



**INTERNATIONAL CIVIL AVIATION ORGANIZATION
ASIA AND PACIFIC OFFICE**

**REPORT OF
THE SIXTH MEETING OF AERONAUTICAL
TELECOMMUNICATION NETWORK (ATN)
IMPLEMENTATION CO-ORDINATION
GROUP OF APANPIRG (ATNICG/6)**

**Seoul, Republic of Korea
16 – 20 May 2011**

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PART I – HISTORY OF THE MEETING

1.1 Introduction

1.1.1 The Sixth Meeting of the Aeronautical Telecommunication Network (ATN) Implementation Co-ordination Group (ATNICG/6) of APANPIRG was held at the Hotel Riviera, Seoul, Republic of Korea, from 16 to 20 May 2011. The Meeting was hosted by the Office of Civil Aviation, Ministry of Land, Transport and Maritime Affairs (MLTM) and Korea Airports Corporation (KAC).

1.2 Attendance

1.2.1 The Meeting was attended by 49 participants from 18 Administrations (Australia, Brunei Darussalam, China, Hong Kong China, Macao China, Fiji Islands, India, Indonesia, Japan, Malaysia, New Zealand, the Philippines, Republic of Korea, Singapore, Sri Lanka, Thailand and USA) and representatives from industrial groups. A list of participants is provided at **Attachment 1**.

1.3 Opening of the Meeting

1.3.1 The Meeting was officially opened by Mr. Kim, Kwang-jae, Deputy Minister for Civil Aviation of Ministry of Land, Transportation and Maritime. While welcoming all the participants of the meeting to Seoul, he highlighted that air transportation in the Asia and Pacific Regions has experienced a significant growth in demand for both passengers and cargo. He shared with the meeting the development of civil aviation in Korea and good safety record maintained with no fatal accident in the last 11 years. He also mentioned that Korea with more than 400,000 flights per year was handling eighth largest traffic volume in the world. It was mentioned that in addition to free fellowship programme, Korea had also developed a total oversight programme to ensure continued safety of aviation. In order to cope with the growth of aeronautical messages generated by the growth of air traffic, Korea plans to implement ATN in line with the implementation plan developed by ICAO and in cooperation with neighboring States. He hoped that the meeting will address various interoperability issues and develop solutions, plans and measures to establish future networks in the Asia and Pacific Regions.

1.3.2 Mr. Sung Si-chul, President of Korea Airport Corporation (KAC) extended warm welcome to the participants from various States of the region. He looked forward to cooperation amongst the States during the meeting and touched upon the progress of ATN implementation in Korea. He expressed his full support to the event and his pleasure in hosting the Sixth Meeting of the ATNICG in Seoul.

1.3.3 Mr. Hoang Tran, Chairman of the ATNICG, in his opening remarks appreciated and thanked Korea Office of Civil Aviation (KOCA) of Ministry of Land, Transport and Maritime Affairs (MLTM) and Korea Airports Corporation (KAC) for the warm welcome and excellent arrangements made for the meeting. He recalled that meetings of the group in the past have developed solutions for many obstacles in a complex network infrastructure in the region and acknowledged support by the States. He noted that most member States have completed procurement of their AMHS and the systems were under testing for operational service. The complication of network security, dual operation of Aeronautical Fixed telecommunication Network (AFTN) and AMHS and the introduction of Internet protocol have had significant impact on the ATNICG's work load and planning. He believes that with common efforts, goal stipulated in APANPIRG's Conclusion to have all the backbone AMHS established in 2011 can be achieved.

1.3.4 Mr. Li Peng, Regional Officer, CNS of the ICAO Asia and Pacific Office expressed gratitude and appreciation to the Government of Republic of Korea for their supports to the ICAO regional activities. He conveyed the greetings to all participants from Mr. Mokhtar A. Awan, ICAO Regional Director. He noted that the ATNICG has enhanced common understanding of the requirements of current and future aeronautical communications and addressed issues related to the ATN/AMHS implementation in the region. He highlighted objectives of the meeting and need for the States to work together to implement ATN network and AMHS in accordance with the implementation strategy and timelines adopted by APANPIRG. He noted several issues that impact smooth implementation of the

ATN/AMHS systems and stressed the need for the ATN/AMHS network to support XML based applications in the near future. He wished the meeting every success.

1.4 Officers and Secretariat

1.4.1 Mr. Hoang Tran, Chairman of the ATNICG presided over the meeting.

1.4.2 Messrs. Li Peng and Sujana K. Saraswati, Regional Officers CNS of ICAO Asia and Pacific Office acted as the Secretaries of the meeting.

1.5 Working Arrangements, Language and Documentation

1.5.1 The ATNICG met as a single body, except for Wednesday break-away Ad-hoc working group created during the course of the meeting to review the implementation plan particularly with reference to specific backbone network and links between direct connection States. The working language for the meeting was English inclusive of all documentation and this Report. Lists of Working/Information Papers and Presentations are provided at **Attachment 2**.

1.6 Conclusions/Decisions - Definition

1.6.1 The ATNICG of APANPIRG records its actions in the form of Draft Conclusions, Draft Decisions 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/Organization or actions by ICAO in accordance with established 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 the internal working arrangement of the ATNICG.

1.7 Terms of Reference (TOR) of ATNICG

Title and Terms of Reference

Title: Aeronautical Telecommunication Network Implementation Co-Ordination Group (ATNICG)

Terms of Reference (TOR)

Coordinate ATN implementation and transitional issues in the Asia and Pacific regions and address relevant system management, operational procedures and emerging issues that may arise.

Composition

The Group will be composed of experts nominated by:

Australia, China, Hong Kong, China, Fiji, India, Indonesia, Japan, New Zealand, Republic of Korea, Singapore, Thailand and the United States of America.

Reporting

The Group will present its report to APANPIRG through the CNS/MET Sub-group.

Agenda Item 1: Adoption of agenda

The agenda adopted by the meeting was as follows:

Agenda Item 1: Adoption of Provisional Agenda

Agenda Item 2: Review of Terms of Reference and Subject/Tasks List

Agenda Item 3: Review outcome of relevant meetings

Agenda Item 4: Review States' ATN/AMHS Implementation Status, Transition and Operational Issues

(member States are expected to provide their latest implementation status in the form of Attachment 3)

Agenda Item 5: IPS Transition

Agenda Item 6: Applications

Agenda Item 7: Air-Ground Communication

Agenda Item 8: Security

Agenda Item 9: Review and update Performance Framework Objective & and Action Items

Agenda Item 10: Any other business

Agenda Item 2: Review of Terms of Reference and Subject/Tasks List

2.1 The meeting reviewed the Terms of Reference (TOR) which was adopted by the Sixteenth meeting of Asia Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) in 2005 and considered it necessary to amend the TOR to reflect the need for addressing operational aspect of the ATN network and AMHS services.

2.2 The meeting set up an Ad Hoc group with volunteering members from Australia, India, New Zealand, Singapore, Thailand and USA to review the Terms of Reference. The meeting reviewed and endorsed the revised TOR proposed by the Ad Hoc group and formulated following draft Decision.

Draft Decision 6/1 - Revised TOR of ATNICG

That, the revised Terms of Reference of the ATNICG as provided in the **Appendix A** under agenda item 2 be adopted.

2.3 The Subject/Tasks list is reviewed and updated periodically by the group taking into account the changes in the implementation environment and the implementation issues faced from time to time. The meeting further updated the Subject/Tasks list and formulated following draft Decision.

Draft Decision 6/2 – Updated Subject/Tasks List of ATNICG

That, the updated subject/Tasks List of ATNICG, provided in the **Appendix B** to the Report be adopted.

Agenda Item 3: Review outcome of relevant meetings**ATNICG Working Group meetings**

3.1 The Eighth Working Group meeting of ATNICG, hosted by Airways New Zealand was held in Christchurch, New Zealand from 29 September to 1 October 2010 and the Ninth Working Group, hosted jointly by Aeronautical Radio of Thailand (AEROTHAI) and ICAO Asia and Pacific Office met on 25 and 26 January 2011 in Bangkok. The meeting reviewed the outcome of these two meetings presented by the Secretariat.

ATNICG WG – 8 Meeting

3.2 The Working Group noted issues related to incompatibility between the AMHS versions implemented in Japan and the ones implemented on the reciprocal ends. Japan was requested to address these issues through an Action Item. The meeting noted the implementation status of important inter-regional ATN/AMHS circuits in USA and in Singapore and also noted that the implementation status of other important inter-regional ATN/AMHS circuits like Australia/South Africa, Japan/Russia etc. was not available.

3.3 The meeting reviewed the recommendations made by the Working Group about addressing plan and security related issues. The meeting also noted the developments on Voice over IP (VoIP). The members of the working group were invited to provide comments on the Pan-regional Interface Control Document (ICD) for ATS Inter-Facility Data Communication (AIDC) presented to the Working Group.

3.4 The Working Group meeting reviewed AIDC planner presented by Hong Kong China. Japan was assigned an Action Item on reviewing current AMHS ICD to see whether it is compatible with Doc 9705, Edition 3.

3.5 ATNICG conveyed its appreciation to Airways New Zealand for hosting the meeting and for the excellent arrangements made.

ATNICG WG/9 Meeting

3.6 ATNICG WG/9, while reviewing the proceedings of the last meeting urged India and China to share their experiences on migrating AFTN circuits from X.25 to TCP/IP. The meeting briefly reviewed the information provided on CNS Roadmap presented to ICAO Assembly. After review, implementation schedule for ATN/AMHS in the region was updated by the Working Group. The status of implementation was further reviewed and updated in ATNICG/6.

CNS/MET SG/14 and APANPIRG/21 Meetings

3.7 The meeting noted the outcome of CNS/MEG SG/14 and APANPIRG/21 meetings presented by the Secretariat. The meeting was informed that APANPIRG, after reviewing the Pan-regional ICD for AIDC for Oceanic Area developed by NATSPG had adopted Conclusion 21/26 recommending change of its title to “Pan-regional ICD for AIDC”.

3.7.1 The meeting was informed of the follow-up action taken by the Secretariat for the conclusions adopted by APANPIRG/21. In accordance with APANPIRG Conclusion 21/24, States were urged to provide Proposed Defect Report (PDR) to the ATNICG meetings.

Aeronautical Communication Panel Meetings

3.8 The meeting noted the outcome of Aeronautical Communication Panel (ACP) Working Group – I (IPS) and Working Group – M (Maintenance) meetings held in Bangkok on 27-28 January and 31 January -1 February 2011 respectively.

Aeronautical Communication Panel (ACP) Working Group M meeting

3.9 The meeting was informed about the proposal to use ICAO GIS portal for timely dissemination of information on bilateral AMHS connections and other CNS developments and EUROCONTROL's proposal to use AMC as back up for the purpose. Different segments of FAA Data Comm. Programme and EUROCONTROL's Link 2000+ and SESAR status were presented to the meeting. Japan informed ACP about its "Long Term Vision of Future Air Traffic System" and its component "Collaborative Actions for Renovation of Air Traffic Systems" or CARATS.

3.10 Following significant issues were noted regarding maintenance of ICAO documents, which refer to the industry standards:

- 1) The industry bodies do not have an established Configuration Control Board or any other similar process. This is necessary as their committees are disbanded once the deliverables have been completed.
- 2) There is no forum for Industry Standards bodies and ICAO to coordinate their works. This issue is being worked out by the "Standards Roundtable" group and is still a "work in progress"
- 3) Most industry bodies are driven by industry; however RTCA is driven by FAA. This makes ICAO-RTCA coordination more complex.

Aeronautical Communication Panel (ACP) Working Group – I meeting

3.11 One of the Action Items reviewed by the meeting assigned the task of investigating the possibility of acquiring a top level domain name for ICAO. The action is yet to be completed.

3.12 On behalf of ATNICG, a paper was presented to ACP WG-I and WG-M meetings, in which following two key issues were raised:

- a) to clarify the status of acquisition of global IPv6 address block

The meeting was informed that ICAO Secretariat had agreed that ICAO Montreal will work to acquire the regional IPv6 address blocks for the regions.

- b) to provide guidance on the issues related to backward compatibility of AMHS, specifically for interconnecting systems that support IPM 84 and IPM 88.

ACP was of the view that the issue is relevant for only one State in APAC region and hence should be addressed at the regional implementation level.

Agenda Item 4: Review States' ATN/AMHS Implementation Status, Transition and Operational Issues

4.1 Under this agenda item, the meeting discussed the information and issues on ATN/AMHS implementation status presented by the following Administrations. While reviewing the status of implementation, meeting expressed that the plans are required to be more firm and use of "TBD" should be avoided as far as possible.

Macao, China

4.2 After commissioning ATSMHS with Hong Kong, China last year, Macao, China is waiting for Beijing to be ready for operation. More than 10 User Agents have been used to replace the AFTN terminals that were placed in the operator positions.

Japan

4.3 Japan started ATN/AMHS Project in 1998 with the signing of agreement with USA and ATSMHS became operational in 2005. Japan does not have any User Agent. The hardware for its AMHS was renewed in 2010. However, its software is still based on Doc 9705, Edition 2. Because of Edition incompatibility issue, further implementation with other Administrations has not progressed. The meeting reminded Japan about APANPIRG Conclusion that the BBIS hubs are required to implement AMHS by 2011 and urged Japan to take into account the fact that the reciprocal Administrations are waiting to complete implementation at their end. It was also informed that Japan completed Router Testing with Taipei but MTA connectivity could not be completed because of incompatibility issue. Requirement to update the AMHS related baseline documents to harmonize them with the current requirements was agreed. It was also agreed that the new document should refer to Doc 9880. The profile requirement for AMHS to support XML based OPMET and xNOTAM applications should be considered.

Hong Kong, China

4.4 Connectivity with Macao, China was completed in Dec 2009. The implementation of connectivity with the other hubs is planned to be completed in 2011/2012. It was clarified that though the interoperability test with Taipei was completed in Nov 2009, the operation is yet to be commissioned. With Beijing, some compatibility issues were identified at MTA level. It was informed that it will take some time to mitigate those issues.

New Zealand

4.5 New Zealand proposes to replace AFTN based on X.25 with AMHS over IP by the end of 2012 (if reciprocal ends are ready). Plan to provide UA to the surrounding island States via VPN connection or VSAT was also informed. Complete transition to AMHS is planned for the end of 2013. New Zealand assured to contact other island State as its plans are now firm.

China

4.6 China plans to commission ATSMHS with ROK in June 2011. Some trials had been conducted and connection with other Hubs or BIS locations have been planned. The status of implementation of ATN/AMHS and connectivity with some reciprocal ends was noted.

India

4.7 India observed differences between Doc 9705, Edition 3 and Doc 9880. In addition to the ATSMHS commissioned with Singapore recently, India informed about its proposal to install three additional IPS based AMHS systems. The meeting congratulated India and Singapore for the commissioning of the circuit. India and China were urged to raise PDR bringing out the issue of incompatibility between Doc 9705, Edition 3 and Doc 9880 observed by them during the testing. The main difference noted is that the PDRs on Doc 9705, Edition 3 had been accommodated in Doc 9880.

Sri Lanka

4.8 Sri Lanka plans to complete the AMHS implementation by September 2011. Sri Lanka assured to confirm the dates of router testing later. Singapore informed about their plans to complete connectivity with Sri Lanka before 2013 and the planned date was further discussed and coordinated in the Ad Hoc working group meeting during the meeting.

Indonesia

4.9 The site acceptance of AMHS in Makassar was completed in May 2009. The AMHS/AFTN gateway connectivity trial between Jakarta and Makassar using 64 Kbps VSAT link will be conducted in June 2011. ATN Router Trial between Jakarta and Singapore, using SNDCF over IP was successfully completed in March 2009.

Republic of Korea

4.10 Republic of Korea installed ATN/AMHS in June and dedicated 64 Kbps ATN international circuit in July 2010. Technical and operational tests were carried out between Seoul and Beijing. The ATN/AMHS circuit is expected to be officially commissioned for operation in June 2011. According to the APAC Regional Air Navigation Plan, Republic of Korea will continuously coordinate and cooperate with Japan for ATN/AMHS Implementation between Seoul and Fukuoka. Republic of Korea also informed about the composition of their ATN/AMHS system and the concept of snapshot for speedy recovery from the database failure. The aeronautical message traffic has increased in last 10 years. The system processed 70,000,000 messages. For meeting the requirement of handling increased number of messages, EMC Storage was introduced which is able to handle a lot of data and is able to recover quickly when the database error occurs. It was also informed that AFTN/AMHS gateway is included in the main AMHS server.

Singapore

4.11 Singapore informed that the intra-regional connectivity with India was commissioned in March 2011. The meeting was also informed about the status on the testing of AMHS connectivity between Singapore and Indonesia. The joint paper from Indonesia and Singapore highlighted the issues faced during the test between the two States. Transition from AFTN to ATN with Indonesia is planned for 2012.

Thailand

4.12 AEROTHAI plans to implement the AMHS system by June 2012. In the meantime, AEROTHAI will coordinate with Singapore to conduct the AMHS inter-operability test scheduled for third and fourth quarter of 2011.

Fiji Islands

4.13 The meeting noted trial and implementation status of AMHS in Fiji Islands. Australia agreed with the presentation made by Fiji Islands about their connectivity. The meeting noted that Fiji Islands has planned to have VPN connection with States in the Pacific except New Caledonia.

Australia

4.14 Australia assured that they will have discussion with other States on implementation and has planned to connect with Japan in 2013 or later. Indonesia informed that they had planned a meeting with Australia to discuss the second circuit between Brisbane and Makkasan. It was reminded that MTA routing with more than one connection between two MTAs in the same States becomes complicated because of identical address. Australia further informed that they did not have any dialogue with the reciprocal ends in South Africa and Chile.

USA

4.15 The meeting was informed that the USA/UK AMHS circuit was commissioned recently. The previous connectivity between USA and UK was on AFTN X.25 on 9600 bps via Canada. In April 2011, direct connection was established between UK and USA using 64 kbps. AFTN and AMHS links will operate in parallel for some months and then AFTN bandwidth will be allocated AMHS making it 128 Kbps. Some of the issues faced during the trials were informed to the meeting. Chairman stressed on the significance of this connectivity for the implementation of ATN globally.

Review and proposed amendment to FASID Tables from CNS 1B, 1C and 1D

4.16 Secretariat presented Asia and Pacific Regions Air Navigation Plan (Doc 9673) Volume II, FASID Tables CNS 1B – Aeronautical Telecommunication Network (ATN) router plan, Table CNS 1C – ATS Message Handling System (AMHS) routing plan and Table 1E – ATS Inter-facility Data Communication (AIDC) for review. The tables presented were approved and circulated through State Letter dated 10 August, 2010. After States updated the planning and implementation information provided in the tables, meeting formulated a draft Conclusion recommending comprehensive amendments to these FASID tables by APANPIRG through CNS/MET SG.

Draft Conclusion 6/3 – Amendment to FASID Tables – CNS 1B, 1C and 1D

That, FASID Tables CNS 1B – Aeronautical Telecommunication Network (ATN) router plan placed at **Appendix C**, Table CNS 1C – ATS Message Handling System (AMHS) routing plan placed at **Appendix D** and Table CNS 1E – ATS Inter-facility Date Communication (AIDC) placed at **Appendix E** be amended in accordance with established procedure.

The meeting suggested that explanations for the terms “inter-regional” and “intra-regional” should be included in the Table of explanation as they are likely to be misinterpreted.

Updates to the Implementation Planner

4.17 Updated ATN/AMHS Implementation Planner, incorporating all the information updates provided by the Administrations during the meeting was presented by Hong Kong China. Planner attributes were explained to the meeting and the information provided in various rows and columns was explained. It was explained that those cells in which no information is provided meant that information had not been received from the relevant States. The meeting requested Hong Kong China to further update the ATN/AMHS implementation planner based on the discussions and agreements achieved during the meeting for presentation to the CNS/MET SG/15 meeting. The updated Implementation Planner is provided in the **Appendix F** to this Report. States are urged to take necessary actions in accordance with the planner.

AMHS Planning and Implementation Status in other Regions

4.18 Secretariat presented the status of ATN/AMHS implementation in other regions. There was no further updates from MID Region since last meeting.

EUR/NAT Region

4.19 The Fifteenth Meeting of the Aeronautical Fixed Services Group (AFSG/15) of the ICAO European Air Navigation Planning Group (EANPG) was held from 11 to 15 April 2011. The meeting was informed that the manual on the ATN using Internet Protocol Suite (IPS) Standards and Protocols (Doc 9896) and the Manual on Detailed Technical Specifications for the ATN using ISO/OSI Standards and Protocols (Doc 9880) were officially published in the second half of 2010 and the Manual of Technical Provisions for Aeronautical Telecommunication Network (ATN) (Doc 9705) and the Comprehensive ATN Manual (Doc 9739) were consequently withdrawn. AFSG was also informed about the improvements made in the AMC to solve following three major issues:

- a) Modification of format of export files
- b) Modification related to COM Charts; and
- c) Consistency checks

AFSG identified following operational requirements which need to be addressed in the Aeronautical Fixed Service:

- a) Amendment 1 to PANS ATM Doc 4444 – FPL 2012 (15 Nov 2012)
- b) xNOTAM using XML (planned in 2012 – 2016); and
- c) XML based OPMET (planned 2012/2013).

The meeting also identified following AFTN requirements, which will be essential to meet the requirements of new ATM enhancements:

- a) Capability for handling long messages (length to be defined)
- b) Extended line length (more than 69 characters); and
- c) Extended character set (restrictions concerning some control characters)

4.20 The Group agreed with the AFSG's view that the current AFTN/CIDIN/AMHS would be able to meet the evolving operational requirements and no other network/technology would be needed. ATNICG however did not fully agree with the AFSG observation that accommodation of long messages on the basis of bilateral agreement and the use of ASCII character set in AFTN had already been included in Annex 10. It was informed that AFTN routing directory change adapted by APANPIRG through its Conclusion 21/25 had been noted by AFSG and the routing directory for EUR region had been updated accordingly from 7 April 2011, 1100 UTC.

4.21 COMSOFT supplementing the information on CFMU informed that they are able to handle AMHS, long AFTN messages and are able to handle ASCII characters. It was confirmed that in Europe, CIDIN is being used but it has the similar restrictions as in AFTN.

South American Region (SAM Region)

4.22 It was informed that the Sixth Workshop/Meeting of the ICAO South American Region Implementation Group (SAM/IG/6) was held in Lima, Peru from 18 to 22 October 2010. Issues related to implementation of ATN/AMHS were discussed in the meeting. The Implementation Group generally reviewed the progress of AMHS connectivity in the region and came to a conclusion that the implementation dates committed were being shifted and hence the project was getting delayed. The group adopted Conclusion SAM/IG 6/9 urging the States to request support from their system provider to complete successful connection and make arrangement to get their staff trained. Group also urged those States, which had not done so far to complete the signing of MoU. The group decided to appoint a study to assess the optimum mix of satellite and ground connectivity to support the implementation of ATN in the SAM region.

African Region (AFI)

4.23 The AMHS Implementation Task Force in the AFI region was established by AFI Planning and Implementation Region Group (APIRG) through Conclusion 17/17. It was informed that a Workshop on AMHS and the First Meeting of the Task Force was being organized from 17 to 20 May 2011 in ICAO ESAF Office, Nairobi.

Agenda Item 5: IPS Transition**Voice over Internet Protocol**

5.1 USA informed the meeting about the on-going activities on the use of Voice over Internet Protocol (VoIP) being carried out by EUROCAE Working Group 67. The specifications in the documents produced by EUROCAE/67 are referred in ICAO Doc.9896. The Federal Aviation Administration (FAA) is coordinating the use of VoIP based on Session Initiation Protocol (SIP) with EUROCAE WG 67 members. Civil Aviation Bureau of Japan (JCAB) is also participating in this effort. FAA is establishing a test platform to evaluate the compatibility of VoIP in supporting legacy voice switching equipment.

5.2 It was mentioned that only EUROCAE has the authority to approve the modification of VoIP document and this may create a problem. It was suggested that ICAO should develop a procedure to address this issue and there should be a mechanism available to control the configuration.

5.3 A presentation on introduction of VoIP and its application for ATM was made by Frequentis, California, Inc. The presentation provided information on the specifications of VoIP and deliverables developed by EUROCAE WG/67, applications for air traffic management, their trials and relevant project etc. The concept of VoIP integrates voice network with data network which is connectionless. It was informed that in VoIP, for signaling SIP and for media UDP have been used. Basic weak-points of the IP protocol were brought out in the presentation and performance parameters related to VoIP were discussed. VoIP applications in ATM include both Air Ground and Ground Ground uses. It was concluded that VoIP is now well accepted for ATM and is starting to be deployed. Tests and trials being conducted were briefly informed to the meeting. Presentation also included information on the VoIP implementation projects which had been taken up by Frequentis.

5.4 The meeting discussed the potential application of VoIP in the APAC Region. Based on the requirement specified in the FASID Table CNS 1D – ATS Direct Speech Circuits, it was agreed that point to point VoIP would be required for coordination by the States. The meeting therefore identified the need to develop an ICD for such application based on specifications in EUROCAE Doc. ED137A, updated version of which was released in 2010 and which will be included in second version of ICAO Doc9896. It was expressed that VoIP can not use too many hops, so it is required to be kept separate from ATN. The meeting was of the view that in case it is decided to migrate to VoIP to replace the voice switching then an ICD needs to be developed. USA agreed to develop ICD for VoIP in due course and an action item was agreed to be added into the list of action items.

Migrations from X.25 to TCP/IP to support AFTN

5.5 The meeting noted India's experiences on implementing AFTN over TCP/IP to replace X.25 technology in its domestic circuits. Constraints with using X.25 were discussed. India informed that an application software was developed to run on the system for routing the AFTN messages through Network Interface Card instead of X.25 adapter hardware. After several months of iterative trials, the application was replicated at all the locations within India and now X.25 protocol used in most of the circuits in India has been eventually replaced with AFTN over TCP/IP.

5.6 The meeting noted the benefits achieved and constraints experienced for using TCP/IP protocol at all these locations. With respect to the request to develop an ICD for using TCP/IP, USA informed about the requirement to implement a protocol (Common Message Handling Protocol, CMHP) to handle message sequence number. Considering that systems developed by different vendors were being used, it was agreed that it would be difficult to develop a single ICD for different systems/applications and the ICD would be misleading. Accordingly, the meeting agreed that developing a single ICD to meet the requirement of AFTN over IP for all the types may not be feasible.

Agenda Item 6: Applications**Directory Service Requirements**

6.1 Discussions based on the presentations from COMSOFT and eB2Bcom on Directory Services to support the AMHS.

6.1.1 After a short introduction to X.500 Director Service and ATN Directory services, the presentation from COMSOFT looked at the global scenario of Directory services when applied in the field of Air Traffic Services. A number of operational aspects have been discussed such as management of data, local availability, synchronisation, manageability, support of regional structures, and transition. An approach to solution was presented based on a centralized topology with replicated data. Ideal structure proposes to have three level structure of on-line directory service i.e. global level, regional level and national level. It is the ultimate goal to be achieved based on established global and regional network.

6.1.2 For the time being, in the near term, the meeting confirmed that AMC service should be used. States are required to submit changes and address information to the AMC through Aerothai, the designated regional agency for collection and validation of directory information. The registered users of AMC from States are required to access AMC off-line for latest changes in the database.

6.1.3 Presentation from e-B2B Ltd, Australia on the directory services covered hierarchical data storage, attribute searching and approximate matching, standard Public Key Infrastructure (PKI) support etc. The presentation covered many optional uses of directory services in addition to AMHS. Significant issues and requirements from directory service like the management of AIRAC cycle, distribution management, routing table and local use of the directory were also addressed in the presentation. It was recommended that the region should develop proof of concept in the form of planning document etc. and define jurisdictions involved and establish a project team.

XML Based Applications

6.2 The Secretariat presented an Information Paper on the XML. The meeting noted recent regional activities on XML. First activity was the OPMET/M Task Force meeting held in March, 2011 and the other one was the Sixth Meeting of ICAO AIS Implementation Task Force which was also held in March 2011, attended by 59 participants. Both meetings brought out the requirement of using XML.

6.6 The meeting noted that at WMO for the Basic System meeting, ICAO observer ensured support for transition to XML in future net-centric environment. Milestones for transition were brought to the notice of ATNICG. It was informed that WMO defines the codes used for the exchange of OPMET data and now it has been decided to use XML. Capability of exchange of XML based data over AFTN and AMHS has been studied. Various AFTN limitations like the use of ITA2 code by some State, maximum length of AFTN message, line length of 69 characters etc. were once again brought to the notice of the meeting. MET was urged to provide operational requirements so that the capability of AFTN/AMHS to handle this format could be studied. Requirement of Regional Operational Data Bank (RODB) for disseminating MET data were discussed in brief. During the transition phase, it was emphasized that both the formats the character oriented format and the XML format of data are required to be accommodated. The paper described various developments that are taking place in accommodating the requirement of transmission of data in XML format and recommended that the ATNICG participants should coordinate with their MET counterparts to get their requirements. States were also encouraged to conduct trials on XML over AMHS. It was assured that CNS/MET Sub Group will be provided information on transmission of XML messages. Issues related to the increased message size etc. were discussed in detail.

6.7 Japan provided a paper on definition and attributes of AIDC. The paper analyzed the difference between ICAO Document - Doc 9694- Data Link Manual, Part VI on AIDC and Pan-regional AIDC ICD. The paper described in detail the requirements in the two documents. The paper identified many 'SHALL' that are used in the Pan-regional ICD. For guidance material, in most cases, 'SHOULD' should be used. Secretariat clarified that ICAO had asked APAC and NATSPG to work on Pan-regional AIDC ICD for use between the two regions. USA emphasized the significance of using AIDC for continental airspace, since over oceanic airspace the transit time was not so stringent, but for continental airspace the transit time was very stringent. The meeting was reminded that there is a template on draft letter of agreement included in the AIDC ICD which specifies some transit time requirements. These specified timers should be tested before AIDC is implemented.

Agenda Item 7: Air-Ground Communication

7.1 No papers were received for this Agenda Item. The meeting reviewed the Asia Pacific regional Strategy for Aeronautical Mobile Strategy and did not identify the need to revise it.

Agenda Item 8: Security

8.1 USA presented updates on the Status of Asia/Pacific Security Documentation and Proposed Future Activities. The paper provided brief history of the development and the basic documents on which the regional document was based. It was mentioned that WP/13 presented to ATNICG/5 provided specific considerations for the Security for IPS environment. NIST-800, the base document used for the development of regional guidance was described briefly. Update to the information provided in the guidance material on Security was recommended. It was also recommended that Security should be included in the implementation plan.

Agenda Item 9: Review and update Performance Framework Objective & Action Items

9.1 The meeting reviewed and updated the Performance Framework Form adopted by APANPIRG in its Twenty First meeting.

9.2 The meeting updated the Action Items list developed by ATNICG WG. It was informed that the Action Item list contained action items which had not been completed or closed. The meeting also added some new action items into the list. The updated list of Action Items is provided in **Appendix G** to this Report.

9.3 The meeting reviewed the proposed updates by USA to the documentation tree. It was informed that the consequential updates on the Documentation Tree had been reflected on the following ICAO APAC website: http://www.bangkok.icao.int/apac_projects/atn/chart/atn_doctree.asp. It was agreed to remove the existing guidance document on directory service, since off-line directory service provided by EUROCONTROL AMC is likely to be utilized for considerable period of time. It was also agreed that the document should be kept and then updated depending upon the developments. The meeting agreed that some of the documents like the form prescribed for registration with AMC and the IPv4 addressing plan adopted by APANPIRG/21 should also be included in the Documentation Tree. The phased approach for testing and implementation (Four Phases) adopted by APANPIRG/21 is also required to be added to the AMHS manual.

9.4 The CNS/ATM Implementation Matrix presented by the Secretariat was reviewed by the meeting. It was noted that the Matrix is regularly reviewed and updated by the contributory bodies of APANPIRG and serves as a monitoring tool used by APANPIRG. The matrix updated by the ADS-B Study and Implementation Task Force in April 2011 was further updated by the meeting particularly in respect of ATN/AMHS and AIDC elements. The Matrix updated by the meeting is provided in **Appendix H** to this Report.

Review of Reports of Ad Hoc Working Groups

9.5 The meeting reviewed the outcome of discussions on ATN/AMHS implementation by Ad Hoc Working Groups including identification of baseline document for AMHS implementation and progress and milestone for establishment of connection between BBIS hubs and the connection between BBIS and BIS locations. The outcome of discussions by Ad Hoc working groups was incorporated into Appendix F - the Implementation Planner to this report which will serve as the basis for further development at future meetings.

9.6 The meeting reviewed a proposal presented by the Ad Hoc Requirements Group for the ATSMHS requirements documents. A summary of documents on the ICAO, EUROCONTROL and Asia/Pacific requirements was provided to the meeting. The meeting noted that the ASIA/PAC requirements for AMHS have been published in several manuals based on different versions of Doc 9705 and the EUROCONTROL AMHS Manual. It was therefore proposed that ASIA/PAC adopt a single document that captures the AMHS requirements for the region and that is based on the latest ICAO specification. The proposed requirements document could be based on any of the existing documents. As a result of discussion, the meeting agreed to establish a small group with experts from USA, Japan, Singapore, Hong Kong China and Thailand with Rappporteur from USA to develop the document for consideration by CNS/MET SG to be held from 25 to 29 July 2011 in Bangkok. The group should initially exchange views on the draft through e-mail and finalize the draft in Bangkok in the first two days of CNS/MET SG/15 for presentation and consideration by CNS/MET SG/15 and APANPIRG/22. Accordingly the meeting formulated the following decision:

Decision 6/4 - Updates to AMHS ICD document

That, an experts group composed of USA, Japan, Singapore, Hong Kong China and Thailand be established to develop a single regional AMHS guidance document based on AMHS ICD.

Agenda Item 10: Any other business**Next meeting of the Group**

10.1 The meeting appreciated the offer by India to host next four day ATNICG working group meeting at Jaipur in the end of September 2011. The Secretariat will coordinate with India for the exact date and venue and inform members of the ATNICG Working Group in the due course of time. Since no State offered to the host next ATNICG meeting, members of ATNICG will be informed once an offer is received. The probable dates and venue of the next meeting will be determined by the APANPIRG/22 meeting to be held in September 2011.

ATN Implementation Forum

10.2 The meeting agreed with a proposal from the Secretariat to discontinue the Regional ATN Implementation Forum on the ICAO APAC web-site.

10.3 The participants witnessed AMHS demonstration provided by COMSOFT during the meeting.

Note of appreciation

10.4 The meeting expressed its appreciation and gratitude to the MLTM and KAC for hosting the meeting, for the excellent arrangements made, the warm hospitality and all the activities organized during the meeting including a technical visit to the Aeronautical Communication Centreat GIMPO Airport and facilities and services at Incheon International Airport.

10.5 The participants also visited with appreciation the technical exhibition on the CNS facilities and applications developed by Republic of Korea.

10.6 The meeting thanked the participating States for the useful information and updates shared with the meeting and spirit of cooperation shown in discussing and updating the bilateral and multilateral implementation plan during the meeting.
