

# Advisory Circular

---

## CONTROLLER PILOT DATA LINK COMMUNICATIONS AND AUTOMATIC DEPENDENT SURVEILLANCE-CONTRACT (CPDLC AND ADS-C)

GENERAL .....	1
PURPOSE .....	1
APPLICABILITY .....	1
RELATED REGULATIONS .....	1
RELATED ADVISORY CIRCULARS .....	1
CANCELLATION .....	1
EFFECTIVE DATE .....	1
OTHER REFERENCES .....	2
1 DEFINITIONS .....	3
2 INTRODUCTION .....	3
3 AIRWORTHINESS REQUIREMENTS .....	3
4 OPERATIONAL APPROVAL .....	3

### GENERAL

Advisory Circulars (ACs) are issued by the Director-General of Civil Aviation (DGCA) from time to time to provide practical guidance or certainty in respect of the statutory requirements for aviation safety. ACs contain information about standards, practices and procedures acceptable to CAAS. An AC may be used, in accordance with section 3C of the Air Navigation Act (Cap. 6) (ANA), to demonstrate compliance with a statutory requirement. The revision number of the AC is indicated in parenthesis in the suffix of the AC number.

### PURPOSE

This AC provides guidance to demonstrate compliance with the requirements regarding, and information related to an application for, an approval for operations of a data link system in accordance with ANR-98.

### APPLICABILITY

This AC is applicable to the operator seeking an approval for operations with CPDLC and ADS-C.

### RELATED REGULATIONS

This AC relates specifically to Division 6 in Part 2 of ANR-98.

### RELATED ADVISORY CIRCULARS

- AC 98-1-1 Application for an Approval to Conduct a Special Operation

### CANCELLATION

This AC supersedes AC AOC-20.

### EFFECTIVE DATE

This AC is effective from 1 October 2018.

**OTHER REFERENCES**

- FAA AC 20-140C Guidelines for design approval of aircraft data link communication systems supporting air traffic services (ATS)

## **1 DEFINITIONS**

- 1.1 **Future air navigation system (FANS 1/A)** is the common industry name for the communication / surveillance system that incorporates CPDLC and ADS-C.
- 1.2 **Controller-pilot data link communications (CPDLC)** is a means of communication between controller and pilot, using data link for ATC communications.
- 1.3 **Automatic dependent surveillance – contract (ADS-C)** is a means by which the terms of an ADS-C agreement will be exchanged between the ground system and the aircraft, via a data link, specifying the conditions under which ADS-C reports would be initiated, and the data that would be contained in the report.

## **2 INTRODUCTION**

- 2.1 CPDLC and ADS-C are widely implemented in the Pacific, Alaska and NAT HLA airspace as part of the ICAO CNS/ATM programme. CPDLC is also being implemented in the European ECAC as well as the Indian Oceanic region.
- 2.2 Together with ADS-B (broadcast) and other data link systems such as PDC (pre-departure clearance), FIS (flight information services), TIS (traffic information services) and D-ATIS, to name a few, CPDLC / ADS-C and ADS-B would feature prominently in the NEXTGEN and/or SESAR airspace management.

## **3 AIRWORTHINESS REQUIREMENTS**

- 3.1 Installation of data link equipage requires airworthiness certification. The operator needs to furnish to the CAAS documents such as AFM entry or amendment to the aircraft TC or STC attesting to compliance with the standards set out in FAA AC 20-140C.

## **4 OPERATIONAL APPROVAL**

- 4.1 While guidelines for operational approval are available in FAA AC 120-70A, in view that the worldwide operation of data link may not have been effectively harmonised, the operator has to develop his own operating policy/ procedures based specifically on the requirements of the areas / regions of his intended operations.
- 4.2 The operational approval by the CAAS for CPDLC / ADS-C operation is worldwide and to ensure compliance with various regional requirements the operator should refer to the following publications for guidance:
  - (a) Data Link Communication Operational Authorisation Information Package (14 March 2006);
  - (b) FANS Operations Manual (FOM);
  - (c) FAA Oceanic NOTAMS;
  - (d) FAA Pacific/Alaska Chart Supplements and North Atlantic Doc 001;
  - (e) North Atlantic Operations and Airspace Manual
  - (f) ICAO Regional Supplement Doc 7030; and
  - (g) State Aeronautical Information Publications (AIPs)
- 4.3 Submissions for Application

- 4.3.1 The following items should be submitted with the application letter:
- (a) Evidence of compliance with airworthiness requirements;
  - (b) Equipment maintenance programme including training of personnel;
  - (c) Operating policy and procedures;
  - (d) Flight and dispatch crew training;
  - (e) MELs; and
  - (f) Other operational issues.
- 4.4 Flight Crew Training
- 4.4.1 As required in Regulation 4 of ANR-98, the operator has to submit its training programme for CAAS's approval.
- 4.4.2 Based on the operator's operational experience and the limitations of the equipment or area of operation, the training can be ground based, computer based, or in a suitably equipped flight simulator
- 4.4.3 For flight crew with no previous data-link experience, training through LOFT exercises in a flight simulator is recommended.
- 4.4.4 For the syllabus contents, the operator's training programme should be based on FANS-1/A Operations Manual (FOM) and should cover the following areas:
- (a) Acronyms (FOM Part 2);
  - (b) General concept of digital and analogue communications;
  - (c) Expected flight crew response;
  - (d) ATS coordination;
  - (e) Aircraft Communication components, displays, alerts (OEM document);
  - (f) Interface with other aircraft;
  - (g) AFM information;
  - (h) MAL provisions;
  - (i) Data link event reports;
  - (j) Data link malfunction or irregularity reports; and
  - (k) Human factor – lesson learned.
- 4.5 Grant of Operational Approval
- 4.5.1 The operator should take note of the Data Link Communication Operational Authorisation Information Package (14 March 2006).
- 4.5.2 At CAAS's discretion, the operator may have to demonstrate adequacy of his training through participation by CAAS officers in the operator's training sessions or line operations.