



**International Civil Aviation Organization**  
CAR/SAM Regional Planning Implementation Group (GREPECAS)  
**First Meeting of the Communications, Navigation and Surveillance / Air  
Traffic Management Subgroup (CNS/ATM/SG/1)**  
**(Lima, Peru, 15 to 19 March 2010)**

**Agenda Item 4:**        **Review to pending matters of the ATM/CNS/SG, ATM/COMM, CNS/COMM and respective Task Forces, for consideration in the CNS/ATM Subgroup work programme**

**Socializing and taking self conscious to all aircraft operators about the AFS (Aeronautical Fixed System) and AMS (Aeronautical Mobile System) Communications System Action Plan focusing on the evolution and use of the new technologies**

(Presented by Colombia)

<b>SUMMARY</b>	
This paper presents a proposal for socializing and taking self conscious to all aircraft operators about the AFS (Aeronautical Fixed System) and AMS (Aeronautical Mobile System) Communications System Action Plan focusing on the evolution and use of the new technologies.	
<b>References:</b>	
National Air Navigation Plan for Colombia, Version 3.0	
<b>ICAO Strategic Objectives:</b>	<i>A – Safety</i> <i>D – Efficiency</i>

**1. Introduction**

1.1            As it is well known the current communications infrastructure is on transition process, cohabiting with new technologies implementation at medium and long term. Therefore it is necessary that the aircraft operator be informed and took self conscious about the AFS (Aeronautical Fixed System) and AMS (Aeronautical Mobile System) Communications System Action Plan focusing on the evolution and use of the new technologies.

**1.2 Action Plan - Communications System**

**1.2.1 Aeronautical Mobile System (AMS)**

1.2.1.1        Barranquilla FIR: On this year Colombia has started with ER FIR Barranquilla Modulated Voice A3E VHF renewal and VDL mode 2 as well. The VDL mode 2 implementation has begun on December 2009 and at the end of this year it is expected to be in service on voice component.

SECTOR	MAIN/BACK FRECUENCY (Mhz)	REMOTE STATIONS	MAIN/ BACK ALTERNATIVE FRECUENCY (Mhz)	REMOTE STATIONS
NORTH	128.40	C. KENNEDY C. MACO C. EL CLIFF	124.85	C. KENNEDY C. MACO TUBARA C. EL CLIFF
SOUTH	124.20	C. JURISDICCIONES C. MACO		

**Note:** The VDL mode 2 is just implemented at the transmitter and receptor equipment located at remote stations.

Alternative frequency NS: 124.85 MHz, Requirement to ICAO is pended.

1.2.1.2 TMA San Andres: Taking into account the ER FIR Barranquilla Voice Modulated A3E VHF and VDL mode 2 renewals, it was possible to acquire the following equipment:

TMA SPP	MAIN/BACK FRECUENCY (Mhz)	REMOTE STATIONS	MAIN/ BACK ALTERNATIVE FRECUENCY (Mhz)	REMOTE STATIONS
APP	119.30	C. MACO C. EL CLIFF		

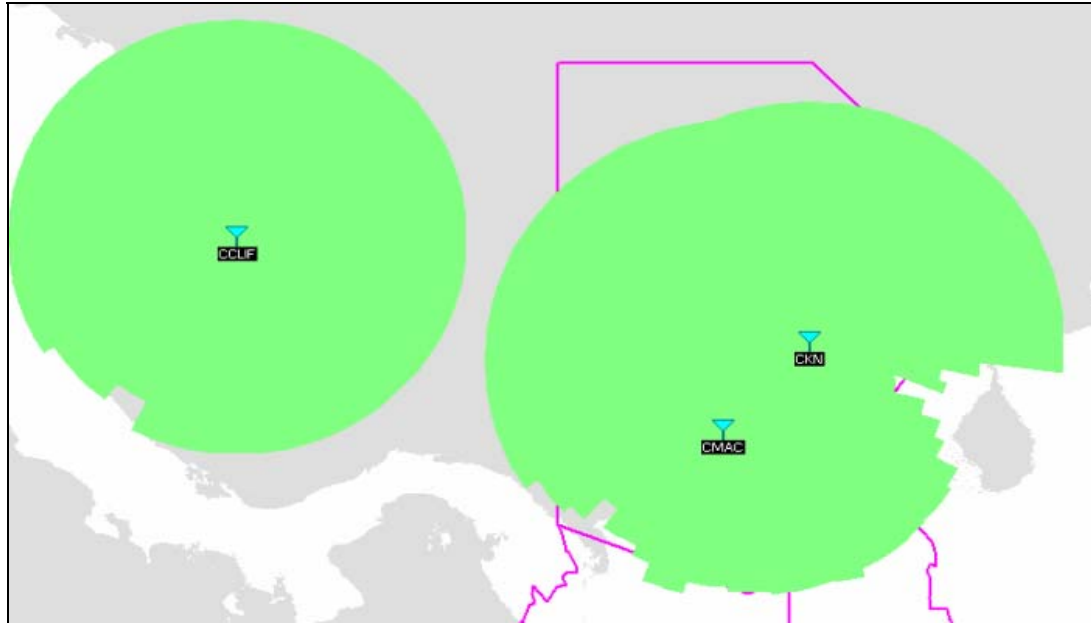
1.2.1.3 FIR Bogotá: Colombia will start the contract process to renewal ER FIR Bogotá modulated voice A3E VHF as follows:

SECTOR	MAIN/BACK FRECUENCY (Mhz)	REMOTE STATIONS	MAIN/ BACK ALTERNATIVE FRECUENCY (Mhz)	REMOTE STATIONS
NW	123.70		To be defined	
SE	125.10		To be defined	
NE	128.60		To be defined	
SW	128.80		To be defined	

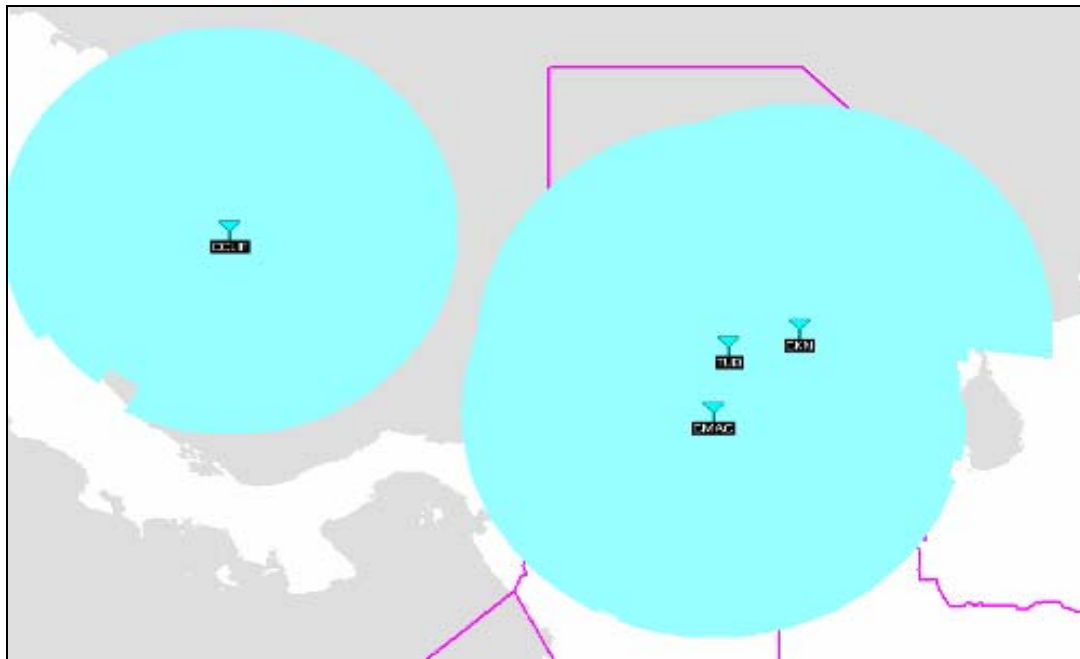
**Note:** The VDL mode 2 is just implemented inside transmitters and receivers at the remote stations.

### 1.2.1 ER-VHR- Coverage examples

1.2.2.1 The FIR Barranquilla coverage was designed using free Internet RADIO MOBILE simulation software version 10.4.8 that corresponds to the SRTM V.2 (Colombia Data). It was calculated the visual coverage for a maximum FL 245 200 Nm operational coverage. The remote stations height data was accessed manually using Radio Mobile software due to the fact that SRTM V.2 data does not correspond to reality.



**Figure 1: BAQ FIR Visual Coverage (Theoretical). 128.40 MHz Frequency for North Sector.**



**Figure 2: BAQ FIR Visual Coverage (theoretical) – 124.85 alternative frequencies for North-South Sector**

1.2.2.2 The aeronautical mobile will be regenerated at short, medium and long term as follows:

COMUNICACIONES	Corto Plazo (2010 - 2012)	Mediano Plazo (2013 - 2015)	Largo Plazo (2016 - 2019)
TMA BAQ (Nueva F: Corozal y Mtr)			
TMA BOG			
Nueva CTA BAQ (RHC, VDP, MC)			
FIR BAQ (UTA)			
FIR BOG. (UTA)			
ACC BQA (NW, SW, SE, NE)			
CTA: Leticia			

COMUNICACIONES	Corto Plazo (2010 - 2012)	Mediano Plazo (2013 - 2015)	Largo Plazo (2016 - 2019)
TMA VCC			
TMA NVA			
TMA FLA			
TMA ANDES			
TWR TULUA			
TWR PTO INIR			
TWR MORELIA			
TWR CAUCASIA			
TWR OTU			
TWR GUAYMARAL			
TWR GIRARDOT			
TWR CAFÉ			

1.2.2.3 Fixed Aeronautical Mobile (FAM): Colombia Civil Aviation is on the transition phase to AFTN/ AMHSN as follows:

COMUNICACIONES	Corto Plazo (2010 - 2012)	Mediano Plazo (2013 - 2015)	Largo Plazo (2016 - 2019)
AMHS FASE I			
AMHS FASE II			
DCL			

FASE DE PRUEBAS SISTEMA AMHS	FECHA
Instalación y pruebas del sistema	Enero - Septiembre 2009
Periodo de Entrenamiento personal Operativo	Diciembre 2009 - Marzo 2010
Pruebas interconexión equipos AFTN / AMHS	Febrero- Mayo 2010
Operación Prueba sistema AMHS	Mayo - Junio 2010
Pruebas AMHS Colombia - Perú	Noviembre 2009
Pruebas AMHS Colombia - Brasil	Mayo 2010
Pruebas AMHS Colombia - Ecuador	Pendiente por definir
Pruebas AMHS Colombia - Venezuela	Pendiente por definir
Operación definitiva sistema AMHS	Octubre - Noviembre 2010

2. **Discussion**

**Proposal for Socializing and taking self conscious to all aircraft operators about the FAS (Fixed Aeronautical System) and AMS (Aeronautical Mobile System) Communications System Action Plan focusing on the evolution and use of the new technologies to be developed on the medium and long term**

2.1 **VDL mode 2**

2.1.1 The Aeronautical Mobile beginnings are supported by voice-data Aeronautical Mobile System (AMS) based upon A3E voice modulation and air ground data communication (CPDLC) for Colombia case.

2.2 **ATN**

2.2.1 The ATN system in Colombia is expected to be implemented at medium and long term by independent aeronautical corporative network.

2.3 **AMHS**

2.3.1 Taking into account the Fixed Aeronautical System implementation in Colombia, it was acquired an AMHS network that currently is on the transition scenario AFTN/AMHS to be implemented at short term and expecting to be primary media at medium term.

2.3.2 In figure 3, it is illustrated the ATN air-ground components. For the Colombian case air component development is on the feasibility phase, expected to be implemented on the medium term.

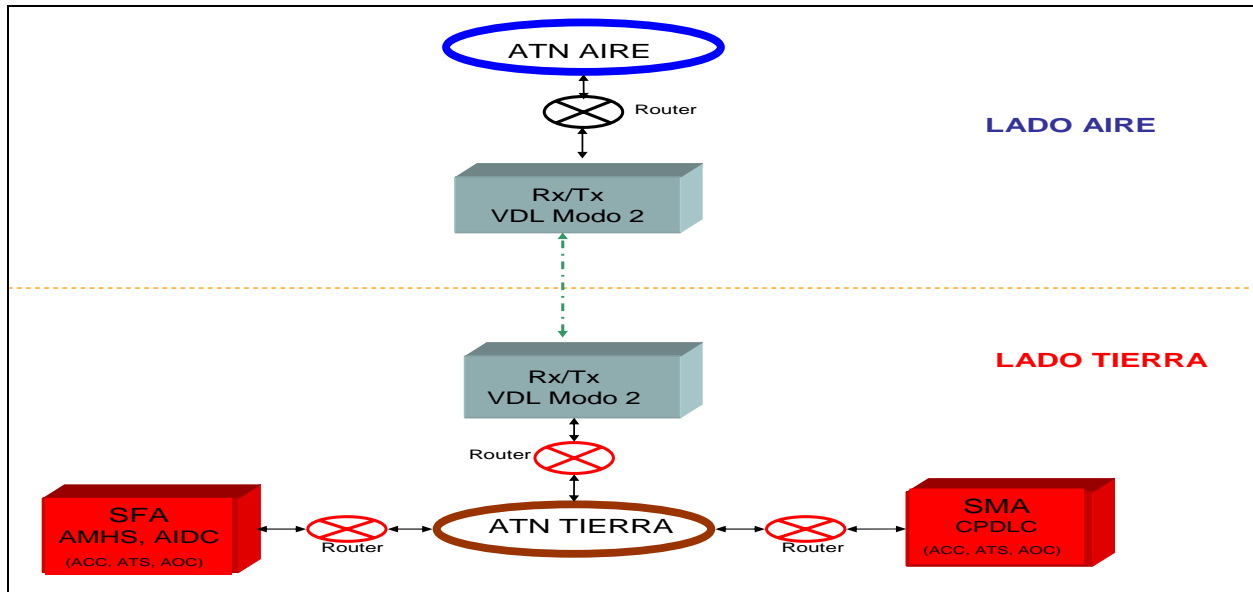


Figure 3: ATN Network.

**Proposed  
Conclusion 1/X -**

**Socializing and taking self conscious to all aircraft operators about the FAS (Fixed Aeronautical System) and AMS (Aeronautical Mobile System) Communications System Action Plan focusing on the evolution and use of the new technologies**

To:

- a) invite States to start or improve on a complete process for “Socializing and taking self conscious to all aircraft operators about the FAS (Fixed Aeronautical System) and AMS (Aeronautical Mobile System) Communications System Action Plan focusing on the evolution and use of the new technologies”.
- b) invite ICAO to continue organizing short term (2010-2011) training courses, seminars and workshops about the FAS (Fixed Aeronautical System) and AMS (Aeronautical Mobile System) Communications System focusing on the evolution and use of the new technologies.
- c) invite IATA to support the socializing, taking self conscious and training about the FAS (Fixed Aeronautical System) and AMS (Aeronautical Mobile System) Communications System focusing on the evolution and use of the new technologies.

3. **Action suggested**

3.1 The Meeting is invited to:

- a) take into account the information performed on this paper.
- b) broadcast by States, ICAO an IATA internet web sites the proposal for socializing, taking self conscious and training about the FAS (Fixed Aeronautical System) and AMS (Aeronautical Mobile System) Communications focusing on the evolution and use of the new technologies, and that the AMS (Aeronautical Mobile System) be implemented at medium and short term as well.
- c) improve knowledge about the FAS (Fixed Aeronautical System) and AMS (Aeronautical Mobile System) Communications through training courses, seminaries, workshops and conferences with easy internet media access.
- d) make FAS and AMS knowledge reachable to aircraft operators

- END -