INTERNATIONAL CIVIL AVIATION ORGANIZATION
ASIA AND PACIFIC OFFICE

REPORT OF

THE TENTH WORKING GROUP MEETING OF AERONAUTICAL TELECOMMUNICATION NETWORK IMPLEMENTATION CO-ORDINATION GROUP OF APANPIRG (ATNICG WG/10)

Jaipur, India
26 – 29 September 2011

The views expressed in this Report should be taken as those of ATNICG WG/10 Meeting and not of the Organization. This report will be provided as baseline for discussion at ATNICG WG/11 and will be submitted to the Seventh Meeting of ATNICG for further action.

History of the Meeting

Report on Agenda Items

List of Attachments

1. Opening of the Meeting

1.1 The Tenth Working Group meeting of Aeronautical Telecommunication Network Implementation Co-ordination Group (ATNICG WG/10) of APANPIRG was held at the Jai Mahal Palace Hotel, Jaipur, India, from 26 to 29 September 2011. The meeting was hosted by Airports Authority of India (AAI).

1.2 The meeting was inaugurated by Dr. S.N.A. Zaidi, Secretary Civil Aviation, Government of India in the presence of Mr. V.P. Agrawal, Chairman and other senior executives of Airports Authority of India. Dr. Zaidi brought out the significant developments that had taken place in India during previous few years and the recognitions Indian civil aviation had receive in the global scenario. Dr. Zaidi and Mr. Agarwal briefly introduced the meeting about the major achievements like integration of radars in the southern region, integration of upper airspace etc. They wished meeting a big success.

1.3 Mr. Hoang Tran, AMHS Programme Manager, FAA and Chairman ATNICG outlined the tasks ahead of the Group. He also informed the meeting about the developments that had taken place in the global environment. Mr. Saraswati, Secretary ATNICG conveyed the condolences of the group to the people and Govt. of Nepal for the loss of precious lives in the recent air accident in Lalitpur, Nepal. He outlined the meeting priorities and tasks ahead for the meeting.

2. Attendance

2.1 The meeting was attended by 48 participants from 11 States (Fiji Islands, India, Indonesia, Malaysia, Nepal, the Philippines, Republic of Korea, Singapore, Sri Lanka, Thailand, USA and an Industry). The List of Participants is provided in **Attachment 1** to this Report.

3. Officers and Secretariat

3.1 Mr. Hoang Tran, AMHS Programme Manager, FAA, USA chaired the meeting.

3.2 Mr. Sujan Kumar Saraswati, Regional Officers CNS, ICAO Asia and Pacific Regional Office acted as Secretary for the meeting.

4. Organization, working arrangement, language and documentation

4.1 The ATNICG WG/10 met as a single body. The working language for the meeting was English inclusive of all documentation and this Report. The List of Working and Information Papers is provided in **Attachment 2** to this Report**.**

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Agenda Item 1: Adopt Meeting Agenda

1.1 The Secretariat presented the Provisional Agenda circulated for the meeting. After discussing the scope of individual Agenda Items, meeting adopted the Agenda without any change.

Agenda Item 2: Review of relevant Meeting Reports (ATNICG/6, CNS/MET SG/15 and APANPIRG/22

2.1 The meeting noted the outcome of the Sixth Meeting of Aeronautical Telecommunication Network (ATN) Implementation Coordination Group (ATNICG/6) presented by the Secretariat presented through IP/2. It was explained that ATNICG/6 outcome was presented to the Fifteenth Meeting of CNS/MET Sub Group (CNS/MET SG/15) and the outcome of CNS/MET SG/15 was presented to APANPIRG/22 hence the issues deliberated in ATNICG/6 are covered in the CNS/MET SG/15 and APANPIRG/22 reports.

Outcome of CNS/MET SG/15 and APANPIRG/22 Meetings

Aeronautical Fixed Services (AFS)

2.2 The meeting reviewed the reports of CNS/MET SG/15 and APANPIRG/22 meetings related to Aeronautical Fixed Services (AFS) and Aeronautical Mobile Service (AMS) including ATN/AMHS implementation related matters presented through WP/2. The meeting noted following actions taken by APANPIRG/22:

- The revised ATNICG Terms of Reference and the updated Subject/Tasks List proposed by ATNICG/6 was adopted.
- The updated FASID Tables CNS 1B – ATN Router Plan, Table CNS 1C – AMHS Routing Plan and Table CNS 1E – AIDC routing plan as developed by ATNICG and recommended by CNS/MET SG/15 were adopted.
- The Asia/Pacific AMHS Technical Specifications developed by the Ad-hoc Group during CNS/MET SG/15 Meeting was adopted (Conclusion 22/18) after appreciating the work done by the Group in completing the task assigned in such a short time.
- Adoption of Conclusion 22/19 urging the States to expedite implementation of ATN/AMHS interconnection for compatible operation in accordance with ICAO Asia/Pacific Regional Implementation Plan.
- Noted the ATN/AMHS implementation status presented to APANPIRG/22 by Mongolia, Republic of Korea and India.
    - Mongolia: 2Mbytes high speed circuit between Ulaanbaatar and Beijing was implemented in October 2010 and there are plans to use this circuit for the implementation of ATN/AMHS and AIDC.
    - Republic of Korea: ATN/AMHS between Seoul and Beijing was commissioned on 1 June 2011 and now ROK is progressing towards AMHS implementation with Japan (Fukuoka).

- India: ATSMHS between Mumbai and Singapore has been operational since 23 March, 2011 and India has plans to implement AMHS connectivity with Pakistan and China.

- Noting the outcome of AIDC Seminar held in October 2010 and the status of development of Pan Regional ICD for AIDC, APANPIRG/22 encouraged the States to provide comments on the draft version of the Pan Regional ICD for AIDC.

Aeronautical Mobile Service (AMS)

2.3 Noting the significance of data-link communication and the planned Second Satellite Data Link Operational Continuity Meeting (SOCM/2) and an associated seminar scheduled from 15 to 18 November 2011, APANPIRG/22 urged the States to nominate suitably qualified participants for participating in the events (Conclusion 22/20).

2.4 APANPIRG/22 noted the work progressed by the Interregional SATCOM Voice Task Force (IRSVTF) formed consequent to the decisions taken in the North Atlantic Systems Planning Group (NATSPG Conclusion 46/5) and APANPIRG (Conclusion 21/27).

2.5 Noting issues related to the usage of same SELCAL code by two or more aircraft, APANPIRG adopted Conclusion 22/21 inviting ICAO to conduct a survey to assess the instances of two or more aircraft using the same SELCAL code in the same HF area in the region.

2.6 The meeting also noted the data-link monitoring results conducted for Auckland Oceanic FIR for the last three years as presented by New Zealand and the status and contingency arrangements of MTSAT presented by Japan. The meeting also noted the restructuring of Flight Service Sectors in Indonesia and the fading of HF signal reported by Sri Lanka.

Developments in ICAO Panels

2.7 A comprehensive report on the outcome of Fourteenth meeting of Aeronautical Communication Panel (ACP) Working Group – I (IPS) (ACP WG-I/14) and Eighteenth meeting of Working Group - M (Maintenance) (ACP WG-M/18) was presented to the meeting through WP/4. Both the Working Group meetings were held in Montreal from 18 to 22 July 2011.

ACP Working Group I (IPS) Meeting

2.8 The meeting discussed issues related to the Directory Service like concept of operation and agreed on developing further guidance on its implementation. Continuity of WG/1 after 2008 was discussed and it was agreed that some new tasks had subsequently been generated which required the Working Group to continue. Meeting agreed to develop an Action Item inviting States to nominate personnel with IPS skills to support extension of work programme.

IPv6 addressing

2.9 EUROCONTROL introduced a paper on IPv6 addressing scheme and BGP Autonomous System Number (ASN) assignments. Meeting was reminded that an Action Item to secure /32 address block for ground-ground communication for each of the ICAO regions had been developed at the

WG-I/13 and it was informed that the Action Item had not yet been completed since the guidance was not available. ACP was reminded that Doc 9896 already has a provision for /32 address assignments to Mobile Service Providers to support mobile (air-ground) communication. ACP after discussing comparative benefits of /16 and /32 addressing schemes came to following conclusion:

a) /16 addressing was needed to support ICAO 24-bit address scheme;

b) /16 address block could accommodate /32 address block for each of the ICAO regions (except EUR/NAT region, which has already secured a separate block)

2.10 ACP was also of the opinion that the use of a common address block for aviation also had security benefits as the Boundary Gateway Protocol (BGP) could be used to prevent aviation data from being carried on the public internet and conversely to prevent access from the public internet. ACP assigned an Action Item for ICAO to develop a justification for a /16 address block and make an application to ARIN or IANA based on expediency of requirement.

2.11 USA proposed to implement dual stack at key boundary points to accommodate neighboring States when they migrate to IPv6. Additionally, USA will also support OSI protocol over IP sub-network. USA was assigned the task to develop guidance material for Doc 9896 on transition from IPv4 to IPv6. There was a suggestion in ACP to modify ICAO SARPs to shift use of OSI protocols to Recommended Practices and keep IPS as a Standard in Annex 10. This move was opposed because AMHS over OSI is already in use in Asia/Pacific region.

DNS Naming

2.12 Following points were raised with reference to DNS naming:

a) Domain names are essential for IPv6 due to address length;

b) Since domain names are developed in order to make the addresses human-readable, it was considered essential to determine what was important to pilots and air-traffic controllers;

c) In many cases this would simply mean applying the principles in use today; and

d) Consideration needed to be given to future applications since future aircraft could have as many as 256 sub-networks on board.

2.13 Domain name benefits were discussed in the meeting and it was agreed that ICAO could oversee this function through the use of an appropriate guidance material.

SWIM

2.14 ACP WG-I discussed in detail the role of ACP in the implementation of SWIM. It was generally agreed that ACP could start the work on media only after the Concept of Operation had been developed and various parameters like volume of data, routing rules, etc. were available. To pursue the subject ACP WG/I adopted an Action Item for follow up and asked ACP to consider the development of a suitable architecture to support SWIM.

ACP Working Group M (Maintenance) Meeting

2.15 ACP WG-M discussed in detailed the Security provisions in Doc 9880 and an Action Item was developed assigning the task of developing a detailed note on the subject for presentation to the ACP Working Group of the Whole meeting. ACP WG-M also discussed issues related to Configuration Management and status of ATN/OSI Document 9880 update. ACP WG M was informed about Communication Roadmap developed by ICAO and the status of VDL Mode 2.

2.16 Chairman, briefing the meeting on the background of Aeronautical Communication Panel (ACP) informed that the Panel was created to address all the issues related to communication. It was informed that there are three main documents, which are referred in the Panel deliberations and these are Doc 9705 (dealing with ATN over OSI), Doc 9880 (dealing with ATN over OSI and Internet Protocol network including subnet level) and Doc 9896 (dealing with ATN over IPS). As informed in the Working Paper, Doc 9705 has become obsolete with the transfer of the relevant information to Doc 9880. On the issue of Directory Services, it was informed that the service is not yet working, but will be an online tool that can impact AMHS operation when it is implemented. In the interim, meeting was reminded that States should use AMC through AEROTHAI. The meeting was reminded the importance of providing their up to date AMHS information through AEROTHAI since all operational or planned operational AMHS will refer to AMC database for AMHS addresses and other related information.

2.17 Following important issues related to implementation of ATN/AMHS were raised in the meeting:

i) It appears that ACP is giving quite a lot of importance to the implementation of VoIP, where as in APAC region, implementation of AIDC is being considered more important. Since, both these services are used for coordination across FIRs, the Group agreed that implementation of AIDC should take precedence, since it is data based which is considered to be more accurate as compared to a voice based services like VoIP;

ii) The meeting also recommends that the AIDC, that is based on AFTN header is encourage to use AMHS/AFTN gateway as the AFTN X.25 network protocol is becoming obsolete and hard to maintain.

iii) An issue was raised that in ACP, a suggestion was made to relegate ATN over OSI to the status of Recommended Practices and ATN over IPS to be kept as Standard. Chairman clarified that this proposal was opposed in ACP based on the argument that in the APAC region there is an implementation which is based on ATN over OSI. It was also pointed out that Air-Ground implementations are predominantly OSI based hence it cannot be relegated to Recommended Practices Status;

iv) On the issue of Domain Name Server, meeting agreed that domain name, in addition to making the IPv6 addresses human readable also provides identity for the civil aviation related organizations. The meeting hence, supported the proposal of having domain name for the civil aviation community; and

v) For air-ground communication, meeting was of the view that VDL-2 is ATN compatible, where as ACARS are not. Because of aircraft equipage, the transition to VDL-2 is going to take some time. Meeting was further informed that Communication Service Providers (including ARINC and SITA) had the option of providing both VDL-2 and ACARS and it was left to the States to choose between the two.

Agenda Item 3: Review ASIA/PAC Technical Specification of AMHS

3.1 Asia/Pacific Technical Specifications for AMHS adopted by APANPIRG/22 were further discussed and a paper (WP/5) was presented under Agenda Item 4 to explain the developed specifications against the provisions made in existing standards.

Agenda Item 4: Implementation Status and Issues

- ATN Certification and Validation Process
  - Review and update conformance procedures and checklist for implementation of AMHS and ATN routers
- AMHS Implementation and update ATN/AMHS Planning Matrix
- Security and ATN Implementation relates issues
  - ACP working group status on Doc 9880 and Doc 9896
  - Director Service strategy for ATN Ground applications
  - Update the guidance documents

4.1 Since Hong Kong China was not able to attend the meeting, ATN/AMHS Planner was presented by India. The meeting reviewed and updated information provided in the Planner. The updated ATN/AMHS Planner is provided in **Attachment 3** to the report for further review.

4.2 Thailand presented a report on the AMHS connection testing between Thailand and Singapore (IP8). It was informed that the system at Thailand end has been provided by Ubitech, where as the system at Singapore end is Comsoft make. The inter-operability test was carried out from 30 May to 10 June 2011. The first part of the test was to verify the basic functionality between the two systems, while the second part of the test was carried out based on a portion of the Inter Operability Test procedure prescribed in Asia/Pacific AMHS Manual. In response to a query, Thailand clarified that the testing was carried out between MTA to MTA, however the testing has not been done exhaustively. It was informed that for the test purposes, IP/SNDCF will be used at sub-net level and later for operation OSI will be used.

4.3 India informed the meeting through IP/7 about completion of AMHS implementation at Mumbai in April 2008 and its readiness to start test with the reciprocal ends at Oman, Thailand, Pakistan, Nepal, Bhutan etc. India also plans to implement IP-based domestic ATN/AMHS at three other major international airports in Chennai, Kolkata and Delhi. As regards to AMHS interconnection with other BBIS States, India has commenced the inter-operability test with Beijing in May 2011 by establishing SNDCF/X.25 connectivity. Initially a problem was faced about message conversion at either end, but this issue has been resolved. Currently the Mumbai system is facing difficulty of viewing the received AFTN originated messages from Beijing. India informed following implementation status:

a) Preoperational trials with Karachi completed, coordination for regular operations on;

b) Mumbai/Muscat presently on AFTN over TCP/IP through AMHS/AFTN gateway Coordination for AMHS trials on;

c) Coordination for AMHS testing with Thailand on; and

d) Awaiting readiness from Sri Lanka, Nepal, Bhutan and Kenya. Nepal informed about its plan to be ready in early 2012.

Agenda Item 5: IP Implementation documents (IP ICD, IP Subnet ICD)

5.1 WP/6 presented by USA addressed the draft ATN Ground-Ground Router Internet Protocol (IP) Sub-Network Dependent Convergence Function (SNDCF) Interface Control Document (ICD). ICAO has defined an IP SNCF in Doc 9880 which specifies provisions for running Contact-Less Network Protocol (CLNP)/Inter Domain Routing Protocol (IDRP) over IPv4 or IPv6. But in the ICAO environment a fully meshed IP sub-network is assumed which includes support to carry parameters from the CLNP internetwork to the IP sub-network. The Asia/Pacific environment being initially point to point, does not need to support internetworking parameters such as priority, QoS, etc. at the sub-network layer.

5.2 The IP SNDCF ICD presented is based on ICAO defined IP SNDCF: however parameters which do not apply on a point-to-point basis are profiled out which permits a simpler implementation until Asia/Pacific migrates to a fully meshed IP Internetwork running TCP over IP. It was recommended that the IP SNDCF ICD, which was presented to the meeting, be forwarded to ATNICG/7 for final review and for recommendation to CNS/MET SG for adoption.

Agenda Item 6: Development of ATN/AMHS Applications

6.1 USA presented updates to the Asia/Pacific AMHS Specifications that was adopted by APANPIRG/22 through WP/5. At ATNICG/6 held in Republic of Korea, Group reviewed a proposal presented by Ad-hoc Requirements Group for ATSMHS requirements documents and noted that the Asia/Pacific requirements for AMHS have been published in several manuals based on different versions of Doc 9705 and the EUROCONTROL AMHS Manual. It was proposed that Asia/Pacific region adopt a single document that captures the AMHS requirements for the region and is based on the latest ICAO specifications in Doc 9880. As a result of discussions, the Group agreed to establish a small group with experts from States. This small group initially exchanged views on the draft specifications through e-mail and presented the final draft to CNS/MET SG/15, which was adopted by APANPIRG/22 based on CNS/MET SG recommendation.

6.2 Based on the recommendation of the Ad-hoc expert group, USA presented, through first of the series of papers (to be presented in the future meetings) a comparison between the AMHS ICD PICS and Doc 9880 PICs. WP/ 5 analyzed Table 1.1 in AMHS ICD against Tables 4-4 and 4-10 in Doc 9880. The paper compares AMHS ICD Conventions for PICS Options and Doc 9880 Conventions for PICS Options for Message Transfer for conveyance of an IPM for fist few elements of AMHS ICD Table 1.1 Message Transfer Envelop. Meeting was invited to comment on the recommendations. Based on the comments received, the information provided in the paper will be revised and a historical record will be maintained. Meeting was also invited to note the methodology adopted and comment on that. The ad-hoc

expert group was invited to assign responsibility to define and schedule completion of analysis for the remaining tables in the AMHS ICD. It was agreed that six sections identified in the Asia/Pacific AMHS Specifications that needed to be updated are assigned to the members of the expert group; Hong Kong China, China, India, Japan, Singapore, Thailand and USA. An Action Item was developed assigning responsibility of coordination to USA.

6.3 WP/7 presented by USA informed the meeting about future evolution of ground-ground messaging system, which will include SWIM, The paper was based on the presentation made by AENA (the Spain ANSP) to the Fourth Working Group of the Whole meeting of Aeronautical Communication Panel (ACP WG-W/4) held from 13 to 16 September, 2011 in Montreal. The paper updated the definitions, structure and strategy to develop SWIM within Europe. The paper also identifies most important topics that ICAO will have to take into account regarding this new concept and its coexistence with AMHS. Following highlights were included in the presentation:

i) SWIM should be a 'middleware' between user applications (e.g. FDPS) and distribution application (e.g. AMHS) and underlining network (e.g. PENS or IP Network);

ii) Specific requirements of the user application should be processed by centralized SWIM rather than built in to individual user applications;

iii) Gateway to address different types of protocols and messages should be part of SWIM rather than building dual stacks to individual applications;

iv) SWIM should concentrate its processing to message type rather than user applications

v) The need to coordinate with SESAR/NextGen should be considered to ensure SWIM infrastructure takes advantage of the new service and application offered; and

vi) SWIM region can be implemented within its region and with non-SWIM regions using phased processes to implement fully meshed SWIM environment.

6.4 The purpose of SWIM is to provide flexibility to support dynamic network without impacting operational environment. SWIM can minimize the modification to existing user applications and AMHS. It also emphasizes the need of AMHS which is binary based to support variety of messages and AMHS underlining network using Internet Protocol. USA presented WP/7 Attachment B titled SWIM Development within Europe and coexistence with AMHS. This paper is based on the paper developed by Mr. Jean-Yves Piram and presented to ACP WG-W/4. The paper provides information on the history of ATN Directory Service, planning and result of the study of ATN Direction operational requirement analysis. It also addresses the concern of network compatibility, the on-line ATN DIR versus the off-line AMC operation, the transition from AMC to ATN DIR and recommended ATN DIR approach for Europe region.

6.5 The recommendation is to use centralized ATN DIR within European region and each AMHS in the region to use Directory Service Agent (DSA) to maintain the ATN DIR data using the Directory Information Shadowing Protocol (DISP) for replication of information. The current ICAO Doc 9705 specifies Directory Access Protocol (DAP) which remains mandatory for access to the directory by management applications, the use of the Lightweight Directory Access Protocol (LDAP) as given in IETF RFC 4511 is considered as a cost-effective alternative to incorporate a Directory User Agent (DUA) into applications with limited directory requirements. Paper did not address ATN DIR between domains

and data exchange between domains for ATN DIR. The Asia/Pacific cannot consolidate all States into a network domain for ATN DIR purposes, however a bilateral ATN DIR between AMHS domains within the region should be considered. Further discussed on the subject will be addressed in the future ACP WGs I and M meetings and results of European Directory Service studies will be analyzed.

Agenda Item 7: Review Ad-hoc WG Reports from each WG leads

7.1 Since there was only one paper for the consideration of the Ad-hoc Group, it was discussed in the main meeting. The Ad-hoc Group did not meet separately.

Agenda Item 8: Any other business

8.1 Republic of Korea presented the proposed Composition of Bypass Route for International Aeronautical Communication Network through IP/3. Information Paper informed about the composition of international aeronautical communication network consequent to the commissioning of operation of AMHS with China in June 2011. Prior to the commissioning of AMHS connectivity, the Gimpo-Beijing connectivity was provided through satellite network with alternate routing provided through Gimpo-Fukuoka-Beijing (RK-RJ-ZB). In the proposed composition, the alternate routing will be Gimpo-Beijing (RK- ZB) over AFTN, in the event of failure of Gimpo-Beijing ATN/AMHS circuit. Similarly in the event of Gimpo-Fukuoka circuit failure, alternate routing will be provided through Gimpo-Beijing-Fukuoka route. Meeting was invited to note and discuss the information provided.

8.2 Through IP/6 India presented information about the software patch they had developed in-house for implementing Amendment 1 to the Fifteenth Edition of ICAO Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM, Doc 4444) for accommodating amended flight plans. The software patch developed will make it possible for India to accept the new flight plan messages, when it becomes applicable on 15 November 2012. Thailand raised the issue that since the ANSP was not the owner of the information provided in the Flight Plan; they did not have the authority to change it. So Thailand has worked out a coordination procedure with the airline operators to facilitate change. An application has been developed to process the information between AFTN/AMHS and FDPS only.

8.3 Mrs. Jittima, Aeronautical Radio of Thailand (AEROTHAI) presented the updated information on AMC through presentation SP/4. She conveyed AMC information regarding AMHS in Asia/Pacific by accessing AMC through internet during the meeting. She reminded the members about the information that can be updated on-line and the information that can be updated only through AEROTHAI-EUROCONTROL. States were invited to contact Mrs. Jittima regarding information on the subject. Mrs. Jittima's email address is 'tima14@aerothai.co.th'.

8.4 Ubitech presented information about their AMHS system and updated the meeting about the status of their various implementations in the region.

8.5 Through IP/4, Thailand proposed to host the next ATNICG Working Group meeting (ATNICG WG/11) and an AMHS Workshop to present progress in AMHS implementation. The proposed timeframe to host both meeting is the 3rd week of January (tentatively from 23 to 27 January 2012). The planned location is Chiang Mai. Thailand offered to further coordinate with ICAO Asia/Pacific Regional Office for the invitation letter and detailed information. Meeting appreciated the offer made by Thailand and thanked Aeronautical Radio of Thailand for their support. It was informed that the dates proposed were not convenient, as they were coinciding with the Chinese New Year.

Meeting decided to consider delaying the schedule by one week. It was planned to have the Workshop for two days and the ATNICG WG/11 meeting for three days.

8.6 Meeting reviewed the list of Action Items presented through WP/3. Information on the status of completion of the Action Items was updated. Two new Tasks were defined and the responsibility assigned.

8.7 Chairman, ATICG thanked Airports Authority of India for hosting the meeting and for the excellent arrangements made for the other programmes organized for the participants. Chairman specifically thanked Dr. S.N.A. Zaidi, Secretary Civil Aviation, Govt. of India and Mr. V. P. Agrawal for their presence during the inaugural session and for their support to the Group.

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International Civil Aviation Organization

The Tenth Working Group Meeting of Aeronautical Telecommunication Network Implementation Co-ordination Group of APANPIRG (ATNICG WG/10)

26 – 29 September 2011, Jaipur, India

LIST OF WORKING/INFORMATION PAPERS AND PRESENTATIONS

WP & IP No.	Agenda Item	Subject	Presented by
		LIST OF WORKING PAPERS	
WP/1	-	Provisional Agenda	Secretariat
WP/2	2	Report on Outcome of CNS/MET SG/15 and APANPIRG/22 Meetings relevant to AFS and AMS	Secretariat
WP/3	3	Review of Action Items List	Secretariat
WP/4	2	Review of Aeronautical Communication Panel Working Group – I (IPS) and M (Maintenance) Meeting Reports	Secretariat
WP/5	3	Review of Message Transfer Envelop for IPM Requirements	ASIA/PAC AMHS Technical Specification Ad-hoc WG
WP/6	5	ASIA/PAC ICD for ATN Ground-Ground Router IP SNDCF	USA
WP/7	6	Outcome of ACP Working of the whole Meeting on SWIM and Directory Service	Secretariat
		LIST OF INFORMATION PAPERS	
IP/1	-	Meeting Bulletin	Secretariat
IP/2	2	Review of Sixth Meeting of Aeronautical Telecommunication Network Implementation Coordination Group Report	Secretariat
IP/3	8	The Composition of Bypass Route for International Aeronautical Communication Network in the Republic of Korea	Republic of Korea

WP & IP No.	Agenda Item	Subject	Presented by

LIST OF PRESENTATIONS

SP/1		The System Wide Information Management (SWIM)	USA
SP/2		EUR/NAT Routing Directory, Part IV – COM Charts per ICAO Region	USA
SP/3		ATS Messaging Management – Implementation Plan	USA

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Interconnection, Connected to router of: *Administration (Location of Router)*	Stage	BBIS								
		Australia (Brisbane)	China (Beijing)	Hong Kong, China (Hong Kong)	India (Mumbai)	Fiji (Nadi)	Japan (Fukuoka)	Singapore (Singapore)	Thailand (Bangkok)	USA (Salt Lake City / Atlanta)
Australia (Brisbane)	A					Q2/11	TBD	Q1/12		Q4/12
	B					Q3/11	TBD	Q1/12		Q2/12
	C					Q4/11	TBD	Q2/12		Q2/12
	D					Q4/11	TBD	Q2/12		Q4/12
China (Beijing)	A			Q3/10	Q1/11		TBD		TBD	
	B			Q3/10	Q2/11		TBD		TBD	
	C			Q4/11	On-going		TBD		TBD	
	D			Q2/12	Q4/11		TBD		TBD	
Hong Kong, China (Hong Kong)	A		Q3/10				TBD		Q1/12	
	B		Q3/10				TBD		Q1/12	
	C		Q4/11				TBD		Q3/12	
	D		Q2/12				TBD		Q4/12	
India (Mumbai)	A		Q1/11					Q3/09	Q4/11	
	B		Q2/11					Q4/09	Q4/11	
	C		On-going					Q4/09	Q1/12	
	D		Q4/11					Completed	Q3/12	
Fiji (Nadi)	A	Q2/11								Q4/10
	B	Q3/11								Q4/11
	C	Q4/11								Q4/11
	D	Q4/11								Q4/11
Japan (Fukuoka)	A	TBD	TBD	TBD				TBD		Q3/00
	B	TBD	TBD	TBD				TBD		Q4/04
	C	TBD	TBD	TBD				TBD		Q4/04
	D	TBD	TBD	TBD				TBD		Completed
Singapore (Singapore)	A	Q1/12			Q3/09		TBD		Q4/11	
	B	Q1/12			Q4/09		TBD		Q4/11	
	C	Q2/12			Q4/09		TBD		Q1/12	
	D	Q2/12			Completed		TBD		Q3/12	
Thailand (Bangkok)	A		TBD	Q1/12	Q4/11			Q4/11		
	B		TBD	Q1/12	Q4/11			Q4/11		
	C		TBD	Q3/12	Q1/12			Q1/12		
	D		TBD	Q4/12	Q3/12			Q3/12		
USA (Salt Lake City / Atlanta)	A	Q4/11				Q4/10	Q3/00			
	B	Q1/12				Q4/11	Q4/04			
	C	Q2/12				Q4/11	Q4/04			
	D	Q3/12				Q4/11	Completed			

Interconnection, Connected to router of: *Administration (Location of Router)*	Stage	BBIS								
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Bahrain	A							Q1/12		
	B							N/A		
	C							Q2/12		
	D							Q2/12		
Europe	A						TBD			
	B						TBD			
	C						TBD			
	D						TBD			
Italy	A								TBD	
	B								TBD	
	C								TBD	
	D								TBD	
Kuwait	A		TBD							
	B		TBD							
	C		TBD							
	D		TBD							
Russian Federation	A		TBD				TBD			
	B		TBD				TBD			
	C		TBD				TBD			
	D		TBD				TBD			
South Africa	A	TBD								
	B	TBD								
	C	TBD								
	D	TBD								
United Kingdom	A							Q4/11		
	B							N/A		
	C							Q4/11		
	D							Q4/11		

Interconnection, Connected to router of: *Administration (Location of Router)*	Stage	BBIS								
		Australia (Brisbane)	China (Beijing)	Hong Kong, China (Hong Kong)	India (Mumbai)	Fiji (Nadi)	Japan (Fukuoka)	Singapore (Singapore)	Thailand (Bangkok)	USA (Salt Lake City / Atlanta)
Indonesia (Jakarta)	A	Q3/12						2009		
	B	Q3/12						2009		
	C	Q3/12						2011		
	D	Q3/12						Q2/12		
New Zealand (Christchurch)	A	Q2/12								Q4/12
	B	N/A								N/A
	C	Q3/12								Q3/12
	D	Q4/12								Q4/12
Timor Leste (Dili)	A	TBD								
	B	N/A								
	C	N/A								
	D	UA/TBD								
Nauru (Nauru)	A	TBD								
	B	N/A								
	C	N/A								
	D	UA/TBD								
Papau New Guinea (Port Moresby)	A	TBD								
	B	TBD								
	C	TBD								
	D	TBD								
Solomon Islands (Honiara)	A	TBD								
	B	N/A								
	C	N/A								
	D	UA/TBD								
Vanuatu (Port Vila)	A	TBD								
	B	N/A								
	C	N/A								
	D	UA/TBD								
DPR Korea (Pyongyang)	A		TBD							
	B		TBD							
	C		TBD							
	D		TBD							
Macao, China (Macao)	A		Q1/09	Q3/09						
	B		Q1 - Q2/09	Q3 - Q4/09						
	C		Q1 - Q2/09	Q3 - Q4/09						
	D		Q2/12	Completed						

Interconnection, Connected to router of: *Administration (Location of Router)*	Stage	BBIS								
		Australia (Brisbane)	China (Beijing)	Hong Kong, China (Hong Kong)	India (Mumbai)	Fiji (Nadi)	Japan (Fukuoka)	Singapore (Singapore)	Thailand (Bangkok)	USA (Salt Lake City / Atlanta)
Mongolia (Ulaanbaatar)	A		TBD							
	B		TBD							
	C		TBD							
	D		TBD							
Myanmar (Yangoon)	A		TBD						TBD	
	B		TBD						TBD	
	C		TBD						TBD	
	D		TBD						TBD	
Nepal (Kathmandu)	A		Q2/12		Q2/12					
	B		Q3/12		Q3/12					
	C		Q3/12		Q3/12					
	D		Q4/12		Q4/12					
Pakistan (Karachi)	A		TBD		Q3/10					
	B		TBD		N/A					
	C		TBD		On-going					
	D		TBD		Q4/11					
Republic of Korea (Seoul)	A		Q2/10				TBD			
	B		Q3/10				TBD			
	C		Q3 - Q4/10				TBD			
	D		Completed				TBD			
Vietnam (Ho Chi Minh / Hanoi)	A		TBD	TBD				TBD	TBD	
	B		TBD	TBD				TBD	TBD	
	C		TBD	TBD				TBD	TBD	
	D		TBD	TBD				2013	TBD	
Philippines (Manila)	A			Q2/13				Q2/13		
	B			Q3/13				Q3/13		
	C			Q3/13				Q3/13		
	D			Q4/13				Q4/13		
Taibei	A			Q4/09			Q1/08			
	B			Q4/09			Q1/08			
	C			Q4/09			TBD			
	D			TBD			TBD			
Bangladesh (Dhaka)	A				N/A					
	B				N/A					
	C				N/A					
	D				N/A					

Interconnection, Connected to router of: *Administration (Location of Router)*	Stage	BBIS								
		Australia (Brisbane)	China (Beijing)	Hong Kong, China (Hong Kong)	India (Mumbai)	Fiji (Nadi)	Japan (Fukuoka)	Singapore (Singapore)	Thailand (Bangkok)	USA (Salt Lake City / Atlanta)
Bhutan (Paro)	A				N/A					
	B				N/A					
	C				N/A					
	D				N/A					
Kenya	A				N/A					
	B				N/A					
	C				N/A					
	D				N/A					
Oman (Muscat)	A				Q1/10					
	B				N/A					
	C				Q3/11					
	D				Q4/11					
Sri Lanka (Colombo)	A				Q4/12			Q4/12		
	B				N/A			Q4/12		
	C				Q4/12			Q4/12		
	D				Q4/12			Q4/12		
Kiribati (Tarawa)	A					UA				
	B					UA				
	C					UA				
	D					UA				
New Caledonia (Noumea)	A					Q4/12				
	B					NA				
	C					Q4/12				
	D					Q4/12				
Tuvalu (Funafuti)	A					UA				
	B					UA				
	C					UA				
	D					UA				
Wallis Island (Wallis)	A					UA				
	B					UA				
	C					UA				
	D					UA				
Brunei Darussalam (Brunei)	A							2013		
	B							2013		
	C							2013		
	D							2013		

Interconnection, Connected to router of: *Administration (Location of Router)*	Stage	BBIS								
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Malaysia (Kuala Lumpur)	A							2007	Q3/12	
	B							2007	Q3/12	
	C							Q4/11	Q4/12	
	D							Q4/12	Q4/12	
Cambodia (Phnom Penh)	A								Q3/12	
	B								Q3/12	
	C								Q4/12	
	D								Q4/12	
Lao PDR (Vientiane)	A								TBD	
	B								TBD	
	C								TBD	
	D								TBD	
American Samoa (Pago Pago)	A									UA
	B									UA
	C									UA
	D									UA
Marshall Islands	A									UA
	B									UA
	C									UA
	D									UA
Micronesia, Federated State of Chuuk	A									UA
	B									UA
	C									UA
	D									UA
Micronesia, Federated State of Kosrae	A									UA
	B									UA
	C									UA
	D									UA
Micronesia, Federated State of Ponapei	A									UA
	B									UA
	C									UA
	D									UA
Micronesia, Federated State of Yap	A									UA
	B									UA
	C									UA
	D									UA
Palau	A									UA
	B									UA
	C									UA
	D									UA

Note:

A	Physical Connections
B	Router Connection Tests
C	MTA Interoperability Tests
D	AMHS Commission
Q1/09	e.g. 1st Quarter in 2009