International Civil Aviation Organization

FOURTH MEETING OF THE SAT FANS 1/A INTEROPERABILITY TEAM

(Sal, Cape Verde, 8 to 9 June 2009)

Agenda Item 4

Review of ADS/CPDLC programmes and implementation activities in SAT FIRs

(Presented by Brazil)

Summary

The objective of this Working Paper is to present the ADS/CPDLC implementation functionalities on Atlantico ACC, as well to discuss some issues that must be solved, in order to guarantee the interoperability between ATC Units.

1. Introduction

The recommendation 3/1 of the SAT/TF/3 meeting was formulated in order to indicate that full operational implementation in the EUR/SAM Corridor should be achieved in July 2009. Also, the meeting agreed that full operational implementation means that only surveillance activities will be provided to support procedural separation in applicable airspaces at this stage.

In order to comply with the mentioned dates, Brazilian Administration took the necessary measures to implement the ADS-C/CPDLC in Atlantico ACC on July 30, 2009.

2. Analysis

2.1. AIP Supplement

The implementation of ADS-C/CPDLC in Atlantico ACC will be based on the AIP Supplement attached as an appendix to this working paper. The meeting should discuss about the convenience of establishing a common model for AIP Supplement, to be used by the states, in order to assure harmonization in the applicable ADS-C/CPDLC procedures.

The Brazilian AIP Supplement will be published on July 02, 2009 and it will be in force on July 30. 2009. This AIP Supplement was based on the main procedures foreseen Doc 4444 (PANS-ATM) and in FANS 1/A Operational Manual (FOM).

2.2. Operational Concept of Atlantico ACC

The ATC system that includes ADS-C/CPDLC, in Atlantico ACC was developed by ATECH and allows the air traffic controller of Atlantico ACC to visualize all aircraft flying in Atlantic FIR, in controller's workstation, whether or not the aircraft has capability to logon into the system. The FANS 1/A aircraft will use all ADS / CPDLC functionality ´prescribed on FOM and described in the above mentioned AIP Supplement.

The non FANS 1/A Aircraft or the aircraft that is experiencing some ADS-C/CPDLC technical problem will establish a voice contact with Atlantic ACC, through HF equipment. In HF room, beside Atlantic ACC, a Aeronautical Station Operator will provide the information received from the pilot to Air Traffic Controller, and vice-versa.

In normal conditions operations, the air traffic controller of Atlantic ACC will use only data link communication, through CPDLC (FANS 1/A Aircraft) or an "emulated CPDLC message" applied by Aeronautical Station Operator. Only in case of emergency, the ATCO will use HF for communication.

This operational concept aims to ensure that there is a unique setting of messages on the ATCO´s workstation, based on data link communications, avoiding the mix of voice and data communication. This operational concept will increase considerably the ability to provide the Air Traffic Services and, in consequence, it will improve the ATC Sector Capacity..

2.3. FANS 1/A Operations Manual Update

As agreed in FANS 1/A previous meetings, one of the means to guarantee the harmonization on the ADS-C/CPDLC is the application of the FANS 1/A Operations Manual. Taking into consideration that FOM is a non Standard ICAO document, it is necessary to establish a process to guarantee the use of the actual version of the document by all involved stakeholders. One of the possible solutions for this issue could be a close coordination between the SAT/FIT Focal Point and all involved ICAO Regional Offices, with the aim to publish the actual FOM version on the ICAO Regional Offices website.

2.4. Harmonization of the ADS-C Contracts

The application of ADS-C will be based on three types of contract: Periodic, Event and Demand. The update rate of the Periodic Contract should be harmonized in South Atlantic, in order to guarantee the coherence between the applicable procedures applicable by all ATC Units involved. In the same sense, there is a need of harmonizing the parameters that will trigger the Event Contract in South Atlantic.

Taking into consideration that initially the ADS-C will not be used to reduce the separation minima in South Atlantic, Brazilian Administration has established a 20 minutes update rate for Periodic Contract.

There is a relationship between the Altitude Range Change Event and **t**he tolerance value which shall be used to determine that the ADS-C level information displayed to the controller is accurate. The Doc 4444 (PANS-ATM – 13.5.3.1) indicates that this tolerance shall

be ± 60 m (± 200 ft) in RVSM airspace. In other airspace, it shall be ± 90 m (± 300 ft), except that appropriate ATS authorities may specify a smaller criterion, but not less than ± 60 m (± 200 ft), if this is found to be more practical. In FANS 1/A Operations Manual (FOM – 6.6.3.2) is foreseen that "where other vertical tolerances do not exist, the vertical tolerances to be applied for ADS-C shall be (±) 300 feet. However, an individual ATSU may specify in local instructions and the AIP that a tolerance of not less than (±) 200 feet will be used to provide consistency with other vertical tolerances applied within the FIR".

Taking into consideration the RVSM is applied in South Atlantic, the Altitude Range Change Event should use 200 feet as a parameter, in accordance with Doc 4444. However, the general Altitude Range Change Event in FOM is 300 feet. The SAT States should discuss about the convenience of establishing a harmonized value for the Altitude Range Change Event. Taking into consideration the value recommended by Doc. 4444, the Brazilian Administration has established 200 feet as a parameter to trigger the Altitude Range Change Event.

Another parameter that needs an harmonization is the Lateral Deviation Change Event. Taking into consideration that the South Atlantic is RNP 10 airspace, the value of 10 NM should be a suitable parameter to the Lateral Deviation Change Event. However, another busier airspace (e.g. North Atlantic) is applying 5 NM. Brazilian Administration established initially a value of 5 NM to trigger the Event Contract.

2.5. FANS 1/A non recognized messages

During the Site Acceptance Test (SAT) of the Atlantico ACC ATC System, the personnel involved was informed by TAM Airlines that there are some CPDLC messages that is not being used by FANS 1/A Systems. Taking into consideration that the application of such messages could lead the ATC Systems to issue an error message, the meeting should discuss the best mean of confirming this information and disseminate it to the Air Navigation Service Providers.

2.6. Dissemination of the ADS-C/CPDLC Implementation in South Atlantic

The basis for the application of ADS-C/CPDLC in South Atlantic is the probability of the significant majority of the aircraft will use FANS 1/A systems. In this sense, the meeting should discuss the best way for disseminating the information regarding the ADS-C/CPDLC implementation in South Atlantic, besides the normal Aeronautical Information Services process and to encourage the aircraft operator to logon on SAT ADS-C/CPDLC Systems.

3. Suggested action

The Meeting is invited to:

a) Take note of the information provided in this working paper;

b) Take note of the date of ADS/CPDLC implementation in Atlantico ACC.

c) Discuss the convenience of developing an AIP Supplement Model to be used by SAT States;

d) Develop a process to keep the FANS 1/A Operations Manual update on the ICAO Regional Offices WEBSITE;

e) Establish a common update rate for periodic contracts;

f) Harmonize the parameters applied to trigger events contracts;

g) Discuss the best mean to obtain information regarding FANS 1/A non recognized messages;

h) Develop a strategy for the dissemination of the ADS-C/CPDLC implementation in EUR/SAM Corridor, with the aim of encouraging aircraft operators to carry out logon in the system.