



Chapter 14

CONTROLLER-PILOT DATA LINK COMMUNICATIONS (CPDLC)

14.1 General

14.1.1 The CPDLC application provides a means of communication between the controller and pilot, using data link for ATC communication.

14.1.2 This application includes a set of clearance / information / request message elements which correspond to the phraseologies used in the radiotelephony environment.

14.1.3 Ground and airborne systems shall allow for messages to be appropriately displayed, printed when required and stored in a manner that permits timely and convenient retrieval should such action be necessary.

14.1.4 Where applicable, the communication procedures for the provision of CPDLC shall be in accordance with Annex 10, Volume III, Part I, Chapter 3. Message element intent and text and associated procedures are, in general, consistent with Chapter 12 — Phraseologies.

14.2 Establishment of CPDLC

14.2.1 Publication of information

CPDLC shall be established in sufficient time to ensure that the aircraft is communicating with the appropriate ATC unit. Information concerning when and, where applicable, where, the air or ground systems should establish CPDLC, shall be published in Aeronautical Information Publications.

14.2.2 Airborne-initiated CPDLC

14.2.2.1 When an ATC unit receives an unexpected request for CPDLC from an aircraft, the circumstances leading to the request shall be obtained from the aircraft to determine further action.

14.2.2.2 When the ATC unit rejects a request for CPDLC, it shall provide the pilot with the reason for the rejection using an appropriate CPDLC message.

14.2.3 ATC unit-initiated CPDLC

14.2.3.1 An ATC unit shall only establish CPDLC with an aircraft if the aircraft has no CPDLC link established, or when authorized by the ATC unit currently having CPDLC established with the aircraft.

14.2.3.2 When a request for CPDLC is rejected by an aircraft, the reason for the rejection shall be provided using CPDLC down link message element NOT CURRENT DATA AUTHORITY or message element NOT AUTHORIZED NEXT DATA AUTHORITY or ICAO FACILITY DESIGNATION of CURRENT DATA AUTHORITY, as appropriate. Local procedures shall dictate whether the reason for rejection is presented to the controller. No other reasons for airborne rejection of ATC unit-initiation of CPDLC shall be permitted

14.3 Exchange of operational CPDLC messages

14.3.1 The controller or pilot shall construct CPDLC messages using the defined message set, a free text message or a combination of both

14.3.1.1 The use of long messages or messages with multiple clearance elements or messages with a combination

of clearances and information should be avoided where possible.

14.3.1.2 When CPDLC is being used, and the intent of the message is included in the CPDLC message set contained in Appendix 5 PANS ATM DOC 4444, the associated message shall be used.

14.3.1.3 Except as provided by 14.3.5.1, when a controller or pilot communicates via CPDLC, the response should be via CPDLC. When a controller or pilot communicates via voice, the response should be via voice.

14.3.1.4 If a CPDLC message that requires an operational response is subsequently negotiated via voice, an appropriate CPDLC message closure response shall be sent, to ensure proper synchronization of the CPDLC dialogue.

14.3.2 Message attributes dictate certain message hand-ling requirements for the CPDLC user receiving a message. Each CPDLC message has three attributes: Urgency, Alert and Response.

14.3.2.1 URGENCY

The urgency attribute delineates the queuing requirements for received messages that are displayed to the end-user. Urgency types are presented as:

Urgency attribute (uplink and downlink)

Type	Description	Precedence
D	Distress	1
U	Urgent	2
N	Normal	3
L	Low	4

14.3.2.2 **ALERT** The alert attribute delineates the type of alerting required upon message receipt. Alert types are presented in following table table:

Alert attribute (uplink and downlink)

Type	Description	Precedence
H	High	1
M	Medium	2
L	Low	3
N	No alerting required	4

14.3.2.3 Response

14.3.2.3.1 The response attribute delineates valid responses for a given message element. Response types for uplink messages are presented in Table 14-A for uplink messages and Table 14-B for downlink messages.

14.3.2.3.2 When a multi-element message requires a response and the response is in the form of a single message element, the response shall apply to all message elements.

Note.— For example, given a multi-element message containing CLIMB TO FL310 MAINTAIN MACH .84, a WILCO response applies to, and indicates compliance with, both elements of the message.

14.3.2.3.3 When a single message element clearance or any part of a multi-element clearance message cannot be complied with, the pilot shall send an UNABLE response for the whole message.

14.3.2.3.4 The controller shall respond with an UNABLE message that applies to all elements of the request when no element(s) of a single or multi-element clearance request can be approved. The current clearance(s) shall not be restated.

14.3.2.3.5 When all elements of a single or multi-element clearance request can be accommodated, the controller shall respond with clearances corresponding to each element of the request. This response should be a single uplink message.

14.3.2.3.6 When a controller can only partially accommodate multi-element



clearance requests, the requests shall be responded to with clearances corresponding to the parts that can be accommodated, and for the parts that cannot be accommodated the current clearance shall be restated or an alternative clearance shall be given.

and the response attribute for the message is Y, when utilized, the single response message shall contain the corresponding number of replies and in the same order.

14.3.2.3.7 When a CPDLC message contains more than one message element

Table 14 A Response attribute (uplink)

Type	Response required	Valid responses	Precedence
W/U	Yes	WILCO, UNABLE, STANDBY, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, LOGICAL ACKNOWLEDGMENT (only if required), ERROR	1
A/N	Yes	AFFIRM, NEGATIVE, STANDBY, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, LOGICAL ACKNOWLEDGMENT (only if required), ERROR	2
R	Yes	ROGER, UNABLE, STANDBY, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, LOGICAL ACKNOWLEDGMENT (only if required), ERROR	3
Y	Yes	Any CPDLC downlink message, LOGICAL ACKNOWLEDGEMENT (only if required)	4
N	No, unless logical acknowledgement required	LOGICAL ACKNOWLEDGMENT (only if required), NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, ERROR	5

Table 14 B Response attribute (downlink)

Type	Response required	Valid responses	Precedence
Y	Yes	Any CPDLC uplink message, LOGICAL	1



		ACKNOWLEDGEMENT (only if required)	
N	No, unless logical acknowledgement required	LOGICAL ACKNOWLEDGMENT (only if required), SERVICE UNAVAILABLE, FLIGHT PLAN NOT HELD, ERROR	2

14.4 Transfer of CPDLC

Note.— Details on CPDLC transfer can be found in the Manual of Air Traffic Services Data Link Applications (Doc 9694).

14.4.1 When CPDLC is transferred, the transfer of voice communications and CPDLC shall commence concurrently.

14.4.2 When an aircraft is transferred from an ATC unit where CPDLC is available to an ATC unit where CPDLC is not available, CPDLC termination shall commence concurrent with the transfer of voice communications.

14.4.3 When a transfer of CPDLC results in a change of data authority, and there are still messages for which the closure response has not been received (i.e. messages outstanding), the controller transferring the CPDLC shall be informed.

14.4.3.1 If the controller needs to transfer the aircraft without replying to any downlink message(s) outstanding, the system shall have the capability to automatically send the appropriate closure response message(s). In such cases, the contents of any automatically sent closure response message(s) shall be promulgated in local instructions / MATS II.

14.4.3.2 When the controller decides to transfer the aircraft without receiving pilot responses to any uplink message(s) outstanding, the controller should revert to voice communications to clarify any

ambiguity associated with the message(s) outstanding.

14.5 Free text messages

The use of free text messages by controllers or pilots, other than pre-formatted free text messages, should be avoided.

Note 1.— Whilst it is recognized that non-routine and emergency situations may necessitate use of free text, avoidance of utilizing free text messages is intended to reduce the possibility of misinterpretation & ambiguity.

Note 2.— Provisions concerning the use of pre-formatted free text messages are contained in Annex 10, Volume II,

14.6 Emergencies, hazards

14.6.1 When a CPDLC emergency message is received, the controller shall acknowledge receipt of the message by the most efficient means available.

14.6.2 When responding via CPDLC to a report indicating unlawful interference, uplink message ROGER 7500 shall be used.

14.6.3 When responding via CPDLC to all other emergency or urgency messages, uplink message ROGER shall be used.

14.6.4 When a CPDLC message requires a logical acknowledgment and/or an operational response, and such a response

is not received, the pilot or controller, as appropriate shall be alerted.

14.7 Equipment failure procedures

14.7.1 Failure of CPDLC

14.7.1.1 The controller and pilot shall be alerted to the failure of CPDLC as soon as the failure has been detected.

14.7.1.2 When a controller or pilot is alerted that CPDLC has failed, and the controller or pilot needs to communicate prior to CPDLC being restored, the controller or pilot should revert to voice, if possible, and preface the information with the phrase: *CPDLC FAILURE*.

14.7.1.3 Controllers having a requirement to transmit information concerning a complete CPDLC ground system failure to all stations likely to intercept, should preface such transmission by the general call *ALL STATIONS CPDLC FAILURE*, followed by the identification of the calling station.

Note.— No reply is expected to such general calls unless individual stations are subsequently called to acknowledge receipt.

14.7.1.4 When CPDLC fails and communications revert to voice, all CPDLC messages outstanding should be considered not delivered and the entire dialogue involving the messages outstanding should be recommenced by voice.

14.7.1.5 When CPDLC fails but is restored prior to a need to revert to voice communications, all messages outstanding should be considered not delivered and the entire dialogue involving the messages outstanding should be recommenced via CPDLC.

14.7.2 Intentional shutdown of CPDLC

14.7.2.1 When a system shutdown of the communications network or the CPDLC ground system is planned, a NOTAM shall be published to inform all affected parties of the shutdown period and, if necessary, the details of the voice communication frequencies to be used.

14.7.2.2 Aircraft currently in communication with the ATC unit shall be informed by voice or CPDLC of any imminent loss of CPDLC service.

14.8 Testing of CPDLC

Where the testing of CPDLC with an aircraft could affect the air traffic services being provided to the aircraft, coordination shall be effected prior to such testing.

