



**International Civil Aviation Organisation
West and Central African Office**

**Twentieth Meeting on the Improvement of Air Traffic Services over the South Atlantic
(SAT/20)**

(Abidjan, Côte d'Ivoire, 1- 5 June 2015)

Agenda Item 3: Communication, Navigation and Surveillance (CNS)

3.3: Improvement of CNS system in the SAT region (AMHS, AIDC, ADS-B)

Implementation of ATS Message Handling System (AMHS) in Dakar center.

(Presented by Senegal ASECNA)

SUMMARY

The present working paper informs the meeting about the new AMHS (ATS Message Handling System) system implemented in Dakar center.

Action by the meeting in paragraph 3

1. Introduction

To improve interoperability between message switching systems, it will replace MESSIR-AFTN provided by Corobor, the current operational system in DAKAR ACC. It deals with all available functions which make it compatible to any other standard system

2. Discussion

2.1 The Installation has started since January 2015

- ✓ Main provider : **AVITECH** (Germany) a subsidiary of **INDRA**(Spain)
- ✓ Successful TEST have been conducted with many centers:
 - In CAFSAT area (RIO, Johannesburg, Casablanca)
 - In ASECNA area: Abidjan, Antananarivo Bamako, Brazzaville, Libreville
Niamey, Nouakchott
- ✓ AMHS is planned to be fully operational before the end of December 2015.

2.2 Main advantages of AMHS

- increased speed, capacity and throughput
- Enhanced reliability
- Extended functionality

- Interoperability with other global messaging services
- Security capabilities

2.3 Interconnection between AFTN/AMHS Systems

- ✓ The AFTN/AMHS gateway communicates with AMHS systems through its AMHS component and communicates with AFTN systems through its AFTN component.
- ✓ AFTN Customers (AFS: AFTN Station) can communicate with AMHS customers (UA: User Agent) through the **MTCU** module (Message Transfer and Control Unit) which will convert AFTN messages format into AMHS messages size.

2.4 Types of AMHS messages

Messages generated by the UA (User Agent) are:

- IPM(Inter Personal Messages) or IPN (Inter Personal Notifications) : these are the aeronautical messages(SVC, FPL, NOTAM, METAR ...)
- IPNs: acknowledge of received or not received message.

Other messages are also exchanged:

- The Reports: DR (Delivery Report) and NDR (Non Delivery Report) are exchanged between MTA in order to inform the sending UA if the sent message has been received or not.
- The probe: a test message exchanged between the sending UA and the destination MTA(Message Transfer Agent).It allows the sending UA to know if the sent message could be routed to the destination UA or not. The result of this message would be a DR (if successful) or NDR (if unsuccessful).

2.5 Architecture

The hardware components of the AFTN/AMHS Gateway are:

- 01 **MTA** (Message Transfer Agent) including two HP ProLiant DL380 G8 mounted servers cluster system.

Each server contains:

- a **Linux operating system V5**,
- an RDBMS (Relational Database Management System) **Oracle V11.2** database
- the Cluster application and the AFTN/AMHS application.

Each server contains also two disks RAID1.The two servers are connected in cluster in order to provide:

- a high availability of the storage service
- a high availability of aeronautical routing messages.

- A Network that allows the server to communicate with AFTN and AMHS terminals by TCP and Asynchronous.

2.6 Database

Each server has:

- ✓ A Relational database management system RDBMS Oracle V11.2 which allows the application software AFTN/AMHS to store and to get back the aeronautical messages
- ✓ A process which makes sure that the standby server and the operational server has an identical database. This process allows the standby server to supply the main server and then ensure continuity of service.

3. Action by the meeting

The meeting is invited to:

- Take note of information related in this present working paper ;
- Make a Recommendation to promote the interoperability of ATM systems ;
- Encourage centers using compatible system to plan and make trials with Dakar.
