



International Civil Aviation Organization
CAR/SAM REGIONAL PLANNING AND IMPLEMENTATION GROUP (GREPECAS)
**FOURTEENTH MEETING OF THE CAR/SAM REGIONAL PLANNING AND
IMPLEMENTATION GROUP (GREPECAS/14)**
(San Jose, Costa Rica, April 16 to 20, 2007)

Agenda Item 7: Other Business

OPTIMIZATION OF AMS VHF COMMUNICATIONS IN CENTRAL AMERICA

(Presented by COCESNA)

SUMMARY

In this information paper is offered a description of the solution for the problems in the Air Traffic Control air-ground communications in the Central America FIR due to the use of different transmission means terrestrial (microwave, optic fiber,...) and satellite, as well as because of the multiple coverage using the same frequency.

1. Introduction

- 1.1 To provide the Air Traffic Control service in the Central America FIR, COCESNA uses various remote AMS VHF sites distributed geographically and strategically along Central America, and Grand Cayman, to have multiple coverage with the same frequency for optimizing the continuity and availability of the air-ground communications (see figure No. 1 of the attachment).
- 1.2 The AMS VHF communications are available through different transmission means as copper wire, microwave, optic fiber cable and satellite links, each media because of its nature takes different times for its transmission.
- 1.3 In CENAMER ACC, each control sector receives the communications of the different remote sites of a single AMS VHF frequency depending on the operative sectorization previously assigned. During these communications two different phenomena are observed because of the difference in velocity in transmission/reception (and in consequence different delays) inherent to the transmission mean and the equipment configuration being used:
 - **Eco Phenomenon:** Even though the original acoustic signal weakens, this same signal always returns with a delay or out of phase.
 - **Reverberation Phenomenon:** Consists in a light delay in a audio signal that is transmitted from a single source to a receptor through more than two media, getting to the receptor at different times.

2. Solutions implemented

2.1 Because of these problems in the communications, COCESNA implemented for the reverberation phenomenon, the use of a communication line delay system.

Eco Suppressor equipment developed by COCESNA

2.2 To solve the problem caused by the eco phenomenon, COCESNA had designed, built and put in operation the eco Suppressor equipment. These equipments as a group form a configurable and expandable system using the same communication channels, without extra costs and without affecting the normal operation of air-ground communications. This solution, as a result of the Search and Development of the Communication Engineering personnel of COCESNA's Agency, ACNA, represent significant and profitable operative, economic and technical benefits.

2.3 The implemented solution is compatible with international communication industry standards.

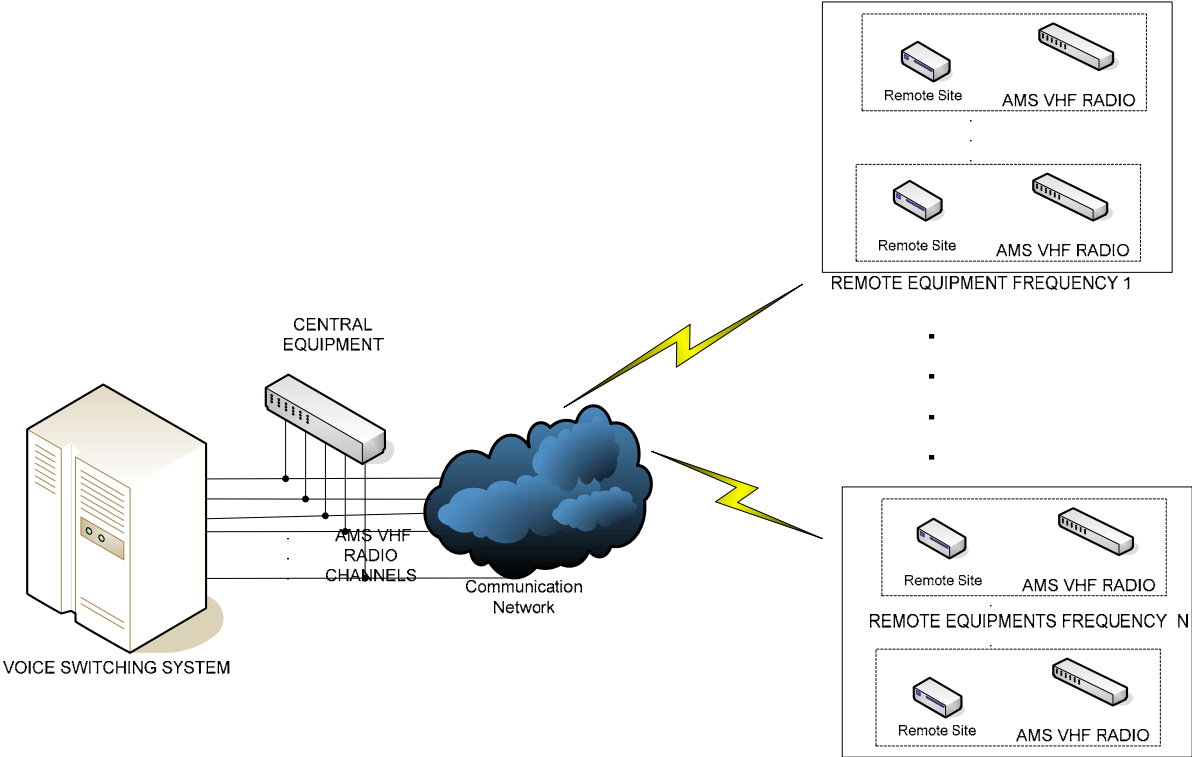
2.4 This system is composed of a Central Equipment and remote equipments in each repeater/transmitter AMS VHF site (see fig. No. 2 of the attachment).

In the attachment a more detailed description is given about the Eco Suppressor Equipment.

3. Suggested action

The Meeting is invited to take note of the information provided about this development and the capabilities and functionalities that solve this type of problems that are very common in AMS communications.

FIG. No. 2 ECO SUPPRESSOR SYSTEM ARCHITECTURE



**FIG. NO: 3 ECO SUPPRESSOR EQUIPMENT
PRINCIPLE OF OPERATION**

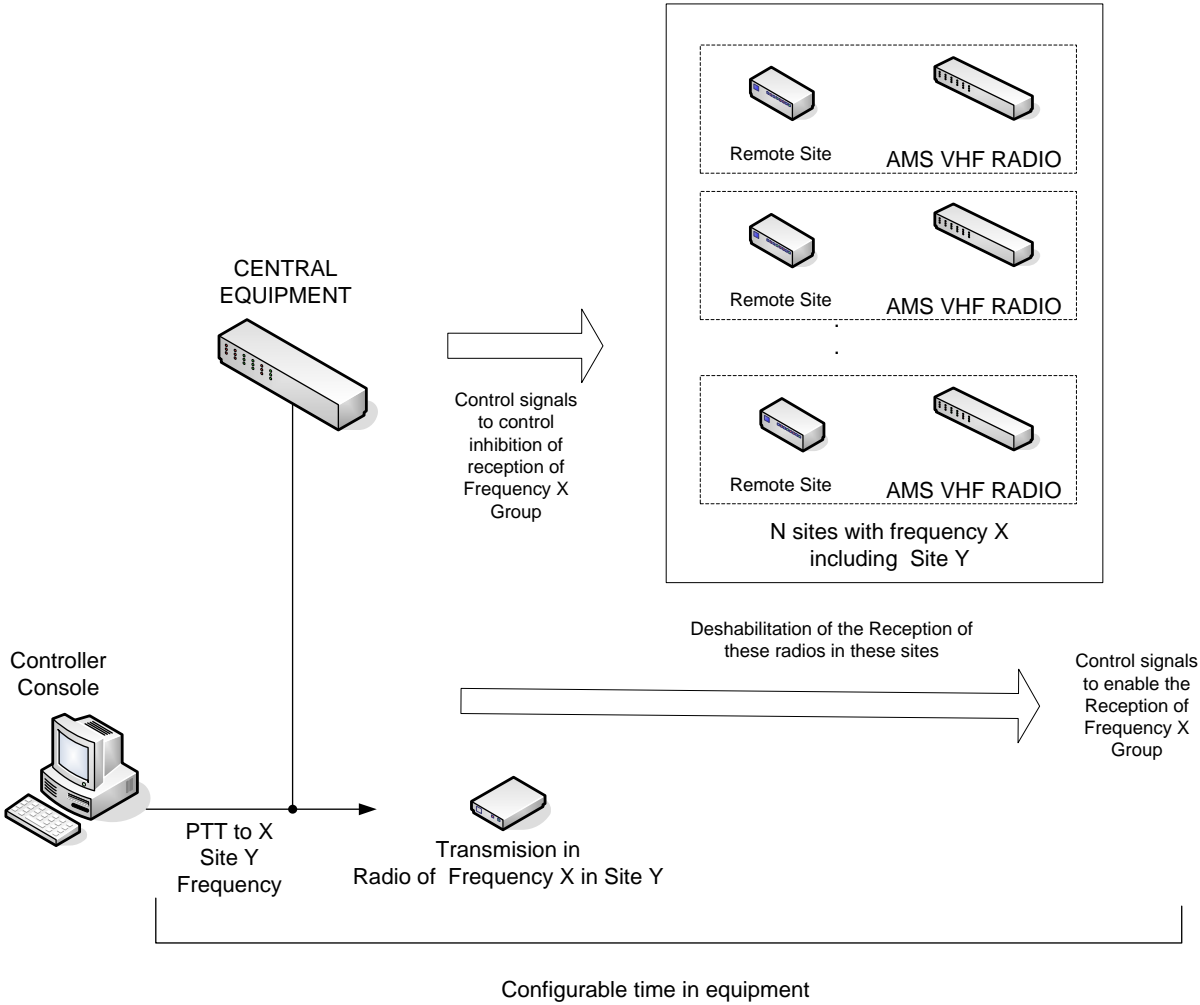
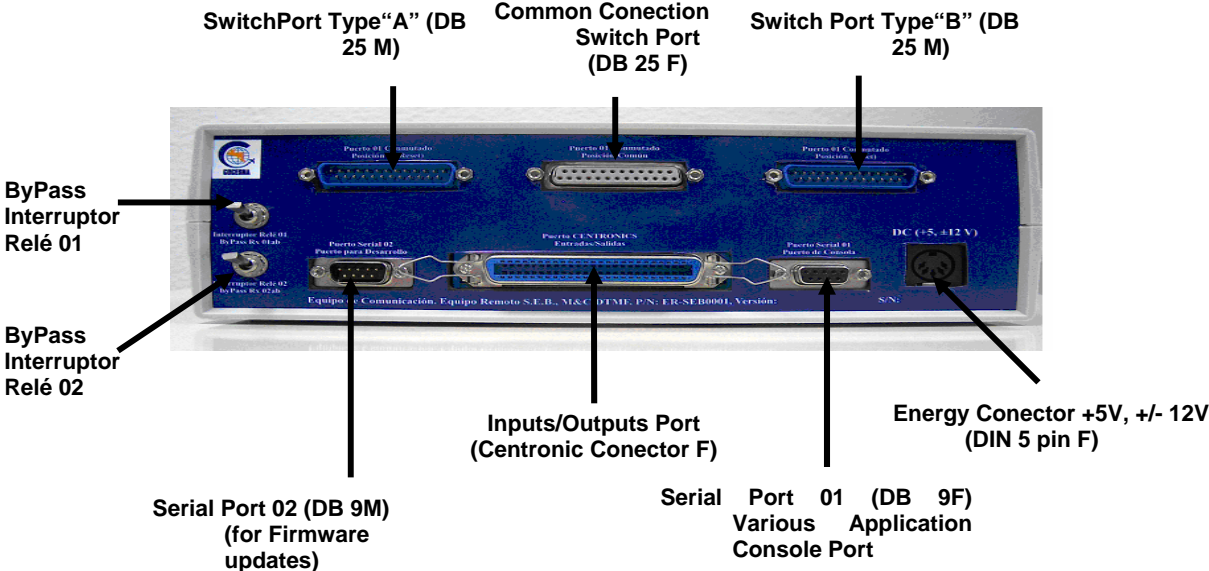


FIG. No. 4: Views of Eco Suppressor Equipment

REAR PANEL REMOTE EQUIPMENT



FRONT PANEL REMOTE EQUIPMENT

Push buttons for Menu Navigation on screen

Liquid Cristal Display

Status Display

