

ELEVENTH AIR NAVIGATION CONFERENCE

Montreal, 22 September to 3 October 2003

Agenda Item 7 Aeronautical air-ground and air-to-air : communications

PROPOSAL CONCERNING THE FUTURE DEVELOPMENT OF AIR- GROUND AERONAUTICAL COMMUNICATIONS

(Presented by the Central American Corporation for Air Navigation Services
(COCESNA))

SUMMARY

This paper presents information describing the status and progress made in the CAR/SAM Regions concerning the implementation of air-ground aeronautical communications based on CNS, as well as the position of these regions regarding the development of such communications based on ATM requirements, and the feasibility of implementing new digital link technologies for data and voice services. This working paper was developed pursuant to Conclusion 11/54 of GREPECAS/11 Meeting.

Action by the conference is in paragraph 4.

1. INTRODUCTION

1.1 COCESNA, following Conclusion 11/54 of GREPECAS/11 (Manaus, Brazil, 3 to 7 December 2002), elaborated this working paper, which has been reviewed and supported by the following States/International Organizations:

Argentina
Barbados

Honduras²
Mexico

¹ Spanish version provided by COCESNA.

Belize ²	Nicaragua ²
Bolivia	Panama
Brazil	Paraguay
Chile	Peru
Colombia	Trinidad and Tobago
Costa Rica ²	United States
Cuba	Venezuela
El Salvador ²	COCESNA
Guatemala	IATA
Haiti	IFATCA

1.2 Based on the results of the Tenth Air Navigation Conference, the work of the CAR/SAM Regional Planning and Implementation Group (GREPECAS), and the recommendations of the Third Caribbean/South American Regional Air Navigation Conference (CAR/SAM/3 RAN), held in Buenos Aires, Argentina, from 5 to 15 October 1999; and in keeping with the Global Air Navigation Plan for CNS/ATM Systems, and taking into account the standardisation carried out by ICAO, CAR/SAM States and International Organisations have been working on the planning and implementation of the new CNS/ATM systems that will meet the needs of aviation at a regional and global level and help to overcome the deficiencies of the current systems.

1.3 The achievement of the air traffic management global operational concept will require speech communications and the implementation of data communications.

1.4 The Communications/Operations Divisional Meeting held in 1995 developed recommendations of relevance to date. Consequently the ICAO ANCP Panel elaborated SARPs for 8.33 Khz. AM/DSB voice transmissions and VDL 2 and 3 modes.

1.5 Regarding air-ground communications, the CAR/SAM/3 RAN Meeting agreed on several recommendations on the AM(R)S Plan and on the use of the VHF frequency spectrum, including provisions to expedite the introduction of VDL. Likewise, GREPECAS has begun studies for the implementation of VDL, providing guidelines for the conduction of trials.

1.6 This working paper gives details of the progress made, and the position adopted, by the CAR/SAM Regions regarding the development and implementation of air-ground aeronautical communications.

² COCESNA Member State

² COCESNA Member State

2. CURRENT STATUS

2.1 CAR/SAM States have met the air-ground communication requirements of FASID Table CNS2A and ICAO Annex 10, Volumes III and V, making use of VHF DSB-AM 25-kHz analog channelling technologies, covering ground areas and using AM(R)S HF frequencies for communications in oceanic and remote areas. Furthermore, the 117.975 - 137 MHz frequency band is not saturated in the CAR/SAM Regions, but there is a greater congestion in the assignment of frequencies in the 118 - 118.925 MHz sub-band, allotted to the aerodrome control service.

2.2 In keeping with the guidelines provided by GREPECAS, measures are being taken in the CAR/SAM Regions to improve and develop air-ground voice and data communications, with the following main objectives:

- a) optimise the use of communication services;
- b) improve VHF and HF coverage;
- c) protect from interference;
- d) implement character-oriented ATIS data links;
- e) implement ACARS; and
- f) others.

2.3 Furthermore, ground-ground digital communication networks have been implemented in the CAR/SAM Regions which have improved the AFS and have contributed to support and improve the ground segment of some air-ground communication links, thus providing the main support infrastructure for the implementation of the ATN and its applications.

2.4 Also, some CAR/SAM States have conducted tests using the ACARS protocol for ATM applications; studies have been initiated for the conduction of VDL Mode 2 trials, and demonstrations of the ADS-C system have been carried out. Some area control centres and related systems have been updated with the capacity to process the data of these new technologies, such as CPDLC and ADS-C, which will permit the conduction trials and tests with these systems.

2.5 In other regions, pre-operational trials of air-ground aeronautical communications systems are being carried out. As these trials become successful and in agreement with COM/OPS Divisional Meeting (1995), it can be inferred that from the avionics point of view, the system can be economically implemented through multi-mode equipment to standardize the new SMA technologies, through global operational approval, both in the various flight phases as in the services and their compatibility with other CNS systems.

3. POSITION OF THE CAR/SAM REGIONS

3.1 It is considered important that the air-ground communication infrastructure should accommodate the new functions and provide the adequate capacity, safety and quality of service required to support ATM requirements. In this infrastructure the communication technology to be selected, the application scenarios, its cost-benefit analysis, and the capacity and optimised use of the radio frequency spectrum are highlighted.

3.2 GREPECAS has taken into account the guidelines on air-ground communications set forth in the Global Air Navigation Plan for CNS/ATM Systems, including air-ground data links (VDL, HFDL and SSR Mode S); but has been awaiting the establishment of concrete operational requirements and the standardisation by ICAO. It has also kept abreast of global and regional VDL implementation plans, since it is felt that the harmonised global implementation is important in order to standardise air-ground communications.

3.3 According to the studies conducted by GREPECAS, the implementation of VDL Mode 2 in the medium term is considered feasible, in principle, to support data link applications, such as CPDLC. The implementation of VDL Mode 3 or 4 will be subject to regional agreements, together with other future data link options, and it is expected that ICAO thoroughly define AMS communications scenarios for regional application.

3.4 In view of the foregoing, it is felt that ICAO should continue studying, on a global basis, the implementation of technologies to develop future air-ground aeronautical digital voice and data communications. It is also felt advisable that ICAO continue coordinating the development of detailed information on future air-ground communications, so as to assist States in the adoption of adequate decisions on the selection of implementation alternatives.

4. ACTION BY THE CONFERENCE

4.1 The conference is invited to:

- a) take note of the information provided in this paper;
- b) with a view to assisting States in the adoption of appropriate decisions on future AMS communications, exhort ICAO to complete studies and disseminate findings on:
 - 1) comparative analyses of new technologies so as to standardise the new air-ground communication systems; and
 - 2) implementation scenarios for future air-ground aeronautical communications, taking into account the results obtained by the Aeronautical Communications Panel (ACP).
- c) urge the States, Regions, and users to cooperate and work together towards the implementation of the new CNS technologies, based on the guidelines and standardisation provided by ICAO and bearing in mind the results of the relevant

cost-benefit analyses, so as to optimise resources for testing and implementation; and in the search for better global and regional alternatives to harmonise the future air-ground aeronautical communications systems.

— END —