INTERNATIONAL CIVIL AVIATION ORGANIZATION
ASIA AND PACIFIC OFFICE

REPORT OF

ATS MESSAGE HANDLING SYSTEM (AMHS)/
SYSTEM WIDE INFORMATION MANAGEMENT (SWIM) WORKSHOP
AND
THE SEVENTH MEETING OF AERONAUTICAL TELECOMMUNICATION NETWORK IMPLEMENTATION CO-ORDINATION GROUP OF APANPIRG (ATNICG/7)

Chiang Mai, Thailand

(5 – 9 March 2012)

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PART I – HISTORY OF THE MEETING

1.1 Introduction

1.1.1 The ATS Message Handling System (AMHS)/ System Wide Information Management (SWIM) Workshop and the Seventh Meeting of Aeronautical Telecommunication Network Implementation Co-ordination Group of APANPIRG (ATNICG/7) was held at the Le Meridien Hotel, Chiang Mai, from 5 to 9 March 2011. The Meeting was hosted by Aeronautical Radio of Thailand Ltd. (AEROTHAI).

1.2 Attendance

1.2.1 95 Participants from 17 Administrations and representatives from industrial groups attended the Workshop and 98 Participants from 18 Administrations and industrial groups participated in the meeting. A list of participants is provided at **Attachment 1**.

1.3 Opening of the Meeting

1.3.1 The Workshop and the Meeting was officially opened by Mr. Somnuk Rongthong, Executive Vice President of AEROTHAI. In his opening speech, Mr. Somnuk expressed warm welcome to all the participants to Chiang Mai. While touching on the catastrophic tsunami in Japan and the worst flood in 50 years in Thailand which occurred in 2011, he highlighted brighter side of the progress of AMHS implementation in the Region. More and more States have implemented AMHS and are ready for transition from AFTN to AMHS. He also emphasized the need to understand more about emerging concepts of System Wide Information Management (SWIM) which was subsequently discussed at the workshop. He wished for a success and fruitful meeting.

1.3.2 Mr. Hoang Tran, Chairman of the ATNICG, in his opening remarks of the meeting, appreciated AEROTHAI for the warm welcome and excellent arrangements made. He also thanked Mr. Somnuk Rongthong for personally opening the meeting. He recalled that meetings of the group in the past have developed solutions for many obstacles in a complex network infrastructure in the region and acknowledged support by the States. He highlighted importance of the meeting and reminded about the tasks that needed to be completed.

1.3.3 Mr. Li Peng, Regional Officer, CNS of the ICAO Asia and Pacific Office expressed gratitude to AEROTHAI for their supports to the ICAO regional activities. He extended warm greetings to all the participants. He highlighted objectives of the workshop and the meeting and emphasized the need for the States to work together to implement ATN/AMHS in accordance with the implementation strategy and timelines adopted by APANPIRG. He also noted importance of SWIM concept and several issues that impact smooth implementation and stressed the need for closer cooperation and further efforts in establishing the ATN/AMHS network to support XML based applications in the near future and to meet the requirements of development of the air navigation system.

1.4 Officers and Secretariat

1.4.1 Mr. Somnuk Rongthong presided over the workshop and facilitated the discussions and Mr. Hoang Tran, Chairman of the ATNICG chaired the ATNICG/7 meeting. Messrs. Sujan Saraswati and Li Peng, Regional Officers CNS of ICAO Asia and Pacific Office acted as the Secretaries of the workshop and the meeting.

1.5 Working Arrangements, Language and Documentation

1.5.1 The workshop and ATNICG met as a single body, except for Thursday break-away peer to peer meetings for discussion on interconnection plan and related issues particularly with reference to specific backbone network and links between direct connection States. The working language for the meeting was English inclusive of all documentation and this Report. Lists of Working/Information Papers and Presentations are provided at **Attachment 2.**

2. AMHS/SWIM Workshop

2.1 The AMHS/SWIM workshop was organized in conjunction with the ATNICG/7 meeting. The objective of the workshop was to provide information to the participants on emerging concept of System Wide Information Management a component of the future air navigation system and to address the challenging issues of AMHS implementation. The workshop was presented with 14 presentations covering a comprehensive list of topics on the AMHS and SWIM as follows:

- Overview of ATN/AMHS implementations
- AMHS Implementation Guidance & Strategy
- SWIM Programme Overview
- Roadmap for Information Distribution
- SWIM Applications
- SWIM over AMHS
- NextGen Network Enabled Weather – NNEW Introduction
- VoIP Introduction
- Interface Options for Non-AMHS Systems
- Enterprise Collaborative Domain and Concept of Aeronautical Collaborative Ring
- FPL Amendment Conversion and solution
- Introduction on ASBU, GANP and AN-Conf/12

2.2 Based on the evaluation of the feedback, it was observed that the AMHS/SWIM Workshop was well received by the participants who also expressed that such kind of workshops on SWIM should be organized in the future.

2.3 Outcome of discussions at the workshop was reviewed by the ATNICG/7 meeting under Agenda Item 2.

3. Conclusions/Decisions - Definition

3.1 The ATNICG of APANPIRG records its actions in the form of Draft Conclusions, Draft Decisions and Decisions with the following significance:

a) Draft Conclusions deal with matters which, in accordance with the Sub-Group's Terms of Reference, require the attention of States/Organization or actions by ICAO in accordance with established procedures:

b) Draft Decisions relate solely to matters dealing with the internal working arrangements of APANPIRG and its contributory bodies; and

c) Decisions relate solely to matters dealing with the internal working arrangement of the ATNICG.

4. Terms of Reference (TOR) of ATNICG (Approved by APANPIRG/22)

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

Terms of Reference (TOR)

Coordinate implementation of ATN and those services identified and assigned by APANPIRG and ICAO in the Asia and Pacific Regions to satisfy ATM operational requirements, achieve inter-operability and address regional implementation and operation related issues.

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

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

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Agenda Item 1: Adoption of agenda

1.1 After reviewing Agenda Items for the meeting presented by the Secretariat, it was decided to amend Agenda Item 5 to read as "Security and Applications". The agenda adopted by the meeting was as follows:

Agenda Item 1: Adoption of Provisional Agenda

Agenda Item 2: Review outcome of relevant meetings/workshops

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

Agenda Item 4: IPS Transition

Agenda Item 5: Security and Applications

Agenda Item 6: Review and update Subject/Tasks List, Performance Framework Form (Objective 8), Action Item List etc.

Agenda Item 7: Any other business

Agenda Item 2: Review outcome of relevant meetings/workshops

Outcome of APANPIRG/22 Meeting (WP/3)

2.1 A report on the outcome of APANPIRG/22 meeting (September 2011) on the issues relevant for ATNICG was presented to the meeting by the Secretariat. Significant outcome related to the Aeronautical Fixed Services (AFS) and Aeronautical Mobile Services (AMS) were noted as follows:

- adoption of the AMHS Technical Specifications developed by an ad-hoc group with members from India, Japan, Singapore, Thailand and USA and the appreciations recorded by APAPNPIRG for the group's efficient work;
- the recommendations of the Special Implementation Programme (SIP) AIDC Seminar held in Bangkok in October 2011 including the flexible solution for implementation;
- support for development of Pan-regional ICD for AIDC;
- 2 Mbps optical fiber link between Ulaanbaatar and Beijing was implemented in October 2010 and Mongolia has a plan to use it for AMHS and AIDC connections with China;
- urging States to identify the characteristics such as file size, target timeline and interface needed for exchange of OPMET and Digital NOTAM using XML code and to conduct trials to promote early provision of a communication medium for exchange of MET and AIM data in XML format over AMHS (C22/48);

- adoption of Conclusion 22/19 urging the States to expedite implementation of ATN/AMHS; and

- approval of the revised TOR of the ATNICG

Action taken on the Report of ATNICG WG/10 (WP/7)

2.2 The meeting reviewed the report of ATNICG WG/10 meeting which was held in Jaipur, India from 26 to 29 September, 2011. Actions taken by the meeting on the report of the Working Group were as follows:

i) Noted that Aeronautical Communication Panel (ACP) was attaching importance to the implementation of VoIP, whereas in Asia/Pacific Region AIDC was taking precedence over voice coordination;

ii) On the issue of AIDC implementation, ATNICG recommended that AFTN based AIDC be implemented using AMHS/AFTN gateway and between direct MTA/MTA switching in addition to over dedicated circuits. This comment may be required to be reflected in the consolidated Pan-regional ICD for AIDC. There was a proposal to conduct necessary assessment for AIDC over AMHS/AFTN gateway as it is important to look at both interoperability and performance aspects for implementation of AIDC. Regarding ad hoc Task Force that may be established to finalize the pan-regional ICD for AIDC, the Chairman emphasized the need to include telecommunication experts in the Task Force; and

iii) The meeting agreed with Working Group recommendation that ACP proposal to relegate ATN/OSI as Recommended Practices should not be supported because ATN/OSI is still in use in the region and also because it is predominantly being used for air-ground communication.

iv) Discussing the issue of Domain Name Server (DNS), it was agreed that a common network service provider or network managers is the preferred option. Citing an example, it was informed that for establishing a point to point connectivity, the procedures took about two years, but this time is cut down drastically if a common service provider is in place. Similarly, defining the connectivity parameters (like IPv4/IPv6 etc.) is relegated to the service provider in the case of a common network service provider and ANSPs do not have to bother about it. Also, it is much simpler to implement Security and other tools like Directory Services etc. if a common network service provider is engaged. The ATNICG/7 meeting further discussed the issue and reconfirmed that it is required to have common network and implementation of IPv.6 would also require a common network service provider.

2.3 The meeting also discussed some of the operational issues related to the implementation of AIDC like transit delays inherent in the store and forward system used in AFTN and the routing implications.

Development made by ACP WG I and WG M (WP/8)

2.4 The Secretariat provided a brief report on the outcome of ACP WG-I/14 and WG-M/18 meetings held in July 2011. Issues related to Directory Services, implementation of VoIP and IP v6 addressing scheme were discussed in the WG-I meeting. Size of address block (/16 or /32) was assessed to meet the requirements of supporting ICAO 24-bit aircraft addressing scheme. Benefits of acquiring a common address block were further reviewed. ATNICG while discussing the issue, was of the view that an argument is required to be developed to support the claim for acquiring a /16 block

for the aviation community. Benefits and issues related to the adoption of DNS and implementation of SWIM were also discussed. The meeting was reminded that the planned WG-M meeting had not been held in September 2011 and now is scheduled to be held in May or June 2012.

Review outcome of AMHS/SWIM Workshop

2.5 Considering the very positive response from the Workshop on the comprehensive presentations and information provided on the SWIM and consequential discussions and the briefing on ICAO ASBU initiative and GANP updates at the workshop, the need for more seminars/workshops on better understanding on SWIM including SOA, SOAP and REST concept was identified by the meeting. It was also noted that in ASBU concept being introduced by ICAO, SWIM is listed in Block 1 (target timeline for implementation starting from 2018). It has close relation with ASBU module B0-30 which is being introduced starting from 2013. It was considered appropriate for the States in the ASIA/PAC Regions to develop a regional approach in planning for the implementation of SWIM.

2.6 Recognizing increasing important role of the public Internet that is played in the provision of MET and digital NOTAM information in lieu of dedicated circuits/links, need for a study was identified for an appropriate network to support SWIM including possibility of using public internet and/or using a common network service provider.

2.7 It was recommended to list study of an IP based network in order to support SWIM as one of the tasks for ATNICG. The initial defined activities which should be performed to incorporate SWIM into the ATN/AMHS Infrastructure were developed by an ad hoc group on SWIM. The group led by USA with members from Japan, New Zealand, Australia, ICAO Secretariat, Hong Kong China, Thailand, Republic of Korea, Singapore, Indonesia and India plus USA met on 8th March 2012.

2.7.1 A brief report on the outcome of the SWIM ad-hoc group meeting was reviewed by the meeting. A list of activities required to be taken up for the implementation of SWIM in the Region is provided in **Appendix A** to this report.

2.8 More information regarding SWIM can be found at following websites**:**

- https://www.eurocontrol.int/articles/system-wide-information-management
- http://www.faa.gov/nextgen/swim

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

Updates on Implementation Status

3.1 Under this agenda item, the meeting reviewed with appreciation the implementation status reports presented by the following States:

- Indonesia (IP/2)
- New Zealand (IP/4)
- India (IP/5)
- China (IP/6)
- Singapore (IP/8)
- Bangladesh (IP/9)
- Thailand (IP/10)
- Japan (IP/11)
- Australia (IP/12)
- Laos PDR (IP/13)
- Hong Kong China (IP/14)
- The Philippines (IP/15)
- Macao China (IP/16)

3.2 It was noted that the transition from AFTN to AMHS is progressing satisfactorily in ASIA/PAC Regions as many AMHS hubs had been put into operation and several ATN/AMHS circuits had been established. Noting the implementation progress made, the meeting also observed delay of some implementation projects reported by few Administrations.

3.3 Bilateral and multilateral discussions were held between the administrations concerned on interconnection and testing plan during the course of the meeting. Administrations were strongly encouraged to complete the implementation in accordance with the target dates established in the regional air navigation plan – FASID tables.

3.4 The implementation status and interconnection plan of various administrations was updated in the Implementation Planner. Updates from Malaysia, Cambodia, Republic of Korea and Viet Nam during the meeting were also reflected in the planner which is provided in the **Appendix B** to this Report.

ATN/AMHS Implementations Activities in other Regions (WP/6)

3.5 The meeting noted ATN/AMHS Implementation status and related activities in other ICAO regions as presented by the Secretariat.

The Usage of Wildcard (**) in AMHS CAAS Address (WP/9)

3.6 Thailand informed the meeting that AMC had just announced the provision of wild card (*) characters for AMHS Addresses on the "Organization-unit-name-1" (OU1) attribute. and proposed all AMC users to consider changing their AMHS registry entries to include wild card (*) character. The recommendation affects the current AMHS addresses of many States in Asia/Pac Region. It may create confusion with recommendation in the Asia/Pac AMHS Naming Plan adopted by APANPIRG in 2005.

3.7 The meeting was informed that AEROTHAI had analyzed the wild card (*) character proposal by AFSG in the European Region. The analysis result shows that the proposal may affect the current AMHS address entries of all states in ASIA/PAC region. Therefore, AEROTHAI requested States to consider the wild card (*) character proposal and make appropriate change as the States see fit. In this connection, States were urged to contact and inform Aerothai about any necessary modification and updates. Furthermore, AEROTHAI found that the Asia/Pacific AMHS Naming Plan adopted in 2005 contains information that may cause confusion about the usage of wild card (*) character especially in the suggested CAAS addressing scheme tables. Therefore, the Asia/Pacific AMHS Naming Plan document needs to be updated in order to clarify any ambiguity with regards to the use of wild card (*) character. (Action Item as new Task to be included in the task list for ATNICG)

3.8 The meeting discussed the issue and felt, it would be more appropriate for ICAO (relevant regional office) to notify States through a State Letter for such kind of amendment or changes. This shoud be a follow-up action to the outcome of European AFSG/14 meeting. Singapore confirmed that they have made a decision to adopt wildcard method. The meeting agreed to update the regional document accordingly and have this issue listed as task into subject/tasks list.

Updates on AMHS address registry of ATS Messaging Management Center – AMC (IP/3)

3.9 The meeting was informed that AEROTHAI had received the registry information from 20 Administrations including Australia, Bangladesh, Cambodia, China, Hong Kong China, Macao China, Fiji, India, Indonesia, Japan, Malaysia, Myanmar, Nepal, New Zealand, Pakistan, Republic of Korea, Singapore, Sri Lanka, Thailand and United States.

3.10 Information in respect of some of the mentioned Administrations is not complete. Administrations and States were urged to update their information using the forms provided in **Appendix C** to this Report i.e. *Appendix F – Pro forma* for modification of AMHS MD Identifier and/or Addressing Scheme and AMC Information Form for updating AMHS Implementation and other information. Aerothai then will input information received from States into the AMC Database according to the AMC operation procedure (following AIRAC Cycle).

Agenda Item 4: IPS Transition

Voice Over Internet Protocol (VoIP) Development (WP/10)

4.1 USA informed the meeting about VoIP functional characteristics specified in ICAO Doc 9896 and implications involved in implementing them in the States who do not participate in a common network (provided and managed by a common service provider). The meeting was reminded about the standards developed by EUROCAE Working Group 67 and discussed the implementation issues involved. It was specifically informed that ED-136 standard specify VoIP service based on a common network. This means the users are assigned an IP address and the service provider programs the dial plan at the Session Initiation Protocol (SIP) server. Asia/Pacific Region does not have a common network like PENS in Europe or FTI in North America or MEVA in Caribbean or REDDIG in South America. It was informed that VoIP can also be used on dedicated circuits using IP router with SIP server that can support more than one voice channels depending on the bandwidth of the circuit. The meeting was of the opinion that ATNICG should develop a strategy 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. It was decided that the next Working Group meeting should be tasked to develop a draft strategy on this subject.

4.2 Japan expressed that while technically supporting the proposal as indicated in the example contained in the paper, further coordination between Japan and USA on the bandwidth etc. and mutual agreement would be required. It was informed that discussions between two Administrations had been going on for two years on new shared IP link to support several voice channels and one AIDC circuit. Coordination for its implementation is being carefully carried out. Similar approach is also being taken by FAA for the shared link with Europe and Caribbean regions.

Sub-Network Dependent Convergence Function (SNDCF) ICD (WP/7 Attachment)

4.3 The meeting reviewed the recommendation of ATNICG WG/10 regarding endorsement of ATN Ground-Ground Router Internet Protocol (IP) Sub-Network Dependent Convergence Function (SNDCF) Interface Control Document (ICD) which was prepared by USA. The meeting was informed that, in addition to the option of using ISO 8208 for IDRP, CLNP connectivity, there was an option available of using IP SNDCF. IP SNDCF has been specified in ICAO Doc 9880, but these specifications are meant for a completely meshed network. As of now, when implementation is on point-to-point basis in the Asia/Pacific region, there may not be a requirement of some parameters like Quality of Service etc, which have been specified in Doc 9880. The proposed document has profiled out such requirement and hence is expected to be much simpler for implementation. The meeting, after discussion agreed that the ICD should be recommended for adoption by APANPIRG and formulated following draft Conclusion:

Draft Conclusion 7/1 - Asia/Pacific IP SNDCF ICD

That, the Asia/Pacific Internet Protocol (IP) Sub-Network Dependent Convergence Function (SNDCF) Interface Control Document (ICD) provided in **Appendix D** be adopted as a regional guidance material.

Agenda Item 5: Security and Applications

XML based date over AMHS (WP/11)

5.1 Comsoft (an industry partner) presented the option of conveying XML-based Aeronautical Data over the ATS Message Handling System (AMHS) making use of the File Transfer Body Part (FTBP). XML is going to be used for the exchange of data to support applications like Digital NOTAM etc. The presentation proposed the use of File Transfer Body Part (FTBP), an element of the Extended ATSMHS suitable for the conveyance of XML coded and non-XML coded data (including binary data type) over AMHS. Direct AMHS users will benefit from the FTBP, but it will not be usable for AFTN users through AMHS/AFTN Gateway. It was expressed that implementation of SWIM in the region may start very shortly and that this activity could start with a focus on the exchange of meteorological information and hence meteorological data should be chosen in the first instance for validation of any such concept. It was pointed out that FTBP is included in the Extended ATSMHS and there were many other options in the Extended ATSMHS, like the Directory Services and Security etc. which were still not being considered mandatory. After an elaborate discussion, it was suggested that meeting could consider adopting Basic ATSMHS and FTBP for the region. It was also agreed that a consensus approach on this issue should be developed between AFSG (EUR/NAT Region) and ATNICG (Asia/Pacific Region),

European Directory Service – EDS (IP/7)

5.2 ATNICG was informed about European Directory Service (EDS). The EDS operational concept is an outcome of the EUROCONTROL study on the Directory Service Operational Concept performed by Comsoft. Attributes of EDS were explained and three steps envisaged for transition from AMC to EDS were described. It was clarified that EDS operational concept will reduce AMHS address management efforts of other regions. In case other regions opt to participate in the programme or to adopt a similar programme, The EDS is prepared to exchange information with those regions.

Agenda Item 6: Review and update Subject/Tasks List, Performance Framework Form & Action Item List

Review of Performance Framework Form for ATN/AMHS Implementation (WP/4)

6.1 The meeting reviewed and updated the Performance Framework Form (Asia/Pacific Regional Object 8) presented by the Secretariat. The contents of specific tasks contained in the Form were updated. Revised target dates of completion of some tasks in the regional objective were recommended. Performance Framework Form for ATN/AMSH Implementation updated by the meeting is placed at **Appendix E** to this report. While reviewing the Form, meeting discussed the issue of directory information maintained in the AMC. A need was recognized for all the implemented AMHSs to synchronize directory information with AMC from time to time. Currently, the information is accessed manually. A requirement was identified for the AMC to make a provision through which the States can identify recent changes and effectively access updated information. Accordingly the meeting developed following draft Conclusion:

Draft Conclusion 7/2 - More Efficient Function of AMC

That, EUROCONTROL AMC be invited to consider the provision of more efficient function to enable the States to identify recent changes from the previous AIRAC Cycle and to develop means of automation for providing updated AMHS Address information.

Updates to FASID Tables (WP/5)

6.2 The meeting reviewed the information contained in the ASIA/PAC Regional Air Navigation Plan (Doc 9673), Volume II Facilities and Services Implementation Document (FASID) Tables including CNS-1B - Aeronautical Telecommunication Network (ATN) Router Plan; Table CNS-1C -ATS Message Handling Services (AMHS) Routing plan and Table CNS-1E - ATS Inter-facility Data Communication (AIDC). Last updates to these tables were adopted by the APANPIRG/22 meeting held in September 2011. Information in the Tables was further updated based on the input received from the States during the meeting. The changes will be integrated into the amendment proposals for these FASID tables in the first half of 2012.

Comparison of Asia/Pac AMHS Technical Specification against Doc 9880 (WP/12)

6.3 To follow up a presentation made to 10th Working Group Meeting of the ATNICG at Jaipur, India, in September 2011, a proposal by ad hoc working group on assignment areas for comparison of the ASIA/PAC AMHS Technical Specification with Doc 9880 was presented to the meeting. In order to complete the comparative analysis of the ASIA/PAC AMHS Technical Specification against ICAO Doc 9880, the tasks to be assigned to the members of the ATNICG WG are reflected in the Subject/Task list and Action Item list of ATNICG. The meeting agreed that progress on the specific task will be carried out through e-mails. Table giving list of the validation tasks required to be taken up and the allocations of responsibilities in respect of these tasks is placed at **Appendix F** and the updated Subject/Task list of ATNICG is provided in **Appendix G** to this report.

Agenda Item 7: Any other business

Sample TMC for conducting ATN/AMSH Testing between States

7.1 The meeting recognized the need to develop a sample Technical Memorandum of Cooperation for ATN/AMHS Trials towards the establishment of AMHS connection between two States. The sample TMC as reference baseline document would facilitate States in reaching an agreement about conducting trials which are required to evaluate the basic connectivity, interoperability, functionality and integrity of the ATN G/G Routers, AMHS systems and AMHS/AFTN Gateway Systems between the Parties.

7.2 In this connection, the meeting reviewed a sample TMC presented by Singapore. Considering that it may be required by the States in a position to conduct trials in 2012 and 2013 for ATN/AMHS interconnection, the meeting agreed to recommend it for adoption by APANPIRG as a regional guidance material. States with experience of developing TMC for ATN/AMHS trials were requested to provide additional comments to the Secretariat and Singapore for integration into the sample document before it is presented to the CNS/MET SG of APANPIRG for consideration in July 2012. In view of the foregoing, the meeting formulated following draft Conclusion.

Draft Conclusion 7/3 - Sample TMC for ATN/AMHS Interconnection Trials

That, the sample Technical Memorandum of Cooperation for ATN/AMHS interconnection trial between States, provided in the **Appendix H** be adopted as regional guidance material for reference by the States.

Dates and Venues for Future Meetings

7.3. Considering pending tasks that need to be completed by the ATNICG Working Group, the meeting agreed to hold the ATNICG WG/11 meeting in September 2012. USA considers hosting the meeting either in Hawaii or in California from 18 to 20 September, 2012 subject to further coordination with the concerned agencies. The meeting also agreed that the Eighth meeting of the ATNICG should be held from 19 to 22 March 2013. Since no offer was received to host the ATNICG/8, the meeting requested the Secretariat to coordinate with the States concerned and inform members of ATNICG accordingly.

Note of Appreciation

7.4 The meeting expressed its appreciation and gratitude to AEROTHAI for the excellent arrangements made for the workshop and the meeting including all secretariat support provided, activities organized during the meeting and for the warm hospitality extended to all the participants. The meeting also thanked Ubitech Technology and Aero-Info Technologies for the functions sponsored for the events.

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BRIEF REPORT ON THE OUTCOME OF SWIM AD-HOC GROUP MEETING

The ATNICG SWIM Ad-Hoc Sub-group met to define the activities which should be performed to incorporate SWIM into the AMHS/ATN infrastructure. Mr. Patel, USA, had developed a preliminary list of ATNICG SWIM activities. The sub-group used this as the basis for discussion. The sub-group agreed with the preliminary list and made several suggestions for extending the list. There was a discussion on the scope of activities which tried to define what part of SWIM in general the sub-group would address. The sub-group added an activity to define the Terms of Reference for the SWIM Sub-group and agreed that the TOR would define the scope. There was a suggestion to coordinate with other groups which were working in the AIS, AIM, Weather, and related areas. This would include reviewing the US and EUROCONTROL SWIM programmes, the sub-groups developing information standards (AIXM, WXXM, FIXM), the Open Geospatial Consortium (OGC) standards and aviation study groups, and the ICAO AIS-AIM study group. This was added to the activities list. There was a discussion that the SWIM Concept of Operations should be examined to place the SWIM sub-group's activity in the appropriate context. The group finally agreed that the activities should be placed in priority. The updated activities lists are as follows.

ATNICG SWIM ACTIVITIES

NO.	LIST OF ACTIVITIES
1	TOR for SWIM Sub-group
2	Evaluate CONOPS
3	Coordinate with study groups such as OGC, AIM, AIS etc. (TORs, Scope)
4	Prioritize the activities
5	Current AFTN and AMHS architectures
6	Types of information: Flight plans, weather, NOTAMS etc.
7	SOA Standards required for the region
8	SWIM Architecture definition for the region

No.	List of Activities
9	Identify SWIM Core services a) Develop core services definitions and component description b) Security Management Service c) Data Registry and Directory services d) Messaging Service i) Pub/sub services ii) Req/Reply
10	Develop Regional documents - Policy, IRDs, Guidance, SOA conformance and Governance material
11	Gateway requirements development
12	Service Adaptors
13	Conduct Prototyping Trade Study Plan & develop Scenarios
14	Validation of function & performance - Evaluation of Industry Technologies and Products

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AMHS Implementation Planner

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					Completed	TBD	Q3/12		Q3/12
	B					Q3/12	TBD	Q3/12		Q3/12
	C					Q4/12	TBD	Q4/12		Q4/12
	D					Q4/12	TBD	Q4/12		Q4/12
China (Beijing)	A			Q3/10	Q1/11		TBD		TBD	
	B			Q3/10	Q2/11		TBD		TBD	
	C			On-going	On-going		TBD		TBD	
	D			Q4/12	Q4/12		TBD		TBD	
Hong Kong, China (Hong Kong)	A		Q3/10				TBD		Q4/12	
	B		Q3/10				TBD		Q3/12	
	C		On-going				TBD		Q3/12	
	D		Q4/12				TBD		Q4/12	
India (Mumbai)	A		Q1/11					Q3/09	Q4/12	
	B		Q2/11					Q4/09	Q2/12	
	C		On-going					Q4/09	Q3/12	
	D		Q4/12					Completed	Q4/12	
Fiji (Nadi)	A	Completed								Completed
	B	Q3/12								Completed
	C	Q4/12								Completed
	D	Q4/12								Q2/12
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	Q3/12			Q3/09		TBD		Q3/12	
	B	Q3/12			Q4/09		TBD		Q1/12	
	C	Q4/12			Q4/09		TBD		Q1/12	
	D	Q4/12			Completed		TBD		Q3/12	
Thailand (Bangkok)	A		TBD	Q4/12	Q4/12			Q3/12		
	B		TBD	Q3/12	Q2/12			Q1/12		
	C		TBD	Q3/12	Q3/12			Q1/12		
	D		TBD	Q4/12	Q4/12			Q3/12		
USA (Salt Lake City / Atlanta)	A	Q3/12				Completed	Completed			
	B	Q3/12				Completed	Completed			
	C	Q4/12				Completed	Completed			
	D	Q4/12				Q2/12	Completed			

AMHS Implementation Planner

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)
Bahrain	A							Q1/12		
	B							N/A		
	C							Q3/12		
	D							Q3/12		
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							Q1/12		
	D							Q3/12		

AMHS Implementation Planner

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	Q1/13						2009		
	C	Q2/13						2011		
	D	Q3/13						Q3/12		
New Zealand (Christchurch)	A	Q1/13								Q1/13
	B	N/A								N/A
	C	Q2/13								Q2/13
	D	Q3/13								Q3/13
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		Q4/12	Completed						

AMHS Implementation Planner

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		Q4/12					
	B		Q3/12		Q4/12					
	C		Q3/12		Q4/12					
	D		Q4/12		Q4/12					
Pakistan (Karachi)	A		TBD		Q3/10					
	B		TBD		N/A					
	C		TBD		Q3/10					
	D		TBD		Q3/12					
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				TBD	TBD	
Philippines (Manila)	A			Q2/14				Q2/14		
	B			Q3/14				Q3/14		
	C			Q3/14				Q3/14		
	D			Q4/14				Q4/14		
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					

AMHS Implementation Planner

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				Q3/12					
	D				Q4/12					
Sri Lanka (Colombo)	A				Q4/12			TBD		
	B				N/A			TBD		
	C				Q4/12			TBD		
	D				Q4/12			TBD		
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		

AMHS Implementation Planner

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)
Malaysia (Kuala Lumpur)	A							2007	Q4/12	
	B							2007	Q4/12	
	C							Q4/12	Q1/13	
	D							Q1/13	Q1/13	
Cambodia (Phnom Penh)	A								Q1/13	
	B								Q1/13	
	C								Q1/13	
	D								Q2/12	
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

E. Appendix F – Pro forma for modification of AMHS MD Identifier and/or Addressing Scheme (major change)

Part 1: Modification of PRMD-name Registration

State:.....

Nationality letters: .....

PRMD-name registered before modification: .....

Please consider the following options in case of modification:

Option A: the PRMD-name to be the following reserved identifier.

Option B: the PRMD-name to be modified as proposed below, after validation by the Secretariat.

Option C: the PRMD-name to remain unchanged (only the addressing scheme is modified, see Part 2).

Please specify your choice (A, B or C): [ ]

If choice is B, please specify the proposed PRMD-name identifier:

P =

Proposed applicability date for the modification (an AIRAC date): .....

Name of organization managing the AMHS MD (if applicable): .....

The contact point: .....

Postal/electronic mail address and telephone/fax number: .....

Additional comments: .....

.....

.....

.....

Pro forma for modification of AMHS MD Identifier and/or Addressing Scheme (major change)

Part 2: Modification of declaration of addressing scheme

State: .....

Nationality letters: .....

PRMD-name registered before modification: .....

Addressing scheme declared before modification: .....

Please select one of the following options in case of modification:

Choice A: AMHS user addresses to be allocated by application of the (recommended) CAAS addressing scheme in the AMHS MD operated in the above State.

Choice B: AMHS user addresses to be allocated by application of the (default) XF addressing scheme in the AMHS MD operated in the above State.

Choice C: the addressing scheme to remain unchanged (only the PRMD-name is modified, see Part 1).

Please specify your choice (A, B or C): ☐

If choice is A (CAAS), please fill in the following table for all location indicators found in Doc 7910 under the above nationality letters.

Organization-name for the group of locations	**location indicators**

(table to be expanded as appropriate)

Pro forma for modification of AMHS MD Identifier and/or Addressing Scheme (major change)

Proposed applicability date for the modification (an AIRAC date): .....

.....

Name of organization managing the AMHS MD (if applicable): ……

The contact point: ……

Postal/electronic mail address and telephone/fax number: ……

END of Appendix F for Major Change

Information required for updating AMHS Implementation and other information

AMC Network Inventory

Part 1 : Person & Contact & COM Centre

1. Country: .....
2. Location: .....
3. COM Operator: .....
4. First name: .....
5. Sure name: .....
6. Local title: .....
7. Phone: .....
8. Fax: .....
9. E-mail: .....
10. Telex: .....
11. AFTN: .....
12. OPMET: .....
13. SITA: .....
14. COM Postal Address: .....
.....
15. Remark: .....

AMC Network Inventory

Part 2 : AFTN Capabilities

Please select one of the following options below:

1. Ax – VCG Mapping Capability
    - Automatic
    - Manual

2. Ax – VCG Mapping Actual Used
    - Automatic
    - Manual

3. Ad – Ax Mapping Capability
    - Automatic
    - Manual

4. Ad – Ax Mapping Actual Used
    - Automatic
    - Manual

5. Long Message Processing
    - Yes
    - No

AMC Network Inventory

Part 3 : AMHS Capabilities

ATS Message Server

1. MTA Name: .....
2. Maximum Content Length: .....
3. Extended Encoded Information type in Support of:
   Please select on the following options
   - IA5
   - FTBP
   - General Text Body Part (ISO646)
   - General Text Body Part (ISO8859-1)
4. Message Lifetime (Minutes)
   - Urgent:……...
   - Non Urgent:……
   - Normal:……...
   - Report:……...

AFTN/AMHS Gateway

- Currently Authorized Message Length:……
- Maximum Number of Address:……...
- Converted General – Text Body Part
  Please select one of the following options
  - ISO646
  - ISO8859-1

5. Protocol Capabilities
   - Protocol
   - P – SEL
   - S – SEL
   - T – SEL
   - Network Address (NSAP or IP) :
     ……...
6. Operational Status:
   - Operate
   - Non-operate

AMC Network Inventory

Part 4 : Connections

Existing Connections (Only International Connections)

1. Remote COM :……
2. Protocol :
   - AMHS/TPO-X.25
   - AFTN X.25
   - AMHS
   - AMHS/TCP-IP
   - CIDIN PVC
   - CIDIN SVC
   - CONV. AFTN
   - WMO
3. Network Address: ……..
4. Link type: ……
5. Capacity: ……...
6. Supplier: ……...
7. Circuit Type:
   - L-Landline
   - M-Multiplexer
   - N-Network
   - R-Radio
   - S-Satellite
8. Active / Not Active
9. Remark : ……..

***1 sheet for 1 connection**

AMC Network Inventory

Part 4 : Connections

Planned Connections (Only International Connections)

1. Remote COM : ……..

2. Protocol :
   - AMHS/TPO-X.25
   - AFTN X.25
   - AMHS
   - AMHS/TCP-IP
   - CIDIN PVC
   - CIDIN SVC
   - CONV. AFTN
   - WMO
   -
3. Network Address : ……..
4. Link type : ……..
5. Capacity : ……..
6. Supplier : ……..
7. Circuit Type:
   - L-Landline
   - M-Multiplexer
   - N-Network
   - R-Radio
   - S-Satellite
8. Active / Not Active

9. Remark : ……..

***1 sheet for 1 connection**

Remark: Information received from States will be put into the AMC Database according to the AMC operation procedure (following AIRAC Cycle).

International Civil Aviation Organization

Asia and Pacific Office

ASIA/PACIFIC

INTERFACE CONTROL DOCUMENT

FOR
AERONAUTICAL TELECOMMUNICATION NETWORK
GROUND-GROUND ROUTER

IP SNDCF

Draft First Edition – September 2011

EXECUTIVE SUMMARY

The Aeronautical Telecommunication Network (ATN) is a global inter-network that provides digital communications to satisfy the increasing telecommunication demands of air traffic service communication, aeronautical operational control, aeronautical administrative communication, and aeronautical passenger communication.

The ATN is composed of a network infrastructure and applications that provide the global communication for ground-ground (G/G) and air-ground services. The ATN network infrastructure includes ATN backbone communication links, ATN routers, and end systems. The ATN applications include among others context management (CM), controller-pilot data link communication (CPDLC) and air traffic service message handling service (ATSMHS).

The Asia/Pacific region is implementing an ATN network to support regional and global ATN services. This Interface Control Document (ICD) specifies the IP sub-network interface requirements for ATN G/G Boundary Intermediate Systems that form nodes of the Asia/Pacific ATN regional backbone network and/or have inter-State connectivity, to ensure interoperability between States. This ICD applies to point-to-point IP sub-network connections between Boundary Intermediate Systems.

1.0 Introduction

1.1 Purpose and Scope

This document provides Interface Control Document guidelines for IP sub-network connections used to communicate between the ATN Ground-Ground Routers that form nodes of the Asia/Pacific regional network Backbone and/or have inter-State/Organization connectivity within the Asia/Pacific region, to assure interoperability.

The scope of this ICD and its relationship to the ATN Router ICD and IP ICD is shown in Figure 1-1. This ICD addresses the sub-network layer of the ATN G/G router using the IP SNDCF specified in ICAO Doc 9880.

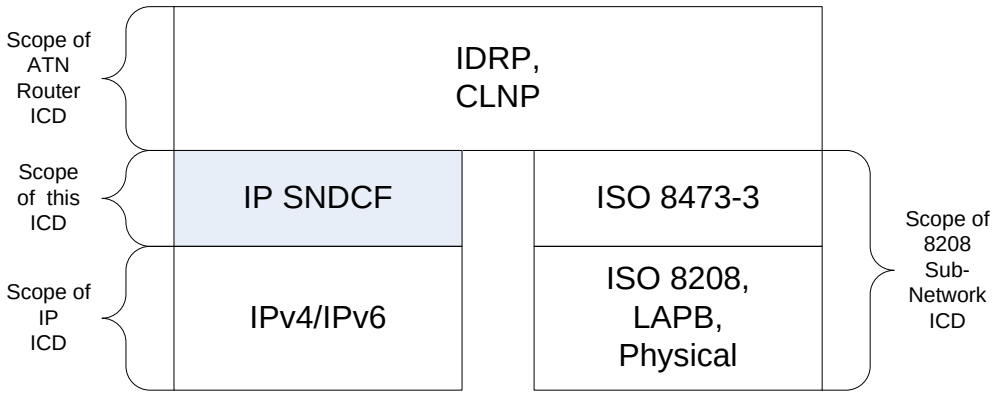

Figure 1-1: ATN Router Protocol Stack and Scope of this Document

1.3 Reference Documents

1.3.1 ICAO

[1] ICAO Doc 9880-AN/466 – Manual on Detailed Technical Specifications for the Aeronautical Telecommunication Network (ATN) using ISO/OSI standards and protocols, Part III Chapter 3 – Internet Communications Service

1.3.2 ASIA/PAC

[2] ASIA/PAC Interface Control Document for Aeronautical Telecommunication Network Ground-Ground Router, Second Edition, April 2005

[3] ASIA/PAC Interface Control Document for Aeronautical Telecommunication Network Ground-Ground Router ISO/IEC 8208 Sub-Network, First Edition, April 2005

[4] ASIA/PAC Interface Control Document for the Internet Protocol, To Be Developed (TBD)

1.3.3 IETF

[5] RFC 1791, Internet Protocol – DARPA Internet Program Protocol Specification, September 1981

[6] RFC 2460, Internet Protocol, Version 6 (IPv6) Specification, December 1998

[7] RFC 2474, Definition of Differentiated Services Field (DS Field) in IPv4 and IPv6 Headers, December 1998

1.3.4 ISO/IEC

[8] ISO/IEC 8473-1, Information Technology – Protocol for providing the connectionless-mode network service: Protocol specification, 1994

[9] ISO/IEC 9542, Information processing systems – Telecommunications and information exchange between systems – End system to Intermediate system routing exchange protocol for use in conjunction with the Protocol for providing the connectionless-mode network service (ISO/IEC 8473), 1988

[10] ISO/IEC 10747, Information processing systems – Telecommunications and information exchange between systems – Protocol for exchange of inter-domain routeing information among intermediate systems to support forwarding of ISO 8473 PDUs, 1994

2.0 IP SNDCF

The purpose of a Subnetwork Dependent Convergence Function (SNDCF) is to provide the connectionless SN-Service assumed by the ATN Internet Protocols over real sub-networks.

The ATN Internet Protocols which use the Subnetwork Service (SN-Service) provided by an SNDCF are the ISO/IEC 8473 Internetwork Protocol [8] and the ISO/IEC 9542 End System to Intermediate System Protocol [9] entities.

The Subnetwork Service (SN-Service) provided by an SNDCF as specified in this ICD is provided directly to the ISO/IEC 8473 Internetwork Protocol entity and indirectly to the ISO/IEC 10747 Inter-Domain Routing Protocol [10] entity.

Table 2-1 identifies the Subnetwork Services and Associated Parameters used Asia/Pac entities.

Table 2-1 SN-Services and Associated Parameters

Parameter	**SN-UNITDATA Request**	**SN-UNITDATA Indication**
SN-Source-Address	Mandatory	Mandatory
SN-Destination-Address	Mandatory	Mandatory
SN-Priority	Optional	Optional
SN-Quality-of-Service	Optional	Optional
SNS-Userdata	Mandatory	Mandatory

Asia/Pac is planning to use the IP SNDCF on a point-to-point basis and so requirement that might otherwise apply to an IP sub-network such as Priority and QOS do not apply. Table 2-2 contains a Point-to-Point Profile for the IP SNDCF.

Table 2-2 Point-to-Point Profile for the IP SNDCF

Item	Function	Doc 9880 Reference	G-G Router Support
Title	Provision of the SN-UNITDATA.Request Service Element	3.7.10.3	
Title	Service Element Parameters	3.7.10.3.1	
	For IPv4, the SN-Source-Address and SN-Destination-Address parameters shall be 32-bit IP Addresses.	3.7.10.3.1.1	Yes
	For IPv6, the SN-Source-Address and SN-Destination-Address parameters shall be 16-octet IP Addresses.	3.7.10.3.1.2	Yes
	As a local matter, the SN-Source-Address shall either be used to indicate the SNPA from which the encapsulated PDU is to be sent, or set to a null value.	3.7.10.3.1.3	Either
	As a local matter, the SN-Quality-of-Service subparameters, if present, other than priority shall either be ignored by the IP SNDCF, or used to determine the Differential Service Requirements for the encapsulating IP Packet header.	3.7.10.3.1.4	Ignored
	The priority subparameter of the SN-Quality-of-Service service parameter shall be used to determine the value of the Differentiated Service field indicated in the encapsulating IP Packet header as described in the procedures below.	3.7.10.3.1.5	No
	The SN-Userdata shall be an unconstrained octet-string (e.g. an encoded CLNP PDU including the CLNP header and user data).	3.7.10.3.1.6	Yes
Title	Procedures	3.7.10.3.2	N/A
Title	IPv4 Subnetworks	3.7.10.3.2.1	N/A
	When the IP SNDCF SN-UNITDATA.Request service element is invoked, an IPv4 datagram shall be constructed with the SN-Userdata as the data portion of the datagram (the payload).	3.7.10.3.2.1.1	Yes
	The IP datagram header shall be constructed according to RFC 1791 [5]	3.7.10.3.2.1.2	Yes
	The protocol shall be set to decimal 80	3.7.10.3.2.1.2.a	Yes

	The source address shall be the IP Address assigned to the interface from which the packet is sent.	3.7.10.3.2.1.2.b	Yes
	The destination address shall be the SN-Destination-Address.	3.7.10.3.2.1.2.c	Yes
	The Time to Live shall be set to a locally specified value, which shall be configurable.	3.7.10.3.2.1.2.d	No
	The 3 topmost bits of the Differentiated Service Code Point (DSCP, former precedence subfield) of the Type of Service (TOS) field shall be set depending on the value of the priority subparameter of the SN-Quality-of-Service service parameter, as follows: IP Precedence — CLNP Priority 000 — 0,1,2,3,4,5 001 — 6,7 010 — 8,9 011 — 10 100 — 11,12,13 101 — 14 110 — N/A 111 — N/A	3.7.10.3.2.1.2.e	No
	As a local matter, the remaining Differentiated Service bits shall be set to correspond to the SN-Quality-of-Service parameter or to a locally specified default value.	3.7.10.3.2.1.2.f	No
	The last two bits of the TOS field (i.e. bits 6 and 7), shall be set to zero.	3.7.10.3.2.1.2.g	No
	The resulting IP datagram shall be forwarded to its addressed destination on the IP Network.	3.7.10.3.2.1.3	Yes
Title	IPv6 Subnetworks	3.7.10.3.2.2	
	When the IP SNDCF SN-UNITDATA.Request service element is invoked, an IPv6 header shall be constructed with the SN-Userdata as the payload of the complete datagram.	3.7.10.3.2.2.1	Yes
	The IP datagram header shall be constructed according to RFC 2460 [6]	3.7.10.3.2.2.2	Yes
	The Next Header field shall be set to decimal 80 unless extension headers are present, when the Next Header field of the final header shall be set to decimal 80.	3.7.10.3.2.2.2.a	Yes

	The source address shall be the IP Address assigned to the interface from which the packet is sent.	3.7.10.3.2.2.2.b	Yes
	The destination address shall be the SN-Destination-Address.	3.7.10.3.2.2.2.c	Yes
	The Hop Limit shall be set to a locally specified value, which shall be configurable.	3.7.10.3.2.2.2.d	No
	The Flow Label shall be set to zeroes.	3.7.10.3.2.2.2.e	Yes
	The Traffic Class shall be set according to RFC 2474 [7]. The value of the first six bits (the DSCP) shall be set to the value xxx000, where the bits 'xxx' are set depending on the value of the priority subparameter of the SN-Quality-of-Service service parameter and according to Doc 9880 (i.e. they are set to the value of the precedence bits in Doc 9880).	3.7.10.3.2.2.2.f	No
	The last two bits of the Traffic class shall be set to zero.	3.7.10.3.2.2.2.g	No
Title	SN-UNITDATA.Indication Service Element	3.7.10.4	
Title	IPv4 Subnetworks	3.7.10.4.1	
	The system shall be configured such that IP packets with a protocol id of 80 are passed to the IP SNDCF.	3.7.10.4.1.1	Yes
	All IP Datagrams passed to the IPv4 SNDCF by the IP Network Service provider shall result in an SN-UNITDATA.Indication, constructed as follows	3.7.10.4.1.2	Yes
	The SN-Source-Address shall be set to the value of the source address field of the IP Datagram header.	3.7.10.4.1.2.a	Yes
	The SN-Destination-Address shall be set to the value of the destination address field of the IP Datagram header.	3.7.10.4.1.2.b	Yes
	The SN-Userdata shall be the data portion of the IP datagram.	3.7.10.4.1.2.c	Yes
	No SN-Quality-of-service parameter shall be present.	3.7.10.4.1.2.d	No
Title	IPv6 Subnetworks	3.7.10.4.2	
	The system shall be configured such that IP packets with a next header byte for the payload set to 80 are passed to the IP SNDCF.	3.7.10.4.2.1	Yes
	All IP Datagrams passed to the IPv6 SNDCF by the IP Network Service provider shall result in an SN-UNITDATA.Indication, constructed as follows	3.7.10.4.2.2	Yes

	The SN-Source-Address shall be set to the value of the source address field of the IPDatagram header.	3.7.10.4.2.2.a	Yes
	The SN-Destination-Address shall be set to the value of the destination address field of the IPDatagram header.	3.7.10.4.2.2.b	Yes
	The SN-Unitdata shall be the payload of the IP datagram.	3.7.10.4.2.2.c	Yes
	No SN-Quality-of-service parameter shall be present.	3.7.10.4.2.2.d	No
Title	ICMP Message Handling	3.7.10.5	
	If a “Destination Unreachable” or “Time Exceeded” ICMP message is received by the IP SNDCF, this should be reported to a layer management function indicating the destination IP Address for which the problem is reported, so that appropriate action may taken.	3.7.10.5.1.1	Yes
	An ICMP message indicating a “Parameter Problem” may indicate a software or configuration error and this should be notified to layer management so that the error is noted and fixed by a network manager.	3.7.10.5.1.2	Yes
Title	Resilient Operation	3.7.10.6	
	When it has more than one interface to an IP network, an ATN system implementing the IP SNDCF shall rely upon the configuration, topology and management of an underlying IP Subnetwork, including IP functions implemented by the ATN system itself, in order to support resilient operation.	3.7.10.6.1	Yes
	Even if the ATN system has more than one interface to the IP network, a single IP address shall be used to support an adjacency with a given remote BIS.	3.7.10.6.2	Yes

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 (2009-2012)**				
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 Implementation Strategy, 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 8/9

	• States hosting Backbone Boundary Intermediate Stations to organize Testing of their system on bilateral basis	2012	States hosting Backbone Boundary Intermediate Systems	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. • Update information by the States/Administrations in AMC	2010 Ongoing	ICAO Asia/Pacific Office, AEROTHAI. States	Completed. Off line support by EUROCONTROL AMC established Ongoing. 20 Administrations have registered as on the date of ATNICG/7
	• Completion of Networking with the BIS States	2013	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*

LIST OF THE TASKS FOR VALIDATION OF REGIONAL AMHS SPECIFICATIONS

Asia/Pac AMHS ICD		ICAO Doc 9880		Assigned to:
Table Number	**Name**	**Table Number**	**Name**	
Table 1.1	Message Transfer Envelope	Table 4-4; Part 1	Message transfer for conveyance of an IPM; AMH11/A.1.4.2 Message transfer	Analysis Completed by USA
		Table 4-10; Part 1	Use of the Message Transfer Envelope; AMH11/A.1.4.2 Message transfer	ATNICG WG/10 WP/5
Table 1.2	Common Data Types	Table 4-4; Part 2	Message transfer for conveyance of an IPM; AMH11/A.1.5 Common data types	USA
		Table 4-10; Part 2	Use of the Message Transfer Envelope; AMH11/A.1.5 Common data types	
Table 1.3	Extension Data Types	Table 4-4; Part 3	Message transfer for conveyance of an IPM; AMH11/A.1.6 Extension data types	USA
		Table 4-10; Part 3	Use of the Message Transfer Envelope; AMH11/A.1.6 Extension data types	
Table 2.1	IPM	Table 4-3; Part 1; Part 2; Part 3; Part 4	IPM generation; AMH21/A.1.1 Supported information objects; AMH21/A.1.2 IPM heading fields; AMH21/A.1.3 IPM body; AMH21/A.1.3.1 Extended body part support	Singapore
		Table 4-9; Part 1; Part 2; Part 3; Part 4	Use of IPM elements; AMH21/A.1.1 Supported information objects; AMH21/A.1.2 IPM heading fields; AMH21/A.1.3 IPM body; AMH21/A.1.3.1 Extended body part support	
Table 2.2	IPM Support of the Basic ATS Message Service	Table 4-1	Use of AFTN message components	Singapore
		Table 4-5	Use of AFTN service message components	

Table 3.1	Message Transfer Envelope (IPN)	Table 4-4; Part 1	Message transfer for conveyance of an IPM; AMH11/A.1.4.2 Message transfer	USA
		Table 4-10; Part 1	Use of the Message Transfer Envelope; AMH11/A.1.4.2 Message transfer	
Table 3.2	Common Data Type	Table 4-4; Part 2	Message transfer for conveyance of an IPM; AMH11/A.1.5 Common data types	USA
		Table 4-10; Part 2	Use of the Message Transfer Envelope; AMH11/A.1.5 Common data types	
Table 3.3	Extension Data Types	Table 4-4; Part 3	Message transfer for conveyance of an IPM; AMH11/A.1.6 Extension data types	USA
		Table 4-10; Part 3	Use of the Message Transfer Envelope; AMH11/A.1.6 Extension data types	
Table 4.1	IPN	Table 4-6; Part 1; Part 2	RN generation; AMH21/A.1.1 Supported information objects; AMH21/A.1.4 IPN fields	Thailand
		Table 4-12; Part 1	Use of RN fields; AMH21/A.1.4 IPN fields	
Table 4.2	OR Descriptor	Table 4-6; Part 3	RN generation; Common data types	Thailand
Table 5.1	Report Transfer Envelope	Table 4-16; Part 1	Generation of AMHS report; AMH11/A1.4.3 Report transfer	Japan
Table 5.2	Common Data Types	Table 4-16; Part 2	Generation of AMHS report; AMH11/A1.5 Common data types	Japan
Table 6.1	Probe Transfer Envelope	Section 4.5.5	Action upon receipt of AMHS probe	Hong Kong, China
Table 6.2	Common Data Type	Section 4.5.5	Action upon receipt of AMHS probe	Hong Kong, China

No.	PERFORMANCE OBJECTIVE	ICAO Strategic Objective	Associated GPI	Tasks/Strategy	Benefits	Deliverables	Target Date	Leader	Supporting Members	ATNICG/6 Update
1	ATN Implementation Coordination	D. Efficiency	GPI-17,GPI-19, GPI-22	(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 09/2009 (3) On- going	Kapoor (India) Hong Kong	All members	(1)Updated the information in the ATN Router and AMHS planning tables and the implementation status (2) Completed, maintain the AMHS Implementation Planner.
2	ATN Operational Procedures	D. Efficiency	GPI-17,GPI-19, GPI-22	(1) Development of Interim Database for Directory Services	Make available real time and quality assurance addresses for ATN message delivery	(1) Interim Database	(1) (2007)	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	ICAO Strategic Objective	Associated GPI	Tasks/Strategy	Benefits	Deliverables	Target Date	Leader	Supporting Members	ATNICG/6 Update
3	ATN Certification & Validation Process	D. Efficiency	GPI-17, GPI-19, GPI-22	(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 forward to CNS/MET SG and APANPIRG/20 for review and adoption
						(3) Update to Conformance Document	(3) Ongoing until 2010			Completed
4	(1) ATN Documentation (2) Review all documents adopted by ATNICG and ATNTTF	D. Efficiency	GPI-17,GPI-19, GPI-22	(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) 2010	Chonlawit B. (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
				(2) Development AIDC documentation (including ICD) and follow development within other groups		(2) AFTN AIDC / ATN Gateway Specification ATN AIDC ICD	(2) 2008 (ACP-dependent)	(Thailand)	Thailand	Task Closed in view of the removal of provision from Doc 9880

No.	PERFORMANCE OBJECTIVE	ICAO Strategic Objective	Associated GPI	Tasks/Strategy	Benefits	Deliverables	Target Date	Leader	Supporting Members	ATNICG/6 Update
				(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) (2007)	USA	Japan	Ad-hoc group formed to develop AMHS ICD to be presented to CNS/MEG SG/15.
				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	D. Efficiency	GPI-17,GPI-19, GPI-22	(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	Final Draft of the Document complete. Will be presented.
6	ATN Service Enhancements	D. Efficiency	GPI-17,GPI-19, GPI-22	(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	Complete. AMC has been adopted by ICAO. Aerothai has been designed as POC for ASIA/PAC region.
				(2) Directory Service - Implementation Strategy	Enhancing the operation	Requirement Analysis Report & Implementation Strategy	(1) 2011 (2) 2012	Thailand		Closed in view of the implementation of AMC

No.	PERFORMANCE OBJECTIVE	ICAO Strategic Objective	Associated GPI	Tasks/Strategy	Benefits	Deliverables	Target Date	Leader	Supporting Members	ATNICG/6 Update
				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
				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

No.	PERFORMANCE OBJECTIVE	ICAO Strategic Objective	Associated GPI	Tasks/Strategy	Benefits	Deliverables	Target Date	Leader	Supporting Members	ATNICG/6 Update
		D. Efficiency	GPI-17,GPI-19, GPI-22	Analyze Common Address Prefix Proposal	Improving the service and routing efficiency	Report on common prefix based analysis conduced	End of 2008	Mark Brown (Japan)	Australia, Fiji, Hong Kong China, New Zealand and USA	Completed. Action Items developed at ATNICG/2 for follow-up at WG meetings.

No.	PERFORMANCE OBJECTIVE	ICAO Strategic Objective	Associated GPI	Tasks/Strategy	Benefits	Deliverables	Target Date	Leader	Supporting Members	ATNICG/6 Update
7	Security	B. Security	GPI-17,GPI-19, GPI-22	(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	Adopted by APANPIRG/19
				(2) Develop ATN System Security Guidance		(2) Guidance Document	(2) (2011)			On-Going review and update
				(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	ICAO Strategic Objective	Associated GPI	Tasks/Strategy	Benefits	Deliverables	Target Date	Leader	Supporting Members	ATNICG/6 Update
8	ATN Service Enhancements (supporting amended ICAO Flight Plan and ATS Message Formats)	D- Efficiency	GPI-17,GPI-19, GPI-22	(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 2011	USA	Fiji, India Hong Kong, China New Zealand Singapore USA	Pending result from ICAO Flight Plan and ATS Message TF. Monitor the developments.
				(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	ICAO Strategic Objective	Associated GPI	Tasks/Strategy	Benefits	Deliverables	Target Date	Leader	Supporting Members	ATNICG/6 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**	**Fiji, India Hong Kong New Zealand Singapore USA**	**Completed. No special link envisaged.**

The ATN PERFORMANCE OBJECTIVE

The APAC ATN ground-to-ground infrastructure will be fully operational 53 percent at 23 locations by December 2007.

(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)

SAMPLE TMC ON ATN/AMHS TESTING

TECHNICAL MEMORANDUM OF COOPERATION

BETWEEN

[To be filled in (Organisation 1)]

AND

[To be filled in (Organisation 2)]

ATN/AMHS
BETWEEN [To be filled in (State 1)] AND [To be filled in (State 2)]

[To be filled in (Date of TMC)]

Revision History

Version	Date	Description

Table of Contents

TECHNICAL MEMORANDUM OF COOPERATION (TMC)

THIS AGREEMENT is made between the [To be filled in (Organisation 1)] and [To be filled in (Organisation 2)] as two air navigation services providers, hereinafter collectively referred to as "Parties" and individually as "Party".

WHEREAS the Parties wish to jointly establish an Air Traffic Service Message Handling Service (AMHS) between [To be filled in (State 1)] and [To be filled in (State 2)] in support of the International Civil Aviation Organisation (ICAO) Aeronautical Telecommunication Network (ATN)/AMHS implementation plans for the Asia/Pacific Region.

AND WHEREAS the Parties have successfully completed the ATN/AMHS Trial hereinafter described in preparation for a smooth ATN/AMHS implementation.

NOW THEREFORE the Parties AGREE as follows:

ARTICLE 1 - CITATION

1.1 This Agreement will hereinafter be referred to as the ATN/AMHS Technical Memorandum of Cooperation (TMC).

1.2 For avoidance of doubt, this TMC (including its annexes and appendices) supersedes all prior draft versions of the TMC.

ARTICLE 2 – PURPOSE

2.1 This TMC defines the scope of the ATN/AMHS between [To be filled in (State 1)] and [To be filled in (State 2)] which the Parties are establishing on the terms of this TMC.

2.2 This TMC also sets out the ATN/AMHS Trial which the Parties have completed to enable the establishment of the ATN/AMHS between [To be filled in (State 1)] and [To be filled in (State 2)].

ARTICLE 3 – FINANCIAL TERMS

3.1 Each Party will be responsible respectively for all the costs and expenses arising from the ATN/AMHS connection from its local terminal to the international connection points provided by its telecom carriers and all equipment, software and associated costs required for the ATN/AMHS operation.

ARTICLE 4 – SCOPE OF ATN/AMHS

4.1 The ATN/AMHS will be based on the ATN Standards and Recommended Practices (SARPs) contained in ICAO Annex 10 Volume III Part 1 Chapter 3 and the Technical Provisions contained in ICAO Doc 9705 Volume III and/or ICAO Doc 9880 Part II.

4.2 The ATN/AMHS connection will be based on the existing ICAO AFTN routing directory for the Asia/Pacific Region and will be between the connection points in [To be filled in (State 1)] and [To be filled in (State 2)].

4.3 The AMHS traffic to be routed via this ATN/AMHS connection will be as follows:

From (Originating/Relaying Station)	To (Connection Point)	For (Intended destination of AMHS traffic)
[To be filled in (State 1)]	[To be filled in (State 2)]	[To be filled in by State 1]
[To be filled in (State 2)]	[To be filled in (State 1)]	[To be filled in by State 2]

4.4 If amendments to the ICAO AFTN/ATN routing plan are made by ICAO Regional Office, the Parties may agree to revise the intended destinations for AMHS traffic set out in paragraph 4.3 to allow for the consequent change in the AMHS traffic or destinations.

ARTICLE 5 – CONTINGENCY ARRANGEMENTS

5.1 The Parties will ensure that fallback procedures in the event of circuit or other failure affecting the flow of AHMS traffic between them are established and supported by their respective routing partners:

	Routing Partners
[To be filled in (State 1)]	[To be filled in by State 1]
[To be filled in (State 2)]	[To be filled in by State 1]

5.2 The Parties will, through regular meetings and other appropriate means, review and exchange information on their respective procedures and the support arrangements and assist each other to strengthen these contingency arrangements.

ARTICLE 6 – ATN/AMHS TRIAL

6.1 The ATN/AMHS Trial to enable the establishment of the AMHS under this TMC was conducted to evaluate the basic connectivity, interoperability, functionality and integrity of the ATN G/G Routers, AMHS systems and AMHS/AFTN Gateway Systems between the Parties.

6.2 The ATN/AMHS Trial consisted of the following tests:

Tests	Test Dates
ATN Connectivity Bilateral Tests A. ATN Router Configuration - SNDCF over X.25 B. ATN Router Configuration - SNDCF over IP C. X.400 P1 Configuration – TP0 over TCP/IP	*[To be filled in]*
ATN/AMHS Inter-Operability Tests	*[To be filled in]*
ATN/AMHS Pre-Operational Tests	*[To be filled in]*

6.3 The test cases for the tests conducted under the ATN/AMHS trial are as follows:

I. ATN Connectivity Bilateral Tests

	Bilateral Test Procedures
ATN Router Configuration (SNDCF over X.25)	
PTA101	Private X.25 Network Connectivity Test
PTA102	CLNP Connectivity Test
PTA103	IDRP Connectivity Test
PTA104	BIS Disconnection/Re-connection Test
PTA105	Failure/Restoration of Carrier Media/ATN Router
ATN Router Configuration (SNDCF over IP)	
PTA201	Private IP Network Connectivity Test
PTA202	CLNP Connectivity Test
PTA203	IDRP Connectivity Test
PTA204	BIS Disconnection/Re-connection Test
PTA205	Failure/Restoration of Carrier Media/ATN Router
X.400 P1 Configuration (X.400 P1 TP0 over TCP/IP)	
PTA301	Private IP Network Connectivity Test
PTA302	Network Disconnection/Re-connection Test
PTA303	Failure/Restoration of Carrier Media

II. ATN/AMHS Inter-Operability Tests

A. Test Cases from Annex E of ICAO Asia/Pacific Guidance for AMHS Conformance Testing (AMHS Manual) version 3.0 Sep 2009

	Bilateral Test Procedures
Submission, Transfer and Delivery Operation (AMHS to AMHS)	
IT101	Submit, transfer and deliver an IPM (UA IUT-A to UA IUT-B)
IT102	Submit, transfer and deliver an IPM (UA IUT-B to UA IUT-A)
Gateway Operations (AFTN to AMHS)	
IT201	Convert an AFTN message to AMHS format (IUT-A)
IT202	Convert an AFTN message to AMHS format (IUT-B)

	Bilateral Test Procedures
Gateway Operations (AMHS to AFTN)	
IT301	Convert an IPM generated by UA of IUT-A to AFTN format (IUT-B)
Gateway Operations (AFTN to AMHS to AFTN)	
IT401	Convert an AFTN message to AMHS and back to AFTN format (IUT-A)
IT402	Convert an AFTN message to AMHS and back to AFTN format (IUT-B)
Gateway Operations – Special case scenarios	
IT501	Distribute an IPM to AMHS and AFTN users
IT502	Expand a DL addressing both AMHS and AFTN users
IT503	Convert an IPM, if the ATS-message-text contains more than 1800 characters
IT504	Split an incoming IPM addressing more than 21 AFTN users
IT505	Probe Conveyance Test
Stress traffic situations	
IT601	Stress load
	Trilateral Test procedures – optional
Submission/Transfer/Delivery and Relay operations	
IT701	Submission/Transfer/Delivery between the partner MTAs
IT702	Relay operations
Test of special situations	
IT801	Alternate MTA routing
IT802	Loop detection

B. Additional selected and bilaterally agreed interoperability tests cases.

III. ATN/AMHS Pre-Operational Tests

A. Test Cases from Annex F of Guidance Document for AMHS Conformance Testing (AMHS Manual) version 3.0 Sep 2009

	Test Function
PRE001	Go-NoGo test Test partner1 to Test partner 2
PRE002	Go-NoGo test Test partner 2 to Test partner 1
PRE003	Exchange of duplicated Operational messages, check of integrity
PRE004	Stress/Load Test (queued data)

B. Additional selected and bilaterally agreed pre-operational tests cases.

6.4 The details of the tests and the test procedures for the test cases are set out in **Annex 1**.

6.5 The test results for each of the test cases conducted according to the test procedures in **Annex 1** are recorded and compiled in the test report provided in **Annex 2**.

6.6 The achievements, problems, and lessons learnt from the tests-related activities are also set out in **Annex 2**.

ARTICLE 7 – COMMITMENT

7.1 The Parties will use all reasonable endeavours to carry out their respective responsibilities and will cooperate to ensure the effectiveness and reliability of the ATN/AHMS between [To be filled in (State 1)] and [To be filled in (State 2)] established under this TMC.

7.2 In furtherance of this commitment, the Parties will conduct additional tests using additional test cases as may be agreed between them. The details of such additional tests and test cases and their test procedures and test results when agreed to between the Parties may be added to Annexes 1 and 2 as Addenda attachments in sequential running numbers, referencing this TMC as follows;
(a) "TMC Annex 1 - Addendum No. 1"
(b) "TMC Annex 2 – Addendum No. 1", etc.

7.3 If a Party assesses that a test or any change in AMHS requirement or service detail is not affordable or not cost effective to implement, that Party may decline to undertake that test or carry out that requirement or service detail but will nevertheless continue to cooperate with the other Party to reach a mutually acceptable outcome.

ARTICLE 8 – AMENDMENTS

8.1 This TMC may be amended by agreement of the Parties in writing and in particular to effect any amendment necessitated by changes in ICAO's recommendations on AMHS requirements or service details.

8.2 The agreed amendments in writing will take effect when signed by the duly authorised representatives of the Parties unless otherwise provided for in the written amendments.

ARTICLE 9 – ATN/AMHS COMMENCEMENT DATE

9.1 The ATN/AMHS between [To be filled in (State 1)] and [To be filled in (State 2)] under this TMC will commence one (1) month from the date this TMC comes into force under Article 11.1.

ARTICLE 10 - RESOLUTION OF DISAGREEMENTS

10.1 Any disagreement regarding the interpretation or application of this TMC or its annexes and appendices shall be resolved in good faith by mutual consultations between the Parties and will not be referred to any court, international tribunal or third party for settlement.

ARTICLE 11 - ENTRY INTO FORCE

11.1 This TMC will enter into force on the date of the last signature by the parties named below.

ARTICLE 12 - SIGNATURE IN COUNTERPARTS

12.1 To facilitate execution, this TMC and each of its annexes and addenda may be executed in counterparts, each of which will be an original, but all of which together will constitute one and the same agreement.

ARTICLE 13 - AUTHORITY

13.1 The Parties agree to the provisions of this TMC as indicated by the signatures of their duly authorised representatives below.

[To be filled in (State 1/Organisation 1)] Authorised Representative	**[To be filled in (State 2/Organisation 2)] Authorised Representative**
_____ [To be filled in by State 1/Organisation 1] _____ Date	_____ [To be filled in by State 2/Organisation 2] _____ Date

ATTACHMENT 1

ATS Message Handling System (AMHS)/
System Wide Information Management (SWIM) Workshop
Chiang Mai, Thailand
5 – 9 March 2012

LIST OF PARTICIPANTS

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESSS	TELEPHONE/FAX/E-MAIL
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International Civil Aviation Organization

AMHS/SWIM SEMINAR AND THE SEVENTH MEETING OF AERONAUTICAL TELECOMMUNICATION NETWORK (ATN) IMPLEMENTATION CO-ORDINATION GROUP OF APANPIRG (ATNICG/7)

Chiang Mai, Thailand, 5 – 9 March 2012

LIST OF WORKING/INFORMATION/PAPERS, PRESENTATIONS AND FLIMSY

WP/IP/SP No.	Agenda	Subject	Presented by
		WORKING PAPERS	
1	-	Provisional Agenda	Secretariat
2	6	Review of Action Items List	Secretariat
3	2	Report on the Outcome of CNS/MET SG/15 and APANPIRG/22 Meetings relevant to AFS and AMS	Secretariat
4	6	Review of Performance Framework Form for ATN	Secretariat
5	6	Review of Asia and Pacific Regions Air Navigation Plan (Doc 9673, Volume II, FASID Tables	Secretariat
6	3	ATN/AMHS Implementation in other Regions	Secretariat
7	2	Review Outcome of the Tenth Working Group Meeting of Aeronautical Telecommunication Network Implementation Coordination Group (ATNICG WG/10)	Secretariat
8	2	Review of Aeronautical Communication Panel Working Group – I (IPS) and M (Maintenance) Meeting Reports	Secretariat
9	3	The Usage of Wildcard (**) in AMHS CAAS Address	Thailand
10	4	Voice over Internet Protocol (VoIP) Development	FAA/USA
11	7	Conveyance of XML-based Aeronautical Data in the ATS Message Handling System (AMHS)	Comsoft
12	7	List of Assignment Areas for Comparison of ASIA/PAC ICD Requirements against ICAO Doc 9880	ASIA/PAC AMHS Technical Specification Ad-hoc WG

WP/IP/SP No.	Agenda	Subject	Presented by
		INFORMATION PAPERS	
1	-	Meeting Bulletin	Secretariat
2	3	Report of ATN/AMHS Status in Indonesia	Indonesia
3	3	Update on the Asia/Pacific AMC Information	Thailand
4	3	ATN/AMHS Implementation Status	New Zealand
5	3	Airports Authority of India ATN/AMHS Implementation Status and Issues	India
6	3	ATN/AMHS Implementation Status in China	China
7	7	European Directory Service (EDS)	Comsoft on behalf of EUROCONTROL
8	3	Singapore ATN/AMHS Implementation Status Report	Singapore
9	3	Reporting ATN Implementation Status	Bangladesh
10	3	Thailand ATN/AMHS Implementation Status Report	Thailand
11	3	Japan ATN/AMHS Implementation Status	Japan
12	3	Australian ATN/AMHS Implementation Status Report	Australia
13	3	Report of AFTN/AMHS Status in Lao PDR	Lao PDR
14	3	ATN/AMHS Implementation Status in Hong Kong, China	Hong Kong, China
15	3	Report of ATN/AMHS Status in the Philippines	The Philippines
16	3	ATN/AMHS Implementation Status	Macao, China
		PRESENTATIONS	
SP/1		ATN/AMHS Implementation in Asia/Pacific Region	Secretariat
SP/2		FAA AMHS Subnetwork Overview	FAA/USA
SP/3		System Wide Information Management (SWIM) – Program Overview	FAA/USA
SP/4		Preliminary Road Map to Information Distribution	FAA/USA
SP/5		AMHS Interface Options for Third-party, Non-AMHS Systems	Comsoft

WP/IP/SP No.	Agenda	Subject	Presented by
SP/6		System Wide Information Management (SWIM) over AMHS	FAA/USA
SP/7		FPL2012 Message Conversion and Migration	Comsoft
SP/8		The Next Generation Network Enabled Weather (NNEW) SWIM Application	USA
SP/9		Frequentis and AMHS/SWIM, FPL2012 and VoIP	Frequentis
SP/10		Regional ATN/AMHS Implementation Strategy	Secretariat
SP/11		Introduction of Enterprise Collaborative Domain for SWIM Implementation and Aeronautical Collaborative Ring	Ubitech
SP/12		China Initial SWIM Program Overview	China
SP/13		Introduction to ASBU GANP Roadmap	Secretariat
SP/14		ICAO Aviation System Block Upgrades (ASBU) and SWIM/AMHS	Thailand
		FLIMSY	
1		Sample TMC on ATN/AMHS Testing	Secretariat