INTERNATIONAL CIVIL AVIATION ORGANIZATION

First Meeting of the AFI AMHS Implementation Task Force (AFI AMHS/I/TF/1)

(Nairobi, Kenya, 19 – 20 May 2011)

FINAL Report

Prepared by ICAO WACAF Office

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PART I – HISTORY OF THE MEETING

1. Introduction

The First Meeting of the AFI ATS Message Handling System Implementation Task Force (AFI AMHS /I/ TF/1) was held at the ICAO Eastern and Southern Regional office, United Nations Office, Nairobi, Gigiri, Kenya from, 19 to 20 May 2011.

2. Objective

The main objective of the Task Force was to develop guidance to ensure that a standardized and harmonized implementation process of AMHS is adopted within the AFI Region.

3. Attendance

The meeting was attended by Thirty four (34) participants from Fourteen (14) Contracting States, two (02) Air Navigation Service Providers (ASECNA acting on behalf AFI 17 Contracting States & ATNS) and an AMHS facilities manufacturer, namely AVITECH from Germany. A list of participants is provided at **Appendix** A.

4. Officers and Secretariat

The meeting nominated **Mrs Lindi-Lee KIRKMAN** from ATNS/ South Africa as Chairperson. **Mr. Francois Xavier SALAMBANGA**, Regional Officer, Communication, Navigation and Surveillance (CNS) from the ICAO Regional Office for Western and Central Africa (Dakar), acted as Secretary of the AFI AMHS Implementation Task Force, and was assisted by **Mr. Prosper ZO'O MINTO'O**, Regional Officer, Communications, Navigation and Surveillance from the ICAO Eastern and Southern Africa Office, Secretary of the APIRG Communications, Navigation and Surveillance Sub-group (CNS/SG).

5. Working language

The meeting was conducted in English and the meeting documentation was issued in this language.

6. Agenda

Agenda Item 1: Election of the Chairperson and Vice-Chairperson of the AMHS Implementation Task Force

Agenda Item 2: Review of the AMHS Implementation Task Force Terms of Reference and Work Programme

Agenda Item 3: Review of AFTN Performance

Agenda Item 4: Overview of ATN and AMHS

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5.1 *Planning and Implementation Activities*

5.1.1 *Planning and Implementation Activities by AFI States*

5.1.2 *Planning and Implementation Activities by other Regions/States*

5.1.3 *Review of the Report of the Second Meeting of the AFI ATN Planning Task Force*

5.1.4 *Review of the EUR AMHS Manual (Version 6.0)*

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Agenda Item 6: Procedures for Global Coordination of AMHS Address Information

Agenda Item 7: Work Programme and Composition of the AMHS Implementation Task Force and Assignment of Responsibilities and Timelines for identified Activities

Agenda Item 8: Any other Business

8. Summary of Conclusions and Decisions

The following conclusions and decisions were formulated by the Task Force

Number	Title
Agenda Item 1	**Election of the Chairperson and Vice-Chairperson of the AMHS Implementation Task Force**
	NIL
Agenda Item 2	**Review of the AMHS Implementation Task Force Terms of Reference and Work Programme**
	NIL
Agenda Item 3	**Review of AFTN Performance**
Draft Conclusion 1/01	**VSAT Networks Performance and capacity** That, according to the specifications provided by ICAO Doc 9880 Part II, and considering the critical role of the satellite VSAT based networks to support ATN components in particular AMHS within AFI, States/Organizations ensure that the VSAT networks (AFISNET, CAFSAT, NAFISAT, and SADC/2) meet the established performance and capacity

Number	Title
	requirements.
Agenda Item 4	**Overview of ATN and AMHS**
	NIL
Agenda Item 5	**AMHS Planning and Implementation**
Draft Decision 1/02	**Survey of the status of implementation ATS AMHS in AFI** That, in accordance with the AMHS implementation Task Force Terms of Reference Composition and Work Programme, a survey should be conducted in order to analyze data on AMHS implementation status in the AFI region through a data collection format to be finalized by the secretariat.
Draft Conclusion 1/03	Bilateral and Multilateral Agreements for AMHS implementation That bilateral and multilateral agreement should be concluded between AFI States based on the model provided at **Appendix B** in order to ensure, through trials, the compatibility /interoperability between their AMHS systems.
Draft Decision 1/04	**Technical guidance material** That, the development of technical guidance material should be included in the Work Programme of the AFI AMHS Implementation Task Force in order to assist States in the implementation process.
Draft Conclusion 1/05	**Human Resource and training needs** That , a) States/Organizations should: 1. ensure that sufficient Human Resources are made available for AMHS engineering, operations and maintenance and; 2. develop comprehensive training programmes for AMHS personnel in partnership with industry; b) ICAO should pursue its efforts in supporting the AFI States through training Regional Workshops and Seminars on AMHS concept, facilities and applications.
Draft Conclusion 1/06	**AMHS Capability for upgraded AFS systems** That States/Organizations, when upgrading /modernizing their current AFS (AFTN) systems should take into account the existing AMHS capabilities in the region and the experience gained by their neighbors in order to develop and conduct a harmonized AMHS implementation process in AFI region and ensure AMHS systems compatibility with neighboring region.

Number	Title
Agenda Item 6	**Procedures for Global Coordination of AMHS Address Information**
Draft conclusion 1/07	**AMC Registration** That, based on ICAO **State Letter AN 7/49.1-09/34 14/04/09,** States/Organizations should: a) designate representatives to register as AMC users; b) ensure that the designated AMC users are duly trained on AMC Web based training platform before they are actually allowed to enter data in the AMC **http://www.eurocontrol.int/amc** ; and c) Communicate to the relevant ICAO Regional Office the details of the designated AMC users to facilitate their accreditation enabling them to access the ATS Messaging Management Centre (AMC).
Agenda Item 7	**Work Programme and Composition of the AMHS Implementation Task Force, and Assignment of Responsibilities and Timelines for identified Activities**
Draft Conclusion 1/08	**Draft Terms of Reference, Composition and Work Programme of AFI/AMHS/I/TF** That, the Terms of Reference, Composition and Work Programme of AFI/AMHS/I/TF be adopted as presented in **Appendix C**
Agenda Item 8	**Any other Business**
Draft Decision 1/09	**Review of the outcome of the AFI regional Workshop on AMHS (17-18 May 2011)** That, the Task Force endorse the recommendations of the AFI regional Workshop on AMHS held in Nairobi from 17 to 18 May 2011 as provided in **Appendix D**, for consideration in addressing its Work Programme

PART II: REPORT ON AGENDA ITEMS

Agenda Item 1: Election of the Chairperson and Vice-Chairperson of the AMHS Implementation Task Force

The meeting nominated **Mrs Lindi-Lee KIRKMAN** from ATNS/ South Africa as Chairperson and Rapporteur of the AFI AMHS Implementation Task Force.

Agenda Item 2: Review of the AMHS Implementation Task Force Terms of Reference and Work Programme

Under this agenda item, the meeting was provided with the Terms of Reference Composition and Work Programme of the AFI AMHS Implementation Task

Force assigned to it by the Third Meeting of the CNS Sub-group (CNS/SG/3) and endorsed by the Seventh Meeting of the APIRG (APIRG/17).

Agenda Item 3: Review of AFTN Performance

Under this agenda item, the secretariat presented to the meeting the summary of the status of implementation of AFTN. It was agreed that since the last CNS/SG and APIRG meetings, WACAF and ESAF States /Organizations have been implementing the pending AFI rationalized AFS-AFTN circuits by interconnecting sub satellite based regional networks (AFISNET, CAFSAT, NAFISAT and SADC2).

The remaining AFI planned circuits have been newly realized through satellite based technology to comply with the regional Plan.

The meeting examined the performance of AFTN in the frame of the implementation of APIRG/16 Decision 16/12 tasking ICAO Regional Offices in Dakar and Nairobi to coordinate the conduct of regional surveys on AFS performance in order to ascertain that AFTN and ATS/DS continue to meet agreed performance requirements.

It was noted that some circuits continue to currently facing a weak availability rate under the recommended value of 97% (AFI/7, Rec. 9/3).

The meeting agreed that the new flight plan format, the requirements of RVSM space management and the automation of flight data processing including flight plan, the automation of AIS including NOTAM messages, recommend that States/Organizations continue their efforts to increase AFS AFTN performance through the satellites based network ,in particular for those current failing circuits, in order to prepare a soft transition from AFTN to AMHS. The following Conclusion was formulated.

Draft Conclusion 1/01: VSAT Networks Performance and capacity

That, according to the specifications provided by ICAO Doc 9880 Part II, and considering the critical role of the satellite VSAT based networks to support ATN components in particular AMHS within AFI, States/Organizations ensure that the VSAT networks (AFISNET, CAFSAT, NAFISAT, and SADC/2) meet the established performance and capacity requirements.

Agenda Item 4: Overview of ATN and AMHS

Under this agenda item, the meeting was provided with the presentation on ATN basic definitions, ATN environment and constituents, ATN Protocol Architecture in Layers, ATN Applications, ATN Subnetwoks and Routing Domains.

The meeting was also briefed on ATN, functional components, ATN End Users,

ATN Levels of Service and Interoperability.

The attention of the meeting was drawn on the AFTN /ATN (AMHS) transition period that needs a gateway to ensure the continuity of Aeronautical Fixed Service.

Agenda Item 5: AMHS Planning and Implementation

5.1 *Planning and Implementation Activities*

5.1.1 *Planning and Implementation Activities by AFI States*

Under this agenda item the meeting made a survey of the status of implementation of AMHS in the AFI Region. The status of implementation of AMHS can be summarized in the following table:

State/Organisation	Status of implementation	Operating Area	Remarks
Ethiopia	Implemented	Domestic	AFTN/AMHS Gateway Available
South Africa	Implemented	Domestic	AFTN/AMHS Gateway Available
Zimbabwe	Implemented	Domestic	AFTN/AMHS Gateway Available
Tunisia	Implemented	Domestic	AFTN/AMHS Gateway Available
Angola	Under procurement		
ASECNA	Specifications under definition		

It was agreed that a survey should be conducted in order to have a comprehensive situation of the status of implementation of AMHS as well as the ongoing planning of implementation by States/organizations.

The meeting formulated the following Decision.

Draft Decision 1/02: Survey of the status of implementation ATS AMHS in AFI

That, in accordance with the AMHS implementation Task Force Terms of Reference Composition and Work Programme, a survey should be conducted in order to analyze data on AMHS implementation status in the AFI region through a data collection format to be finalized by the secretariat.

The meeting noted that there were various AMHS vendors who could provide AFI States with AMHS capability and agreed on the necessity to ensure the interoperability between the systems. It was therefore agreed that when implementing AMHS States and Organizations concluded bilateral and multilateral agreement in order to conduct trials aiming to ensuring the compatibility /interoperability of their AMHS systems.

The following draft conclusion was adopted by the meeting.

Draft Conclusion 1/03: Bilateral and Multilateral Agreements for AMHS implementation

That bilateral and multilateral agreement should be concluded between AFI States based on the model provided at Appendix B in order to ensure, through trials, the compatibility /interoperability between their AMHS systems.

The meeting also noted that the harmonized implementation process of AMHS within AFI is a complex challenge that needs guidance materials. The meeting proposed that the development of technical material be included in the Work Programme of the AFI AMHS Task force to assist States in the implementation process. The following Decision was formulated

Draft Decision 1/04: Technical guidance material

That, the development of technical guidance material should be included in the Work Programme of the AFI AMHS Implementation Task Force in order to assist States in the implementation process.

The meeting discussed in length on the issue related to the availability of adequate trained Human Resource for AMHS provision, operation and maintenance. It was recalled that AFI States/Organizations noted the lack of expertise in this field during APIRG/17 meeting and asked through conclusion 17/15 ICAO to support AFI states by organizing training Seminars and Workshops. The meeting noted the effort developed by ICAO to organize the workshop and recognized the necessity to intensify such training in coordination with the industry;

The following conclusion was formulated

Draft Conclusion 1/05: Human Resource and training needs

That,

a) States/Organizations should:

1. **ensure that sufficient Human Resources are made available for AMHS engineering, operations and maintenance and;**
2. **develop comprehensive training programmes for AMHS personnel in partnership with industry;**

b) ICAO should pursue its efforts in supporting the AFI States through training Regional Workshops and Seminars on AMHS concept, facilities and applications.

The meeting also discussed the issue related to the continuity of Aeronautical Fixed Service (AFS) during the AFTN/AMHS transition period. It was noted that most of AFI States are currently under either AMHS procurement step or AMHS implementation planning step. The meeting noted that in accordance with the initiatives already taken by some States in the AFI region in view of implementing AMHS some harmonization actions are needed in order to ensure a smooth transition from AFTN to AMHS and compatibility between various systems.

The industry provided the meeting with technical information related to the currently available gateway functionality that will facilitate this smooth transition.

It was therefore agreed that when upgrading their current AFTHN systems states and organizations should taken into consideration the existing AMHS capabilities in the region and develop a harmonized AMHS implementation process aiming to ensuring AMHS systems compatibility.

The following conclusion was formulated.

Draft Conclusion 1/06: AMHS Capability for upgraded AFS systems

That States/Organizations, when upgrading /modernizing their current AFS (AFTN) systems should take into account the existing AMHS capabilities in the region and the experience gained by their neighbors in order to develop and conduct a harmonized AMHS implementation process in AFI region and ensure AMHS systems compatibility with neighboring region.

5.1.2 *Planning and Implementation Activities by other Regions/States*

Under this agenda item the meeting was provided with the process of implementation of AMHS in ICAO regions (APAC, NACC, SAM, MID &

EUR/NAT).

The meeting noted that the implementation of AMHS within AFI region in accordance with AFI Air Navigation Plan should be included in the frame of the Global Air Navigation Plan and therefore implementing AMHs in AFI as a component of ATN must take into consideration the similar project under development within other regions.
It was noted that each region has developed the basic documents aiming to conducting the implementation of AMHS (Regional AMHS Implementation Plan, Regional AMHS Implementation Strategy, ATN Routing Structure, ATSAMHS Naming Plan, AMHS Test Procedure Manual AMHS, Addressing Directory...).

The meeting noted these ongoing implementation development within the ICAO regions and agreed to take if necessary some materials from the experiences that should be updated to meet AFI operational requirements.

5.1.3 *Review of the Report of the Second Meeting of the AFI ATN Planning Task Force*

Under this agenda secretariat presented to the meeting a summary of the report of the the Second Meeting of the previous Aeronautical Telecommunication Network Planning Task Force (ATN/TF/2), held in Dakar from 5 to 6 April 2005. It was noted that some elements from this report such as the development of ATN routing architecture were relevant to the AMHS Task Force activities and should be taken into consideration by the meeting.

5.1.4 *Review of the EUR AMHS Manual (Version 6.0)*

Under this agenda item the meeting was provided with a summary presentation on the EUR AMHS Manual which compiles guidance material and detailed requirements concerning the implementation of AMHS in the EUR Region, for consideration in relation with its assigned mandate.

The secretariat also briefed the meeting on the **A**TS **M**essaging Management **C**entre **(AMC)** which provides off-line network management services to States/ANSPs in the ICAO EUR Region, and, in a more limited manner, to States/ANSPs in other Regions, under control by the **Aeronautical Fixed Services Group (AFSG)**, a subgroup of **EANPG**.

The two goals of the ATS Messaging Management Centre with regard to AMHS were presented to the meeting:

- facilitate the transition from CIDIN/AFTN to AMHS;
- provide new tools in support of AMHS operation, address management and user capabilities management, that will serve during transition and in the target AMHS network.

The meeting was also reminded that under **State Letter AN 7/49.1-09/34 14/04/09** ICAO informed States and organization that he will utilize the European ATS

Messaging Management Centre (AMC), provided by EUROCONTROL, to coordinate the allocation and management of AMHS addresses and invited all States to designate representatives to register as AMC users.

The meeting discussed in length on the capability offered by AMC in support to the AMHS implementation process as recognized by ICAO **State Letter AN 7/49.1-09/34 14/04/09 and formulated the following conclusion**

Draft conclusion 1/07: AMC Registration

That based on ICAO State Letter AN 7/49.1-09/34 14/04/09, States/Organizations:

a) designate representatives to register as AMC users;

b) ensure that the designated AMC users are duly trained on AMC Web based training platform before they are actually allowed to enter data in the AMC http://www.eurocontrol.int/amc and;

c) Communicate to the relevant ICAO Regional Office the details of the designated AMC users to facilitate their accreditation enabling them to access the ATS Messaging Management Centre (AMC).

5.2 *Development of an AMHS Manual for the AFI Region*

The meeting discussed on this issue and agreed on the necessity to develop an AMHS Manual for the AFI Region. The Work programme of AFI AMHS TF has then been reviewed to include this request and a Working Group was established and tasked for this issue with ATNS (South Africa) as Team Leader. The detailed composition of the working group is contained in the revised Term of Reference and work programme of AFI AMHS/TF.

Agenda Item 6: Procedures for Global Coordination of AMHS Address Information

The meeting was informed on **State letter SP 54/1-03/39, dated 30 May 2003,** through which ICAO sought input from States and interested international organizations, to allow ICAO to establish the AMHS Management Domains and Addressing Information Register. The meeting was informed that this register has been established and made available on the ICAO Website, at the URL: http://www.icao.int/anb/panels/acp/amhs/amhs.cfm.

Agenda Item 7: Work Programme and Composition of the AMHS Implementation Task Force and Assignment of Responsibilities and Timelines for identified Activities

Under this agenda item the Task Force reviewed and updated its workprogramme and assigned responsibilities and timelines for identified activities:

- Review of ICAO SARPs and Guidance Material;
- Conduct of a Regional Survey on AFS circuits specifications and AMHS; implementation status in AFI;
- Draft AFI AMHS Implementation Strategy;

The following conclusion was therefore formulated.

Draft Conclusion 1/08: Draft Terms of Reference, Composition and Work Programme of AFI/AMHS/I/TF

That, the Terms of Reference, Composition and Work Programme of AFI/AMHS/I/TF be adopted as presented in Appendix C

Agenda Item 8: Any other Business

Under this agenda item, the meeting reviewed the outcomes of the AFI Regional Workshop on AMHS held in Nairobi from 17 to 128 May 2011.The workshop formulated eight recommendations aiming to ensuring:

- the reinforcement of AFI Ground-Ground Communication medium capability to support the implementation of ATN;
- bilateral and multilateral agreements aiming to ensuring the compliance and the full interoperability of their AMHS facilities;
- guidelines for national and regional security policy and regulation for AMHS systems and applications;
- survey of the status of implementation of AMHS in the AFI neighboring regions be conducted;
- the development of AFI Strategy for the Implementation of AMHS in the AFI Region;
- training on AMHS for AFI technical personnel;
- Integrity of software tools

The meeting endorsed these recommendations and formulated the following Decision.

Draft Decision 1/09: Review of the outcome of the AFI regional Workshop on AMHS (17-18 May 2011)

That, the Task Force endorses the recommendations of the AFI regional Workshop on AMHS held in Nairobi from 17 to 18 May 2011 as provided in Appendix D, for consideration in addressing its Work Programme.

APPENDIX A

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APPENDIX B

MEMORANDUM OF UNDERSTANDING FOR THE INTERCONNECTION OF AMHS SYSTEMS IN AFI REGION

Preface

This document defines the Memorandum of Understanding for the bilateral interconnection of AMHS systems between the States of the Region. The two States may revise this document when so required.

Approval
Memorandum of Understanding for the Interconnection of AMHS Systems

By **State A** By **State B**

Revisions

Revision / Date	Description	Pages changed

APPENDIX B

MEMORANDUM OF UNDERSTANDING

TECHNICAL-OPERATIONAL AGREEMENT FOR THE INTERCONNECTION OF AMHS SYSTEMS

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1. Purpose

To provide a detailed description of the technical, operational, and administrative aspects of the Memorandum of Understanding that are needed for the interconnection of AMHS systems between States A and B.

2. Summary

- The plans for the implementation of the ATN ground-ground application and the plans for AFI regional ATN routers, as defined in FASID Tables CNS XX and CNS YY, respectively, were formulated through Conclusion XXX of APIRG/YY.

- The regional AMHS addressing plan that the States should apply when implementing AMHS systems in the AFI Region was presented at the APIRG/XXX meeting (Appendix XX to agenda item yy) and reviewed by the CNS/SG/ xxx meeting held in *Place, Country , on DD MM YY.*

- States that have implemented or are planning to implement AMHS systems should register before the ATS message transmission management centre (AMC), according to ICAO State letter AN 7/49.1-09/34 of 14 April 2009 on management and updating of information on addresses of the air traffic service (ATS) message handling system (AMHS), and the procedure for registering a State representative as user of the AMC.

- For the interconnection of the AMHS systems installed in the Region, consideration has been given to conducting trials between AMHS to check the interoperability of AMHS systems, and a study of the bandwidth required for their interconnection.

3. Reference

This Agreement follows the recommendations contained in the following documents:

- Report of the AFI AMHS Implementation Task Force meeting, Nairobi, Kenya, 19-20 May 2011;

4. Safety

Each State must ensure that its communication networks involved in the interconnection have the required protection for this type of service, taking into account, at least, the following aspects:

- Protection against intrusion by unauthorised people and/or systems;
- Protection against attacks from computer viruses; and
- Use of the equipment exclusively for the interconnection of automated systems.

5. Operational Aspects

The Administrations undertake, within their respective jurisdiction, to provide direct training on the contents of this Memorandum of Understanding to the personnel working in the systems involved.

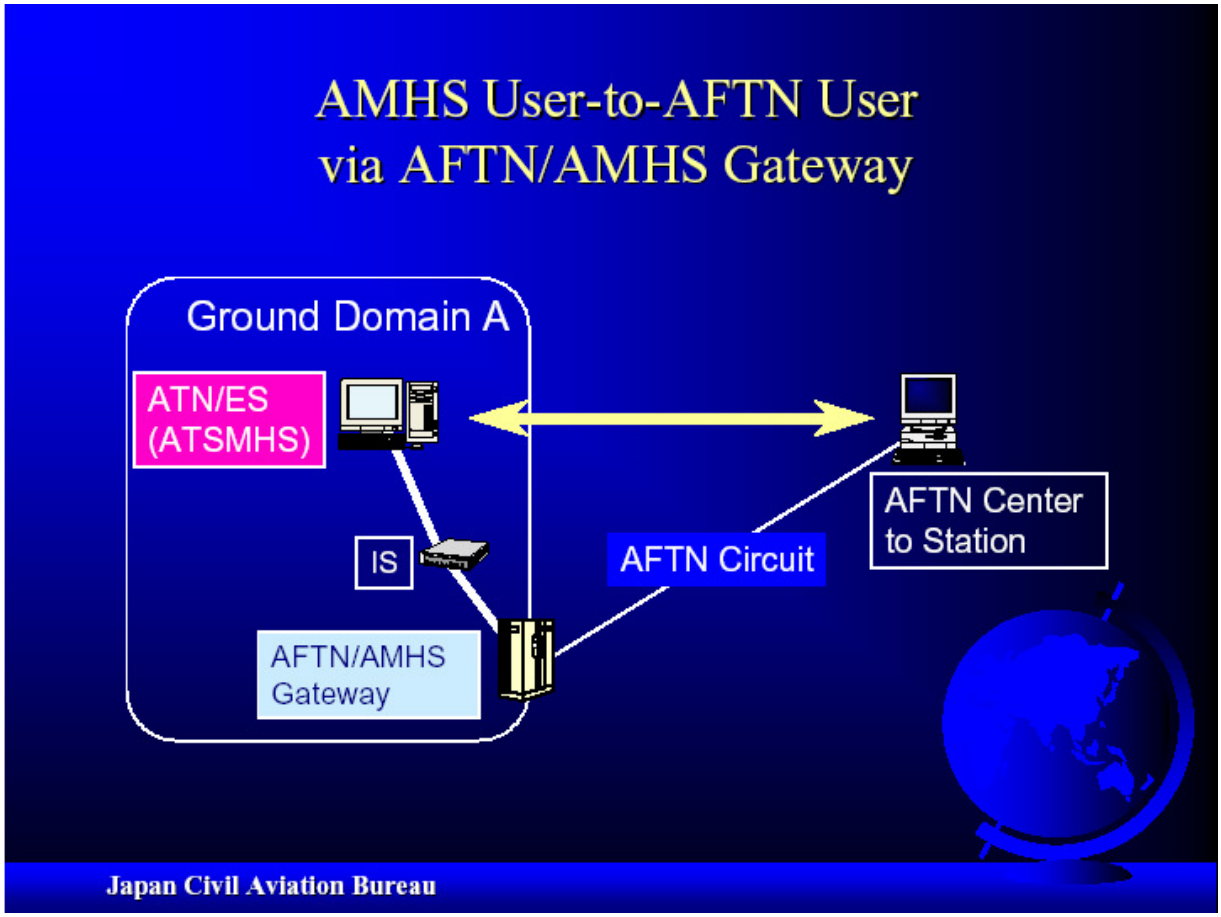
The selected interconnection option entails that States will have to establish specific operational procedures, taking into account the functionality available in each automated system.

6. Technical Aspects

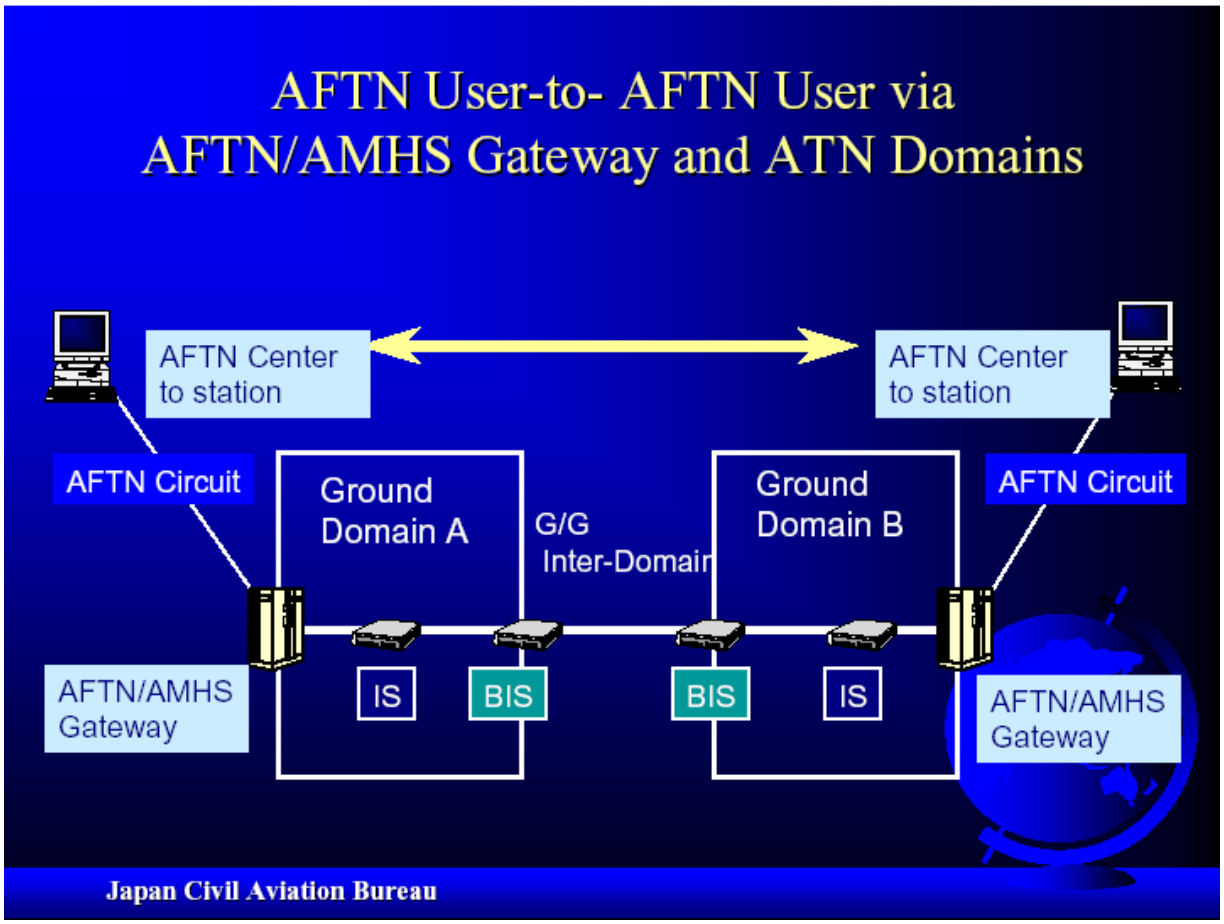
The interconnection must permit the automatic transfer of messaging plans between the two States, using the respective MTAs;

The main aspects are:

1) Analysis of the current scenario: Currently, some States have deployed their AMHS systems at the national level (Zimbabwe, South Africa, Uganda), while some Atats are under purchasing or planning processes (Angola, Asecna members States...), but the operating mode between two States is still AFTN, that is, using the gateway, as shown in the following graphical example:



2) Selection of the exchange scenario: the functional scenario can only be as follows, in which the exchange of traffic between States is already being carried out through the interconnection of the respective MTAs, leaving the gateway operational for the exchange of messages with those States that have not migrated to the AMHS:



3) Implementation Strategy:

In order to achieve the desired objective, the following action must be taken, indicating, in each case, whether such action has already taken or the tentative date for its implementation:

- Data transportation network: Intra-regional IP ATN
- Means: AFISNET, CAFSAT, SADC2, NAFISAT networks
- Channel: DLCI
- ATN boundary elements: routers provided by each State
- IP addressing of router link ports: to be configured according to the Regional IP Addressing Plan, Link Ports
- Serial interfaces: V.35

- Tests:
  - *Network transport*: by Networks administrators
  - *Network connectivity*: by *State A* and *State B*
  - *Message exchange*:
  - *Exchange of technicians between States*:
  - *Preparatory phase*:
- *Operational status*:

4) Implementation:

- The Interconnection Management Committee will be in charge of implementation management, and will be made up by personnel listed in Attachment A.
- This Interconnection Committee will perform its functions until three (3) months after the beginning of the Operational Phase; thereon, the integrated operation will be entrusted to the respective Communication Stations.

5) Operation Monitoring

Each State must be responsible for monitoring the operation of its systems, including the maintenance of its equipment and systems, ensuring the required availability, performance, safety, and efficiency.

All problems of uncertain origin must be analysed jointly by the States through the Interconnection Management Committee, which will coordinate the actions required for their resolution.

However, each State must do its best to carry out the actions under its responsibility, informing the Interconnection Management Committee about their implementation.

In any case, the Interconnection Management Committee must be constantly informed about the occurrence of anomalies, regardless of their origin.

6) Training

The participating States must develop training plans for the technical teams responsible for system maintenance, taking into account extent, periodicity, and technical evolution.

7) Maintenance

Teams must be prepared for contingencies and be technically capable of analysing anomalies.

Each State shall develop its own Action Plan, which will define the technical information required for the interconnection with adjacent ACCs, and will contain, at least:

1. The topology of the networks involved, with technical details about the bandwidth, availability, latency, and redundancy required;

2. The specifications of the equipment used;

3. Maintenance requirements;

4. Maintenance procedures: preventive, predictive, and corrective; and

5. All related technical documents;

7. The States agree that the means of communication for the implementation of the interconnection will be the available satellite based network between the two States.

7. Administrative Aspects

This Agreement is a dynamic document that can be revised at any time, in keeping with the technological evolution of the systems and communication networks of the participating States.

Interconnection management will be entirely the responsibility of the Interconnection Management Committee established by the two (2) States, in accordance with the following:

1. Organisational Structure

In order to carry out its activities, the Committee will be organised as follows:

1. Coordinator

The coordinators for AMHS interconnection between States A and B are listed in **Annex A.**

Coordinators will be responsible for general coordination of all the activities of the technical and operational groups, and for maintaining contact with other organisations to address interconnection issues.

2. Technical Group

It must include technicians designated by the two States, with training in their respective fields, especially in communication networks and computer automation systems.

They will be responsible, in their respective country, for the implementation and/or coordination of the technical activities required for the implementation, maintenance, and support of automated systems, communication networks, and interconnection equipment.

3. Operational Group

It must include experts in the operation of electronic messaging systems.

2. Functions

The Committee is responsible for all the coordination required for the planning, implementation, maintenance, and operational support of the systems and equipment involved in the interconnection of AMHS systems.

It must also ensure the continued safety of the information to be transmitted between the automated systems involved in the interconnection.

Its functions include controlling and updating all technical and operational documentation.

It is also responsible for the network topology to be used for the interconnection, which must be approved by the two (2) States.

Interconnection implementation must be coordinated and controlled by the Committee, through action plans previously approved by the two (2) States.

The Committee must advise the States about the need for technological evolution of the equipment and systems involved in the interconnection.

Its teams must monitor the performance, stability, reliability, and integrity of the equipment and systems involved in the interconnection, and propose and monitor corrective action.

The Committee must establish the necessary procedures for correcting faults.

Also, together with the participating States, it must provide for the resolution of problems.

3. Management Process

In order to carry out its activities, the Interconnection Management Committee will apply the following management system:

1. Periodic meetings and discussions to identify requirements, preferred technical solutions, alternatives, and options for the interconnection of AMHS systems;

2. Exchange of technical reports and documentation, plans and schedules as required for a successful and timely culmination of these efforts.

3. Joint planning, technical coordination, and implementation of activities by the two (2) States.

8. Financial Aspects

Regarding financial aspects, the States agree to the following:

1. Acquisition of equipment, components, and systems;

The equipment necessary for the interconnection will be acquired by each State, according to the technical specifications approved by the Interconnection Management Committee;

2. Acquisition of spare parts

Spare parts for the equipment involved in the interconnection will be purchased by each State, according to its specific needs, but in keeping with the maintenance guidelines issued by the Interconnection Management Committee.

3. Acquisition of third-party services

Each State agrees to pay for incidental third-party services, such as software adjustments, projects, and implementation of communication networks.

Each State will be responsible for its share of the incidental cost of upgrades to the satellite Network to address traffic increases, in keeping with the guidance issued by the Network Administration.

ANNEX A

AMHS SYSTEM INTERCONNECTION MANAGEMENT COMMITTEE

COORDINATORS OF THE MANAGEMENT GROUP

State A

Name:
Phone number:
Email:

State B

Name:
Phone number:
Email:

Appendix C

TERMS OF REFERENCE, WORK PROGRAMME AND COMPOSITION OF THE AFI ATS MESSAGE HANDLING SYSTEM IMPLEMENTATION TASK FORCE (AFI AMHS/I/TF)

1-TERMS OF REFERENCE

1) Conduct a comprehensive review of ICAO Standards and Recommended Practices (SARPs) pertaining to the Air Traffic Services Message Handling Service (ATSMHS) application as specified in Annex 10 – *Aeronautical Telecommunications* - Volume II and Volume III, and guidance material contained in ICAO *Manual on detailed specifications for the Aeronautical Telecommunication Network (ATN) using ISO/OSI standards and protocols* (Doc.9880), *Global Air Navigation Plan* (Doc 9750) and other relevant provisions ;
2) Collect and analyze information on the status of AFI ANSPs ATS Message Handling Systems plans, including ongoing upgrades to existing systems;
3) On the basis of the above, develop a coordinated AFI transition strategy and plan with associated timelines to enable the streamlined coordinated implementation of AMHS.

Considerations

In addressing its terms of reference, the Task Force should consider, *inter alia,* the following aspects:

1) AFI AMHS systems should be:
   a. implemented in accordance with ICAO SARPs and technical specifications, and
   b. interoperable with systems implemented by other ICAO Regions;
2) Personnel training for operational migration from AFTN to AMHS;
3) AFS network backbone capabilities;
4) Systems that transition early will need to be capable of handling both AMHS and AFTN messages.
5) Establishment of an Information Management system to track implementation timelines; and
6) Impacts to users (compliance to new flight plan format, availability of qualified personnel, etc).

2-WORK PROGRAMME

Task No.	Global Plan Initiative	Subject	Target date
1	GPI-22	**Review of ICAO SARPs and Guidance Material** *Team Leader: Secretariat* *Team members: All Task Force Core members* *References:* • *ICAO Annex 10 (Vol. 2 and Vol.3)* • *ICAO Doc 9880*	CNS/SG/4 Deliverable: 30/06/2011
2	GPI-22	**Conduct of a Regional Survey on:** 1. AFS circuits specifications (circuit type, modulation rate, protocol, ITU code, VSAT network) 2. AMHS implementation status (implementations, plans, levels of service, protocols, implementation challenges, level of knowledge on AMHS and ATN, etc.) *Team Leader: Secretariat*	CNS/SG/4 Deliverable: 30/06/ 2011

		Team members: All Task Force Core members *References:* • *APIRG/15 Report* • *ICAO Annex 10 (Vol. 2 and Vol.3)* • *ICAO Doc 9880*	
3	GPI-22	**Draft AFI AMHS Implementation Strategy** *Team Leader: ASECNA* *Team members: Botswana, Burkina Faso, Madagascar, South Africa (ATNS), Tanzania and ASECNA* *References:* • *CAR/SAM AMHS Implementation Strategy*	CNS/SG/4 Deliverable: 30/06/ 2011
4	GPI-22	**Draft AFI AMHS Implementation Plan** 1. Draft AFI ATN Architecture 2. Draft AFI ATN Network Service Access Point Addressing Plan 3. Draft AFI AMHS Implementation Plan a. AFI FASID CNS1B Table b. AFI FASID CNS1C Table *Team Leader: Rwanda* *Team members: Angola, Ethiopia, Kenya, Mozambique, Rwanda, Sudan, Zimbabwe and ASECNA* *References:* • *Report of the Second Meeting of AFI ATN Planning Task Force* • *AFI Air Navigation Plan, FASID (CNS)* • *ICAO Annex 10 (Vol. 2 and Vol.3)*	CNS/SG/4 Deliverables: 30/06/ 2011
5	GPI-22	**Draft AFI AMHS Manual** 1. Introduction 2. AFI AMHS Requirements 3. AFI ATS Messaging Service Profile 4. System implementation - Guidelines for system requirements 5. AMHS management 6. Tests and validation of systems 7. Operational procedures and recommendations 8. Miscellaneous 9. Appendices *Team Leader: South Africa (ATNS)* *Team members: Somalia (CACAS), South Africa, Tanzania, Uganda and ASECNA* *References:* • *ICAO EUR AMHS Manual (Doc 020)* • *ICAO Annex 10 (Vol. 2 and Vol.3)* • *ICAO Doc 9880*	CNS/SG/4 Deliverables: 30/06/ 2011

3-COMPOSITION

Core members: *Algeria, Angola, Botswana, Egypt, Ethiopia, Ghana, Kenya, Malawi, Niger, Nigeria, Rwanda, Senegal, South Africa (ATNS), Sudan, Tanzania, Tunisia, Uganda, Zimbabwe, ASECNA, IFATSEA and Roberts FIR.*

Other members: *All AFI States and Air Navigation Service Providers (ANSPs) with implemented and planned AMHS systems.*

Note: *Members should nominate suitable experts involved in aeronautical telecommunications operations and systems engineering.*

Working arrangements: TBD.

-END-

Appendix D

Summary of conclusions of the AFI Regional Workshop on AMHS

Number	Title
Agenda Item 1	**Introduction:** ***Overview- End systems providing the ATSMHS- Terminology***
Recommendation 1/01	**Reinforcement of AFI Ground-Ground Communication medium capability to support the implementation of ATN** That, considering the critical role of the satellite VSAT based networks to support ATN components in particular AMHS within AFI, Administration/Organizations reinforce the capability of current Networks (AFISNET, CAFSAT, NAFISAT, and SADC/2) to comply with the requirements of ATSMHS in accordance with the specifications provided by ICAO Doc 9880.
Agenda Item 2	**System Level Provisions**
Recommendation 1/02	**Multilateral Agreement** That in accordance with the provision of DOC 9880, States/Organizations develop models of bilateral and multilateral agreements aiming to ensure the compliance and the full interoperability of their AMHS facilities.
Agenda Item 3	**ATSMHS Specifications**
Recommendation 1/03	**Need of reference technical specifications for the implementation of AMHS in AFI Region** That in accordance with interoperability requirements for the implementation of Extended AMHS, AFI/AMHS/I/TF develop a draft referential technical specification taking into consideration the existence AMHS systems with the support of ICAO.
Recommendation 1/04	**National and Regional Security Policy and Regulation** That, the AFI/AMHS/I/TF should develop with the support of ICAO, guidelines for national and regional security policy and regulation for AMHS systems and applications.
Agenda Item 4	**AFTN/AMHS Gateway Specifications**
Recommendation 1/05	**Survey of the status of implementation ATSMHS in AFI neighboring regions** That, a survey of the status of implementation of AMHS in the AFI neighboring regions be conducted in order to align the implementation of cost effective AFTN AMHS Gateway capability aiming to ensure seamless Aeronautical Fixed Service during the AMHS transition period.
Agenda Item 5	**AMHS Implementation in the AFI Region**
Recommendation 1/06	**Development of AFI Strategy for the Implementation of AMHS in the AFI Region** That, in the spirit of APIRG Conclusion 17/16 (Implementation of AMHS) , active coordination should be maintained between States and all relevant stakeholders to develop the regional strategy of implementation of AMHS taking into consideration, the experience gained by the States/Organizations who have already implemented basic ATSMHS systems.
Recommendation 1/07	**Need of training on AMHS for AFI technical personnel** That , a) States/Organizations should develop consolidated training plan for technical operational and maintenance personnel; b) ICAO should pursue its efforts in supporting the AFI States through training Regional Workshops and seminars on AMHS facilities and applications.

Number	Title
Recommendation 1/08	**Integrity of software tools** That: a) States should establish regulations and procedures to ensure integrity of the software tools being introduced in the management of civil aviation systems; and b) the Secretariat should coordinate the development of specifications and criteria for software integrity validation, in liaison with States, and report to the next meeting of the AFI AMHS TF