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

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

REVIEW REPORT OF ELEVENTH WORKING GROUP MEETING OF AERONAUTCIAL TELECOMMUNICATION NETWORK IMPLEMENTATION COORDINATION GROUP (ATNICG WG/11)

(Presented by the Secretariat)

SUMMARY

Eleventh Working Group Meeting of Aeronautical Telecommunication Network Implementation Coordination Group (ATNICG WG/11) was held in Bangkok, Thailand from 26 to 28 September, 2012. This paper provides outcome of the meeting for review and action by the ATNICG.

This paper relates to -

Strategic Objective:
C - Environmental Protection and Sustainable Development of Air Transport

1. INTRODUCTION

1.1 Eleventh Working Group Meeting of Aeronautical Telecommunication Network (ATN) Implementation Co-ordination Group of APANPIRG (ATNICG WG/11) was held in at ICAO Asia and Pacific Regional Office, Bangkok, Thaialdn from 26 to 28 September 2012. The meeting was attended by 40 participants from 10 States.

2. DISCUSSION

2.1 Review of relevant Meeting Reports

2.1.1 The Meeting reviewed the outcome of ATNICG/7, CNS/MET SG/16 and APANPIRG/23 on issues related to the provision and operation of Aeronautical Fixed Services (AFS) and Aeronautical Mobile Services (AMS). Significant outcome of the meetings were discussed and actions required to be progressed by ATNICG were noted. The outcome of the meetins has been discussed in detail in the WP/2 of this meeting.

2.2 Usage of Common Network

2.2.1 The meeting was informed about the benefits of using a common network like PENS in Europe, FTI in North America, MEVA in Caribbean or REDDIG in South America. It 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. Action Item 11/3 was developed to assess the regional priority about the network.

2.3 ACP Working Group – I (IPS) Meeting

2.3.1 Aeronautical Communication Panel Working Group – I (IPS) Fifteenth Meeting and Working Group – M (Maintenance) Nineteenth Meeting were held in Bucharest, Romania from 28 May to 1 June 2012.

2.4 Aeronautical Communication Panel Working Group – S (Surface)

2.4.1 The first Meeting of ACP Working Group – S (Surface) established by ACP – WGW/3 was held from 19 to 20 March, 2012.

2.4.2 The meeting noted the outcome of ACP WG-I and ACP WG-S relevant to the work of ATNICG presented by the Secretariat.

2.4.3 The meeting was also provided information on the developments taken up by Electronic Navigation Research Institute of Japan. ACP WG-S hoped to develop and publish relevant SARPs for Surface communication by 2014. It was noted that it had been decided to use AeroMACS in a joint study conducted by EUROCONTROL and FAA. The meeting was also provided information on the frequency spectrum proposed to be used for the system. Usage of WiMAX for AeroMACS was justified on the basis of its characteristic limitation of speed and coverage.

2.5 State-to-State AMHS Implementation Discussion

2.5.1 In the absence of participant from Hong Kong China, India coordinated the updates of ATN/AMHS Implementation Matrix Planner. States, participating in the meeting updated. implementation information in the Planner.

2.5.2 India informed the meeting about current status of ATN/AMHS implementation in its administration. It was informed that additional AMHS systems are planned at Chennai, Kolkata and Delhi to replace AFTN completely. The domestic AMHS implementation will be using TCP/IP and tender action for that has been planned shortly. It was observed that though, dual stack AMHS had already been implemented in eight out of nine BBIS hubs, connectivity between these BBIS hubs and between BBIS hubs and BIS locations was getting delayed. The delay in implementing connectivity

is probably because of delay in resolving compatibility issues. The meeting formulated following draft Conclusion urging the States to resolve such compatibility issues in a timely manner:

Draft Conclusion 11/1 – 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.

2.5.3 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. Following draft Conclusion hence was formulated:

Draft Conclusion 11/2 – 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.

2.5.4 Singapore informed the meeting that connectivity with Mumbai was completed in March, 2011 and with UK, it has been completed in December 2011. Singapore also informed its readiness to implement connectivity as when the reciprocal ends are ready. Thailand informed about the status of testing with Singapore, India and Hong Kong China. Thailand also informed about the lessons they had learnt from the compatibility testing. It was informed that compatibility issues because of different systems used at the reciprocal ends was delaying the completion of testing. Link stability issue, while testing with India had led to readjustment of procedure with regards to split link configuration and establishment of new link was being considered.

2.5.5 Indonesia informed that ATN/AMHS Router and Server had been installed in Jakarta and AMHS interoperability test had been conducted between Jakarta and Singapore. Results indicated that the link bandwidth needs to be upgraded to 64 kbps and invited Singapore to synchronize the execution date of the upgrade. Lao PDR had planned to migrate to AMHS for domestic circuits in the first phase to replace AFTN terminals, before November 2012 by using TCP/IP. A TCP/IP Router had been installed in Vientiane ATC for AMHS communication. Lao PDR will request AEROTHAI to change the current X.400 addressing scheme from XF to CAAS by submitting its request in the required forms. Lao PDR also informed about the current implementation status in their administration. Lao PDR further informed that they are ready to start testing with Thailand.

2.5.6 It was agreed that a list of the States which have not completed the implementation as the schedule should be compiled after reviewing the Implementation Planner in ATNICG/8. It was also agree, the more the delay in implementation of ATN/AMHS, the longer region will have to operate with dual systems (AFTN and AMHS). The meeting also agreed to draw an Action Plan to address the issue of delay in ATN/AMHS implementation by some States. It was considered that the target date for completion **of ATN/AMHS implementation in the whole region should be 2015**.

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

2.6.1 USA introduced Roadmap 2, proposed to be presented to the 12th Air Navigation Conference. It was observed that AMHS and AIDC will be merged to form Information Management Services (IMS) in Block 2 of ASBU. The meeting was concerned that AMHS may be facing end of life, even before it is fully implemented. Meeting was also 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.

2.6.2 USA presented Information Management Based Network Planning bringing out three implementation options: Private IPv6 ATS Network, IPv6 tunneling over public internet and Private IPv6 Network through Inter-Domain. Attributes in terms of Definition, Advantages and Disadvantages were discussed in detail. The meeting discussed the implementation issues related to IPv6. It was generally agreed that ATNICG should carry out a cost/benefit analysis to chart its own course and inform ACP accordingly. Meeting came to a conclusion that the recommendations made in the paper presented by USA had already been included in the Conclusion which has been adopted by APANPIRG/23

2.6.3 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 in a Conclusion adopted by APANPIRG/23.

2.6.4 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. USA also discussed architectural options available for the implementation of SWIM in Asia/Pacific Region. The meeting agreed that SWIM or IMS in the region should be implemented over AMHS. While discussing advantages of implementing SWIM and IMS over AMHS, it was explained that guidance material on suitable HTTP gateways for AMHS need to be developed.

2.6.5 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.

2.7 Exchange of XML- coded OPMET and Digital NOTAM over AMHS

2.7.1 India informed the meeting about India's plan for the exchange of XML-coded OPMET/Digital NOTAM over ATS Message Handling System (AMHS) and constraints involved. Challenging issues pertaining to interface, file size and timeline for the exchange of the XML-coded OPMET and Digital NOTAM over AMHS were highlighted. India favors the use of XML coded digital version of NOTAM and OPMET information over AMHS. The meeting was of a 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 formulated following draft Conclusion for consideration by ATNICG

Draft Conclusion 11/3 - 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.

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

2.8.1 USA updated the meeting that the plan for testing the delivery of XML-based OPMET messages over AMHS between the United States of America, Singapore and the United Kingdom had been rescheduled for November 2012 as a result of the London summer Olympics dictated that the activity be deferred. Four proposed test configurations over the operational AMHS network was presented to the meeting. Five different test messages extracted from FAA/EUROCONTROL WXXM 1.1 Primer (February 2010) will be used for the testing. The intent of the test is 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.

2.9 **ICD for ATN IPS – IPv4**

2.9.1 USA presented the draft Version 1.0 of the Interface Control Document for ATN IPS (IPv4) Router for comments and information. It was advised that USA uses the IPS router ICD as basis for 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 next ATNICG meeting to be held in March 2013.

2.10 **Guidance Material on the use of wild card (*) character in C**

2.10.1 The meeting recalled that the concern of the use of wild card (*) character in the CAAS table was discussed at ATNICG/7 meeting. 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 WP02 – Default Entries and Wild Card in the CAAS Table for AFSG/14 meeting. AEROTHAI considered the proposal in WP02 to be suitable and proposed to adapt the material in the working paper to be used in a State Letter to be issued by ICAO Regional Office.

2.10.2 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."

2.10.3 **Position and Number of wild card characters:**

Within the Organizational-unit-name1 (OU1) attribute the use of wild card characters should be restricted using following conditions:

- Wild card characters are restricted to be 2nd, 3rd, and 4th position;
- Depending on the position of the first wild card character three, two or one wild card character are present;
- Wild card characters are used as trailing characters only, i.e. an alphabetic character will never follow a wildcard character.

Examples for permitted values: K***, VT**, VTB*

Examples for not allowed values for OU1: ****, VT*D, V*B*

2.10.4 As requested by the meeting, Thailand will prepare a paper to update the ASIA/PAC AMHS NAMING PLAN for consideration by ATNICG/8 meeting.

2.11 **Comparison of ASIA/PAC AMHS/ICD Requirements against Doc.9880**

2.11.1 In accordance with assignments of ATNICG/7 Meeting held in March 2012 (WP/12 of ATNICG/7), Japan, Singapore, Thailand, Hong Kong China and the United States provided results of comparative analysis of ASIA/PAC AMHS ICD against ICAO Doc 9880 to the meeting. The consolidated findings are described in the following sub-paragraphs.

2.11.2 The first WP in this series is WP/3 developed by Japan. WP/3 is concerned with Report Transfer Envelope and Common Data Type requirements. WP/3 not only presents the analysis of PICS elements but is exceptional in that detailed work sheets were attached that depict the AMHS ICD and Doc 9880 elements side-by-side. Hong Kong is concerned with Probe requirements. US is concerned with Message Transfer Envelope requirements.

2.11.3 All of the WPs contain appendices which describe differences in the AMHS ICD and in Doc 9880 elements and which contain recommendations on what should be done about the differences. The recommendations in each of the WPs are mostly to "Ignore the AMHS ICD element". This recommendation is generally made when analysis reveals that the intended requirement is essentially the same in the AMHS ICD as in Doc 9880. This recommendation generally indicates that Doc 9880 is more consistently specified because of the better defined conventions and distinctions between conformance and action requirements. There were also several cases where the recommendation is to "Accept the Doc 9880 specification". This recommendation generally indicates that the subject element was specified in Doc 9880 but was not listed in the AMHS ICD. Note that these two recommendations indicate that the Doc 9880 requirements referenced in the Asia/Pac Technical Manual are valid.

2.11.4 It was noted that for the Probe Transfer Envelope and Common Data Type there are not PICS tables in Doc 9880 which correspond to PICS tables in the AMHS ICD. There were however text descriptions of the requirements in Doc 9880. Because the absence of the PICS tables in Doc 9880 and to ensure the integrity and completeness of all the AMHS requirements of Asia/Pacific, Hong Kong derived the related tables by making reference to ISO/IEC ISP 10611-3. Hong Kong then used the derived tables to complete the analysis.

2.11.5 There are recommendations to "Generate an Amendment Proposal to Doc 9880". One case is for element 1.1.11, extensions, where Doc 9880 4.4.2.3.8 d) specifies that the extensions element take values as specified in 4.4.2.3.6; however, 4.4.2.3.6 does not specify any permitted values. The other case is a minor editorial AP. For element 1.1.7 (per-message-indicators) Doc 9880 Table 4-7 specifies differences from Table 4-4 for Receipt Notifications (which are IPNs). However for this element there are no differences; that is, Table 4-4 is the same as Table 4-7 for this. Also Table 4-4 specifies origination elements for Message Transfer Envelope for both IPM and IPN. However the title of Table 4-4 indicates that it is only for IPM.

2.11.6 There is one additional set of PICS tables to be compared. It is expected that the results of this analysis will be consistent with all of the other cases. Given this, the AMHS technical specifications adopted by APANPIRG/22 meeting should be considered as latest regional guidance document for the AMHS requirements which has linkage to references of Doc.9880.

2.12 **Status of AMHS and IP Network Implementation in other regions**

2.12.1 The meeting noted ATN/AMHS and IP Network related activities in other regions. Following significant points were noted from the outcome of ATN/IPS WG/4 meeting of ICAO MID Region held from 21 to 23 May 2012 in ICAO MID Regional Office, Cairo:

i) PAN European Network Service (PENS) implemented in Europe allows ANSPs two different IP interconnection possibilities. In case where ANSPs have their own IP networks, they can connect their national IP network to PENS. In other case, where the ANSPs do not have their own IP Network, PENS can install an access point consisting of PENS router, at each location where an IP connection needs to be implemented;

ii) ICAO MID Region recognized increasing important role of public internet and identified the need for a study to support SWIM including the possibility of using public internet and/or using common service provider; and

iii) ICAO MID Region is of the opinion that initial activity should be performed to incorporate SWIM into the ATN/AMHS infrastructure.

2.12.2 The meeting was also informed about the issues discussed in ICAO and FAA Workshop held from 10 to 13 April, 2012 in Miami regarding follow-up actions of AMHS and ICAO Seminar/Workshop on Implementation of Ground-Ground and Air-Ground Data Link held in Lima, Peru, from 10 to 12 September, 2012.

2.13 **Report on AMHS Implementation Status**

2.13.1 The AMHS implementation planner was updated based on the information and reports furnished by member States.

2.13.2 Some information from BBISs States like Singapore was updated based on an IP provided to the meeting;

2.13.3 Planner was further updated by taking the feedback from the States presented at the meeting for the data pertaining to the reciprocal ends;

2.13.4 States were urged to provide feasible dates instead of TBD for Physical connection, Router connection, MTA connection and Commissioning of the system and connection;

2.13.5 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 2015 and 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 will be developed. Thus most of the status for Japan was retained as TBD. Chairman ATNICG and the Secretariat were urged to follow up actions with Japan for expediting the implementation;

2.13.6 Thailand reviewed on the status of connections with various Sates. It is expected that, except for China, connection with rest BBIS locations will be commissioned by Q4/12 or early 2013. Discussion with China was being carried out with target date of implementation of the AMHS connection during 2013-14;

2.13.7 Nepal requested Secretariat to assist in establishing a bilateral dialogue with China for setting up 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;

2.13.8 It was observed that AMHS connectivity between BIS and BIS States was missing in the planner. India accepted the responsibility to update the status and present at next meeting;

2.13.9 It was also observed that status of Philippines in the planner was missing. The same was included and the target dates for implementation of AMHS connection with Hong Kong, China and Singapore were established for 2015.

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

2.14.1 Information Management Service (IMS) Ad-Hoc Sub WG lead informed that the objectives of the Ad Hoc WG are 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.

2.14.2 Format of the detailed work-plan was presented in WP/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 in the outcome of the IMS Ad Hoc Sub WG.

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

2.15 **Dates and Venues for Future Meetings**

2.15.1 Indonesia informed the meeting about Chairman, Directorate General of Civil Aviation – Ministry of Transportation of Indonesia's offer to host Eighth Meeting of ATN Implementation Coordination Group (ATNICG/8) in Indonesia in March 2013.

2.15.2 Considering pending tasks that still need to be completed by the ATNICG Working Group, the meeting agreed to hold the ATNICG WG/12 meeting in September 2013. USA considers hosting the meeting in Seattle in September 2013 subject to further coordination with the agencies concerned.

2.16 **Retirement of Regional Officer CNS**

2.16.1 The meeting noted that Dr. Sujan Saraswati, Secretary of the ATNICG retired by the end of 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.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) review the outcome of ATNICG WG/11 meeting; and

b) take action on the 3 draft Conclusions developed by the WG meeting.

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