



SAM/IG/4  
WP/39  
16/07/09

**International Civil Aviation Organization**  
**South American Regional Office**

**FOURTH WORKSHOP/MEETING OF THE SAM IMPLEMENTATION GROUP (SAM/IG/4)**

**REGIONAL PROJECT RLA/06/901**

**Lima, Peru, 19 to 23 October 2009**

**Agenda Item 6:       Assessment of operational requirements in order to determine the implementation of communications, navigation and surveillance (CNS) capacity improvements for en-route and terminal area operations.**

(Presented by Brazil)

**Summary**

The purpose of this Working Paper is to present the strategy of the Brazilian Administration for the migration of the service currently provided by the AFTN to the ATS Message Handling System, according to the CNS/ATM concept.

**References:**

- Report on the SAMIG/3 Meeting

**1.               Background**

1.1               The ATN development has started during the ICAO Panel on The Secondary Surveillance and Collision Avoidance Systems (SICASP). A first decision made was to base the ATN inside the open systems interconnection (OSI) protocols, from the International Organization for Standardization. Lately, in June 1994, the development of the ATN has been assigned to the ATN Panel.

1.2               The ATN panel has developed the Standards and Recommended Practices (SARP) for communications and application services. The first SARP CNS/ATM-1 set provides an internet infrastructure with six identified application entities, two for ground-ground communications and four for air-ground communications. Among these applications is included the ATS Message Handling System (AMHS).

1.3 Aiming at implementing the ATS Message Handling Service, the Brazilian Administration has contracted the development and customization of the message automated systems, which is under implementation at Manaus and Brasilia, including its respective AFTN/AMHS Gateways.

## **2 Analysis**

### **AFTN in Brazil**

2.1 The AFTN structure in Brazil adopts the Aeronautical Communications Stations (ECM) as facilities to support the fixed communications among ATS organs.

2.2 In the ECM, the communications operators provide messages exchange support, through the AFTN, for other ATS operators. Besides being accountable for the procedures to accomplish the whole messages process, the ECM operators take over the role of message certifiers, i.e. they guarantee that the sender is really an authorized user.

2.3 The Communications Stations are connected, through dedicated channels, to the Message Automatic Commutation Centers (MACC).

2.4 In Brazil, nowadays, there are two centers, located in Brasilia and Manaus, known as CCAM-BR and CCAM-MN, respectively. Some stations that use the CCAM-BR have their terminals connected through the Recife and Curitiba concentrators, which center the communications and exchange the messages with the CCAM-BR through circuits with TCP/IP protocol.

2.5 Although they are two CCAM, with enough capacity to operate as main AFTN centers, the CCAM-BR e CCAM-MN are configured to operate as being only an AFTN knot in Brazil. The CCAM-MN operates as if it were a concentrator of the CCAM-BR and vice versa.

2.6 Both the CCAM-BR and the CCAM-MN are in charge of exchanging messages with international organs, becoming integrated to the global AFTN.

2.7 Nowadays, 400 (four hundred) AFTN terminals are implemented and providing services in Brazilian facilities. The most part of these terminals meet multiple AFTN addresses.

### **Migration Plan from the AFTN to the AMHS**

2.8 The central objective of the Migration Plan from the AFTN to the AMHS is directed to the implementation of user terminals at the operational organs pertaining to the Brazilian Airspace Control System (SISCEAB), in charge of several services (AIS, ATS, CNS, MET and SAR), as well as at the organizations related to the Brazilian aeronautical administration and other users of the aeronautical telecommunications infrastructure, in accordance with the standards and criteria established by the Airspace Control Department (DECEA).

2.9 The migration of the AFTN users to the AMHS is divided in stages, according to the Migration Plan approved by the DECEA. The plan can be adapted according to the particularities of each location; nevertheless, it shall comply with the following premises:

- ✓ To prioritize the migration of the CCAM-BR and CCAM-MN subscribers who can Access the system through the local networks (LAN) of the CINDACTA I (Brasília) and CINDACTA IV (Manaus), respectively;
- ✓ An AMHS subscriber shall have, at least, the same quality level of message service compared to the service provided by the AFTN;

- ✓ The migration shall not take place as long as it is not possible to reach the quality level of the AFTN service; and
- ✓ The AFTN terminals will remain in operational conditions, simultaneously with the AMHS terminals, until the runnability of the new service is proved.

2.10 For the aeronautical telecommunications critical mission, it is not possible the changing of systems to be simply carried out in a sole operation, with the activation of the new system and the deactivation of the old one.

2.11 Also, the fact of being a global network, with many countries involved and different economical and regional features, reinforces the need of a joint operation of both systems during a transitory period, using the *Gateway* AMHS/AFTN functionalities between the two systems, until the new one be completely implemented within the CAR/SAM Regions and other countries with which Brazil has signed a systems connection agreement.

2.12 The Migration Plan from the AFTN to the AMHS has established a sequence of actions and deadlines which are summarized as follows:

#### CONCISE TABLE OF ACTIONS AND DEADLINES

ACTIONS	DEADLINES
a) Acceptance Tests of the Systems in Manaus and Brasília.	By OCT/2009
b) Integration between the Manaus and Brasília Systems and activation of the AFTN/AMHS Gateways.	By OCT/2009
c) Development, test and acceptance of the AMHS subscribers' terminal.	By OCT/2009
d) AMHS operation pilot and maintenance courses.	By NOV/2009
e) Loading of the AMHS Addressing Scheme (CAAS) to the Directories of Manaus and Brasília Systems.	By DEC/2009
f) Irradiation courses on the AMHS technical-operational knowledge through the DECEA's regional organs.	By JUN/2010
g) To make available a virtual link, via public Internet, for the connection of AMHS terminals in remote areas, where there may be difficulties to access	As of

the network or to hire public utilities.	JAN/2011
h) Migration from the AFTN subscribers' terminals to the AMHS according to the modules provided in the Migration Plan.	As from OCT/2009 to DEC/2012

### General Aspects

2.14 For the transition between the AFTN and the AMHS in a global scale, it will be necessary to coordinate and synchronize the AMHS addresses allocation. Focused on this objective, ICAO, in cooperation with EUROCONTROL, has established procedures for the coordination and synchronization of the AMHS addresses in short and medium terms. To that end, it will be used the European ATS Message Handling Center (AMC). In order to achieve the proposed objectives, all States were invited to designate representatives for registering as AMC users.

2.15 The connection of the Brasília e Manaus AMHS Systems to the international network shall be preceded by tests with Ezeiza (Argentina), after the respective Message Handling Centers prove they are steady and safe, in accordance to the Memoranda of Understanding signed with Argentina and Paraguay.

### 3. Suggested Action

3.1 The meeting shall analyze the information presented in the Working Paper, aiming to parameterize the whole planning that is being developed for the AMHS interconnection within the SAM Region.

\* \* \* \* \*