



ICAO

International Civil Aviation Organization  
North American, Central American and Caribbean Office

INFORMATION PAPER

NACC/WG/4 — IP/35  
17/03/14

**Fourth North American, Central American and Caribbean Working Group Meeting  
(NACC/WG/4)**

Ottawa, Canada, 24 to 28 March 2014

**Agenda Item 3 Follow-up on the NAM/CAR Regional Performance-Based Air Navigation  
Implementation Plan (NAM/CAR RPBANIP) Progress  
3.3 ANI/WG and other regional group progress reports**

**CANADIAN IMPLEMENTATION OF CPDLC AND ADS-C**

(Presented by Canada)

**EXECUTIVE SUMMARY**

This Information Paper provides an overview of the status of CPDLC and ADS-C implementation by Canada.

*Strategic  
Objectives:*

- Safety
- Air Navigation Capacity and Efficiency

*References:*

- *Global Operational Data Link Document - Edition 2*

**1. Introduction**

1.1 Canada has been involved with the implementation of FANS 1/A data link (i.e. based on RTCA DO-258A/EUROCAE ED-100A (or 100) avionics standards) beginning with the ICAO North Atlantic (NAT) Region data link programme, which commenced in 2001.

1.2 As of January 2001, Automatic Dependent Surveillance - Contract (ADS-C) was implemented in the Gander Oceanic Flight Information Region (FIR) using a centralized system which supported basic functions only (waypoint change event and periodic meteorological reporting). A local ADS-C system was commissioned in early 2005 and automated lateral and vertical deviation contracts were implemented in early 2011.

1.3 Use of ADS-C in Canadian domestic airspace has been limited to the Edmonton FIR, where a centralized service supporting basic functions only (see paragraph 1.2 above) is currently provided. During the current year, it is planned to begin introducing ADS-C functionality into the domestic flight data processing system. Additional functionality will be introduced in stages, and will eventually be used to support separation provision as per the *Global Operational Data Link Document* (GOLD), which is used by NAV CANADA as guidance material for its FANS 1/A data link implementations. At the current time, it is planned to implement this ADS-C functionality only in the Edmonton and Vancouver FIRs.

1.4 The implementation of Controller Pilot Data Link Communications (CPDLC) in most of the ICAO NAT Region followed a phased approach. As of late 2002, Phase 1 & 2 CPDLC was implemented in the Gander Oceanic FIR with full implementation (Phase 4) taking place in early 2008. In this regard, it should be noted that, with the exception of the New York Oceanic and Santa Maria Oceanic FIRS, CPDLC is not used to provide re-routes in the ICAO NAT Region. It is planned to introduce this functionality in the Gander Oceanic FIR in 2015.

1.5 CPDLC is being introduced in Canadian domestic airspace in a phased approach, similar to the one used in the ICAO NAT Region. With the exception of the Toronto FIR, all Canadian domestic FIRs provide CPDLC services at the Phase 3 level. This translates to the ability for flights to make basic vertical and speed requests and to receive appropriate clearances via CPDLC. Flights will also be able to report leaving and level at specified altitudes. It is planned that the Toronto FIR will implement CPDLC services at the Phase 3 level mid-2014. It is planned to implement the final phase, Phase 4, in all Canadian domestic FIRs concurrently; an implementation date has not yet been determined. A chart of the Canadian data link service areas is provided at Attachment A.

1.6 The use of CPDLC or ADS-C is not mandatory in the Canadian domestic airspace, nor are there any restrictions to flights which are not appropriately equipped. In the ICAO NAT Region, with the exception of the New York Oceanic FIR, it has been agreed to implement a data link mandate. The details of this mandate are explained, *inter alia*, in Aeronautical Information Circular (AIC) 40/12 which was issued by Canada. This AIC is provided at Attachment B.

## **2. Action by the Meeting**

2.1 The NACC WG is invited to note the information provided.

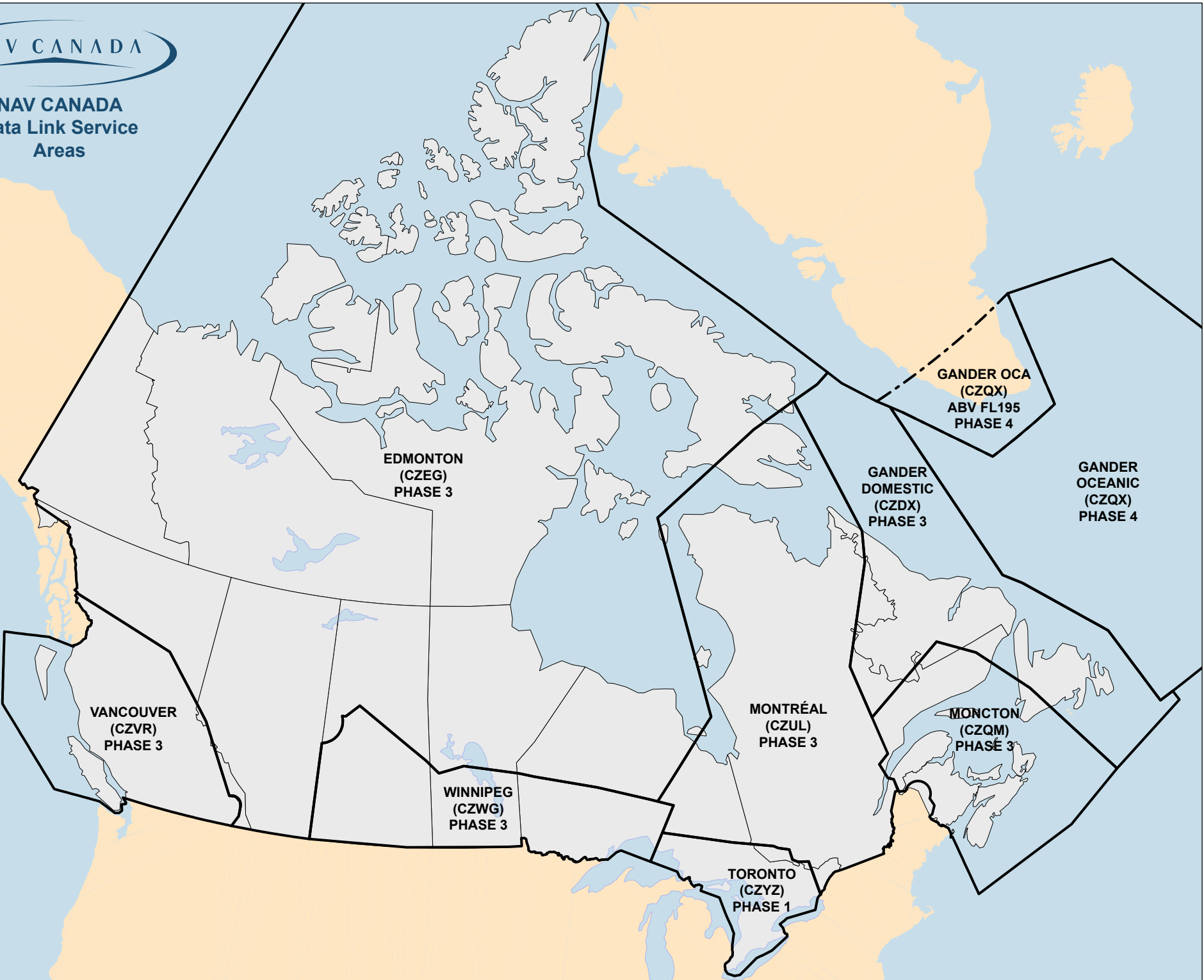
**Attachment A** - Chart of Canadian Data Link Service Areas (provided separately)

**Attachment B** - AIC 40/12: Notice of Mandate for Data Link Services in the North Atlantic Airspace (provided separately)

-----



**NAV CANADA  
Data Link Service  
Areas**



Effective date: December 12, 2013

# AERONAUTICAL INFORMATION CIRCULAR 40/12

## NOTICE OF MANDATE FOR DATA LINK SERVICES IN THE NORTH ATLANTIC REGION

(Supersedes AIC 24/12)

### Introduction

It is widely acknowledged that data link services enhance surveillance and intervention capabilities, and its availability constitutes a crucial component in providing safe, efficient, and sustainable operations, as well as facilitating the future evolution of the air traffic management (ATM) system in the North Atlantic (NAT) region.

As notified in State letter EUR/NAT 12-0003.TEC (dated 04 January 2012), all aircraft intending to conduct flights in the portions of the NAT regional airspace defined below shall be fitted with, and shall operate controller-pilot data link communications (CPDLC) and Automatic Dependent Surveillance-Contract (ADS-C) equipment.

### Purpose of Circular

This aeronautical information circular (AIC) outlines the defined airspace for the data link mandate, methods of indicating equipage in flight plan, and details the timelines for implementation.

### Background

The CPDLC and ADS-C implementation based on RTCA DO-258A/EUROCAE ED-100A (or ED-100) avionics standards started in the International Civil Aviation Organization (ICAO) NAT region at the end of 1990. Data link service enhances ATM surveillance and intervention capabilities and is seen as instrumental in reducing the collision risk, particularly in the vertical plane, and meeting the NAT target level of safety (TLS). The use of ADS-C vertical and horizontal deviation event contracts to conformance monitor aircraft help towards quickly resolving this significant safety issue.

The use of ADS-C would also greatly facilitate search and rescue operations and location of an aircraft following an accident in oceanic airspace.

In order to achieve the foregoing safety objectives, it is important to increase the level of data link equipage in the NAT. The current level of data link usage in the NAT has reached 45-50% and continues to grow. Introducing a mandatory data link equipment carriage requirement will increase the NAT data link equipage level and help in meeting the NAT TLS.

### Area of Applicability

The NAT data link mandate will be implemented incrementally, via two phases.

The first phase will commence 7 February 2013, with all aircraft operating on or at any point along two specified tracks within the NAT organized track system (OTS) from flight level (FL) 360 to FL 390 inclusive required to be fitted with and using CPDLC and ADS-C equipment. The mandate will be in effect during the OTS validity period, and is applicable to those flights that will cross 30° W during the published track times.

The specified tracks will be those for which the predicted loading is in the higher percentage of overall predicted NAT OTS loading on that day and shall be identified in the Remarks section of the NAT OTS message. Non compliant aircraft will not be permitted to join or cross the specified tracks during the NAT OTS validity period. However, continuous climb or descent through the specified levels may be available, subject to traffic.

The specified tracks will be published as part of the NAT OTS message in REMARKS 2.

**Example:**

REMARKS:

1. TMI IS 108 AND OPERATORS ARE REMINDED TO INCLUDE THE TMI NUMBER AS PART OF THE OCEANIC CLEARANCE READ BACK.
2. ADS-C AND CPDLC MANDATED OTS ARE AS FOLLOWS  
TRACK B 360 370 380 390  
TRACK D 360 370 380 390  
END OF ADS-C AND CPDLC MANDATED OTS

The second phase will commence 5 February 2015 in specified portions of NAT minimum navigation performance specifications (MNPS) airspace. The vertical and lateral dimensions of the airspace will be defined and advertised at a later date.

### Flight Planning

Operators intending to conduct flights in the airspace defined above shall be fitted with and shall operate CPDLC and ADS-C. The appropriate equipage to be indicated in Item 10 (equipment and capabilities) of the ICAO flight plan is as follows:

- D1 ADS-C with FANS 1/A capabilities and
  - J2 CPDLC FANS 1/A HFDL and/or
  - J5 CPDLC FANS 1/A SATCOM (INMARSAT) and/or
  - J7 CPDLC FANS 1/A SATCOM (Iridium).

### Further Information

For further Information, please contact:

Doug Dillon, Manager  
ACC Operations, Gander Area Control Centre  
NAV CANADA  
P.O. Box 328  
Gander, NL A1V 1W7

Direct line: 709-651-5223  
E-mail: [dillond@navcanada.ca](mailto:dillond@navcanada.ca)



Rudy Kellar  
Vice President, Operations