on an "ad-hoc" basis and as such it has completed its tasks, the meeting agreed to dissolve it. At the same time, taking into account the importance of the tasks, related to the IAVW and the need for a regional group to assist the Secretariat in the coordination of the activities on IAVW, it was proposed to establish a Volcanic ash Task Force to replace the Volcanic ash ad-hoc WG. Having agreed on this proposal the meeting formulated the following draft decision:

Draft Decision 6/20 – 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 S to the Report.

12.10 It was agreed that the Task force would consist of members from the States hosting the VAACs in the ASIA/PAC Region: Australia, Japan (Rapporteur), New Zealand and United States with the member from Japan acting as Rapporteur of the TF. The meeting supported the idea that Indonesia and Philippines be invited to participate in this TF. The ICAO Secretariat would take action on inviting these States to nominate experts for the group.

12.11 It was expected that the Task force would carry its tasks mainly through correspondence and would report on the results of its work at the CNS/MET SG/7 Meeting in 2003.

Agenda Item 13: Quality assurance/performance monitoring in MET field

13.1 The inclusion of Quality Assurance (QA) in the agenda of CNS/MET SG/6 was aimed to initiate exchange of information and views on the current situation and future development of the implementation of QA in the MET Services for the international air navigation in the ASIA/PAC Regions. The meeting was briefed on the introduction of the QA requirements in the ICAO Annex 15 in 1997 and subsequently in Annex 3 in 2001.

13.2 The participants exchanged information on the QA activities in their respective Meteorological Services. In particular, the expert from Hong Kong, China presented the progress of the Hong Kong Observatory (HKO) with the implementation of a quality system for its aviation weather services in support of international air navigation. It was identified 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. It was recognized that some of these States have even obtained ISO 9000 certification. However, it was felt that the majority of the States in the ASIA/PAC Region have not yet started action on this subject.

13.3 It was recognized that the States have been implementing different quality systems in their MET services and not all have been using the ISO 9000 standards as a basis of their systems. It was pointed out that other sets of standards could be used depending on the national regulations. The States with experience in the QA shared their opinion that, in general, the introduction of these systems has had positive effect on the MET Services. It was stressed that the quality management system was very complex and should encompass all processes involved in the provision of the service.

13.4 Some participants expressed concern that it was difficult to follow the data flow used by the airlines to supply information. This might lead to discredit of the service provided even if a QA system existed, since information from non-controlled sources might be used together with quality-controlled information.

13.5 As a specific part of QA system in the MET field the meeting discussed the TAF verification. The expert from Australia presented information on automated TAF verification/improvement system software that was developed by the Australian Bureau of Meteorology. In the ensuing discussion it was recognized that different methods for TAF verification have been used in the States. Despite this fact, the meeting agreed that TAF verification was very important element of the quality management and further effort was necessary to develop unified methodology. It was emphasized that this methodology should be operationally oriented. The expert from IATA stressed that such TAF verification results when provided to the users would contribute to the operational risk analysis. The meeting was informed also about WMO CAeM activities on the TAF verification.

13.6 A question was raised on the appropriateness of the table in the Attachment E of Annex 3, Operationally Desirable Accuracy of Forecasts, for the purposes of the forecast verification. 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, since it could be used as reference in the forecast verification modules of the quality system.

13.7 The meeting was informed about the first MET Quality Assurance Workshop for the EUR Region that was held in Luxembourg, 27–29 May, 2002. The workshop was organized by ICAO with the support of Eurocontrol and was a part of the work programme of the Meteorology Group of the EANPG (METG) as a means to support the implementation of new provisions in Annex 3 concerning Quality Assurance for MET. The meeting agreed that training on quality assurance was a very important task and formulated a draft conclusion as follows:

Draft Conclusion 6/21 – 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 Regions during 2003.

13.8 In view of the fact that the MET Divisional Meeting in September 2002, was going to discuss the QA issues and provide important guidance in this field, it was agreed that the programme of such training seminar would be elaborated by ICAO Regional Office after the Divisional meeting in coordination with the members of the group.

13.9 In connection with the above training the ICAO Secretariat advised the meeting that it was planned that WMO would be included on a permanent basis in the invitation list for the CNS/MET SG meetings. Participation of WMO expert in the meeting would provide basis for a better coordination and collaboration on the matters of common interest and in particular on training-related issues.

Agenda Item 14: Regional preparations for the MET Divisional Meeting (2002)

14.1 Under this agenda item a number of papers prepared by States for the MET Divisional Meeting, to be held in Montreal from 9 to 27 September 2002, were presented as information papers.

14.2 At first, the Agenda of the Meeting was presented by the Secretariat. It was recalled that the objective of the divisional-type air navigation meeting was to make recommendations, within the scope of its agenda, for new SARPs, procedures for Air Navigation Services (PANS) and guidance material, or for amendments of the existing SARPs, PANS and guidance material. The meeting was also informed about the main issues that would be addressed by the MET Divisional Meeting in September this year.

14.3 The papers presented by the experts from Australia and New Zealand covered most of the agenda items in the Agenda for the MET Divisional Meeting: WAFS implementation and new products for turbulence and icing; Volcanic Ash issues; Quality Assurance; MET aspects of CNS/ATM concept.

14.4 The meeting noted with appreciation the information provided by the experts from Australia and New Zealand.

Agenda Item 15: Deficiencies in the COM/NAV/SUR and MET fields

15.1 The meeting noted that the ICAO Council on 30 November 2001 approved the single definition of the shortcoming and deficiency as “Deficiency”.

“A deficiency is defined as a facility, service or procedure does not comply with a regional air navigation plan or with related ICAO SARPs and which situation has a negative impact on the safety, regularity and/or efficiency of international civil aviation”.

15.2 The list of deficiencies in the CNS and MET fields was reviewed and updated. It was noted that in the CNS field, of the 4 items of deficiencies, one was implemented and the State concerned had officially notified the Regional Office confirming that the deficiency was corrected. In the MET field, of the eight deficiencies, two deficiencies are expected to be corrected in 2003. The list of deficiency as updated by the meeting is provided in Appendix T.

Agenda Item 16: Review the CNS and MET parts of ASIA/PAC Basic ANP and FASID

16.1 The meeting reviewed the result of ANP/FASID Review Working Group meeting, which was held in Mumbai on 7 April 2002. The meeting was attended by 21 participants from Australia, China, Hong Kong China, India, Japan, Thailand and the United States. The result of ANP/FASID Review Working Group meeting was also reviewed by the 4th meeting of ATN Transition Task Force (ATNTTF) held in Mumbai on 8-12 April 2002.

16.2 The meeting reviewed the proposed changes to be incorporated into Part IV of the Basic ANP and the introduction to the Part IV of FASID, which are provided in the Appendix U and Appendix V. Accordingly, the meeting endorsed the following draft Conclusion developed by the 4th meeting of ATN Transition Task Force as follows:

Draft Conclusion 6/22- 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 U and Appendix V, respectively be adopted and incorporated in the respective documents in accordance with the established procedure.

16.3 In light of the work completed by the ANP/FASID Review Working Group, the meeting decided the dissolution of the Working Group considering that the further updating of the material will be done by the Secretariat, with assistance from the CNS/MET Sub-Group, if required. Accordingly, the meeting reached the following decision:

Decision 6/23 - Dissolution of ANP/FASID Review Working Group

That, the ANP/FASID Review Working Group be dissolved.

FASID Table CNS 1B and CNS 1C

16.4 Japan provided comments on the proposed amendments to the FASID Tables including CNS-1B (ATN Router Plan), CNS-1C (ATSMHS (Routing) Plan). This paper also provided updates of Japanese planning data for both the tables.

16.5 The meeting agreed the proposed editorial changes in the Explanation of the Tables and the title of table CNS-1C from ATSMHS Routing Plan to read ATSMHS Plan. The meeting agreed that descriptions for Column 4 “Type of Interconnection” in the Explanation of the Table CNS- 1B would read as follows:

- (1) Inter-Regional
- (2) Intra-Regional
- (3) Sub-Regional

16.6 The meeting also agreed the proposed change to Column 3 “ATSMHS Type” in the Explanation of the Table CNS-1C as follows:

- a) AFTN/AMHS Gateway
- b) ATS Message Server

Agenda Item 17: Future Work Programme

17.1 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.

17.2 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.

17.3 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.

17.4 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.

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

Draft Decision 6/24- 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.

Future Meeting

17.6 The meeting proposed that the Seventh Meeting of the CNS/MET Sub Group be held in Bangkok from 14 to 18 July 2003.

17.7 The Fifth Meeting of the ATN Transition Task Force will be hosted by China and will be held in Shanghai from 7 to 11 April 2003.

Agenda Item 18: Any other business

ICAO policies and practices related to CNS/ATM Systems

18.1 The meeting was informed that the 33rd Session of the ICAO Assembly held in Montreal, Canada from 25th September to 5th October 2001 adopted the Resolution A33-15 – consolidated statement of continuing ICAO policies and practices related to Communications, Navigation and Surveillance/Air Traffic management (CNS/ATM) Systems. The consolidated statement including its appendices was presented to the meeting for information.

Eleventh Air Navigation Conference

18.2 The meeting was informed of timing and venue for the Eleventh Air Navigation Conference (AN-Conf/11). It was also stated that the ICAO State Letter ST 12/1/02/58 – Invitation to attend the Conference dated 28 June 2002 was forwarded to States and International Organizations. The agenda together with explanatory notes were presented to the meeting. States were encouraged to prepare views and positions ready for discussion, as required, during the next meeting of the Sub Group.

38th DGCA Conference

18.3 The meeting reviewed the list of Action Items developed by the 38th Conference of the Directors General of Civil Aviation ASIA/PAC region held in Seoul, Republic of Korea from 5 to 9 November 2001. The meeting noted Action Item 38/4 in which States were strongly urged to make arrangement for the designated contact person to get involved in the preparation, at national level for WRC-2003 and also to attend the APT Conference Preparatory Group Meeting for WRC-2003 to protect aviation interest. The meeting noted that Action Item 38/5 strongly urged States to take appropriate measures and fully cooperate in the resolution of deficiencies on a high priority basis. The meeting also noted Action Taken 38/8 regarding CFIT incident in Samoa and the actions taken by several administrations to generate awareness of concerned personnel to prevent such incidents in the future.

Comparative analysis of regional developments

18.4 A matrix containing the comparative analysis of regional developments in the air navigation field was presented. 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. The meeting was also informed of the recent developments in SARPs, PANS and guidance material related to air navigation systems. While reviewing the matrix, it was also advised that under the third item of the system of ADS-B trials in the table of Surveillance, in addition to Australia and Japan, Mongolia should also be listed in the ASIA/PAC region, as ADS-B trials were conducted in Mongolia.

Notification of Differences to Annexes and Review Process

18.5 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.

18.6 As part of normal practice amendments to Annexes are considered by the relevant agency within the Australia administration. A coordinated Australian response is formulated and forwarded to ICAO. Previously in considering amendment proposals the concentration had been on the subject of the current amendment and on occasions wider consideration of Annex Standards and previously notified differences had not occurred. The effect had been in some aspects a lack of comprehensive notification. The new practice overcomes this problem.

18.7 The differences to CNS/MET related Annexes i.e. Annex 3, Annex 5 and Annex 10 were presented to the meeting for information which are also available at web page: <http://www.airservices.gov.au/pilotcentre/ais/sup/h24.pdf>

18.8 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.

18.9 The database was prepared using downloaded electronic versions of the Annexes available in Adobe PDF and DjVu format on the ICAO website. The database contained fields include: Annex Number, Annex Volume, Amendment Number, Appendix Reference, Annex Paragraph, Paragraph Details, Compliance Status, Details of Difference, Remarks/Reference, Assessor and Difference to be Notified. Compliance status, details of difference, remarks and references were entered into the database by the relevant authoritative organization. Australia has a database containing the SARPs and necessary information for the continued review and tracking for compliance.

18.10 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.

18.11 Concern was also expressed with the easy of identify changes to Annexes. State Letters with amendment proposals clearly identify changes by the shading and strikeout convention. 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?

18.12 The meeting appreciated the practice followed by Australia in reviewing Annexes and considered that States should be encouraged to follow similar practice and formulated the following conclusion:

Draft Conclusion 6/25 - 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 of CNS/ATM Implementation in Japan

18.13 Japan provided information on the progress of CNS/ATM Implementation in Japan. The MTSAT project is the core element of the new plan. It was stated that MTSAT-1R will be launched in summer of 2003 and MTSAT-2 will be launched in 2004. AMSS function of MTSAT will be in operation in 2004. ATM centre will be implemented in 2005 to combine Naha and Tokyo FIRs into a single FIR. CNS/ATM database will be established to provide D-FIS, ATIS, SIGMET, NOTAM information, etc. The scheme of system integration and timeline for implementation were also presented to the meeting.

US. FAA Safe Flight 21 Program Status

18.14 The United States made a visual presentation on status of Safe Flight 21 Programme. Safe Flight 21 is a cooperative government/industry programme to evaluate capabilities for Free Flight. These include the cockpit display of traffic, weather, and terrain information, improved information for controllers, and improved surface situational awareness. The new technologies are based on the use of Global Positioning System (GPS), Automatic Dependent Surveillance-Broadcast (ADS-B), Traffic Information Service-Broadcast (TIS-B), Flight Information Services-Broadcast (FIS-B), and the use of a multi-functional display in the cockpit and enhanced controller displays.

18.15 In 2002, the multilateration system was installed at Louisville, Kentucky, and a new automation platform for that facility to support on-going ADS-B test and evaluation efforts will be procured. Development and evaluation is continuing on avionics and the procedural modifications needed to improve surface situational awareness and enhance existing surface surveillance using ADS-B. Interoperability and shakedown testing of avionics capable of transmitting and receiving ADS-B messages, receiving TIS-B messages, and displaying the combined ADS-B and TIS-B information to flight crews was conducted in April and May at Memphis International Airport. It also provided an opportunity to document the air-to-air and air-to-ground surveillance performance of ADS-B in a light-to-moderate interference environment. Other planned demonstrations and evaluations include: call sign procedures evaluation in Louisville; and ADS-B/automation system integration and surface moving map human factors testing at the FAA Technical Center in Atlantic City, New Jersey. In addition, areas in the lower 48 states that do not have radar services are being evaluated for potential use of ADS-B as a surveillance source. The more detailed information regarding the programme can be found at the FAA's Safe Flight 21 websites:

<http://www.faa.gov/safeflight21> and
<http://www.alaska.faa.gov/capstone>

Tropical Cyclone advisories and SIGMETs

18.16 The MET working group of the CNS/MET SG discussed under this agenda item issues related to the provision of Tropical Cyclone advisories and SIGMETs.

18.17 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 and that the other TCAC have been still using mainly the "WT" designator.

18.18 The meeting noted with appreciation the information provided by the expert from the United States that the TCACs Miami and Honolulu have recently implemented the “FK” TC advisories. The representative of 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. The representative of Japan took note of this information for follow-up after the meeting.

18.19 The meeting was provided feedback from the WMO TC groups on some operational issues related to TC advisories and SIGMETs: inclusion in the TC advisories a 6-hour forecast for the position of the TC center and information about the maximum surface wind in the outlook part of the TC SIGMETs. It was pointed out that the current practice of the WMO member countries was to use degrees and fractions in reporting the latitude/longitude information in the TC advisories and SIGMETs whilst the ICAO requirement, was to use degrees and minutes. In this regard, the meetings agreed that the use of degrees and minutes as specified by ICAO Annex 5 should be used by the TCACs and MWOs.

18.20 The meeting agreed that for the next CNS/MET SG meeting the tropical cyclone related issues would be discussed under a separate agenda item.

Report on the progress of the METATM Task Force on CNS/ATM

18.21 The Chairman of the METATM TF presented a brief interim report on the progress of the Task Force to date.

18.22 The main findings of the TF 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. The information that was required to be provided under Annex 3 broadly covered these requirements, 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.

18.23 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 Task Force was pleased to note that both MET and ATM Authorities have been pro-active in communicating their respective capabilities and requirements. The final report on the subject would be presented at the CNS/MET SG/7.