



International Civil Aviation Organization

ICAO The Ninth Meeting of the APANPIRG ATM Sub-Group (ATM/SG/9)

Video Teleconference, 01 – 05 November 2021

Agenda Item 5: ATM Systems (Modernisation, Seamless ATM, CNS, ATFM)

THE PROGRESS TOWARD TRIAL OPERATION OF DOMESTIC CONTROLLER PILOT DATA LINK COMMUNICATIONS (CPDLC) IN JAPAN

(Presented by Japan)

SUMMARY

This paper presents the progress of preparation for trial operation of domestic Controller-Pilot Data Link Communications (CPDLC). Japan Civil Aviation Bureau (JCAB) plans to initiate a trial operation of domestic CPDLC in March 2022.

1. INTRODUCTION

1.1 ICAO Doc 4444 (PANS-ATM) defines that Controller-Pilot Data Link Communications (CPDLC) is a means of communication between controller and pilot, using data link for ATC communication. This application includes a set of clearance/information/request message elements that correspond to the phraseologies used in the radiotelephony environment.

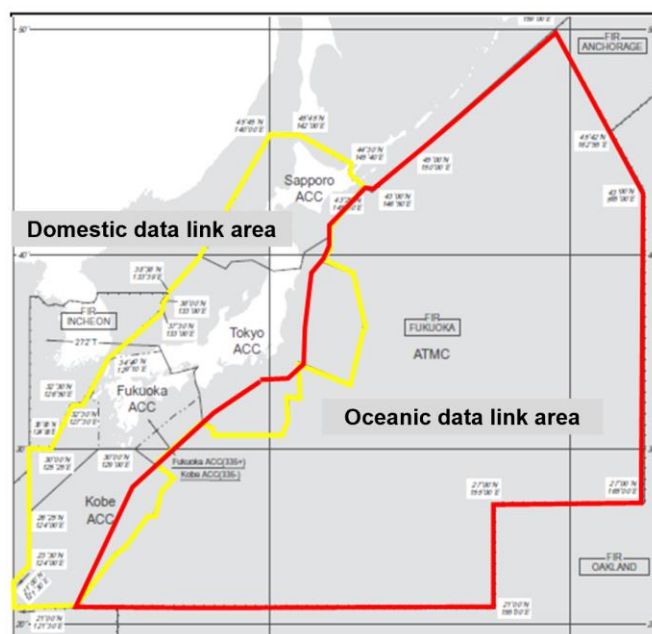
1.2 Currently, CPDLC is already available in the Oceanic airspace in the Fukuoka Flight Information Region (FIR). CPDLC is the primary means of communication for aircraft that have established data link connections, giving various benefits to pilots and also ATC controllers.

1.3 CPDLC improves communication capabilities by reducing voice channel congestion and enabling the use of CPDLC-related automation. Furthermore, CPDLC generally provides us with several benefits even in domestic use. Text-based messages can reduce the human error caused by voice, and ensure more urgent voice communication.

1.4 As presented on the IP09 at the ATM/SG 8, JCAB expands this operation into domestic airspace where radar surveillance service is available in order to increase ATC capacity and improve its safety. JCAB plans to introduce it on March 1, 2022.

2. DISCUSSION

2.1 The figure below shows the current service area in the oceanic with a red line and the upcoming service in the domestic area with a yellow line. The applicable altitude in the domestic area is at or above FL335 within Sapporo, Tokyo, and Fukuoka Area Control Centers.



2.2 Operational procedures of the domestic CPDLC will be published by Aeronautical Information Publication Supplement (AIP SUP).

2.3 Domestic CPDLC utilizes VHF datalink or Satellite-based data link, no HF data links. Available Data Link Systems: Future Air Navigation System (FANS) 1/A; Available Data Link Subnetworks: VDL Mode A, VDL Mode 2, or Satellites.

2.4 JCAB starts operation from the following limited items and considers expanding the CPDLC area or CPLDC message items after conducting evaluation and verification.

- Transfer of Communications
(UM117 CONTACT [ICAO unit name] [frequency])
- Stuck Microphone
(UM157 CHECK STUCK MICROPHONE [frequency])
- Beacon Codes
(UM123 SQUAWK [beacon code])
- Advisory
(UM154 RADAR SERVICES TERMINATED)

* As a general rule, free text messages (downlink) cannot be used in domestic data link airspace.

2.5 The aircraft must first log on to the ground system "RJJJ" in order to make a CPDLC connection. When departing from a domestic airport, it is desirable to log on to the ground or complete the logon by the time you enter the domestic data link airspace after takeoff.

*When entering the oceanic data link area, it is necessary to log on 45 to 15 minutes before entering the airspace as per the existing regulations.

2.6 For aircraft flying between domestic and oceanic datalink airspaces, AFN log on are maintained and continue to receive ATS datalink services.

From Domestic airspace to Oceanic airspace

2.7 If data link operation has already been established in the domestic area, the instruction for HF communication with related ATS facility will be uplinked near the boundary, and the CPDLC authority will be transferred at the same time as the transfer of control. In the oceanic area, data link operations will continue as the current operation.

From Oceanic airspace to Domestic airspace

2.8 If data link operation has already been established in the oceanic area, the instruction for VHF communication with the ATS facility will be uplinked near the boundary, and the CPDLC authority will be transferred at the same time as the transfer of control. In the domestic area, data link operations will continue seamlessly.

2.9 Further detailed requirements or procedures will be notified through AIP SUP shortly. After sufficient evaluation through trial operation and initial operation, it is expected to include additional messages, such as vertical/speed/reroute clearances, and to expand its data link airspace into lower areas/sectors below FL335.

2.10 CPDLC enables us to send even complex instructions without misunderstanding, workload, nor lengthy voice communication. It could also deliver the messages to the aircraft's flight management system with quick and accurate loading. Thus, it would support to achieve Trajectory-Based Operations (TBO). Aiming to TBO, JCAB proceeds with evaluation and verification of domestic CPDLC to improve and enhance the operations.

3. ACTION BY THE MEETING

3.1 The meeting is invited to note the information contained in this paper.

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