International Civil Aviation Organization

Sixth Meeting of the Frequency Management Working Group (FM WG/6)

(Cairo, Egypt, 27 – 28 September 2026)

Agenda Item 4: Frequency Congestion Issue

CONSIDERATIONS FOR CPDLC IMPLEMENTATION IN THE MID REGION

(Presented by the Secretariat)

Summary

The MIDANPIRG/23 Meeting requested the CNS SG to initiate work on Controller-Pilot Data Link Communications (CPDLC) as a potential means to alleviate VHF frequency congestion in the MID Region. This paper presents the benefits of CPDLC, outlines the associated operational and technical implementation requirements, and operating cost considerations. The paper is submitted for the consideration of the FM WG with a view to identifying the most appropriate approach for addressing the matter, including the assessment of the feasibility of CPDLC implementation in the MID Region.

Action by the meeting is at paragraph 3.

REFERENCES

- MIDANPIRG/23 & RASG-MID/13 Meeting (14-18 June 2026, Cairo)
- ICAO DOC 4444, PANS-ATM
- ICAO DOC,10037, Global Operational Datalink (GOLD)

1. INTRODUCTION

1.1 Controller-Pilot Data Link Communications (CPDLC) is a digital communication system that enables air traffic controllers and flight crews to exchange standardized operational messages through a data link rather than relying solely on voice radio communications.

1.2 The concept of CPDLC emerged from the limitations of conventional voice communications, particularly in oceanic and remote airspace where VHF coverage was unavailable and pilots relied on HF radio. HF communications were often affected by poor signal quality, atmospheric interference, frequency congestion, and long communication delays.

1.3 The MIDANPIRG/23 meeting (Cairo, Egypt, 14-18 June 2026) recalled the issue of frequency congestion in the MID Region and discussed a set of actions to mitigate it. The meeting requested CNS SG to initiate work on CPDLC, recognizing its potential to alleviate frequency congestion in the Region. The meeting also noted that the current equipage rate within the Region remains limited.

1.4 The primary objective of CPDLC is to improve the safety, efficiency, and capacity of air navigation services by providing a reliable supplementary means of communication between ATC and pilots. ICAO provisions in Doc 4444 (Procedures for Air Navigation Services-Air Traffic Management (PANS-ATM)) support the use of CPDLC to exchange ATS clearances, requests, reports, and other operational messages.

2. DISCUSSION

2.1 The ICAO MID Region continues to experience strong growth in both passenger and overflight traffic, driven by its strategic position. As traffic increases, there may be merit in exploring technologies such as CPDLC to complement existing voice communications, enhance operational efficiency, and support future airspace capacity requirements.

2.2 The principal benefits of CPDLC include:

a) Reduced voice frequency congestion by transferring routine controller-pilot communications from voice to digital data link;
b) Enhanced safety through standardized, unambiguous text messages that reduce the risk of misheard or misunderstood instructions;
c) Lower controller and pilot workload through streamlined communication processes and reduced need for repetitive voice transmissions;
d) Increased airspace capacity by supporting more efficient management of growing traffic levels;
e) Improved situational awareness by providing a permanent electronic record of exchanged messages for both pilots and controllers.

2.3 The implementation of CPDLC requires a combination of regulatory, operational, technical, and human resource elements to ensure safe and effective operation, inter-alia, the following:

2.3.1 Deployment of Ground system capability of ATS automation systems capable of supporting CPDLC message;

2.3.2 Aircraft equipped with approved CPDLC avionics and compatible communication systems;

2.3.3 Training for controllers, pilots, engineers, and operational personnel on normal, abnormal, and contingency procedures;

2.3.4 Reliable and interoperable communication infrastructure including Air-Ground communication links (SATCOM, VDL, .etc), communication service provider (CSPs), necessary backup and redundancies; and

2.3.5 Establishment of national regulations, operational approvals, and procedures aligned with PANS-ATM (Doc 4444) and other applicable ICAO provisions.

2.4 Successful CPDLC implementation depends not only on technical readiness but also on regional harmonization, stakeholder coordination, and a robust safety and operational framework.

2.5 CPDLC implementation feasibility should be assessed through a cost-benefit analysis that takes into account recurring CSP charges, ground system upgrades, aircraft equipage requirements,

and the investment needed to establish and maintain the supporting communication infrastructure. The assessment should ensure that the anticipated operational benefits justify the associated implementation and long-term operating costs.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) discuss the operational needs, benefits and requirements for CPDLC implementation in the MID Region;
b) encourage State to share relevant CPDLC experience;
c) agree on the next steps, including assessing the feasibility of CPDLC implementation in the MID Region, considering operational needs, expected benefits, implementation requirements, and associated costs.

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