International Civil Aviation Organization

The Third Meeting of the Future Air Navigation Systems Interoperability Team-Asia (FIT-Asia/3)

Pattaya, Thailand, 26-27 May 2014

Agenda Item 2:   Central Reporting Agency Reports

CPDLC AUTOMATIC HANDOFF PROCEDURES

(Presented by Boeing (CRA) / IATA)

SUMMARY

The CRA has received many problem reports for the FIT Asia region relating to automatic CPDLC handoff failures. This paper provides an overview of GOLD automatic handoff procedures.

1.   INTRODUCTION

1.1   Automatically transferring the CPDLC connection is the normal and preferred method of operation when aircraft operate between adjacent FIRs providing CPDLC services. Automatic CPDLC handoffs reduce flight crew and controller workload and error potential.

2.   DISCUSSION

2.1   A detailed list of procedures to enable automatic handoff of CPDLC connections is listed in GOLD section 2.2.4.5.   ANSPs should be familiar with the procedures in this section and ensure ground automation and controller standard operating procedures follow GOLD automatic handoff procedures.

2.2   The Current Data Authority (CDA) <u>is responsible</u> for initiating the CPDLC automatic handoff process. There are several individual steps described in the GOLD which must be followed to enable a successful automatic handoff.

2.3   The CDA performs the following steps in the exact order listed to transfer a CPDLC connection to the next ATSU:

   a)   Sends a NDA message to notify the aircraft of the identity of the next ATSU permitted to establish a CPDLC connection;

   b)   Initiates address forwarding with the next ATSU; and

   c)   Sends a CPDLC termination request message when the aircraft is in the vicinity of the boundary with the next ATSU.

Auto Handoff Procedures

2.4   Only the Current Data Authority (CDA) can send the Next Data Authority (NDA) uplink message. Some ground automation systems have automated uplinking the NDA message to reduce controller workload and reduce error potential.

2.5   After a network acknowledgment has been received for the NDA message a contact request address forwarding message is sent to the aircraft. Again some ground automation systems have automated the sending of address forwarding uplinks.

2.6   The address forwarding procedure is the process whereby one CDA instructs the aircraft system to initiate a logon request to the NDA .

2.7   When triggered by a contact request, the aircraft sends a logon request to the NDA without flight crew input.

2.8   The NDA responds to the logon request in the same way whether the logon request was manually sent by the flight crew or automatically as a result of address forwarding.

2.9   Once the NDA responds the aircraft holds an active CPDLC connection with the CDA and an in-active CPDLC connection with the NDA.

2.10   The CDA is notified that the address forwarding process is complete by receipt of a contact complete message.

2.11   The CDA completes the automatic handoff process by sending an end service uplink when the aircraft is in the vicinity of the FIR transition boundary.

2.12   When the end service message is received by the aircraft it terminates the active connection (CDA) and activates the inactive connection (NDA).

2.13   *Figure 2-16* below from the GOLD provides a graphical representation of the automatic handoff process
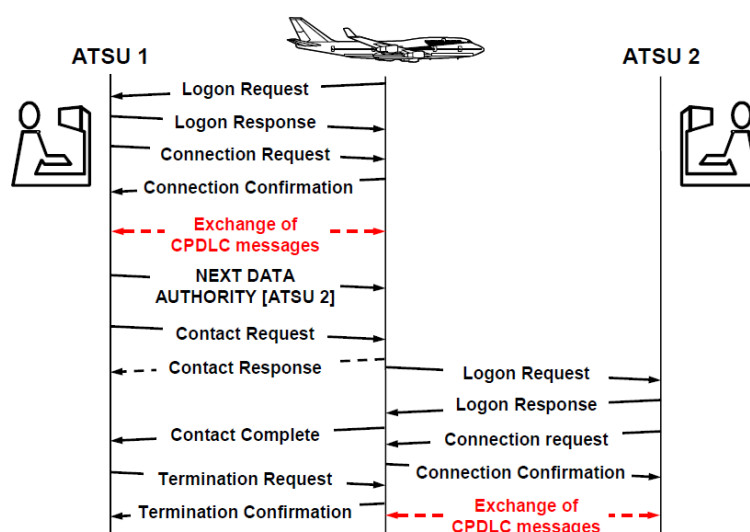
Figure 2-16.   Nominal sequence for initial CPDLC connection establishment and transfer of CPDLC connection using air-ground address forwarding

3. DISCUSSION

3.1   The meeting is invited to:

    a) note that the following:

        i.   Normal operation is to provide an automatic handoff service between adjacent FIRs providing CPDLC services;

        ii. The Current Data Authority is responsible for initiating the automatic service

        iii. Procedures described in GOLD section 2.2.4.5 must be followed to enable a successful automatic handoff**;** and

    b) discuss any relevant matters as appropriate

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