INTERNATIONAL CIVIL AVIATION ORGANIZATION
ASIA AND PACIFIC OFFICE

REPORT OF

THE EIGHTH MEETING OF AERONAUTICAL
TELECOMMUNICATION NETWORK (ATN)
IMPLEMENTATION CO-ORDINATION
GROUP (ATNICG/8) OF APANPIRG

Jakarta, Indonesia
18 – 21 March 2013

Page

PART I - HISTORY OF THE MEETING

PART II - REPORT OF AGENDA ITEMS

LIST OF ATTACHMENTS

Attachment 1: List of participants
Attachment 2: List of working and information papers

LIST OF APPENDICES

Appendix A   Interface Control Document for ATN IPS (IP v.4)
Appendix B   AMHS Implementation Update Planner
Appendix C   Update of CNS/ATM Implementation Matrix
Appendix D   AIDC Implementation status in the APAC Region
Appendix E   Revised TOR of ACSICG (ATNICG)
Appendix F   Performance Framework Form (PFF)
Appendix G   Updated Subject/Tasks List of ATNICG

_ _ _ _ _ _ _ _ _ _ _

PART I – HISTORY OF THE MEETING

1.   Introduction

1.1   The Eighth Meeting of the Aeronautical Telecommunication Network (ATN) Implementation Co-ordination Group (ATNICG/8) of APANPIRG was held from 18 to 21 March 2013 at the Hotel Indonesia Kempinski, Jakarta, Indonesia. The meeting was hosted by the Directorate General of Civil Aviation Office (DGCA), Indonesia.

2.   Attendance

2.1   The Meeting was attended by 72 participants from 19 States and 2 Administrations (Australia, Bangladesh, Cambodia, China, Hong Kong China, Macao China, Fiji Islands, India, Indonesia, Japan, Malaysia, Nepal, New Zealand, Pakistan, Philippines, Republic of Korea, Singapore, Sri Lanka, Thailand, USA, and Viet Nam) and representatives from industry. A list of participants is provided at **Attachment 1**.

3.   Opening of the Meeting

3.1   The Meeting was officially opened by Mr. Herry Bakti, Director General of DGCA, Indonesia. In his opening remarks, he extended warm welcome to all the participants to Jakarta and expressed pleasure in hosting the meeting. He informed the meeting about the recent civil aviation activities in Indonesia including the establishment of Air Navigation Indonesia (ANI) on 16 January 2013. He emphasized the importance of Aeronautical Telecommunication for safe, efficient and orderly flow of air traffic. He assured commitment of Indonesia to work for the air navigation services with other international entities. He introduced a live demonstration of AMHS service implemented in the eastern part of Indonesia and encouraged fruitful and productive deliberations.

3.2   Mr. Li Peng conveyed warm greetings of Mr. Mokhtar A. Awan, Regional Director, ICAO Asia and Pacific Office and wished for a successful meeting. He expressed gratitude to the Government of the Republic of Indonesia, in particular DGCA for hosting the meeting and supporting ICAO regional activities. He recalled history of the group and highlighted recommendations of AN Conf/12 on SWIM and AFS related items.

3.3   In his opening remarks, Mr. Hoang Tran, Chairman of the ATNICG, welcomed the participants and thanked the Directorate General of Civil Aviation for hosting this meeting. He highlighted some of the challenging issues and future direction of the AFS/AMHS/SWIM for APAC Region. He encouraged participants to actively contribute to the deliberations.

4.   Officers and Secretariat

4.1   Mr. Hoang Tran, Chairman of the ATNICG chaired the meeting.

4.2   Mr. Li Peng, Regional Officer CNS of ICAO Asia and Pacific Office was the Secretary of the meeting.

5.   Working Arrangements, Language and Documentation

5.1   The ATNICG met as a single body, except for Tuesday when break away Ad-hoc working groups discussed implementation challenges and strategies. The working language for the meeting was English inclusive of all documentation and this Report. List of Working/Information Papers is provided at **Attachment 2.**

6.   **Conclusions/Decisions - Definition**

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 the 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.

– – – – – – – – – – –

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 outcome of APANPIRG/23 on ATN/AMHS implementation

Agenda Item 3:   Review States' ATN/AMHS Implementation Status, Transition and Operational Issues

Agenda Item 4:   IPS Transition

Agenda Item 5:   Outcome of AN-Conf/12 on System Wide Information Management (SWIM)

Agenda Item 6:   Report of IMS/SWIM Sub-group on regional SWIM implementation objective and IMS roadmap including cost-benefit analyses

Agenda Item 7:   Information Security

Agenda Item 8:   Pan Regional AIDC ICD related issues

Agenda Item 9:   Review and update Subject/Tasks List and Action Item List etc.

Agenda Item 10:   Any other business

– – – – – – – – – – –

Agenda Item 2:   Review outcome of APANPIRG/23 on ATN/AMHS implementation

2.1   Under this agenda item**,** the meeting reviewed outcome of APANPIRG/23 on ATN/AMHS related matters.   The summary of APANPIRG/23 discussions on matters relating to AFS and AMS is provided in Attachment to Working Paper 2.

2.2   The meeting also reviewed the outcome of the Eleventh meeting of ATNICG Working Group held in Bangkok from 26 to 28 September 2012 and took following actions:

2.3   **Usage of Common Network**

2.3.1   The meeting noted the benefits of using a common network like PENS in Europe, FTI in North America, MEVA in Caribbean and REDDIG in South America. The Working Group was reminded that a strategy needs to be developed as to whether the regional priority should be to have a common super network or should the priority be assigned to developing solutions around discrete networks that already exist in the region. The meeting noted that the working group Action Item 11/3 was developed to assess the regional priority about the network. This issue was further discussed under agenda item 4.

2.3.2   The meeting observed that planned connectivity between the BBIS hubs and between BBIS hubs and BIS locations was getting delayed. One of reasons of delay was resolution of compatibility issues. The meeting therefore endorsed following draft Conclusion formulated by the working group urging States to resolve such compatibility issues in a timely manner:

> **Draft Conclusion 8/1 – Timely implementation of ATN/AMHS**
>
> That, BBIS and BIS States be urged to resolve bilateral issues on urgent basis paving the way for effective use of the network and thereby ensuring utilization of resources and the investment made by the States.

2.3.3   The meeting also agreed that the Backbone BIS was more or less in place and now the time has come for the BIS hubs to connect to the backbone to complete regional network. The meeting considered it necessary to set up the target date of 2015 for this implementation.   It was recognized that the more the delay in the implementation of ATN/AMHS, the longer region will have to operate with dual systems (AFTN and AMHS). Accordingly, following draft Conclusion developed by the Working Group was endorsed:

> **Draft Conclusion 8/2 – BIS States to implement ATN/AMHS**
>
> That, States hosting BIS nodes be urged to aggressively take up implementation of ATN/AMHS connectivity as per the Regional Plan to complete regional ATN/AMHS network in the whole APAC region by the end of 2015.

2.4   **Information Management Service/Asia-Pacific AFS Network**

2.4.1   USA introduced Communication Roadmap 2 at the ATNICG WG/11 meeting. It was informed that AMHS and AIDC will be merged to form Information Management Services (IMS) in Block 2 of ASBU. The meeting was of the view that AIDC is an application, whereas AMHS was a message management system and hence the two should not be mixed together. It was agreed that IMS or SWIM should be defined at a high level and should not be linked to IPv6 implementation. In this connection, the meeting noted that development of SWIM concept has been listed as a task for an ICAO panel.

2.4.2   India invited ATNICG to draw an action plan for the implementation of SWIM and other services in a harmonized manner in the region and urged ICAO to develop suitable guidance material for the mandated services. The meeting agreed that recommendation made in the paper urging ICAO to develop action plan for critical evaluation and development of SWIM and/or IMS had already been covered under a Conclusion adopted by APANPIRG/23.

2.4.3   USA clarified concepts behind 'Service Oriented Architecture (SOA)' and discussed in details their applicability in SWIM. It was clarified that there are many SOA standards available and selection of the most suitable standard is required to be carried out.

2.4.4   USA proposed development of **Asia/Pacific regional SWIM implementation strategy** and preparing and presenting how IMS is synchronized with ICAO ASBU B1 and B2 as the objective of the efforts towards the study of IMS. The draft strategy was being developed by some members of the group and the result will be presented to the next ATNICG Working Group meeting scheduled for August 2013 in Seattle, USA.

2.5   **Exchange of XML- coded OPMET and Digital NOTAM over AMHS**

2.5.1   Challenging issues pertaining to interface, file size and timeline for the exchange of the XML-coded OPMET and Digital NOTAM over AMHS were discussed briefly by the meeting India favors the use of XML coded digital version of NOTAM and OPMET information over AMHS. The meeting was of view that interface, file size and target timeline could only be identified on bilateral or multilateral basis at this stage. AMHS system at Mumbai was designed to transport XML data. Members of ATNICG were invited to share experience on XML trials over AMHS based on which, guidance material on trial may be developed. While noting several identified constraints that may impact smooth and timely implementation of the exchange of XML information over AMHS, the meeting endorsed following draft Conclusion:

Draft Conclusion 8/3 - XML Trial over ATN/AMHS

That, ICAO be invited to provide guidance on the requirements for end-user product/message in respect of XML coded NOTAM and OPMET messages.

2.5.2   In this connection, the Secretariat informed meeting about the outcome of a global RODB coordination meeting held in Brussels on 4-5 March 2013. The target date for releasing Version 1 of ICAO meteorological exchange model (iWXXM) is July 2013 when the model to be used for exchange of OPMET (METAR, SPECI, TREND, TAF and SIGMET) data in XML format will be finalized. The meeting also noted the issues raised at MARIE-PT meeting held in Brussles, Belgium from 6 to 8 March 2013 (for more info: http://www.icao.int/safety/meteorology/MARIE-PT/Pages/default.aspx then click meetings) including the following points of information:

   −   iWXXM is the ICAO Meteorological exchange model;

   −   Details are included in the Manual on the Digital Exchange of Aeronautical Meteorological information Doc10003 (it is available on the ICAO MARIE-PT website);

   −   WMO Task Team on Aviation XML (TT-XML) is developing the XML schema;

   −   Products initially include METAR/SPECI, TREND, TAF and SIGMET;

   −   XML schema to be ready in late March 2013 for comments, then release in July for testing;

     − Amendment 76 to Annex 3 will enable bilateral exchange of XML from November 2013;

     − ICAO format to be used for OPMET exchange (internationally);

     − XML increases the file size by factor of x40;

     − Requires compression before transmission;

     − AFTN won't be adequate as a communication channel; and

     − Requires implementation of AMHS.

2.6   **Test of XML based OPMET Messages over AMHS**

2.6.1   The meeting noted the result of testing the delivery of XML-based OPMET messages over AMHS between the United States of America, Singapore and the United Kingdom which was rescheduled for November 2012. Four proposed test configurations over the operational AMHS network were presented to the working group meeting. Five different test messages extracted from FAA/EUROCONTROL WXXM 1.1 Primer were used for the testing. The intent of the test was to simulate a tripartite configuration spanning all three regions. States in a position to conduct similar test were encouraged to make reference of the proposed configurations and test message set.

2.6.2   The meeting noted the test result presented by Singapore and USA (IP/18). The testing was initially conducted in November 2012 and continued from January to March 2013. The intent of the testing phase was to establish end-to-end AMHS interoperability with an intermediate system (i.e. UK), providing the routing functions to facilitate the exchange of XML-based OPMET messages. The testing was considered to be on-going. Most of the messages were successfully exchanged between each combination of AFTN terminal and AMHS UA. The parties involved in the testing generally agreed that AMHS provides a suitable platform for the exchange of XML-based OPMET data.

2.7   **ICD for ATN IPS – IPv4**

2.7.1   USA presented the draft Version 1.0 of the Interface Control Document for ATN IPS (IPv4) Router to the working group meeting for comments and information. It was advised that USA uses the IPS router ICD as the basis of connection with U.K., Canada and States in the South American Region. The ICD addresses the Network Interface and Internet layers of the ATN IPS router using the TCP/IP model. The members of ATNICG WG were requested to review the structure and contents of the document and provide comments for improvement at ATNICG/8 meeting. As no amendment proposal was received during the meeting, following draft Conclusion was formulated:

     Draft Conclusion 8/4 – Interface Control Document for ATN IPS (IP v.4)

     That, the ICD for ATN IPS (IP v.4) as provided in **Appendix A** to the report be adopted as regional guidance material.

2.8   **Guidance Material on the use of wild card (*) character**

2.8.1   The meeting recalled that concern about the use of wild card (*) character in the CAAS table was discussed at ATNICG/7 meeting and the ATNICG working group. States were urged to consider using wild card character in their respective CAAS entries. Aerothai presented guidance material on the use of the wild card (*) character based on WP03 – Default Entries and Wild Card in the CAAS Table for AFSG/14 meeting.

2.8.2   The use of wild card character in CAAS Table is suggested in ASIA/PACIFIC AMHS NAMING PLAN Section 5 - **Defining *Organization-name* and *Organization-unit-name-1* for CAAS** to be "used to reduce the number of entries in Organsiation-unit-name-1 field."

2.8.3   The meeting was informed that comments on the requirement of highlighting the recent changes to the AMC tables were forwarded to Eurocontrol for their consideration through ICAO Paris Office.

2.9   **IMS Ad Hoc Sub WG meeting report**

2.9.1   The meeting noted that the Information Management Service (IMS) Ad-Hoc Sub WG was formed with the objective to develop draft Asia/Pacific regional SWIM implementation strategy, and the detailed IMS roadmap addressing schedule and how IMS will be synchronized with ICAO Aviation System Block Upgrades (ASBU) Block 1 and Block 2.

2.9.2   Format of the detailed work-plan was presented in ATNICG WG/11 – Working Paper 13. It was proposed to update the ATNICG subject task list accordingly. The Ad Hoc WG will solicit participation from ICAO Asia/Pacific member States to contribute towards the outcome of the IMS Ad Hoc Sub WG.

2.9.3   The general direction presented to the meeting was to utilize AMHS as the backbone with gateway to support SWIM when it becomes available.

— — — — — — — — — — —

Agenda Item 3:   Review States' ATN/AMHS Implementation Status, Transition and Operational Issues

3.1   Report on AMHS Implementation Status

3.1.1   While reviewing the status of AMHS connectivity of Japan with counterpart States like Australia, China, Hong Kong, Singapore and USA,   Japan informed the meeting that they plan to implement an upgraded AMHS system in November 2015 and added that initially the system will be tested with US (FAA). Subject to successful testing with USA, schedule for setting up physical connection and testing with other States (2 State each year) from 2016 will be developed. Thus most of the status for all States' AMHS connection to Japan was retained as TBD. This will cause the AMHS connection between USA and Australia and USA to New Zealand to be changed to 2016 as the earliest. USA also informed that its plan to establish direct AMHS service with Philippines to support AIDC in 2015 will be delayed due to schedule of AMHS upgrade presented by Japan.

3.1.2   The meeting recalled that Nepal had requested Secretariat to assist in establishing a bilateral dialogue with China for setting up a physical link between Kathmandu and Beijing as the testing has to be done on a VSAT link and a router is required to enable connection for commissioning the AMHS system which was installed recently. In this connection, the meeting was informed that a COM coordination meeting between China, Nepal and Myanmar was held from 6 to 7 March in Kunming China. TMC for the testing was scheduled to be signed in Mid. April and target date for conducting trial is May 2013.

3.1.3   The target date for the implementation of AMHS connection between the Philippines and Hong Kong China/Singapore was established as 2015 as CNS/ATM project had been resumed recently.

3.2   The meeting reviewed the information papers on implementation updates provided by the following States/Administrations:

   - Bangladesh
   - Indonesia
   - Japan
   - New Zealand
   - China
   - India
   - Republic of Korea
   - Macao, China
   - Hong Kong, China
   - Thailand
   - The Philippines
   - Nepal

3.2.1   The meeting noted that France has a plan to commence AMHS implementation starting from 2013; AMHS implementation in French Polynesia would take place in 2014.

3.2.2   Viet Nam informed the meeting that AMHS testing will be conducted in 2014 and implementation of AMHS would be in 2015.

3.2.3   The AMHS implementation matrix planner was further updated by the subject lead from India and Hong Kong China during the meeting based on the information and reports furnished by member States during the meeting. States were urged to negotiate with their counterparts during the meeting and provide agreed dates in the planner instead of TBD for Physical connection, Router connection, MTA connection and Commissioning of the system and connection. The updated planner is provided in **Appendix B** to this Report.

3.3   The related information on ATN, AMHS and AIDC contained in the CNS/ATM Implementation Matrix was also updated and the updated Matrix is provided in **Appendix C** to this report.

3.4   Hong Kong China informed the meeting that the new CAD buildings have been ready for new ATC systems since end 2012. With regard to the new AMHS system, factory acceptance test was conducted in November 2012 with satisfactory result. The system is now being installed with the site acceptance test scheduled in May 2013. Interface and interoperability tests with other new ATC systems will be arranged around the same timeframe. A communication link test program will be commenced in April 2013 to ensure serviceability of all the new communication link connections to the new AMHS system. Similar test would also be arranged for the domestic segment of the international link to neighbouring communications centres. This is essential for the new leased lines to the new sites to be declared in operational readiness state.

3.4.1   To minimize the interoperability and interface risk, same model of OSI/ATN and IPS/ATN routers in the ATCX/BATCX will be deployed in ATCCB/FB so as to limit the scope of the test to local connectivity of leased line only. Neighbouring communication centers will be informed separately in advance for the test to ensure that the messages can be exchanged via these new lines and new AMHS/ATN equipment. Normally the test is expected to last less than 30 minutes. Hong Kong, China will coordinate closely with neighbouring communication centres to minimize interruption of service during the line test period. Administrations concerned were requested to provide necessary support on the link test arrangement as described in Working Paper 15.

3.4.2   The meeting also noted the AMHS interoperability test (IOT) procedures and results of the tests that had been carried out between Bangkok, Thailand and Hong Kong, China in the period 8-16 January 2013. The IOT was conducted based on the latest Annexes of APAC AMHS Manual for ATN Router Test (Annex C) and AMHS Conformance Test (Annex E) using IP SNDCF over VPN connections.   VPN was temporarily deployed instead of a permanent leased line to link up both sides to set up the required test environment. The test mainly focused on the test cases described in Annex E. In view of the successful IOT, it is planned that ATN/AMHS link will be put into service by Q2 2013 upon completion of tri-partite ATN router test over VPN to ensure seamless implementation of the ATN/AMHS circuit which will operate harmoniously with existing operational ATN/AMHS connections.

3.5   India informed the meeting about current status of ATN/AMHS implementation in its administration. India implemented dual stack AMHS system in 2008 and they could establish link with Singapore in 2011. Presently India has tested their system with Beijing, Bangkok and Karachi. Trials with Bangladesh and Nepal are expected shortly after the establishment of link with both the States. India informed that Kenya will be planning their implementation by July 2013 and Bhutan is still in the process of resolving funding issues. Since there was no response from Muscat for the establishment of link on AMHS, the issue may be taken up by ICAO Secretariat through ICAO Cairo Office for early resolution. It was informed by Comsoft representative that Muscat is planning to shift the operations to new control centre and thus AMHS connectivity with India would be done subsequent to the shifting.

3.5.1   Information on implementation status and related issues was provided to the meeting by other Administrations in their information papers as mentioned in paragraph 3.2.

3.6   Through a working paper, India also highlighted the issues of slow progress in transition from legacy AFTN system to AMHS system in the Region. It was stated that despite making continuous efforts to expedite interconnection with BBIS/BIS states through close coordination, the progress remains very slow. States that implemented AMHS had made considerable investments and now are loaded with the opportunity costs viz. additional manpower due to simultaneous operation of AFTN system as well as AMHS system, probable hardware malfunction, rentals towards hired unutilized media and regular upgrades to cope with advancements of continued non utilization of the system. India also appreciated that these States might have some genuine

operational as well as logistical limitations that impede the transition process. In order to expedite the implementation process, the meeting set up an ad hoc working group addressing the challenging implementation issues.

3.7   The result of discussions of the Ad Hoc working group on implementation challenging issues is as follows:

1)   The Ad Hoc working group meeting was jointly conducted by India and Hong Kong China. The AMHS planner was further updated based on the inputs provided by the member states. Efforts have been made to fill up and complete the planner and replace the TBD fields with realistic dates wherever possible.

2)   Member States were urged to highlight the challenges and issues they experienced with the implementation so that States that are in the process of implementation may be supported to expedite the implementation process.

3)   India highlighted the problems faced due to slow transition. It was pointed out that in view of growing concern from the higher management of the States in respect of non-utilization of the AMHS system and inability to utilize the associated applications like file attachments, XML, weather data etc. The benefits that were supposed to accrue from the implementation of AMHS against the investments made by the states are getting delayed and the states are further loaded with the opportunity costs in the form of parallel operations of dual systems to cater to non AMHS states, extra manpower deployment, additional maintenance and upgrade costs due change in technology mid-way in addition to non- utilization of the hired media in some cases.

4)   The issue related to connectivity of BIS to BIS states was also discussed. Only Vietnam could provide a date for connectivity with Lao (PDR) and the planner was updated accordingly. Pakistan pointed out that they were having BIS to BIS connections with Tehran, Kuwait and Muscat. Muscat plans to establish link with Pakistan after shifting their system to a new location. However, Pakistan was not aware of the plans of other states.

5)   Hong Kong while deliberating the issue pointed out that it would be worthwhile to consider advancing the regional implementation to an early date so as to actually realize the potential benefits of the network. It was further stressed that the applications like FTBP, XML etc. which are really useful to the States will become reality only when the network is fully functional in the Region.

6)   Japan gave the inputs to update the planner. As per Japan, they plan to implement the new system by November 2015 and commence operations with FAA by end of 2015. They further plan to operationalize connectivity with Singapore, Hong Kong and Beijing by 2016 and Australia by 2017 end. Japan was urged to expedite the connectivity with the states so as to complete the entire regional connectivity by 2015. In addition to this they were apprehensive of the safety issues involved in commissioning the circuits with other states and hence they proposed to take up connectivity with one state at a time till stable operations are achieved. However, Japan agreed to consider exploring the possibility to expedite the commissioning of the links with other states as fast as possible.

7)   Indonesia while updating the planner had an issue of connectivity with Australia. The issue was resolved by them through bilateral meeting and schedule has been updated accordingly.

8) Thailand provided information on the connectivity status with various states and it was brought out that testing with India was successful but there were issues related to establishment of new link. India assured to look into the issue of establishment of new link; otherwise it was agreed by both the states to coordinate AMHS cutover on the existing link through mutually agreeable operational procedure. The connectivity between Bangkok and Beijing is planned for Q1/14 and with Hong Kong in Q2/13.

9) Bangladesh provided the updated connectivity status with India and Bangkok. It was reported that their system was ready and they plan to commence testing soon. There was an issue of VSAT connectivity with India to which India requested Bangladesh to adopt lease line connectivity. It was pointed out by India that at the time of planning by Bangladesh no discussions were held for the type of connectivity and as per existing policy in vogue, the telecom regulator in India does not permit international V-SAT connectivity, however the issue has been raised with the higher authorities in India. Intimation in respect of type of link will be conveyed to Bangladesh by April 2013.

10) Pakistan, while updating the status was requested to provide the timelines for operationalizing the AMHS link with India. Pakistan informed that they require upgrade to their system before operationalization, in the form of automatic updation of AMC tables which was at present only possible manually. The issue was reported to be under active consideration of Pakistan.

11) Vietnam was concerned about the new technologies that are in the pipeline like XML, SWIM, and AIM etc. in addition to AMHS which though may not be essential with respect to operations by some of the states, but they have to commit investment in the new technology to keep themselves abreast with member states. In this regard states face lot of problems with respect to the funding and the problem further complicates as the investments made cannot be recovered through ATS charges due to opposition from IATA and airlines. Malaysia responded to this issue and shared the concerns but was of the view that the issue was related to individual states and the tariff issues being decided by the concerned government.

12) The meeting requested the member states to draw a timeline for the completion of Asia/Pac regional network. A target date of 2015 broadly emerged during the meeting with exception of Japan who plans to complete their transition by 2017.

3.8   The participating States at the meeting were encouraged to take the opportunity to progress bilateral technical agreement on trials and develop milestones towards commissioning dates of AMHS service.

3.9   In view of the readiness of most BBIS hubs for ATN/AMHS operations, the meeting considered it necessary to implement interim measures to achieve full ATN/AMHS Interconnection in the Region. The meeting endorsed a proposal for deployment of IDRP among those BBIS hubs that are ready to do so. Accordingly, the meeting formulated following draft Conclusion:

Draft Conclusion 8/5 – BBIS States to implement ATN/AMHS

That, those States which are hosting BBIS hubs and are ready to implement ATN/AMHS be urged to review the feasibility and realize interim ATN connectivity using IDRP prior to complete readiness of all the member States in the Region in 2014/15. This will realize the early operational benefits of network resiliency and AMHS operations, particularly in instances where incompatible versions of AMHS currently preclude AMHS connectivity.

— — — — — — — — — — —

Agenda Item 4:   IPS Transition

4.1   Further to the discussion by the ATNICG Working Group on the common telecommunication service provider as mentioned in paragraph 2.3 of this report, the meeting considered two proposals from USA and Japan. There are two types of IP based VPN services in the world i.e. Internet VPN using the public Internet and Multiprotocol Label Switching (MPLS) based private IP-VPN from a service provider. The routing of message traffic is established with Virtual Routing and Forwarding (VRF). MPLS operates between Layer 2 and Layer 3.

4.2   The meeting was informed about the initial study by Japan on IP VPN. From the economical point of view, IP based virtual private network (Global IP-VPN) services is considered as a very strong candidate for the future AMHS since they are meshed network and therefore do not need the number of dedicated circuits to meet the point-to-point international aeronautical telecommunication requirements.

4.2.1   From information security point of view, Global IP-VPN should be recommended as it is designed to deliver a secure, private any-to-any service over a dedicated Multi-Protocol Label Switching (MPLS) network.

4.2.2   With regard to contracts with telecommunication providers, currently each Administration has to sign contract with their service provider for international lease circuit on a bilateral basis. In case of a Global IP-VPN, a single service provider would be selected to provide network service. i.e. the existing point-to-point international leased circuits will be integrated into a single local access point in each country. Japanese Civil Aviation Bureau has considered to make a contract with a leading international service provider in Japan i.e. KDDI corporation which has been providing over fifty years of international telecommunication services.

4.2.3   Under a meshed any-to-any network routing, if local access circuit fails, all communication with other corresponding hubs or stations will be lost. In order to avoid such situation, redundancy for secure network access has to be considered. A backup local access circuit with another different service provider is desirable and/or another IP-VPN alternative network.

4.2.4   Introduction and description of a Global IP-VPN service provider and a proposal from KDDI was provided to the meeting.

4.3   USA proposed to use IP VPN from an existing commercial network based on MPLS technology to provide Air Traffic Service Message Handling Service (ATS MHS) and any future service which is based on IP such as System Wide Information Service (SWIM) and/or Traffic Flow Management (TFM) service. This proposed IP VPN is a partition of a larger global network and dedicated to the Asia/Pacific and USA.

4.3.1   It was emphasized that in order to support the smart and dynamic environment, a common IP network and application to provide SWIM integration needs to be implemented. The meeting noted the proposed IP VPN using commericailly available MPLS technology based network.

4.3.2   The cost of using such kind of common service provider has to be equal or less than the current cost of utilizing existing commercially available infrastructure. An entity, an established Organization or a State needs to be designated as Network Administrator for the management of contract with the common service provider. The FAA has been exploring a potential contract with Harris Corporation to establish a Virtual Private Network for its global telecommunication network infrastructure.   Harris is using this global infrastructure to distribute data for banking and oil industries in addition to ATC data for The FAA. Their network is based on MultiProtocol Label Switching (MPLS) technology that provides dynamic routing.

4.4   In order to compare recommendations with other available options to select an optimal solution for a common service provider for the Asia/Pacific region, the meeting set up an ad hoc working group to discuss benefits and analyze the optimal recommendations for an Asia/Pacific IP VPN.

4.4.1   The brief report on the discussion by Ad Hoc group on the common service provider was further discussed as follows:

Report of Ad Hoc Working Group on Creation of Asia/Pac Regional Common IP Network

1)   Two working papers were presented at ATNICG/8 regarding the potential for creation of a common Asia/Pacific IP network; these papers were presented by Japan and USA.

2)   Each of these papers proposed the establishment of a regional MPLS network, with connectivity to be offered to all member states in the region.

3)   Members of the Ad Hoc Working Group discussed possible options for the establishment of such a network, as well as possible issues and pitfalls involved.

4)   Issues to be addressed include, but are not limited to, the following factors:
     - Responsibility for administration of such a network
     - Allocation of cost
     - Methods for payment and billing
     - Cost of network use compared to private point-to-point circuits (as currently used today)
     - Required lead time for implementation
     - Network security issues
     - Network redundancy issues
     - Capacity for future growth, as needed

5)   Suggestion was made to use information on other similar networks (e.g. PENS, MEVA) as potential sources with regard to creation and administration of such a network.

6)   The need for establishment of a sub-group to address this topic was discussed.

7)   Several simultaneous steps need to be taken in the near term:

     - A working paper needs to be developed regarding this topic to be presented to CNS SG and APANPIRG for concept approval; USA will develop the draft of such a paper and request comment from all interested members for working paper finalization (members interested in participating in this process need to provide contact information to USA for draft distribution)

- Further information regarding the networks proposed by Japan and USA needs to be obtained so that details regarding administration and pricing can be provided to the member States

- Representatives of PENS will be contacted to request information regarding their network; USA will establish this initial contact

- Further address the possible need for a regional sub-group to address the topic.

4.5   **Singapore's experience on IP VPN with U.K.**

4.5.1   Singapore informed the meeting that the original intent was to obtain a cost effective solution based on the existing half sharing model on international leased circuit arrangement. However, both U.K. and Singapore have obtained quotation from various Telcos and Telstra was selected as the supplier offering the most commercially acceptable and best value offer (There is no preference given to Telstra). The circuit was a private wire from Telstra global IP VPN.

4.5.2   As it was not possible to have half circuit arrangement for IP VPN circuit, UK was the State to procure and fund the entire link. An agreement was then worked out between SIN and UK for the 50% payment arrangement and service level agreement. As the circuit procurement was by UK, some difficulty was initially encountered for incident reporting mechanism, especially when both States are in different time zone. This has however been agreed and worked out between UK NATS and Singapore com centre. Since Mar 2012, the performance of the circuit was satisfactory. Singapore informed that the monthly operating cost of IP VPN is lower by 30% compared with point-to-point circuit.

4.6   **MPLS Network**

4.6.1   In order to develop a joint Working Paper on the subject for consideration by APANPIRG through CNS Sub-group, USA was requested to take the lead with participation from Japan Singapore, Thailand, China and Hong Kong China and New Zealand. To request support from Administrations mentioned above for the arrangement of Subject Matter Experts (SME) to actively participate in the work, the meeting formulated following decision:

Decision 8/6 – Common MPLS Network in Asia/Pacific Region

That, Subject Matter Experts from USA, Japan, Singapore, Thailand, China, Hong Kong China and New Zealand provide input and contribution to the joint working paper to be presented at the CNS SG meeting in May 2013 recommending the use of MPLS to create a common regional IP network to meet current and future operational requirements. Regional Office is requested to follow up this action with a letter distributed to States concerned.

— — — — — — — — — —

Agenda Item 5: Outcome of AN-Conf/12 on System Wide Information Management (SWIM)

5.1 **Recommendations of AN-Conf/12 on ASBU and SWIM**

5.1.1 The outcome of AN Conf/12 on ASBU and SWIM was informed to the meeting. A presentation on the introduction of ASBU and recommendations for introduction of SWIM was made to the meeting by the Secretariat. The meeting was also informed that the SWIM concept was being developed based on the recommendations of AN Conf/12. The meeting noted that relevant ASBU modules are included in Block 1. Target date for initial implementation of SWIM, included in block 1 is starting from 2018.

5.2 **Republic of Korea SWIM initiatives**

5.2.1 Republic of Korea SWIM project started in 2012. The project has a 5 year plan covering periods of design and building a SWIM prototype. The project is being carried out by four universities in ROK, Korea Airports Corporation and one industry partner. A number of consultant groups are also participating. In the first phase by 2016, the prototype will be developed and interconnected to the ATN in ROK. During the second phase from year 2016 to 2017, the prototype of ROK will be evaluated.

5.2.2 The ROK SWIM will provide interoperability with conventional communication network systems. Information sharing based on SWIM with other countries will effectively enhance flight safety.

5.3 **China SWIM initiatives**

5.3.1 According to ICAO ASBU plan, China has launched Initial SWIM Study Project in 2011. The aim of the project is to study and evaluate SWIM concept and key technologies to be used. The outcome of the study will result in a proposal for information management infrastructure for next generation ATM system in China. The study project will also provide a prototype for demonstration of the initial SWIM capabilities. Service Oriented Architecture and innovative IT technologies have been evaluated in the first two years of the project. A test system integrating information of ATSU, airport and airlines has been deployed in Beijing Capital Airport for further assessment. The project will be completed in 2015.

5.4 The meeting also appreciated the presentation on SWIM/AMHS made by Frequentis and additional information provided to the meeting by IDS.

5.5 The main points on SWIM discussion included the following:

- SWIM concept is being developed by ICAO at global level;

- A SWIM Workshop was conducted in conjunction with last meeting ATNICG/7;

- Applications identified using XML include iWXXM; AIXM and FIXM. etc.

- Technology to be used needs harmonization as early as possible;

- Relation between SWIM and AMHS, general discussion and initial conclusion was developed by ATNICG/7 and noted by APANPIRG/23 in the report.

- Member States were encouraged to provide contribution to the development of SWIM concept.

5.6   USA informed the meeting about their follow-up action taken with ACP WG I and during AN Conf/12 regarding the need of development of SWIM/IMS by ICAO resulting from ATNICG/7 and APANPIRG/23 Conclusion 23/21. The meeting noted the programme has already been listed as priority by ANC and the other thing is the requirement for an interoperable regional network which was discussed by the ad hoc working group during the meeting.

5.7   The Frequentis representative informed the meeting that the SWIM operation concept has been specified in SESAR Document - Project Number 08.01.01, D41 - SWIM Concept of Operations.

_ _ _ _ _ _ _ _ _ _ _

Agenda Item 6:   Report of IMS/SWIM Sub-group on regional SWIM implementation objective and IMS roadmap including cost-benefit analyses

6.1   The meeting agreed to defer the discussion on draft regional strategy on SWIM/IMS to next working group meeting to be held in Seattle in August or October 2013 as the initial draft was not ready for consideration by the meeting. The lead member from FAA was not able to participate in the meeting.

_ _ _ _ _ _ _ _ _ _

Agenda Item 7:   Information Security

7.1   No paper was received for this agenda item. There was a general discussion on the information security subject. The meeting noted the Recommendations of AN-Conf/12 on the Information (Cyber) Security. The meeting also noted that encryption used in VPN may be kept in the MPLS. PKI is one element for consideration in the SWIM construction.

_ _ _ _ _ _ _ _ _ _

Agenda Item 8:   Pan Regional AIDC ICD related issues

8.1   The meeting noted the activities of the APAC/NAT Interregional AIDC Task Force which was established through APANPIRG Conclusion 23/20.

8.1.1   The first meeting of the Task Force IRAIDTF/1 was held on 16-18 January 2013 in Paris, France. Nominated participants from Thailand and Japan attended the meeting. Participants from Australia and New Zealand also participated in the meeting through Teleconference – Webex. As result, IR-ICDE V0.5 was developed.

8.1.2   Another teleconference to follow up the outcome of the first meeting was held on 27 February 2013. Next WEBEX meeting has been scheduled for 10 April 2013. There was a proposal for conducting a face to face meeting in either July or November 2013 in Bangkok.

8.1.3   The PAN regional ICD for AIDC Version 0.6 will be issued shortly. States in the APAC Region were encouraged to provide comments and/or input using changes matrix for consideration by the Task Force. The APAC regional ICD Version 3 will be kept frozen till the availability of pan regional ICD which is expected to be considered for approval by APANPIRG/25 in 2014 through CNS Sub-group.

8.2   **AIDC Implementation status and issues**

8.2.1   Hong Kong, China presented the working paper on their experience of trials and realization of the ATS Interfacility Data Communications (AIDC) in phases, using a standalone system with a subset of core messages exchanged with neighboring ACC/ATCUs and their consideration in applying adaptable parameters in AIDC capability in order to address interoperability issues and to fast track AIDC implementation with other partners to reduce ATM personnel workload and eliminate human errors arising from voice communications.

The meeting was also invited to enrich the new Pan-regional ICD for AIDC with:

> ➢   use of subset of AIDC messages to reap operational benefits of notification/coordination through electronic means on a mutually agreed basis

> ➢   proper handling of error/alert messages generated from the system or from counterparts by AIDC operators

> ➢   Service impact to time- and mission-critical AIDC message due to network latency and circuit diversion/re-route or system maintenance of the ATN/AFTN network infrastructure.

Australian experience on AIDC

8.2.2   Australia informed the meeting about their experience in the implementation of AIDC and development of AIDC ICD for APAC region. Various questions were clarified and States were encouraged to implementation of AIDC through bilateral discussion and agreement**.**

8.2.3   The meeting updated the status of AIDC implementation in the APAC region as provided in the **Appendix D** to this report.

– – – – – – – – – –

Agenda Item 9:   Review and update Subject/Tasks List and Action Item List etc.

9.1   Under this agenda item, the meeting discussed a proposal to amend TOR of the group. Considering the need to follow up recommendations of AN Conf/12 on AFS and SWIM and requirements to provide communication and information management for operational needs, the meeting agreed with the proposed changes and formulated following draft Decision for consideration by APNAPIRG through CNS Sub-group:

> **Draft Decision 8/7 -   Aeronautical Communication Service Implementation Coordination Group – (ACSICG)**

> That, the revised TOR of ATNICG provided in the **Appendix E** to this report be adopted.

9.2   The meeting also reviewed and updated ATN implementation strategies for the Asia/Pacific Region as proposed in Working Paper 19. The need to migrate to an IP based network has been discussed and supported. The minimum channel speed for 64 Kbps service for AMHS interconnection was also discussed. Considering time constraints in reviewing the proposed change to the strategy, the meeting agreed to refer this draft to ATNICG WG for further consideration.

9.3   The meeting also reviewed and updated the Performance Framework Form on ATN/AMHS Implementation as provided in the **Appendix F** to this report. The meeting also noted the requirement to migrate from the current form to Air Navigation Report Form as provided in the attachment 2 to Working Paper 14.

9.4   The meeting reviewed and updated the list of Subject/Tasks which is provided in the **Appendix G** to this report for review by CNS SG.

− − − − − − − − − − − − − −

Agenda Item 10:   Any other business

Dates and Venues for Future Meetings

10.1   Considering pending tasks that still need to be completed by the ATNICG Working Group, in particular for the development of strategies for SWIM and IMS, the meeting agreed and appreciated the offer from USA to host the ATNICG WG/12 meeting in either August or October 2013 in Seattle, USA. USA will inform member States of the working group in due course and issue a letter of invitation through ICAO Regional Office.

10.2   The meeting also appreciated the offer from Republic of Korea for hosting the Ninth ATNICG meeting (ATNICG/9 or ACSICG/1) in Republic of Korea. The meeting agreed that meeting should be scheduled for May 2014. Venue of the meeting will be further coordinated with the Secretariat and member States of the group will be kept informed accordingly.

Retirement of Regional Officer CNS

10.3   Dr. Sujan Saraswati, Secretary of the ATNICG retired in October 2012 after almost 6 years of service with ICAO. The group recorded its appreciation and gratitude to Dr. Sujan Saraswati for his dedication, achievements and contribution to the ATN/AMHS implementation in the region.

Appreciation to DGCA

10.4   The participants expressed Gratitude and deep appreciation to DGCA Indonesia for the hospitality extended to all participants and excellent arrangement made for the meeting including all activities organized during the meeting.

− − − − − − − − − − −

INTERNATIONAL CIVIL AVIATION ORGANIZATION

INTERFACE CONTROL DOCUMENT FOR ATN IPS (IPV4) ROUTER

VERSION 1.0

EXECUTIVE SUMMARY

The Aeronautical Telecommunication Network (ATN) is a global telecommunications network being established to provide digital communications between ICAO member States.

This Interface Control Document (ICD) the provides Internet Protocol Suite (IPS) router guidelines for the routers that form nodes of the ATN backbone to ensure interoperability between States

CONTENTS

LIST OF FIGURES

1.0 INTRODUCTION

This document provides ATN IPS router ICD guidelines for the routers that form nodes of the network Backbone. This ICD addresses the Network Interface and Internet layers of the ATN IPS router using the TCP/IP model.

1.1 Purpose and Scope

The general requirements for the ATN IPS router cover the lower two layers of the TCP/IP four-layer model. The TCP/IP model defines a four-layer network model as shown in Figure 1-1. Only the lower two layers are covered under this document.

| Application |
| Transport |
| Internet |
| Network Interface |
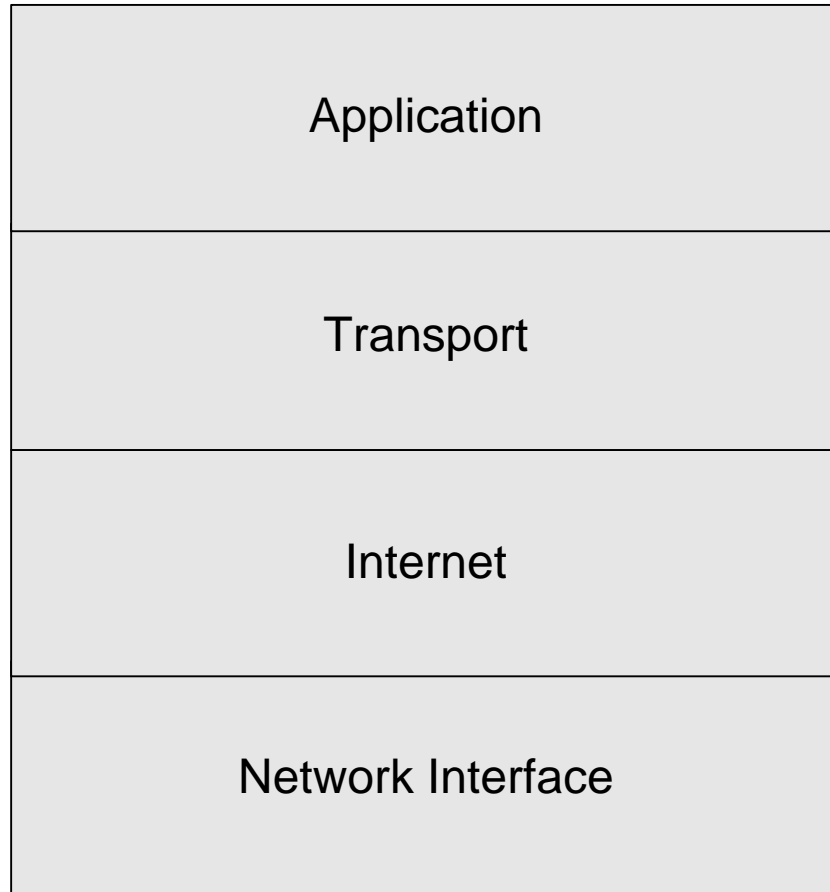
Figure 1-1 TCP/IP Layer Model

1.2 Document Structure

This document is structured as follows:

- Section 1, Introduction, summarizes the contents of this document and reference documents.
- Section 2, Internet Protocol Addressing, specifies the Internet Protocol (IP) address allocation.
- Section 3, Interface Design Characteristics, provides the layer 1 and 2 requirements for interface between ATN IPS routers.

1.3 Applicable Documents

The following documents form a part of this ICD to the extent specified herein. In the event of a conflict between the documents referenced herein and the contents of this ICD, the contents of this ICD shall be the superseding requirements

1.3.1   Internet Standards

RFC 791 Internet Protocol, September 1981
RFC 792 Internet Control Message Protocol, September 1981, as updated by RFCs 950, 4884, and 6633
RFC 793 Transmission Control Protocol, September 1981, as updated by RFC 3168
RFC 796 Address Mappings, September 1981
RFC 826 An Ethernet Address Resolution Protocol, November 1982
RFC 894 Standard for the Transmission of IP Datagrams over Ethernet Networks, April 1984
RFC 2427 Multiprotocol Interconnect over Frame Relay (FR), September 1998
RFC 950 Internet Standard Subnetting Procedure, August 1985
RFC 1812 Requirements for IP Version 4 Routers, June 1995, as updated by RFC 2644 and RFC 6633
RFC 2328 Open Shortest Path First (OSPF) Version 2, April 1998
RFC 2439 BGP Route Flap Damping, November 1998
RFC 2644 Changing the Default for Directed Broadcasts in Routers, August 1999
RFC 3168 The Addition of Explicit Congestion Notification (ECN) to IP, September 2001
RFC 4271 A Border Gateway Protocol 4 (BGP-4), January 2001, as updated by RFC 6286
RFC 4884 Extended ICMP to Support Multi-Part Messages, April 2007
RFC 6286 Autonomous-System-Wide Unique BGP Identifier for BGP-4, June 2011
RFC 6633 Deprecation of ICMP Source Quench Messages, May 2012

1.3.2   ICAO Documents

ATNICG/5-WP/11 11 "Proposed Asia/Pacific IPv4 Address Planning" presented and accepted at The Fifth Meeting of Aeronautical Telecommunication Network (ATN) Implementation Co-ordination Group of APANPIRG (ATNICG/5) in Kuala Lumpur, Malaysia, on 31 May – 4 June 2010

2.0 INTERNET PROTOCOL ADDRESSING

Network addressing should be in accordance with RFC 796 for IPv4 implementations.

3.0 INTERFACE DESIGN CHARACTERISTICS

This section provides the general functional and physical design characteristics for the interfacing communication devices.

3.1 General Characteristics

The ATN IPS routers are Commercial off the Shelf (COTS) routers that can be easily procured and implemented. The use of these routers will tremendously decrease the time of deployment and final implementation of the ATN.

3.2 Functional Design Characteristics

This section describes the functional requirements of this interface.

3.2.1   Network Interface Layer

The network interface layer handles the hardware details or the physical interfacing to the transmission medium (e.g., cable, radio link). It provides the mechanical, electrical, functional, and procedural methods necessary to activate, maintain, and deactivate physical connections for data links.

The following standards are allowable physical interface implementations.

3.2.1.1 TIA/EIA-232-E/F

The TIA/EIA-232-E/F should be implemented according to TIA/EIA-232-E/F documents.

3.2.1.2 TIA/EIA-530-A

The TIA/EIA-530-A should be implemented according to TIA/EIA-530-A document.

3.2.1.3 V.35

The V.35 should be implemented according to ITU-T V.35 document.

3.2.1.4 Ethernet

Transmission of IPv4 datagrams over Ethernet networks should be in accordance with RFC 894.

3.2.1.5 Frame Relay (FR)

Transmission of IPv4 datagrams over Frame Relay should be done in accordance with RFC 2427.

3.2.2   Internet Layer

The Internet layer specifies the protocols that provide services corresponding to the internet layer. The protocol used in this layer shall be Internet Protocol (IP). IP is designed for use in interconnected packet-switched computer communication networks and provides addressing and fragmentation services.

3.2.2.1 Internet Protocol

IPv4 implementations shall be in accordance with RFC 791.

3.2.3   Routing

The Border Gateway Protocol 4 (BGP-4) shall be used to build and maintain routing tables in the ATN IPS routers, in accordance with RFC 4271. BGP route flap damping shall be used in accordance with RFC 2439.

3.2.4   Monitoring

ATN IPS routers shall support monitoring, to include, at a minimum, properly responding to an ICMP (RFC 792) Echo Request (ping).

APPENDIX A - ACRONYMS

A.0 Acronyms

This appendix defines the acronyms used in this document.

A/G	AIR-GROUND
AAC	Aeronautical Administrative Control
ABM	Asynchronous Balanced Mode
AIDC	ATS Interfacility Data Communications
AMHS	ATS Message Handling System
AOC	Aeronautical Operational Control
APC	Aeronautical Passenger Communication
APRLs	ATN Protocol Requirement Lists
ATN	Aeronautical Telecommunications Network
ATS	Air Traffic Service
ATSC	Air Traffic Service Control
BGP	Border Gateway Protocol
CLNP	Connectionless Network Protocol
CLNS	Connection-Less Network Service
CPDLC	Controller Pilot Data Link Communications
DCE	Data Circuit-terminating Equipment
DM	Disconnected Mode
DTE	Data Terminal Equipment
E/R	Error Report
ECN	Explicit Congestion Notification
EIA	Electrical Industry Association
ERD	End Routing Domain
ES	End System
FIB	Forwarding Information Base
FR	Frame Relay
FSM	Finite State Machine
G-G(G/G)	Ground-Ground
GRE	Generic Routing Encapsulation
ICAO	International Civil Aviation Organization
ICD	Interface Control Document
ICMP	Internet Control Message Protocol

IDRP	Inter Domain Routing Protocol
IEC	International Electrotechnical Commission
IPS	Internet Protocol Suite
ISO	International Standardization Organization
IP	Internet Protocol
ITU	International Telecommunications Union
ITU-T	ITU Telecommunications Sector
LAPB	Link Access Procedure Balanced
NET	Network Entity Title
NPDU	Network Protocol Data Unit
NSAP	Network Service Access Point
OSI	Open Systems Interconnection
PDU	Protocol Data Unit
PIB	Policy Information Base
PICS	Protocol Implementation Compliance Statement
PSDN	Public Switched Data Network
PSN	Packet Switched Network
PVC	Permanent Virtual Circuit
QOS	Quality of Service
RD	Routing Domain
RDC	Routing Domain Confederation
RIB	Routing Information Base
SARPs	Standards and Recommended Practices
SNDCF	Sub Network Dependent Convergence Functions
SNPA	Sub Network Point of Attachment
SVC	Switched Virtual Circuit
TBD	to be Determined
TBR	to be Reviewed
TCP	Transmission Control Protocol

Interconnection, Connected to router of: Administration (Location of Router)	Stage	BBIS									Phillipines (Manila)	Stage	Interconnection, Connected to router of: Administration (Location of Router)	Remarks
		Australia (Brisbane)	China (Beijing)	Hong Kong, China (Hong Kong)	India (Mumbai)	Fiji (Nadi)	Japan (Fukuoka)	Singapore (Singapore)	Thailand (Bangkok)	USA (Salt Lake City / Atlanta)				
	A					Completed	Q3/17	Q3/13		Q2/13		A		
Australia	B					Q3/12	Q4/17	Q3/13		Q2/13		B	Australia	
(Brisbane)	C					Q2/13	Q1/18	Q4/13		Q3/13		C	(Brisbane)	
	D					Q2/13	Q2/18	Q4/13		Q4/13		D		
China	A			Q3/10	Q1/11		Q3/16		Q1/14			A	China	
	B			Q3/10	Q2/11		Q4/16		Q4/13			B		
(Beijing)	C			On-going	On-going - pre-operational trials to begin march/13		Q1/17		Q4/13			C	(Beijing)	
	D			Q4/13	Q2/13		Q2/17		Q1/14			D		
Hong Kong, China	A		Q3/10				Q2/16		Q1/13		Q1/15	A	Hong Kong, China	
	B		Q3/10				Q3/16		Q4/12		Q2/15	B		
(Hong Kong)	C		On-going				Q3/16		Q4/12		Q2/15	C	(Hong Kong)	
	D		Q4/13				Q4/16		Q2/13		Q4/15	D		
India	A		Q1/11					Q3/09	Q2/13			A	India	
	B		Q2/11					Q4/09	Q2/12			B		
(Mumbai)	C		On-going - pre-operational trials to begin march/13					Q4/09	Q2/13			C	(Mumbai)	
	D		Q3/13					Completed	Q4/13			D		
	A	Completed								Completed		A		

Interconnection, Connected to router of: Administration (Location of Router)	Stage	BBIS									Phillipines (Manila)	Stage	Interconnection, Connected to router of: Administration (Location of Router)	Remarks
		Australia (Brisbane)	China (Beijing)	Hong Kong, China (Hong Kong)	India (Mumbai)	Fiji (Nadi)	Japan (Fukuoka)	Singapore (Singapore)	Thailand (Bangkok)	USA (Salt Lake City / Atlanta)				
Fiji	B	Completed								Completed		B	Fiji	
(Nadi)	C	Q3/13								Completed		C	(Nadi)	
	D	Q4/13								completed		D		
	A	Q2/17	Q2/16	Q2/16				Q2/16		Q3/00 Renewal AMHS Q2/15		A		
Japan	B	Q3/17	Q3/16	Q3/16				Q3/16		Q4/04 Renewal AMHS Q3/15		B	Japan	Note : Japan has plans to install a new AMHS system in 2015 and start testing the sytem initially with FAA and then schedule connectivity with other BBIS a nd Bis countries.
(Fukuoka)	C	Q3/17	Q3/16	Q3/16				Q3/16		Q4/04 Renewal		C	(Fukuoka)	
	D	Q4/17	Q4/16	Q4/16				Q4/16		Completed Renewal AMHS Q4/15		D		
	A	Q3/13			Q3/09		Q2/16		Q2/13		Q1/15	A		
Singapore	B	Q3/13			Q4/09		Q3/16		completed		Q2/15	B	Singapore	
(Singapore)	C	Q4/13			Q4/09		Q3/16		ongoing		Q2/15	C	(Singapore)	
	D	Q4/13			Completed		Q4/16		Q2/13		Q4/15	D		
	A		TBD * Discussions underway to implement the circuit in 2013-14	Q4/12	Q2/13			Q2/13				A		
Thailand	B		TBD	Q3/12	Q2/12			completed				B	Thailand	
(Bangkok)	C		TBD	Q3/12	Q3/13			ongoing				C	(Bangkok)	
	D		TBD	Q4/12	Q4/13			Q3/13				D		
	A	Q2/13				Completed	Completed Renewal AMHS Q2/15					A		

Interconnection, Connected to router of: *Administration (Location of Router)*	Stage	BBIS										Stage	Interconnection, Connected to router of: *Administration (Location of Router)*	Remarks
		Australia (Brisbane)	China (Beijing)	Hong Kong, China (Hong Kong)	India (Mumbai)	Fiji (Nadi)	Japan (Fukuoka)	Singapore (Singapore)	Thailand (Bangkok)	USA (Salt Lake City / Atlanta)	Phillipines (Manila)			
USA	B	Q2/13				Completed	Completed Renewal AMHS Q3/15					B	USA	
(Salt Lake City / Atlanta)	C	Q3/13				Completed	Completed Renewal AMHS Q3/15					C	(Salt Lake City / Atlanta)	
	D	Q4/13				completed	Completed Renewal AMHS Q4/15					D		
Phillipines	A			Q1/15				Q1/15					Phillipines	
	B			Q2/15				Q2/15						
	C			Q2/15				Q2/15						
	D			Q4/15				Q4/15						
Bahrain	A							Q3/13				A	Bahrain	
	B							N/A				B		
	C							Completed				C		
	D							Q4/13				D		
Europe	A						TBD					A	Europe	
	B						TBD					B		
	C						TBD					C		
	D						TBD					D		
Italy	A								Q1/14			A	Italy	
	B								q4/13			B		
	C								q4/13			C		
	D								Q2/14			D		
Kuwait	A		TBD									A	Kuwait	
	B		TBD									B		
	C		TBD									C		
	D		TBD									D		
	A		TBD				Q3/17					A		

Interconnection, Connected to router of: Administration (Location of Router)	Stage	BBIS									Phillipines (Manila)	Stage	Interconnection, Connected to router of: Administration (Location of Router)	Remarks
		Australia (Brisbane)	China (Beijing)	Hong Kong, China (Hong Kong)	India (Mumbai)	Fiji (Nadi)	Japan (Fukuoka)	Singapore (Singapore)	Thailand (Bangkok)	USA (Salt Lake City / Atlanta)				
Russian Federation	B		TBD				Q4/17					B	Russian Federation	
	C		TBD				Q1/18					C		
	D		TBD				Q2/18					D		
South Africa	A	TBD										A	South Africa	
	B	TBD										B		
	C	TBD										C		
	D	TBD										D		
United Kingdom	A						Q4/11					A	United Kingdom	
	B						N/A					B		
	C						Q1/12					C		
	D						Completed					D		
Indonesia (Jakarta-Singapore/Makkasar-Australia)	A	Q1/14						2009				A	Indonesia (Jakarta)	
	B	Q2/14						Completed				B		
	C	Q3/14						Completed				C		
	D	Q4/14						Q3/13				D		
New Zealand (Christchurch)	A	Q1/14								Q1/14		A	New Zealand (Christchurch)	
	B	N/A								N/A		B		
	C	Q2/14								Q2/14		C		
	D	Q3/14								Q1/15		D		
Timor Leste (Dili)	A	UA/TBD										A	Timor Leste (Dili)	
	B	UA/TBD										B		
	C	UA/TBD										C		
	D	UA/TBD										D		
Nauru (Nauru)	A	UA/TBD										A	Nauru (Nauru)	
	B	UA/TBD										B		
	C	UA/TBD										C		
	D	UA/TBD										D		
	A	TBD										A		

| Interconnection, Connected to router of: *Administration (Location of Router)* | Stage | BBIS | | | | | | | | | Phillipines (Manila) | Stage | Interconnection, Connected to router of: *Administration (Location of Router)* | Remarks | |
		Australia (Brisbane)	China (Beijing)	Hong Kong, China (Hong Kong)	India (Mumbai)	Fiji (Nadi)	Japan (Fukuoka)	Singapore (Singapore)	Thailand (Bangkok)	USA (Salt Lake City / Atlanta)					
Papau New Guinea	B	TBD										B	Papau New Guinea		
(Port Moresby)	C	TBD										C	(Port Moresby)		
	D	TBD										D			
	A	UA/TBD										A			
Solomon Islands	B	UA/TBD										B	Solomon Islands		
(Honiara)	C	UA/TBD										C	(Honiara)		
	D	UA/TBD										D			
	A	UA/TBD										A			
Vanuatu	B	UA/TBD										B	Vanuatu		
(Port Vila)	C	UA/TBD										C	(Port Vila)		
	D	UA/TBD										D			
	A		TBD									A			
DPR Korea	B		TBD									B	DPR Korea		
(Pyongyang)	C		TBD									C	(Pyongyang)		
	D		TBD									D			
	A		Q1/09	Q3/09								A			
Macao, China	B		Q1 - Q2/09	Q3 - Q4/09								B	Macao, China		
(Macao)	C		Q1 - Q2/09	Q3 - Q4/09								C	(Macao)		
	D		Q4/13	Completed								D			
	A		TBD									A			
Mongolia	B		TBD									B	Mongolia		
(Ulaanbaatar)	C		TBD									C	(Ulaanbaatar)		
	D		TBD									D			
	A		TBD						Q1/14			A			
Myanmar	B		TBD						Q2/14			B	Myanmar		
(Yangoon)	C		TBD						Q3/14			C	(Yangoon)		
	D		TBD						Q4/14			D			

Interconnection, Connected to router of: Administration (Location of Router)	Stage	BBIS									Phillipines (Manila)	Stage	Interconnection, Connected to router of: Administration (Location of Router)	Remarks	
		Australia (Brisbane)	China (Beijing)	Hong Kong, China (Hong Kong)	India (Mumbai)	Fiji (Nadi)	Japan (Fukuoka)	Singapore (Singapore)	Thailand (Bangkok)	USA (Salt Lake City / Atlanta)					
	A		Q2/12* No physical connection yet, testing through VSAT		Q4/12							A			
Nepal	B		Q3/12		Q2/13							B	Nepal		
(Kathmandu)	C		Q4/12		Q2/13							C	(Kathmandu)		
	D		Q2/13		Q2/13							D			
	A		TBD		Q3/10							A			
Pakistan	B		TBD		N/A							B	Pakistan		
(Karachi)	C		TBD		Q3/10							C	(Karachi)		
	D		TBD		Q2/13 India ready, waiting for Pakistan updation of AMC table							D			
	A		Q2/10				Q3/16					A			
Republic of Korea	B		Q3/10				Q4/16					B	Republic of Korea		
(Seoul)	C		Q3-Q4/10				Q1/17					C	(Seoul)		
	D		Completed				Q2/17					D			
	A			Q4/14				Q3/14	Q3/14			A			
Vietnam	B			Q4/14				Q3/14	Q3/14			B	Vietnam		
(Ho Chi Minh)	C			Q4/14				Q3/14	Q3/14			C	(Ho Chi Minh / Hanoi)		
	D			Q1/15				Q4/14	Q4/14			D			
	A			TBD			Q3/17					A			
Taipei	B			TBD			Q4/17					B	Taipei		
	C			TBD			Q1/18					C			
	D			TBD			Q2/18					D			
	A				Q2/13				Q2/13			A			
Bangladesh	B				Q2/13				Q2/13			B	Bangladesh		

Interconnection, Connected to router of: *Administration (Location of Router)*	Stage	BBIS										Stage	Interconnection, Connected to router of: *Administration (Location of Router)*	Remarks	
		Australia	China	Hong Kong, China	India	Fiji	Japan	Singapore	Thailand	USA	Phillipines (Manila)				
		(Brisbane)	(Beijing)	(Hong Kong)	(Mumbai)	(Nadi)	(Fukuoka)	(Singapore)	(Bangkok)	(Salt Lake City / Atlanta)					
(Dhaka)	C				Q2/13				Q3/13			C	(Dhaka)		
	D				Q2/13				Q3/13			D			
	A				Reply received from Bhutan. Govt. approval for funds will be sought by them N/A							A			
Bhutan	B				N/A							B	Bhutan		
(Paro)	C				N/A							C	(Paro)		
	D				N/A							D			
	A				Q3/13							A			
Kenya	B				Q4/13							B	Kenya		
	C				Q4/13							C			
	D				Q4/13							D			
	A				Q1/10							A			
Oman	B				N/A							B	Oman		
(Muscat)	C				Awaiting firm plans from Muscat Q3/12							C	(Muscat)		
	D				Q4/13							D			
	A				Awaiting firm information from Sri Lanka Q2/13			TBD				A			
Sri Lanka	B				N/A			TBD				B	Sri Lanka		
(Colombo)	C				Q2/13			TBD				C	(Colombo)		

Interconnection, Connected to router of: *Administration (Location of Router)*	Stage	BBIS										Stage	Interconnection, Connected to router of: *Administration (Location of Router)*	Remarks	
		Australia	China	Hong Kong, China	India	Fiji	Japan	Singapore	Thailand	USA	Phillipines				
		(Brisbane)	(Beijing)	(Hong Kong)	(Mumbai)	(Nadi)	(Fukuoka)	(Singapore)	(Bangkok)	(Salt Lake City / Atlanta)	(Manila)				
	D				Q3/13			TBD				D			
	A					UA						A			
Kiribati	B					UA						B	Kiribati		
(Tarawa)	C					UA						C	(Tarawa)		
	D					UA						D			
	A					Q4/12						A			
New Caledonia	B					NA						B	New Caledonia		
(Noumea)	C					Q4/12						C	(Noumea)		
	D					Q4/12						D			
	A					UA						A			
Tuvalu	B					UA						B	Tuvalu		
(Funafuti)	C					UA						C	(Funafuti)		
	D					UA						D			
	A					UA						A			
Wallis Island	B					UA						B	Wallis Island		
(Wallis)	C					UA						C	(Wallis)		
	D					UA						D			
	A							2013				A			
Brunei Darussalam	B							2013				B	Brunei Darussalam		
(Brunei)	C							2013				C	(Brunei)		
	D							2013				D			
	A							2007	Q2/13			A			
Malaysia	B							N.A.	Q3/13			B	Malaysia		
(Kuala Lumpur)	C							Completed	Q4/13			C	(Kuala Lumpur)		
	D							Q4/13	Q4/13			D			
	A								Q2/13			A			
Cambodia	B								Q3/13			B	Cambodia		
(Phnom Penh)	C								Q3/13			C	(Phnom Penh)		
	D								Q3/13			D			

| Interconnection, Connected to router of: *Administration (Location of Router)* | Stage | BBIS | | | | | | | | | Phillipines (Manila) | Stage | Interconnection, Connected to router of: *Administration (Location of Router)* | Remarks | |
		Australia (Brisbane)	China (Beijing)	Hong Kong, China (Hong Kong)	India (Mumbai)	Fiji (Nadi)	Japan (Fukuoka)	Singapore (Singapore)	Thailand (Bangkok)	USA (Salt Lake City / Atlanta)					
	A								Q1/13			A			
Lao PDR	B								Q2/13			B	Lao PDR		
(Vientiane)	C								Q3/13			C	(Vientiane)		
	D								Q4/13			D			
	A									UA		A			
American Samoa	B									UA		B	American Samoa		
(Pago Pago)	C									UA		C	(Pago Pago)		
	D									UA		D			
	A									UA		A			
Marshall Islands	B									UA		B	Marshall Islands		
	C									UA		C			
	D									UA		D			
	A									UA		A			
Micronesia, Federated	B									UA		B	Micronesia, Federated		
State of Chuuk	C									UA		C	State of Chuuk		
	D									UA		D			
	A									UA		A			
Micronesia, Federated	B									UA		B	Micronesia, Federated		
State of Kosrae	C									UA		C	State of Kosrae		
	D									UA		D			
	A									UA		A			
Micronesia, Federated	B									UA		B	Micronesia, Federated		
State of Ponapei	C									UA		C	State of Ponapei		
	D									UA		D			
	A									UA		A			
Micronesia, Federated	B									UA		B	Micronesia, Federated		
State of Yap	C									UA		C	State of Yap		
	D									UA		D			

Interconnection, Connected to router of: Administration (Location of Router)	Stage	BBIS									Phillipines (Manila)	Stage	Interconnection, Connected to router of: Administration (Location of Router)	Remarks	
		Australia (Brisbane)	China (Beijing)	Hong Kong, China (Hong Kong)	India (Mumbai)	Fiji (Nadi)	Japan (Fukuoka)	Singapore (Singapore)	Thailand (Bangkok)	USA (Salt Lake City / Atlanta)					
Palau	A									UA		A	Palau		
	B									UA		B			
	C									UA		C			
	D									UA		D			
					Note:										
					A	Physical Connections									
					B	Router Connection Tests									
					C	MTA Interoperability Tests									
					D	AMHS Commission									
					Q1/09	e.g. 1st Quarter in 2009									
					UA	User Agent									
Note : Japan has plans to install a new AMHS system in 2015 and start testing the sytem initially with FAA and then schedule installation of other circuits with BBIS a nd Bis countries.															

CNS/ATM Implementation Planning Matrix

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	Navigation*			ADS-B/ Multilateration	ADS-C	Remarks
				En-route	Terminal	Approach			
AFGHANISTAN									
AUSTRALIA	ATN tests were conducted. BIS Router and Backbone BIS Router and AMHS implemented.	AFTN based AIDC Implemented between Brisbane and Melbourne, Auckland, Nadi and Auckland. AIDC is also in use between Melbourne and Mauritius.	Implemented and integrated with ATM systems to support FANS1/A equipped aircraft.	Implemented	Implemented		A total of 29 UAP and 14 WAM stations are used to provide a 5 Nm separation service and operational. ADS-B mandate applies from 12/2013 at and above FL290. Mandates for additional flight level are considered for 2015 & 2017. WAM operating in Tasmania. Commissioned in 2010. WAM being installed in Sydney to provide 3 Nm separation service and PRM which is expected to be operational 2011. ADS-B data sharing with Indonesia operational since 2/2011.	FANS 1/A ADS-C implemented.	

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	Navigation*			ADS-B/ Multilateration	ADS-C	Remarks
				En-route	Terminal	Approach			
AUSTRALIA (Cont'd)							ASMGCS using multilateration operational in Melbourne & Sydney in 2010. Brisbane and Perth being installed.		
BANGLADESH	BIS Router and AMHS planned for 2011.	AIDC between Dhaka and CTG, Dhaka and Sylhet planned for 2011.		Not yet planned	Not yet planned		Not yet planned	Not yet planned	
BHUTAN	ATN BIS Router and UA service 2011.					Procedures developed for NPA.			
BRUNEI DARUSSALAM	ATN BIS Router planned for 2012 and AMHS planned for 2012.								
CAMBODIA	BIS Router and AMHS planned for 2011.	Planned 2009	Planned 2009			Procedure developed for NPA.			

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	Navigation*			ADS-B/ Multilateration	ADS-C	Remarks
				En-route	Terminal	Approach			
CHINA	ATN Router and AMHS deployed in 2008.

Tripartite BBIS trial completed with Bangkok and Hong Kong, China in Jan. 2003.

ATN trial with Hong Kong using XOT over internet conducted in 2006, Further trials planned in 2009.

AMHS/ATN technical tests with Macau completed in 2009.

ATN/AMHS circuit with ROK put into operational use in June 2011.

ATN/AMHS tests with India are on-going.

Plan for ATN/AMHS implementation with Hong Kong, China (2013).

Plan for ATN/AMHS implementation with Macau, China (2013).

ATN and AMHS technical trial with Mongolia is TBD. | AIDC between some of ACCs within China has been implemented. AIDC between several other ACCs are being implemented.

AIDC between Sanya and Hong Kong put in to operational use in Feb 2007.

AIDC between Qingdao and Incheon planned for 2013. | Implemented to ATS Rout.

L888 route,

Trial on HF data link conducted for use in western China. | Implemented in certain airspace.

L888, Y1 and Y2 routes.

Total distance of air route with PBN is around 10.4 thousand km. which is approximately 7% of national route distance in China.

4RNP10 routes have been implemented in Sanya FIR.

RNP4 has been implemented in Lhasa to Ali, Xining to Yushu and Europe-Asia route. | RNAV (GNSS) implemented in certain airports.

Beijing, Guangzhou, Tianjin. | Ali, Linzhi and Lhasa airports | 5 UAT ADS-B sites are used for flight training of CAFUC.

Chengdu-Jiuzhai project finished in 2008 with 2 ADS-B stations and additional site is planned to enhance the surveillance coverage.

Chengdu - Lhasa route surveillance project completed with 5 ADS-B stations using 1090ES since 2010. Trials planned from May 2011.

1 ADS-B site installed in Sanya FIR since 2008. 3 additional ground stations planned, Trial planned for Jun, 2011. | FANS 1/A based ADS-C implemented.

L888 route. | |

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	Navigation*			ADS-B/ Multilateration	ADS-C	Remarks
				En-route	Terminal	Approach			
	Plan for test with Russian Federation (TBD)\n\nConnection tests with Thailand is 2014\n\nConnection tests with Nepal is 2013								
HONG KONG, CHINA	ATN and AMHS technical trial with Japan conducted in 2003.\n64 Kbps ATN Link with Bangkok put into operational use in June 2004.\n\nPreliminary ATN/AMHS technical trials with China (Beijing) using VPN over Internet connection conducted in September 2006.\n\nOperational AMHS commissioned in July2009.\n\nATN/AMHS circuit with Macao put into operational use in Dec. 2009.\n\nATN/AMHS interoperability tests with other adjacent communications centres commenced in late 2009, viz	AFTN-based AIDC with Sanya put into operational use in February 2007.\n\nAIDC trial with other adjacent ATS authorities for new ATC system to be commissioned by 2013.\n\nAIDC technical trial with Taibei conducted in 2010 and completed in 2012 and put into operational use in Nov. 2012.	FANS 1/A based CPDLC trials completed in 2002.\n\nVDL Mode-2 technical trial conducted in 2002.\n\nD-ATIS, D-VOLMET and 1-way PDC implemented in 2001.\n\nPDC service upgraded to 2-way data link in June 2008.	Implemented in certain airspace\n\nRNP4 Enroute (>FL290 in 2014)	Implemented in certain airspace\n\nBasic RNP-1 for SIDs and STARs in 2013.	RNAV (GNSS) departure procedures implemented in July 2005.\n\nRNP AR APCH procedures for 07L/25R runways implemented in June 2010.	A larger-scale A-SMGCS covering the whole Hong Kong International Airport put into operational use in April 2009.\n\nData collection/ analysis on aircraft ADS-B equipage in Hong Kong airspace conducted on quarterly basis since 2004.\n\nADS-B trial using a dedicated ADS-B system completed in 2007. ADS-B out operations over PBN routes L642 and M771 at or above FL 290 within HK FIR	FANS 1A trials for ADS-C completed in 2002.	

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	Navigation*			ADS-B/ Multilateration	ADS-C	Remarks
				En-route	Terminal	Approach			
	Taibei (2009), Beijing (2010), Thailand (2012), Japan ((Planned Q3/2016), Philippines (Planned Q2/2015) and Viet Nam (Planned Q4/2014) Plan for ATN/AMHS implementation with China (2013) and Taibei (2013).						are planned in December 2013 and within HK FIR at or above FL 290 in December 2014 ADS-B trial using ADS-B signal provided by Mainland China to cover southern part of Hong Kong FIR commenced in 2010.		
MACAO, CHINA	ATN/AMHS interoperability test with Beijing commenced in March 2009. ATN/AMHS circuit with Hong Kong put into operational use in end Dec. 2009.								ATZ within Hong Kong and Guangzhou FIRs. In ATZ full VHF coverage exist. Mode SMSSR coverage available for monitoring purposes.

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	Navigation*			ADS-B/ Multilateration	ADS-C	Remarks
				En-route	Terminal	Approach			
COOK ISLANDS									
DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA	The ATN BIS Router and AMHS to be implemented in 2011.	With neighboring ACCs to be implemented TBD		Implemented in certain ATS routes G711, B467		RNAV (GNSS) Non-precision approach to be implemented in 2011.	ADS-B has been used as back-up surveillance of SSR since 2008.		
FIJI	ATN BIS Router and AMHS implemented	AFTN based AIDC implemented between Nadi, Brisbane, Auckland and Oakland.	Implemented and integrated with ATM systems to support FANS1/A equipped aircraft.	Implemented		Implemented	ADS- B /multilateration ground stations installed. Situations awareness service will be provided in 2013.	FANS 1/A ADS-C implemented.	
FRANCE *(French Polynesia Tahiti)*		Implementation of limited message sets with adjacent centres under discussion.	FANS-1. Implemented since 1996.					FANS 1/A ADS-C implemented since March 1999.	
INDIA	MUMBAI – SINGAPORE – BBIS – Circuit Implemented MUMBAI – PAKISTAN – BIS – Operational Trial Completed MUMBAI – CHINA – BBIS – Under operational trials	AIDC with Dhaka /Muscat – TBD Mumbai/Karachi under trial operations	FANS-1 implemented at Kolkata, Chennai, Mumbai and Delhi.	SBAS (GAGAN project) likely to operational in the year 2013	PBN based SIDs & STARS implemented at Delhi, Mumbai, Chennai, Ahmadabad, Hyderabad and Kolkata		ASMGCS with MLAT commissioned at Delhi, Hyderabad and Bangalore Mumbai and Chennai ASMGCS	FANS 1/A ADS-C implemented at Kolkata, Chennai, Delhi and Mumbai.	

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	Navigation*			ADS-B/ Multilateration	ADS-C	Remarks
				En-route	Terminal	Approach			
	MUMBAI – OMAN – BIS -Presently AFTN over TCP/IP MUMBAI – THAILAND – BBIS -Awaiting readiness from Thailand MUMBAI AMHS – Commissioned in APRIL 2011						installed		
INDONESIA	ATN BIS Router and AMHS planned for trial in 2009. Trial with Singapore planned. ATNBIS Router and AMHS are still on going trial with Singapore planned to complete by 2012. (Part D: AMHS Commission)	Brisbane and Makassar in planned in June 2009. Makasar and Brisbane is still on going trial AIDC, planned operational in 2011	FANS-1/A. CPDLC in Ujung Pandang FIRs already trial start from 2008 and will be implemented in 2009. FANS-1/A CPDLC in Ujung Pandang FIRs is completely trial operational and will be full operational for designated route on September 2010.				30 Ground Station successfully installed. Since 2009, ATC Automation in MATSC has capabilities to support ADS-B application. ADS-B Task Force team established to develop planning and action concerning ADS-B Implementation within Indonesia FIR	FANS-1/A ADS-C trial planned at Jakarta and Ujung Pandang ACC in 2007. FANS-1/A ADS-C in Ujung Pandang FIRs is completely trial operational and will be full operational in September 2010.	

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	Navigation*			ADS-B/ Multilateration	ADS-C	Remarks
				En-route	Terminal	Approach			
JAPAN	ATN BBIS router and AMHS installed at 2000. Connection tests with USA 2000 - 2004 and put into operational use in 2005. ATN BBIS router (to apply to Dual Stack) and AMHS (to upgrade in 2015. The connection test with each country which is not currently connecting is started after update.	AFTN based AIDC implemented with Oakland, Anchorage, Incheon and Taibei. Planned between Fukuoka ACC and Shanghai ACC for 2014.	FANS1/A system Implemented in Fukuoka FIR.	SBAS implemented RNAV5 implemented. RNP AR Approach implemented	RNAV1 implemented Basic RNP implemented	RNP Approach implemented	Two Multilateration Systems have been implemented at Narita and Haneda airports. Multilateration Systems have been implemented at five airports and are being implemented at three airports. PRM (WAM) is planned to be implemented at Narita Airport. (Operation will start in 2014).	FANS 1/A. ADS-C implemented in Fukuoka FIR.	
KIRIBATI									
LAO PDR	ATN BIS Router and AMHS completed planned for implementation with Bangkok in 2010.	AIDC with Bangkok planned for 2010.		Implemented. Planned for 2011.					

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	Navigation*			ADS-B/ Multilateration	ADS-C	Remarks
				En-route	Terminal	Approach			
MALAYSIA	ATN BIS Router completed 2007. AMHS planned in 2012.	AFTN AIDC planned with Bangkok ACC – TBD. AIDC between Kuching and KK FIR already implemented. For Kuala Lumpur FIR, will be implemented by end of 2013.	On trial since July 2008. On 7 oceanic ATS routes i.e. P628, L510, L645, L627, N571, B466 and P574 within the Kuala Lumpur FIR. Implemented in 2011.	Implemented for Oceanic Routes. RNAV-5 domestic Routes implementation in progress and partially implemented.	Basic RNAV implemented	RNP AR APCH for WMKP and WBGG in progress, will be implemented by middle 2013. Other airports next.	Malaysia planned to start mandate ADS-B requirement in KL FIR in 2018 and ADS-B implementation on 2020. Implementation of ADS-B proposed in 2010 - 2015.	FANS 1/A ADS-C already implemented for Bay of Bengal area. Implemented since July 2008 on 7 oceanic ATS routes within KL FIR.	
MALDIVES	Implementation planned for 2013	ATM system software already upgraded to support AIDC. Trials with neighbouring ACC's planned in Sept. 2012.	New software upgrade in progress. Trials to be started in Aug. 2012.	Planned for completion in 2012	PBN based SIDS and STARS implemented.	RNP approach implemented at Ibrahim Nasir Int'l Airport	Implementation in progress. System to be commissioned in 2012.	Implemented since 2008. New software upgrade in progress and planned for completion in Aug. 2012	
MARSHALL ISLANDS						NPA implemented at Majuro Atoll.			
MICRONESIA (EDERATED STATES OF)									
Chuuk				Implemented					
Kosrae				Implemented					
Pohnpei				Implemented					
Yap				Implemented					

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	Navigation*			ADS-B/ Multilateration	ADS-C	Remarks
				En-route	Terminal	Approach			
MONGOLIA	AMHS/AFTN gateway is implemented in first quarter of 2012. ATNBIS router will be implemented in 2013. Coordinating with China on ATN/AMHS connection technical trial target date TBD.	ATM automation system supports AIDS and OLDI. Coordinating with Russia on OLDI connection in target date TBD. Coordinating with China on AIDC connection technical trial target date TBD.	Function available. Regular trials are conducted.		GPS procedures are being developed and implemented at 10 airports.		Five ADS-B ground station for combination with SSR will be implemented first quarter of 2013. Full coverage for surveillance gaps will be implemented by 2015-2016.	FANS 1/A ADS-C implemented since August 1998.	
MYANMAR	AMHS implemented Nov. 2011	Plan to support AIDC to the ATM automation system at 2013	Implemented since August 1998. Software upgrading and integration to ATC automation will be completed in 2012.	Three new DVOR installation have been completed by 2012 and plan to operate in 2013.	New ILS system at YGN Int'l AP finished installation by 2012 and plan to operate in 2013.		Plan to implement two ADS-B ground stations at the end of 2012.	Implemented since August 1998. Software upgrading and integration to ATC automation will be complete in 2012.	
NAURU									
NEPAL	BIS Router and AMHS planned for 2011.	AFTN/AMHS based AIDC between KTM-CAL, KTM-BAN, KTM-LHASA planned for 2011.			GPS departure and approach has been developed for 8 airports and planned for implementation in 2008.		ADS-B feasibility study planned for 2007.		

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	Navigation*			ADS-B/ Multilateration	ADS-C	Remarks
				En-route	Terminal	Approach			
NEW CALEDONIA	New router and AMHS planned at the end of 2013 with Nadi				Arrival GNSS based RNAV procedures have been developed by for La Tontouta Airport		Three ADS-B ground stations commissioned in 2010 to cover international traffic at La tontouta airport serving Tontouta ACC & APP. It is used for Situation awareness and SAR.		
NEW ZEALAND	AMHS implementation planned for 2012 using IPS links.	AFTN based AIDC implemented between New Zealand, Australia, Fiji, Tahiti, Chile and USA.	FANS-1/A. Implemented	Will be implemented as required.	RNAV procedures being implemented as developed.	RNP AR APCH implemented at Queenstown (NZQN).	MLAT being used in Queenstown area (WAM) and Auckland (airport surface movements). ADS-B data available from all MLAT & SSR sites.	FANS 1/A Implemented	
PAKISTAN	ATN/AMHS considered as Phase II implemented since 2010.	Implemented between Karachi and Lahore ACCs Plan to implement AIDC with Mumbai and Muscat for December 2010	Implementation planned from 2005-2010.	Planned for 2005-2010.	RNAV arrival and departure procedure being developed.	NPA (RNP) procedure are being developed and under flight inspection.	Feasibility study for using ADS-B is in hand. One station was installed at ACC Karachi and evaluation is in progress.	Planned for 2005-2010.	Existing Radar system being upgraded.

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	Navigation*			ADS-B/ Multilateration	ADS-C	Remarks
				En-route	Terminal	Approach			
PAPUA NEW GUINEA	Plans to create a newly duplicated digital communications line connecting with existing and new sites and replacing AFTN switch with a AMHS before 2015	Implemented with Australia in April 2011	Plans for new ATM system supporting CPDLC by 2015	Implemented	GNSS based RNAV procedures have been developed by for five airports.	GNSS NPA approach implemented at 22 aerodromes.	Legislation mandating ADS-B and guidelines for aircraft equipage and operational approval to be issued by 31/12/2011 with target mandatory date by mid-2015 and plans to provide ADS-B service above FL245 within Port Moresby FIR and also in specific higher traffic areas domestically.	Plans for new ATM system with ADS-C within UTA airspace by 2015	
PHILIPPINES	ATN G/G BIS Router/AMHS installed in 2006. Pending AMHS Interoperability tests moved to Q3/2015 both for Singapore and Hong Kong. AMHS trials with Singapore by end 2012 and Hong Kong planned in 2012.	Planned for 2013.	CPDLC Planned for 2011. Trials on-going.	New ACC on test.	RNAV routes of MLA. MACTAN for FLT validation.		Two ground stations scheduled for implementation in 2013.	FANS 1/A ADS-C planned for 2013.	

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	Navigation*			ADS-B/ Multilateration	ADS-C	Remarks
				En-route	Terminal	Approach			
REPUBLIC OF KOREA	ATN/AMHS circuit with China put into operational use in June 2011. ATN/AMHS test with Japan to be conducted	AFTN based AIDC implemented between ACC and Fukuoka ATMC. AIDC between Incheon and Qingdao to be implemented.	PDC & D-ATIS implemented 2003.	Two RNAV5 routes were implemented in 2011. More RNAV5/2 routes will be implemented gradually.	RNAV1 SID/STAR were partially implemented at GIMPO and INCHEON airports. More SIDs/STARs will be implemented gradually	RNP approaches with Baro were implemented at GIMPO airport in 2011. More RNP approaches with Baro will be implemented gradually	ADS-B implemented 2008 for SMC in Incheon International Airport.	FANS 1/A based ADS-C implemented since 2003 for contingency purpose.	
SINGAPORE	AMHS implemented. ATN Router trial with Malaysia completed in 2007 On-going ATN/AMHS trial with Indonesia and planned to complete by 2012. ATN/AMHS circuit with India put into operational use in March 2011. Completed ATN/AMHS trial using VPN over internet with Bahrain in 2011. On-going ATN/AMHS trial with Thailand and planned to complete by 2012.	AFTN based AIDC to be implemented	Implemented since 1997. Integrated in the ATC system in 1999.		RNAV SIDS and STARS implemented in 2006.	NPA Procedure implemented in 2005.	The airport M-lat system was installed in 2007 and "far-range" ADS-B sensor was installed in 2009.	FANS 1/A ADS-C implemented since 1997. Integrated with ATC system in 1999.	

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	Navigation*			ADS-B/ Multilateration	ADS-C	Remarks
				En-route	Terminal	Approach			
	ATN/AMHS circuit with UK put into operational use in March 2012.								
SRI LANKA	ATN BIS Router Planned for 2013. AMHS (Domestic) and AMHS/AFTN Gateway to be implemented by Oct. 2011.	Trials with Male' planned in 2013.	Implemented (FANS 1/A based)	14RNAV10 routes already established. 05 RNAV5 routes to be established in 2013. Upgrade airspace above FL225 to RNAV10 and introduce RNP4 routes in a phased manner within 2013-2016.	GNSS based RNAV-1 SIDS and STARS trials being conducted. To be implemented in a phased manner within 2013-2016.	Introduction of RNP APCH (with Baro-VNAV) in a phased manner with 2013-2016. GNSS based Precision Approaches planned beyond 2016.	ADS-B Trials planned for 2012 and implementation in 2013.	Implemented (FANS 1/A based) .	Information pertaining to Navigation are based on the PBN Implementation plan of Sri Lanka .
THAILAND	BBIS/BIS Routers already implemented. AMHS has been implemented. Trial with other BBIS States; Singapore, India and Hong Kong are on going. ATN/AMHS operational links for Singapore, India and Hong Kong, China are planned for completion by Q4 2013	AFTN based AIDC planned for TBD. (as a part of new ATM system)	FANS-1/A Implemented.	Under implementation	Implemented at Phuket Airport	Implemented at Phuket	Multilateration implemented in 2006 at Suvarnbhumi Int'l. Airport. ADS-B is planned to be part of future surveillance infrastructure.	FANS 1/A ADS-C Implemented.	

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	Navigation*			ADS-B/ Multilateration	ADS-C	Remarks
				En-route	Terminal	Approach			
TONGA	AMHS planned for 2008. The provider is linked to the New Zealand AFTN				RNAV procedures planned for 2013-2014	NPA planned for 2007. RNP AR APCH planned for 2013-2017	Trial planned for 2017		CPDLC and ADS-C is not considered for lower airspace
UNITED STATES	AMHS implemented. (Salt Lake City & Atlanta)	AFTN based AIDC implemented.	FANS-1/A based CPDLC implemented.	Implemented	Implemented		Status as of March 31, 2011 81 Radio Stations under construction or in Final Design (77 in CONUS; 4 in AK) 342 Radio Stations constructed (313 in CONUS; 29 in Alaska) 326 Radio Stations Reporting on the SBS Network (297 in CONUS; 29 in AK) 275 Operational Radio Stations WAM implemented in areas of Colorado for 5nm separation services and coming to Juneau in 2011	Implemented	

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	Navigation*			ADS-B/ Multilateration	ADS-C	Remarks
				En-route	Terminal	Approach			
VANUATU									
VIET NAM	BIS Routers planned for 2009. ATN/AMHS trial in 2010 and operation in 2012. ATN BIS Router AMHS in 2013	AFTN based AIDC implemented in 2009. Trial for ATN based AIDC planned in 2010. Trial for AIDC in 2012. Plan to implement in 2013	CPDLC operational trial conducted in early 2007. Implemented in 2007	For en-route TBD.	RNAV	GBAS 2015	2013	FANS 1/A ADS-C operational trial conducted for oceanic area of Ho Chi Minh FIR since March 2002. FAN 1/A implemented in 2007	

* Navigation – Navigation including Performance Based Navigation (PBN), APV and precision approach

**AIDC IMPLEMENTATION STATUS
IN THE APAC REGION**

Country Administration /Country Administration	ATS Unit A	ATS Unit B (Counterpart)	Remark: Date of implementation
Australia	Brisbane	Melbourne	
Australia/New Zealand	Brisbane	Auckland	
Australia/New Zealand	Auckland	Melbourne	
Australia/Fiji	Brisbane	Nadi (Oceanic)	
Australia/Mauritius	Melbourne	Mauritius	
Australia/South Africa	Melbourne	Johannesburg	
Australia/USA	Brisbane	Oakland	
Australia/Indonesia	Brisbane	Ujung Pandang	Undergoing operational trial from May 2013
New Zealand/Fiji	Auckland	Nadi (Oceanic)	
New Zealand/USA	Auckland	Oakland	
New Zealand/France	Auckland	Tahiti	
China	Sanya	Hong Kong	8 Feb. 2007
	Hong Kong	Taipei	12 Nov. 2012
	Guangzhou	Nanning	
	Guangzhou	Zhanjiang	
	Guangzhou	Zhuhai	
	Nanning	Kunming	
	Nanning	Zhanjiang	
	Zhanjiang	Haikou	
	Chengdu	Chongqing	
	Chengdu	Guiyang	
	Guiyang	Chongqing	
	Guiyang	Kunming	
India			Being implemented at all ATCC plus 32 Aerodromes
Japan	Fukuoka ATM Center	Oakland ARTCC	
	Fukuoka ATM	Anchorage ARTCC	
Japan/ROK	Tokyo ACC	Incheon ACC	
ROK/Japan	Fukuoka ACC	Incheon ACC	
	Fukuoka ACC	Taipei ACC	Mar. 2012
	Naha ACC	Taipei ACC	
Fiji/USA	Nadi	Oakland	
India/Pakistan	Mumbai	Karachi	Under Trial
Malaysia	Kota Kinabalu	Kuching	
Pakistan	Karachi	Lahore	

Some AIDC circuits being planned and/or under trial are listed as follows:

Country Administration /Country Administration	ATS Unit A	ATS Unit B (Counterpart)	Remark: Date of implementation
Myanmar	Yangon	All adjacent ATS units	ATM system to be ready in 2013
Philippines	Manila	Fukuoka ATM	Planned for 2015
Bangladesh	Dhaka	Chittagong Dhaka	System being updated
	Dhaka	Sylhet	
Thailand	Bangkok		
Malaysia	Kuala Lumpur	With adjacent ATS Units	By end of 2013
China/ROK	Qingdao	Incheon	Planned for 2013
DPR. Korea	Pyongyang	Adjacent ACCs	Being planned
Indonesia/Australia	Makassar	Brisbane	On-going trial
Maldives	Male	With neighboring ACCs	ATM system software already upgraded to support AIDC
Maldives/Sri Lanka	Male	Colombo	Planned for 2013
Mongolia	Ulaanbaatar	With China (AIDC) and Russia (OLDI)	ATM supports OLDI and AIDC discussion with the concerned for implementation
Thailand	Bangkok		Together with ATM system upgrades
Viet Nam			Trial conducted in 2012, implementation planned for 2013

_ _ _ _ _ _ _ _ _ _ _ _

<u>**DRAFT REVISED TERMS OF REFERENCE**</u>

<u>Title and Terms of Reference</u>

<u>Title:</u> **Aeronautical Communication Services Implementation Co-ordination Group (ACSICG)**

<u>Terms of Reference (TORs)</u>

<mark>Complete implementation of Asia and Pacific (APAC) Aeronautical Communication Network (ATN) and ensure the underlying communications backbone continues to support the evolving ICAO operational requirements for the exchange and management of aeronautical information and data.</mark>

<u>Composition</u>

The Group will be composed of experts nominated by ~~all~~ ICAO member states in the Asia and Pacific Regions.

<u>Reporting</u>

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

– – – – – – – – – – – – –

ASIA/PACIFIC REGION

PERFORMANCE FRAMEWORK FORM
(REGIONAL)

(Amended in March 2012)

REGIONAL PERFORMANCE OBJECTIVE: -   *APAC Objective 8*
IMPLEMENTATION OF AERONUTICAL TELECOMMUNICATION NETWORK (ATN) FOR GROUND – GROUND COMMUNICATION NETWORK

Benefits	
Safety	• Will provide reliable means of communication for Air Navigation Services, with the provision of automatic switching capability, in the event of failure of current media
Efficiency	• Routers will have the capability of choosing between different media based on defined criteria. • Multiplicity of protocols used for different communication requirements will be avoided; • Provision for lower case characters and graphic message included;

Strategy **Implementation strategy, short term (2009-2013)**				

ATM OC COMPONENTS	**TASKS**	**TIME FRAME**	**RESPONSIBILITY**	**STATUS**
SDM *(ATM Service Delivery Management)*	Ensure implementation of Ground to Ground Aeronautical Telecommunication Network (ATN) in the Asia and Pacific Regions			
	• Review the ATN <u>Implementation Strategy,</u> revise it when necessary taking into account the current developments	2013	ATNICG	Strategy needs to be revised to take into account the emerging communication services like SWIM.
	• Review the Status of implementation of dual stack ATN at the Backbone Boundary Intermediate System hubs	2011	ATNICG	Completed
	• <u>States hosting Backbone Boundary Intermediate Stations</u> to organize Testing of their system on bilateral basis	2013	States hosting Backbone Boundary Intermediate Systems	On-going Planner has been developed to provide up to date implementation and testing status in the region.

	• Implementation of AMHS Off Line Directory Service. Availability of off-line support by Eurocontrol AMC considered essential for the efficient management of AMHS Addresses. ICAO HQ has directed the States to register the operating personnel with AMC.	2010	ICAO Asia/Pacific Office, AEROTHAI.	Completed. Off line support by EUROCONTROL AMC established
	• Update information by the States/Administrations in AMC	Ongoing	States	Ongoing. 20 Administrations have registered as on the date of ATNICG/7
	• Completion of Networking with the BIS States	2015	Asia and Pacific Regions States	Some States started implementation and conducted operational trials
	• Review if implementation objectives have been met.	2009 - 2013	ATNICG	ATNICG to periodically review the status and direction in which the implementation is progressing and to ensure that the implementation efforts are leading towards the defined objectives
GPIs	GPI/17: Data link applications, GPI/22: Communication infrastructure			
References	• *Annex 10, Aeronautical Telecommunications, Volume III (Part I – Digital Data Communication Systems)* • *Manual on Detailed Technical Specifications for the Aeronautical Telecommunications Network (ATN) using ISO/OSI (Doc 9880)* • *ICAO Aeronautical Telecommunication Network (ATN) Manual for ATN using IPS Standards and Protocols (Doc 9896)* • *Manual on Required Communication Performance (Doc 9869)* • *Manual of Technical Provisions for the Aeronautical Telecommunication Network (Doc 9705)* • *Regional Implementation guidance materials adopted by APANPIRG*			

No.	PERFORMANCE OBJECTIVE	Tasks/Strategy	Benefits	Deliverables	Target Date	Leader	Supporting Members	ATNICG/8 Update
1	ATN Implementation Coordination	(1) Review of implementation problems and develop co-ordinated solutions (2) Coordinate / compile the regional implementation schedule (3) Monitor Implementation	Expedite implementation activities, ensure system compatibility through out the region	(1) Co-ordination Report (2) Waterfall schedule (3) Monitor AMHS Implementation Planner	(1)On-going /Semi-annually (2) Schedule 03/2013 (3) On- going	Kapoor (India) Hong Kong, China	All members	(1)Updated the information on the ATN Router and AMHS planning tables and the implementation status (2) **Completed,** maintain the AMHS implementation Planner.
2	ATN Operational Procedures	(1) Development of Interim Database for Directory Services	Make available real time and quality assurance addresses for ATN message delivery	(1) Interim Database - (2)Global AMC service are used	(1) (2013)	Robert Hallman (USA)	Thailand, Hong Kong China, Japan	**Completed.** The database was demonstrated. Aerothai will maintain the database on behalf of the regional ICAO Office. Aerothai will serve as POC for AMC coordination between ASIA/PAC States and Eurocontrol. ATN Operational Procedures is completed and adopted.
		(2) Develop the operational database management procedures		(2) Operational Procedures	(2) (2007)			**Completed.**

No.	PERFORMANCE OBJECTIVE	Tasks/Strategy	Benefits	Deliverables	Target Date	Leader	Supporting Members	ATNICG/8 Update
3	ATN Certification & Validation Process	(1) Develop conformance procedures and checklist for AMHS and ATN routers	Expedite implementation activities, ensure global system compatibility	(1) Checklist	(1) (2007)	Sin Hie Sng (Singapore)	China, Hong Kong China, Indonesia,ROK, USA,	**Completed**
		(2) Develop validation process document		(2) Conformance Document	(2) 2007			**Completed** and adopted by APANPIRG
				(3) Update to Conformance Document	(3) Ongoing until 2010			**Completed**
4	(1) ATN Documentation (2) Review all documents adopted by ATNICG and ATNTTF	(1) Study DIR objects / attributes proposed in ACP and follow development within other groups (2) Update document tree / establish tracking table for suspended dates (3) Standardized Report form and Guidance Material	Expedite implementation activities, ensure global system compatibility	(1) Directory Report (2) Tracking table/Updated documentation tree (3) AMC report (4)Report Form and Report Guidance	(1) Annually (2) Periodically (3) 2012	Jittima (Thailand)	USA	Update the database. AMC mandated by ICAO. Training completed. Directory Service will be implemented in coordination with ACP and phases will be developed.

No.	PERFORMANCE OBJECTIVE	Tasks/Strategy	Benefits	Deliverables	Target Date	Leader	Supporting Members	ATNICG/8 Update
		(2) Development AIDC documentation (including ICD) and follow development within other groups		(2) AFTN AIDC / ATN Gateway Specification ATN AIDC ICD	(2) 2014 (IRAIDTF-dependent)	(Thailand)	Thailand	Remark: Removal of provision from Doc 9880 was noted. IR AIDC ICD has been taken over by Inter-reginal Task Force. Monitoring progress and provides input
		(3) Update of AMHS ICD to comply with SARPs 3rd Edition		(1) Report differences between existing ICD and requirements for Edition 3 of Doc 9705 (2) Updated AMHS ICD	(1) Sept 2011 (2) (2013)	USA	Japan	Ad-hoc group formed and consolidated APAC Technical Specificaiton replacing AMHS ICD developed. Further verification of funciton are assigned to members of ATNICG WG.
		Managing PDR	Update ICAO Documents (9880 /9896)	PDR filing and tracking	On-going	USA	All the Member States	Additional Task proposed in ATNICG/5. PDR filing procedure already circulated.
5	ATN Performance	(1) Develop/establish/adapt/monitor/identify/analyse performance indicators	Assure QOS, service continuity, timely delivery of services	(1) AMHS performance report	(1) Annually until (2010)	Japan	Republic of Korea, India	**Will resisit when regional IP-VPN be considered.**

No.	PERFORMANCE OBJECTIVE	Tasks/Strategy	Benefits	Deliverables	Target Date	Leader	Supporting Members	ATNICG/8 Update
6	ATN Service Enhancements	(1) Review the impact of the implementation of Directory Services in the Region	Enhancing the service	(1) Report on directory	(1) Annually	Fiji	USA, Thailand New Zealand Japan Australia	AMC directory temporarily being used.Directory service will be considerd when regional IP-VPN becoming availabel.
		(2) Directory Service - Implementation Strategy	Enhancing the operation	Requirement Analysis Report & Implementation Strategy	(2) 2012	Thailand		Closed in view of the implementation of AMC
7	IPM Implementation	ATN/IPS Implementation Plan	Inter-regional and intra regional network compatibility	(1) ATN/IPS router ICD (2) IPS addressing plan (3) ATN/OSI - ATN/IPS Transition Plan (4) ATN/IPS routing policy (5) Update FASIS Tables to accommodate IPS (6) IDRP over IP subnet - ICD	(1) 2011 (2) 2011 (3) 2011 (4) 2012 (5) 2011 (6) 2011	USA	Australia, China, India, Fiji, Hong Kong, China, Japan, and USA	Proposed an additional task 1) ongoing 2) IPv4 addressing plan has been adopted

No.	PERFORMANCE OBJECTIVE	Tasks/Strategy	Benefits	Deliverables	Target Date	Leader	Supporting Members	ATNICG/8 Update
		Providing support for emerging requirements of OPMET, AIS/AIM, AIDC etc.	Enhancing the service	Task Report on XML based messages over AMHS platform	2011	USA	Hong Kong China,	Additional Task proposed in ATNICG/5
		(5) Study for transition of AFTN-based AIDC as an alternative to ATN based AIDC to ATN environment	Improving the service and lowering the operating cost	(5) Report on the impact of transition of AFTN-AIDC to ATN-AIDC AFTN AIDC/ATN Gateway Specification	(5) (2008)	Thailand	India, Indonesia, New Zealand, USA,	A Draft specification of AFTN AIDC/ATN Gateway was presented. Completed. Task closed in view of removal of provision from Doc 9880
8	Address Prefix	Analyze Common Address Prefix Proposal	Improving the service and routing efficiency	Report on common prefix based analysis conduced	End of 2010	Mark Brown (Japan)	Australia, Fiji, Hong Kong China, New Zealand and USA	Closed. Action Items developed at ATNICG/2 for follow-up at WG meetings.
9	Security	(1) Develop ATN System Security policy	Safe and Secure Inter and Intra Regional Communication and service infrastructure	(1) Policy Document	(1) Annually until (2010)	Vidyut Patel (USA)	Australia, Hong Kong China	Completed and Adopted by APANPIRG/19

No.	PERFORMANCE OBJECTIVE	Tasks/Strategy	Benefits	Deliverables	Target Date	Leader	Supporting Members	ATNICG/8 Update
		(2) Develop ATN System Security Guidance		**(2) Guidance Document**	**(2) (2011)**			**reviewed and updated - closed**
		(3) Develop ATN System Security Solution for Initial and Enhanced Services		**(3) Security, Technical, Management and Operational Control**	**(3) (2008)**			**Completed**
		(4) Co-ordinate and monitor ACP working group and other regions including Directory Service, PDRs		**(4) Report**	**(4) Semi-Annually**		**Thailand**	**On-Going review and update**
		(5) Develop IPS Security Policy and update the relevant guidance documents		**Policy and updated guidance documents**	**2011**			**Proposed additional task to facilitate ATN/IPS**
		(6) Develop ATN System Security Check List based on Security Control and Regional Incident Response Plan and Contingency Plan		**(5) Check List, Regional Incident Response Plan and Contingency Plan**	**(5) (2009)**			**Forward to CNS/MET SG and APANPIRG for review and adoption**

No.	PERFORMANCE OBJECTIVE	Tasks/Strategy	Benefits	Deliverables	Target Date	Leader	Supporting Members	ATNICG/8 Update
10	ATN Service Enhancements (supporting amended ICAO Flight Plan and ATS Message Formats)	(1) Review the impact of the implementation of Amendment 1 to 15th Edition of Doc 4444 effective 15 Nov. 2012 (PANS ATM Chapter 4 and Appendix 3 relating to the ICAO Flight Plan and associated ATS Message formats to the AFS	Enhancing the service	(1) Report on capability of existing and planned AFS systems to the revised ICAO Flight Plan and ATS Message Format	(1) Annually until 2012	USA	Fiji, India Hong Kong, China New Zealand Singapore USA	**Completed.** Post Monitor the performance.
		(2) Identify the new requirements for AMHS/AFTN to support new message format	Enhancing the operation	(2) Report on impact of New ATS message format in AMHS	(2) 2010	Thailand	Fiji, India Hong Kong, China New Zealand Singapore USA	Completed
			Enhancing the operation	Develop Voice over IP point-to-point ICD	2012	USA, Japan, India		Task created in ATNICG/6

No.	PERFORMANCE OBJECTIVE	Tasks/Strategy	Benefits	Deliverables	Target Date	Leader	Supporting Members	ATNICG/8 Update
			(3) Identify the link control procedure using the AMHS to support the revised ATS message format to the ATC automation system	Enhancing the service	(3) Report whether special link control procedure is required	(3) 2010	Thailand		**Completed** Fiji, India Hong Kong New Zealand Singapore USA
		Develop Regional Strategy for the implementation of SWIM/IMS	To meet the requirements of ASBU as recommended in AN Conf/12	Regional SWIM/IMS Implementation Strategy	2014	USA		Draft Strategy will be presented to the ATNICG WG/12 meeting for consideration by CNS SG in 2014
		Common Communication Service Provider for the region.	Will facilitate implementation of circuits/connections within the region. Will also facilitate harmonization of regional network	Joint Working Paper for the consideration of CNS SG of the APANPIRG	May, 2013	USA	Japan, Singapore, Thailand, China, Hong Kong China and New Zealand	USA, Japan, Singapore, Thailand, China, Hong Kong China & New Zealand assigned the task of preparing common Working Paper
11	Update regional ATN/AMHS implementation strategy	Update regional ATN/AMHS Implementation Strategy to include recent developments	Regional Strategy will be aligned to the changing requirements	Updated Strategy	Apr. 2014	ATNICG WG Members		Draft Strategy to be reviewed by ATNICG/13

No.	PERFORMANCE OBJECTIVE	Tasks/Strategy	Benefits	Deliverables	Target Date	Leader	Supporting Members	ATNICG/8 Update
	The ATN PERFORMANCE OBJECTIVE Workprogramme of ATNICG relates to ICAO Strategic Objective: Sustainability and GPS22, 19 and 17. The APAC ATN ground-to-ground infrastructure will be fully operational 80 percent at 23 locations by December 2013. **(GPI-22) COMMUNICATION NETWORK INFRASTRUCTURE** **Related ATM objectives:** AMSS; HF data; VHF data; SSR Mode S; ATN **Scope:** To evolve the aeronautical mobile and fixed communication infrastructure, supporting both voice and data communications, accommodating new functions as well as providing the adequate capacity and quality of service to support ATM requirements. **(GPI-19) METEOROLOGICAL SYSTEMS** **Objective:** To improve the availability of meteorological information in support of a seamless global ATM system. **(GPI-17) IMPLEMENTATION OF DATA LINK APPLICATIONS** **Scope:** Increase the use of data link applications **Related ATM objectives:** Application of data link; Functional integration of ground systems; with airborne systems; ATS inter-facility data communication (AIDC)								

**Eighth Meeting of the Aeronautical Telecommunication Network Implementation
Co-ordination Group of APANPIRG (ATNICG/8)
Jakarta, Indonesia
18 - 21 March 2013**

LIST OF PARTICIPANTS

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESSS	TELEPHONE/FAX/E-MAIL
AUSTRALIA (2)		
Mr. George A. Kerlin	Senior Engineer Specialist Airservices Australia Locked Bag 747 Eagle Farm QLD 4009 **AUSTRALIA**	Tel: +61 (7) 3866 3263 Fax: +61 (7) 3866 3772 E-mail: george.kerlin@airservicesaustralia.com
Mr. Warren E. Beeston	Manger Solution ATC Future Systems Airservices Australia Locked Bag 747 Eagle Farm QLD 4009 **AUSTRALIA**	Tel: +61 (7) 3866 3720 Fax: +61 (7) 3866 3833 E-mail: warren.beeston@airservicesaustralia.com
BANGLADESH (2)		
Mr. Beni Madhab Biswas	Assistant Director (Comm.Ops) Civil Aviation Authority of Bangladesh Hazrat Shahajalal International Airport O/C Building Kurmitola, Dhaka 1229 **BANGLADESH**	Tel: +880 (2) 890 1044 Fax: +880 (2) 890 1411 E-mail: ccoohsia@caab.gov.bd
Mr. Saleh Ahmed Khan	Director (Communication) Civil Aviation Authority of Bangladesh Headquarters, Kurmitola Dhaka 1229 **BANGLADESH**	Tel: +880 (2) 890 1403 Fax: +880 (2) 890 1411 E-mail: dcom@caab.gov.bd

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESSS	TELEPHONE/FAX/E-MAIL	
CAMBODIA (2)			
Mr. Chea Sokkheng	Deputy Director Standard and Air Safety Department State Secretariat of Civil Aviation No. 62 Preah Norodom Blvd. Phnom Penh **CAMBODIA**	Tel: Fax: E-mail:	
Mr. Peou Vuthy	Deputy Chief of AIS State Secretariat of Civil Aviation No. 62 Preah Norodom Blvd. Phnom Penh **CAMBODIA**	Tel: Fax: E-mail:	
CHINA (6)			
Ms. Guo Jing	Deputy Director CNS Division of Air Traffic Regulation Office of CAAC No.155 Dongsi West Road Dongcheng District Beijing **PEOPLE'S REPUBLIC OF CHINA**	Tel: Fax: E-mail:	+86 (10) 6409 2577 jingg@vip.163.com
Dr. Wang Tianyun	Engineer Air Traffic Management Bureau No. 12 Dongsanhuan Middle Road Chaoyang District Beijing **PEOPLE'S REPUBLIC OF CHINA**	Tel: Fax: E-mail:	+86 (10) 8778 6968 +86 (10) 8273 5111 wangtianyu@atmb.net.cn
Dr. Xin Quan	Engineer AIT of ATMB 802 Tower B, Technology Fortune Centre No. 8 XueQing Road Haidian District Beijing **PEOPLE'S REPUBLIC OF CHINA**	Tel: Fax: E-mail:	+86 (10) 8273 5133 +86 (10) 8273 5111 xinquan@ait.cn

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESSS	TELEPHONE/FAX/E-MAIL
Dr. Du Ming	Engineer AIT of ATMB 802 Tower B, Technology Fortune Centre No. 8 XueQing Road Haidian District Beijing **PEOPLE'S REPUBLIC OF CHINA**	Tel: +86 (10) 8273 5166 Fax: +86 (10) 8273 5111 E-mail: duming@ait.cn
Mr. Shen Jian Zhong	Inspector CNS Division of CAAC East China Regional Administration No. 300 Yingbin Er Road Shanghai **PEOPLE'S REPUBLIC OF CHINA**	Tel: +86 (21) 2232 1253 Fax: +86 (21) 2232 1258 E-mail: shenjianzhong_hd@caac.gov.cn
Ms. Li Xing Bo	The Second Research Institute of CAAC No.17, South Section 2 2nd Ring Road Chengdu **PEOPLE'S REPUBLIC OF CHINA**	Tel: +86 (28) 8290 9941 Fax: +86 (28) 8290 9867 E-mail: lixingbo@yahoo.com
HONG KONG, CHINA (2)		
Mr. Ching Pui-kay	Senior Aeronautical Communications Supervisor Civil Aviation Department of Hong Kong Room No. 205, 2nd Floor Air Traffic Control Complex Hong Kong International Airport Chek Lap Kok **HONG KONG, CHINA**	Tel: +852 2910 6211 Fax: +852 2910 1160 E-mail: pkching@cad.gov.hk
Mr. Lau M.Y. Stanley	Acting Senior Electronics Engineer Civil Aviation Department of Hong Kong 1 Tung Fai Road Hong Kong International Airport **HONG KONG, CHINA**	Tel: +852 2910 6507 Fax: +852 2845 7160 E-mail: smylau@cad.gov.hk

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESSS	TELEPHONE/FAX/E-MAIL
MACAO, CHINA (3)		
Mr. Sun Shabo	Consultant Civil Aviation Authority of Macao China Alameda Dr. Carlos D'Assumpção 336-342, Centro Comercial Cheng Feng 18° andar **MACAO, CHINA**	Tel: +853 8796 4131 Fax: +853 2833 8089 E-mail: sbsun@aacm.gov.mo
Mr. Lo Veng Tong, Freeman	Senior Safety Officer (CNS) Civil Aviation Authority of Macao China Alameda Dr. Carlos D'Assumpção 336-342, Centro Comercial Cheng Feng 18° andar **MACAO, CHINA**	Tel: +853 8796 4132 Fax: +853 2833 8089 E-mail: freemanlo@aacm.gov.mo
Mr. Sun Kong Chong	Senior IT & CNS Engineer ITC Service Administration of Airports Ltd. Macau International Airport E & M Building, Taipa **MACAO, CHINA**	Tel: +853 8898 2368 Fax: +853 8898 2387 E-mail: sonnysun@ada.com.mo
FIJI ISLANDS (2)		
Mr. David McDonald	Radio Engineering Inspector Civil Aviation Authority of Fiji Ottawa Road AFL Compound Namaka, Nadi **FIJI ISLANDS**	Tel: +679 672 1555 Ext. 3339 Fax: +679 672 0261 E-mail: david.mcdonald@caaf.org.fj
Mr. Florian Schmid *(On behalf of Airports Fiji Limited)*	Product Manager Directory Services (On behalf of Airports Fiji Limited) Comsoft GmbH Wachhausstr. 5a 76227 Karlsruhe **GERMANY**	Tel: +49 721 9497 2534 Fax: E-mail: florian.schmid@comsoft.aero

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESSS		TELEPHONE/FAX/E-MAIL
INDIA (2)			
Mr. Rajith Ali	Senior Manager (Communication) Airports Authority of India Rajiv Gandhi Bhavan Safdarjung Airport New Delhi 110003 **INDIA**		Tel: +91 (11) 2461 0849 Fax: +91 (11) 2469 3963 E-mail: rali@aai.aero
Mr. Ajay Kumar Kapur	Joint General Manager Airports Authority of India Rajiv Gandhi Bhavan Safdarjung Airport New Delhi 110003 **INDIA**		Tel: +91 (11) 2463 2930 Fax: +91 (11) 2464 1088 E-mail: a_k_kapur@yahoo.com
INDONESIA (11)			
Mr. Ahmad Nurdin Aulia	Chief of Certification of Air Navigation Directorate of Air Navigation Directorate General of Civil Aviation Jl. Merdeka Barat No. 8 Jakarta 10110 **INDONESIA**		Tel: +62 (21) 350 5550 Fax: +62 (21) 350 7569 E-mail: auliahmad@yahoo.fr
Mr. Farid Wajdi	Chie of Aeronautical Communication Directorate General of Civil Aviation Jl. Merdeka Barat No. 8 Jakarta 10110 **INDONESIA**	Operation	Tel: +62 (21) 350 5550 Fax: +62 (21) 350 7569 E-mail: Farizd_aismap@yahoo.com
Mr. Arian Nurahman	Staff of Aeronautical Communication Directorate of Air Navigation Directorate General of Civil Aviation Jl. Merdeka Barat No. 8 Jakarta 10110 **INDONESIA**		Tel: +62 (21) 350 5550 Fax: +62 (21) 350 7569 E-mail: arian.nurahman@gmail.com

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESSS	TELEPHONE/FAX/E-MAIL
Ms. Suyanti Aviany	Staff of Aeronautical Communication Directorate of Air Navigation Directorate General of Civil Aviation Jl. Merdeka Barat No. 8 Jakarta 10110 **INDONESIA**	Tel: +62 (21) 350 5550 Fax: +62 (21) 350 7569 E-mail: Aviany25@yahoo.com
Mr. Trisna Metria	Staff of Aeronautical Communication Directorate of Air Navigation Directorate General of Civil Aviation Jl. Merdeka Barat No. 8 Jakarta 10110 **INDONESIA**	Tel: +62 (21) 350 5550 Fax: +62 (21) 350 7569 E-mail: trisnametria@yahoo.com
Mr. Hariyadi	Navigation Department Head Angkasa Pura I Pt. Angkasa Pura I Graha Angkasa Pura I Kota Baru Bandar Kemayoran Blok B-12 Kav. 2 Jakarta 10610 **INDONESIA**	Tel: +62 (21) 654 1961 Fax: +62 (21) 654 1314 E-mail: hariyadi@angkasapura1.co.id
Mr. Riza Fahmi	ATS Performance & Service Development Department Head Angkasa Pura I Pt. Angkasa Pura I Graha Angkasa Pura I Kota Baru Bandar Kemayoran Blok B-12 Kav. 2 Jakarta 10610 **INDONESIA**	Tel: +62 (21) 654 1961 Ext. 2312 Fax: +62 (21) 6586 6838 E-mail: riza.fahmi@angkasapura1.co.id

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESSS	TELEPHONE/FAX/E-MAIL
Mr. Fadli Soesilo	Director of Engineer from Air Navigation Indonesia Soekarno-Hatta International Airport Tower Building Jakarta **INDONESIA**	Tel: +62 (21) 550 6109 Fax: +62 (21) 550 1129 E-mail: fadli_soes@yahoo.com
Mr. Budiono Richwan	ATS & Aeronautical Communication Manager Air Navigation Indonesia Soekarno-Hatta International Airport Airport Building 611 Jakarta **INDONESIA**	Tel: +62 (21) 550 6109 Fax: +62 (21) 550 1129 E-mail: budiono_richwan@angkasapura1.co.id
Mr. Theodorus Van Kempen	Automation System Manger Air Navigation Indonesia Soekarno-Hatta International Airport Airport Building 611 Jakarta **INDONESIA**	Tel: +62 (21) 550 6160 Fax: +62 (21) 550 1129 E-mail: yong_tid@co.id
Mr. Hariyadi Budiharjo	Engineer Pt. Elektrindodaya Pakarnusa Jl. Soekarno Hatta KM. 13, 8 Bandung 40613 **INDONESIA**	Tel: +62 (22) 780 1536 Fax: +62 (22) 780 1690 E-mail: harjadihary@gmail.com
JAPAN (5)		
Mr. Hiroyasu Shirasaki	Special Assistant to the Director Operations and Flight Inspection Japan Civil Aviation Bureau (JCAB) 2-1-3, Kasumigaseki Chiyoda-ku Tokyo 100-8918 **JAPAN**	Tel: +81 (3) 5253 8751 Fax: +81 (3) 5253 1664 E-mail: shirasaki-h016c@mlit.go.jp

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESSS	TELEPHONE/FAX/E-MAIL
Mr. Kenji Sekitani	Chief Flight Information 1st Section Operations and Flight Inspection Division Japan Civil Aviation Bureau (JCAB) 2-1-3, Kasumigaseki Chiyoda-ku Tokyo 100-8918 **JAPAN**	Tel: +81 (3) 5253 8751 Fax: +81 (3) 5253 1664 E-mail: sekitani-k02mm@mlit.go.jp
Mr. Takuya Jizo	Advisor NEC Software Hokkaido Ltd. Sapporo L-Plaza F7 28 Kita 8 Nishi 3 Kita-ku, Sapporo 060-0808 **JAPAN**	Tel: +81 (11) 746 6393 Fax: +81 (11) 746 6429 E-mail: jizo-t@ma.dnes.nec.co.jp
Mr. Yoshio Tsuji	Advisor Oki Electric Industry Co., Ltd. 4-10-16, Shibaura, Minato-ku Tokyo 108-8551 **JAPAN**	Tel: +81 (3) 3454 2111 Fax: +81 (3) 5445 6186 E-mail: tsuji583@oki.com
Mr. Katsuya Nishimori	Advisor KDDI Corporation Garden Air Tower 3-10-10, Iidabshi Chiyoda-ku, Tokyo 102-8460 **JAPAN**	Tel: +81 (3) 6678 0872 Fax: +81 (3) 6678 0230 E-mail: ka-nishimori@kddi.com
MALAYSIA (3)		
Mr. Mani Vannan Ketena Samy	Senior Assistant Director Air Traffic Management Sector Department of Civil Aviation Malaysia No. 27, Persiaran Perdana Level 4, Podium Block B, Precinct 4 62618 Putrajaya **MALAYSIA**	Tel: +603 8871 4285 Fax: +603 8881 0530 E-mail: mani@dca.gov.my

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESSS	TELEPHONE/FAX/E-MAIL
Mr. Muniandy Amasee	Senior Assistant Director Air Traffic Management Sector Department of Civil Aviation Malaysia No. 27, Persiaran Perdana Level 4, Podium Block B, Precinct 4 62618 Putrajaya **MALAYSIA**	Tel: +603 8871 4280 Fax: +603 8881 0530 E-mail: muniandy@dca.gov.my
Mr. Anwar Awang Man	Assistant General Manager Specialized Network Services Telekom Malaysia Berhad, 6th Floor Bangunan TM Bukit Mahkamah Jalan Raja Chulan Kuala Lumpur 50200 **MALAYSIA**	Tel: +603 2020 6021 Fax: +603 2034 1619 E-mail: anod@tm.com.my
NEPAL (3)		
Mr. Hansha Raj Pandey	Deputy Director Civil Aviation Authority of Nepal Head Office Babar Mahal Kathmandu **NEPAL**	Tel: +977 (1) 424 9379 Fax: +977 (1) 426 2516 E-mail: hrp@caanepal.org.np
Ms. Neela Manandhar	Manager Civil Aviation Authority of Nepal Head Office Babar Mahal Kathmandu **NEPAL**	Tel: +977 (1) 411 3111 Fax: +977 (1) 426 2516 E-mail: neelamanandhar12@yahoo.com

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESSS	TELEPHONE/FAX/E-MAIL
Ms. Sarita Sipahi Koju	Deputy Manager Civil Aviation Authority of Nepal Head Office Babar Mahal Kathmandu **NEPAL**	Tel: +977 (1) 411 3111 Fax: +977 (1) 426 2516 E-mail: kojugsarita@yahoo.com
NEW ZEALAND (1)		
Mr. Ian S. Dore	Software Team Leader Airways Development Centre Airways New Zealand P.O. Box 14131 Christchurch 8544 **NEW ZEALAND**	Tel: +64 (3) 358 1697 Fax: +64 (3) 358 1566 E-mail: ian.dore@airways.co.nz
PAKISTAN (1)		
Mr. M. Fasih Uz Zaman Khan	General Manager Communications Operations Pakistan Civil Aviation Authority Head Quarters Jinnah International Airport Terminal-1, Karachi-75200 **PAKISTAN**	Tel: Fax: E-mail:
PHILIPPINES (2)		
Ms. Remedios M. Gomez	Facility-In-Charge-Manila AFS/AFTN Manila Aeronautical Fixed Service Airways Facilities Complex Air Traffic Service Civil Aviation Authority of the Philippines Old Mia Road, Pasay City 1300 **PHILIPPINES**	Tel: +63 (2) 879 9191 Fax: +63 (2) 879 9191 E-mail: rem_gomez@yahoo.com

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESSS	TELEPHONE/FAX/E-MAIL
Mr. Norrick T. Baes	Facility-In-Charge/CNS Officer Air Navigation Service Civil Aviation Authority of the Philippines Old Mia Road, Pasay City 1300 **PHILIPPINES**	Tel: +63 (2) 879 9184 Fax: +63 (2) 879 9185 E-mail: norrick.baes@yahoo.com
REPUBLIC OF KOREA (9)		
Mr. Han Byeongsun	Deputy Director Air Navigation Division Ministry of Land, Transport and Maritime Affairs #11, Doum-ro 6 Sejong Special Self-governing City 339-012 **REPUBLIC OF KOREA**	Tel: +82 (44) 201 4360 Fax: +82 (44) 201 5637 E-mail: bshan63@korea.kr
Mr. Kim Ki Hyoun	Assistant Director Air Navigation Division Ministry of Land, Transport and Maritime Affairs #11, Doum-ro 6 Sejong Special Self-governing City 339-012 **REPUBLIC OF KOREA**	Tel: +82 (44) 201 4362 Fax: +82 (44) 201 5637 E-mail: kimhwalove@korea.kr
Mr. Hong Sungmin	Assistant Director Air Navigation Division Ministry of Land, Transport and Maritime Affairs #11, Doum-ro 6 Sejong Special Self-governing City 339-012 **REPUBLIC OF KOREA**	Tel: +82 (44) 201 4296 Fax: +82 (44) 201 5631 E-mail: smhong01@korea.kr

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESSS	TELEPHONE/FAX/E-MAIL
Mr. Lee Jungyul	Senior Manager/ATC Communication Team, NAVAIDs Group Incheon International Airport Corporation 424-47 Gonghang-gil Jung-gu, Incheon **REPUBLIC OF KOREA**	Tel: +82 (32) 741 2747 Fax: +82 (32) 741 2798 E-mail: lee091@empas.com
Mr. Kang Jiseok	Deputy General Manager Korea Airports Corporation 78, Haneul-Gil Gangseo Gu Seoul 157-711 **REPUBLIC OF KOREA**	Tel: +82 (2) 2660 2867 Fax: +82 (2) 2660 2870 E-mail: thin@airport.co.kr
Mr. Lee Myeongjin	Assistant Manager Korea Airports Corporation 78, Haneul-Gil Gangseo Gu Seoul 157-711 **REPUBLIC OF KOREA**	Tel: +82 (2) 2660 2869 Fax: +82 (2) 2660 2870 E-mail: megi83@airport.co.kr
Dr. Park Hyodal	Professor Inha University 253 Yonghyun-dong Namgu Incheon **REPUBLIC OF KOREA**	Tel: +82 (32) 860 7418 Fax: +82 (32) 868 3654 E-mail: hdpark@inha.ac.kr
Dr. Choi Sang Bang	Professor Inha University 253 Yonghyun-dong Namgu Incheon **REPUBLIC OF KOREA**	Tel: +82 (32) 860 7417 Fax: +82 (32) 868 3654 E-mail: sangbang@inha.ac.kr

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESSS	TELEPHONE/FAX/E-MAIL
Dr. Chung Jaehak	Professor Inha University 253 Yonghyun-dong Namgu Incheon **REPUBLIC OF KOREA**	Tel: +82 (32) 860 7421 Fax: +82 (32) 868 3654 E-mail: jchung@inha.ac.kr
SINGAPORE (2)		
Mr. Mohd Zaki Bin Ariffin	Senior Technical Officer (COMMS/NAVAIDS) Aeronautical Telecommunication & Engineering Division Civil Aviation Authority of Singapore #046-043, Terminal 2 Singapore Changi Airport **SINGAPORE** 918141	Tel: +65 6541 2675 Fax: +65 6542 2447 E-mail: mohd_zaki_ariffin@caas.gov.sg
Mr. Cher Soon Seng	Engineer c/o Singapore Air Traffic Control Centre 60 Biggin Hill Road **SINGAPORE** 509950	Tel: +65 6214 8067 Fax: +65 6545 9370 E-mail: cherss@ncs.com.sg
SRI LANKA (2)		
Mr. Werner E. Reiche *Nominated as observer by Airport and Aviation Services (Sri Lanka) Ltd.*	Software Engineering Manager IDS Tech Inc. 155 Terrence Matthews Crescent Ottawa, Ontario, KZM 2A8 **CANADA**	Tel: +1 (613) 591 0500 Fax: +1 (613) 591 0981 E-mail: w.reiche@sympatico.ca
Mr. Dan D. Wilson *Nominated as observer by Airport and Aviation Services (Sri Lanka) Ltd.*	Marketing Director IDS Tech Inc. 155 Terrence Matthews Crescent Ottawa, Ontario, KZM 2A8 **CANADA**	Tel: +1 (613) 591 0500 Fax: +1 (613) 591 0981 E-mail: dwilson@idscorporation.ca
THAILAND (2)		

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESSS	TELEPHONE/FAX/E-MAIL
Mr. Chonlawit Banphawatthanarak	Engineering Manager Aeronautical Radio of Thailand Ltd. 102 Soi Ngamduple Tungmahamek Sathon, Bangkok 10120 **THAILAND**	Tel: +66 (2) 285 9378 Fax: +66 (2) 285 8020 E-mail: chonlawit.ba@aerothai.co.th
Ms. Jittima Asawachaiporn	General Administrative Manager Aeronautical Radio of Thailand Ltd. 102 Soi Ngamduple Tungmahamek Sathon, Bangkok 10120 **THAILAND**	Tel: +66 (2) 285 9082 Fax: +66 (2) 287 8538 E-mail: jittima.as@aerothai.co.th
USA (4)		
Mr. Hoang Tran	AMHS Programme Manager Federal Aviation Administration 800 Independence Avenue, SW Washington, D.C. 20591 **USA**	Tel: +1 (202) 493 5995 Fax: E-mail: hoang.tran@faa.gov
Mr. Joe Knecht	Communications Infrastructure Engineering Team Federal Aviation Administration William J. Hughes Technical Center Atlantic City, NJ 08405 **USA**	Tel: +1 (609) 485 5077 Fax: E-mail: joe.knecht@faa.gov
Mr. Brian Bagstad	Senior ATO Representative Federal Aviation Administration American Embassy – Singapore 27 Napier Road **SINGAPORE** 258508	Tel: +65 6476 9462 Fax: E-mail: Brian.Bagstad@faa.gov

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESSS	TELEPHONE/FAX/E-MAIL
Mr. John Fort	CEO Frequentis California, Inc. 201-B Calle Del Oaks Monterey CA 93940 **USA**	Tel: +1 (831) 578 5071 Fax: +1 (831) 392 0429 E-mail: john.fort@frequentis.com
VIET NAM (5)		
Mr. Nguyen Van Thang	Deputy General Director Viet Nam Air Traffic Management. (VATM) Civil Aviation Administration of Viet Nam No. 200/6 Nguyen Son Street Long Bien District, Hanoi **VIET NAM**	Tel: +84 (4) 3872 1816 Fax: E-mail: vatm@hn.vnn.vn
Mr. Hoang Huu Lich	Chief of CNS Air Navigation Department of CAA of Viet Nam 119 Nguyen Son Street Long Bien District Ha Noi **VIET NAM**	Tel: +84 (4) 3827 4192 Fax: E-mail: hhlich@caa.gov.vn
Mr. Nguyen Hong Hiep	Officer Technical Department Viet Nam Air Traffic Management 200/6 Nguyen Son, Bo De Long Bien, Ha Noi **VIET NAM**	Tel: +84 (4) 3851 5838 Fax: +84 (4) 3827 1386 E-mail: vatmtecch@hn.vnn.vn nguyenhonghiepbk@vatm.vn
Mr. Tran Quy Lam	Officer Research & Development (R & D) Aeronautical Technical Services Company Viet Nam Air Traffic Management 200/6 Nguyen Son Street - Long Bien District Ha Noi **VIET NAM**	Tel: +84 (4) 3827 3171 Fax: E-mail: lamtq@attech.com.vn

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESSS	TELEPHONE/FAX/E-MAIL
Mr. Lam Quy Tran	ICT Solution Specialist Air Traffic Technical Co., Ltd. Viet Nam Air Traffic Management Corporation 5/200 Nguyen Son Long Bien District, Hanoi **VIET NAM**	Tel: +84 (4) 3827 1513 Ext. 4491 Fax: +84 (4) 3873 0398 E-mail: lamtq@attech.com.vn
COMSOFT (1)		
Mr. Uwe Kurpat	Comsoft AFTN/AMHS Sales Manager Comsoft GmbH Wachhausstrasse 5a 76227 Karlsruhe **GERMANY**	Tel: +49 (721) 9497 2600 Fax: +49 (721) 9497 304 E-mail: uwe.kurpat@comsoft.aero
ICAO (1)		
Mr. Li Peng	International Civil Aviation Organization Asia and Pacific Office 252/1, Vibhavadee Rangsit Road Chatuchak, Ladyao Bangkok 10900 **THAILAND**	Tel: +66 (2) 537 8189 Ext. 158 Fax: +66 (2) 537 8199 E-mail: PLi@icao.int

— — — — — — — — — — — — — — — — —

International Civil Aviation Organization

THE EIGHTH MEETING OF AERONAUTICAL TELECOMMUNICATION NETWORK (ATN) IMPLEMENTATION CO-ORDINATION GROUP OF APANPIRG (ATNICG/8)

Jakarta, Indonesia, 18 - 21 March 2013

Ministry Of Transportation
Republic of Indonesia

LIST OF WORKING/INFORMATION PAPERS AND PRESENTATIONS

WP/IP No.	Agenda	Subject	Presented by
		WORKING PAPERS	
1	-	Provisional Agenda	Secretariat
2	2	Outcome of APANPIRG/23 on ATN/AMHS Implementation	Secretariat
3	2	Review Report of Eleventh Working Group Meeting of Aeronautical Telecommunication Network Implementation Coordination Group (ATNICG WG/11)	Secretariat
4	5	Follow-up to Recommendations of the Twelfth Air Navigation Conference (AN-Conf/12) on SWIM and AFS	Secretariat
5	8	Inter-Regional APAC/NAT AIDC Document	Secretariat
6	9	Aeronautical Telecommunications Network Implementation Coordination Group (ATNICG) Terms of Reference and Subject/Tasks List	Secretariat
7	4	The Network Service to be used for AMHS in Japan	Japan
8	3	Slow Transition from Legacy AFTN to AMHS in APAC Region	India
9	4	Proposed an Asia/Pacific Internet Protocol (IP) Virtual Private Network (VPN) Using MultiProtocol Label Switching (MPLS)	USA
10	5	Updated Status of SWIM Operational Concept	USA
11	10	Hosting the Twelfth ATNICG Working Group (ATNICG WG/12)	USA
12	10	Hosting the 9th Meeting of ATNICG (ATNICG/9) in 2014	Republic of Korea
13	3	CNS/ATM Implementation and Planning Matrix	Secretariat

WP/IP No.	Agenda	Subject	Presented by
14	9	Review of Performance Framework Form for ATN	Secretariat
15	3	New AMHS installation at New ATCC Building Hong Kong International Airport	Hong Kong, China
16	3	Interoperability Tests between Bangkok, Thailand and Hong Kong, China	Hong Kong, China
17	8	AIDC Implementation Issues	Hong Kong, China
18	8	AIDC Planning Implementation Status in APAC Region	Secretariat
19	9	Review Strategy for the Implementation of Aeronautical Telecommunication Network (ATN)	Secretariat

INFORMATION PAPERS

WP/IP No.	Agenda	Subject	Presented by
1	-	Meeting Bulletin	Secretariat
2	3	ATN/AMHS Implementation Status of Bangladesh	Bangladesh
3	3	Report of ATN/AMHS Status in Indonesia	Indonesia
4	3	Indonesia (Visionary) Plan ATN/AMHS to Support Implementation of Aeronautical Information Management	Indonesia
5	3	The Implementation Status of Renewal ATN/AMHS in Japan	Japan
6	3	ATN/AMHS Implementation Status	New Zealand
7	3	China ATN/AMHS Implementation Status Report	China
8	3	ATN/AMHS Implementation Status in India	India
9	3	ATN/AMHS Implementation Status in the Republic of Korea	Republic of Korea
10	6	SWIM Project in Republic of Korea	Republic of Korea
11	6	China SWIM Initiatives	China
12	3	ATN/AMHS Implementation Status	Macao, China
13	3	ATN/AMHS Implementation Status in Hong Kong, China	Hong Kong, China
14	3	Thailand ATN/AMHS Implementation Activities	Thailand
15	3	European Directory Service (EDS) in Brief	Comsoft

WP/IP No.	Agenda	Subject	Presented by
16	4	SWIM & AMHS	Frequentis
17	3	Report of ATN/AMHS Status in the Philippines	Philippines
18	9	Report on Review of Testing of XML based OPMET Delivery over AMHS Involving the United States, Singapore and United Kingdom	USA and Singapore
19	3	ATN/AMHS Implementation Status	Nepal

– – – – – – – – – – –