



# Advisory Circular

**Subject: Formal Arrangements - Aeronautical Data/Information**

Issuing Office:	Civil Aviation, Standards	Document No.:	AC 803-011
File Classification No.:	Z 5000-34	Issue No.:	01
RDIMS No.:	18236446-V6	Effective Date:	2022-05-31

---

## Table of contents

<b>1.0</b>	<b>Introduction</b> .....	<b>2</b>
1.1	Purpose .....	2
1.2	Applicability .....	2
1.3	Description of changes.....	2
<b>2.0</b>	<b>References and requirements</b> .....	<b>2</b>
2.1	Reference documents .....	2
2.2	Cancelled documents.....	2
2.3	Definitions and abbreviations .....	2
<b>3.0</b>	<b>Background</b> .....	<b>4</b>
3.1	Aeronautical Information Service (AIS).....	5
3.2	Originators of aeronautical data and aeronautical information .....	5
3.3	Data Interoperability .....	5
<b>4.0</b>	<b>Requirements for Formal Arrangements</b> .....	<b>6</b>
4.1	Aeronautical Data Originator.....	6
4.2	Data Format .....	6
4.3	Implementation.....	7
<b>5.0</b>	<b>Information management</b> .....	<b>7</b>
<b>6.0</b>	<b>Document history</b> .....	<b>7</b>
<b>7.0</b>	<b>Contact us</b> .....	<b>8</b>

## 1.0 Introduction

- (1) This Advisory Circular (AC) is provided for information and guidance purposes. It describes an example of an acceptable means, but not the only means, of demonstrating compliance with regulations and standards. This AC on its own does not change, create, amend or permit deviations from regulatory requirements, nor does it establish minimum standards.

### 1.1 Purpose

- (1) The purpose of this document is to provide information on what formal arrangements are, why they exist, what can be expected from NAV CANADA and what will be required from the originators of aeronautical data and aeronautical information.

### 1.2 Applicability

- (1) This document applies to all parties responsible for originating aeronautical data/information including, Transport Canada Civil Aviation (TCCA) personnel, aerodrome operators, NAVAID owners and instrument flight procedure sponsors.

### 1.3 Description of changes

- (1) Not applicable.

## 2.0 References and requirements

### 2.1 Reference documents

- (1) It is intended that the following reference materials be used in conjunction with this document:
  - (a) [\*Aeronautics Act\*](#) (R.S.C., 1985, c. A-2)
  - (b) [\*Civil Air Navigation Services Commercialization Act\*](#) (S.C. 1996, c. 20)
  - (c) [Part VIII, Subpart 03](#) of the *Canadian Aviation Regulations* (CARs) — Aeronautical Information Services
  - (d) International Standards and Recommended Practices, Aeronautical Charts (Annex 4 to the Convention on International Civil Aviation)
  - (e) International Standards and Recommended Practices, Aeronautical Information Services (Annex 15 to the Convention on International Civil Aviation)
  - (f) Procedures for Air Navigation Services — Aeronautical Information Management (ICAO - Doc 10066)
  - (g) Aeronautical Information Services Manual (ICAO - Doc 8126)
  - (h) Standards for Processing Aeronautical Data (RTCA/DO-200B)

### 2.2 Cancelled documents

- (1) Not applicable.

### 2.3 Definitions and abbreviations

- (1) The following **definitions** are used in this document:

- (a) **Aeronautical data:** A representation of aeronautical facts, concepts or instructions in a formalized manner suitable for communication, interpretation or processing. E.g. aerodrome location indicator <CYOW>, hours of operation <H24>.
- (b) **Aeronautical data chain:** A series of interrelated links wherein each link provides a function that facilitates the origination, transmission and use of aeronautical data for a specific purpose.
- (c) **Aeronautical information:** Information resulting from the assembly, analysis and formatting of aeronautical data. E.g. Aeronautical Information Publication (AIP), instrument flight procedures, Aeronautical Information Circulars (AIC).
- (d) **Aeronautical Information Product:** Aeronautical data and aeronautical information provided either as digital data sets or as a standardized presentation on paper or electronic media. Aeronautical information products include:
  - (i) Canada Air Pilot (CAP)
  - (ii) Canada Flight Supplement (CFS)
  - (iii) Canada Water Aerodrome Supplement (CWAS)
  - (iv) Aeronautical Information Circular (AIC)
  - (v) Aeronautical Charts
  - (vi) AIP Canada (including Amendments and Supplements)
  - (vii) NOTAMs
- (e) **Aeronautical Information Management (AIM):** the dynamic, integrated management of aeronautical information through the provision and exchange of quality-assured digital aeronautical data, in collaboration with all parties.
- (f) **Aeronautical Information Service (AIS):** A service established within the defined area of coverage responsible for the provision of aeronautical data and aeronautical information necessary for the safety, regularity and efficiency of air navigation.
- (g) **Data format:** A structure of data elements, records and files arranged to meet standards, specifications or data quality requirements.
- (h) **Data set:** An identifiable collection of data.
- (i) **Origination** (aeronautical data or aeronautical information): The creation of the value associated with new data or information or the modification of the value of existing data or information.
- (j) **Originator** (aeronautical data or aeronautical information): An entity that is accountable for data or information origination and/or from which the AIS organization receives aeronautical data and aeronautical information. The originator is also known as the aeronautical data originator.
- (k) **Sponsor** (Instrument Flight Procedures): An entity that has agreed to assume the regulatory responsibility for an Instrument Flight Procedure (IFP) at an aerodrome or operational location. For the purpose of this document, an IFP sponsor is the originator of aeronautical data/information for an IFP.
- (l) **Aeronautical Data Originator (ADO):** An entity that is accountable for data or information origination and/or from which the AIS organization receives aeronautical data and aeronautical information. The term is interchangeable with originator.

- (2) The following **abbreviations** are used in this document:
- (a) **ADO**: Aeronautical Data Originator
  - (b) **AIC**: Aeronautical Information Circular
  - (c) **AIM**: Aeronautical Information Management
  - (d) **AIP**: Aeronautical Information Publication
  - (e) **AIS**: Aeronautical Information Service
  - (f) **CANSCA**: Civil Air Navigation Services Commercialization Act
  - (g) **CAR**: Canadian Aviation Regulation
  - (h) **ICAO**: International Civil Aviation Organization
  - (i) **IFP**: Instrument Flight Procedure
  - (j) **PDF**: Portable Document Format
  - (k) **TCCA**: Transport Canada Civil Aviation

### 3.0 Background

- (1) A key driver for the transition from AIS to AIM is the need to achieve an uninterrupted aeronautical data chain with no loss or corruption in information, in a pre-defined format and with guaranteed accuracy and integrity.
- (2) Data originators, such as aerodrome operators, instrument flight procedure sponsors, etc., have an essential role in ensuring that aeronautical data/information are of the required quality at origination, and transmitted in this form to the AIS.
- (3) Data of high quality can only be maintained if the source material is of good quality. To better control the relationships of all stakeholders along the whole data chain from the originator to the user, agreements are required to clearly define the responsibilities of all parties involved in the national aeronautical data chain. This will help clarify the position of all parties involved in the aeronautical data chain.
- (4) The establishment of formal arrangements is a requirement of the International Standards and Recommended Practices for aeronautical information services. Annex 15 to the Convention on International Civil Aviation states: "Each Contracting State shall ensure that formal arrangements are established between originators of aeronautical data and aeronautical information and the AIS in relation to the timely and complete provision of aeronautical data and aeronautical information".
- (5) A formal arrangement is an agreement which lays out the requirements for how and when an Aeronautical Data Originator (ADO) shall review and provide (or submit) their aeronautical data/information to the AIS provider. The agreement also specifies the data quality requirements for each data element for which the agreement is being established.
- (6) The main objective of the formal arrangement is to enhance the process of data distribution in terms of quality and timeliness. This will contribute to improved safety, increased efficiency and greater cost-effectiveness for all stakeholders.

### **3.1 Aeronautical Information Service (AIS)**

- (1) The function of an Aeronautical Information Service (AIS) is to receive, collate or assemble, edit, format, publish/store and distribute aeronautical data and aeronautical information concerning the entire territory of the State as well as those areas over the high seas for which the State is responsible for the provision of air traffic services.
- (2) Subject to CANSCA, NAV CANADA (the AIS provider) is responsible for the aeronautical information services in respect of the Canadian airspace or any other airspace in respect of which Canada has responsibility for the provision of air traffic services.
- (3) Section 803.01(2) of the CARs states that “No person shall provide aeronautical information services except in accordance with the standards set out in Annexes 4 and 15 to the Convention”.
- (4) In accordance with Annex 15 to the Convention, the aeronautical data and aeronautical information provided by AIS shall be of the required quality in accordance with the data quality specifications (requirements) that are contained in Appendix 1 (Aeronautical Data Catalogue) of the Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM, Doc 10066).
- (5) Annex 15 also states that “An AIS shall establish verification and validation procedures which ensure that upon receipt of aeronautical data and aeronautical information, quality requirements are met”.

### **3.2 Originators of aeronautical data and aeronautical information**

- (1) The origination of aeronautical data and aeronautical information is a critical process with respect to initiating data quality since subsequent processing of that data cannot improve its quality but only maintains it. Therefore, all parties originating aeronautical data and aeronautical information have the responsibility to provide the aeronautical data with defined data quality requirements in order to meet the user needs.

### **3.3 Data Interoperability**

- (1) The future of aeronautical information services must prioritize the aeronautical data and information themselves over the products. There is an increasing need by industry to consume data directly from databases into systems and at a much faster pace. Therefore, the focus must also be on the data quality as opposed to how the information is presented on a printed paper product or electronic product such as PDF.
- (2) The consumption of data into automated systems will occur in the form of subscription to a data service. For this to be possible, the data must be of the right quality (including format) for use by any system of any country (interoperable) and the processing of it must be automated to gain the desired efficiency and ensure the data integrity. From the data, aeronautical information products can be created as needed.
- (3) This level of automation and interoperability is only possible if quality is the focus for the data holdings. The establishment of formal arrangements is an important step in supporting both ADOs and NAV CANADA in getting to this point.

## 4.0 Requirements for Formal Arrangements

### 4.1 Aeronautical Data Originator

- (1) An ADO provides NAV CANADA with up to date aeronautical data and information. Regular review, at least annually, of the aeronautical data/information for which the ADO is responsible must take place.
- (2) A formal arrangement identifies who the ADO is, ensuring that only the authoritative source of the data can submit data modifications to NAV CANADA.
- (3) The ADO plays an important role in helping to improve data quality during the implementation of a formal arrangement and in maintaining these data quality standards when modifications or removal of their data must be submitted to NAV CANADA.
- (4) The data quality requirements applicable from origination through to publication includes:
  - (a) Format: A structure of data elements, records and files arranged to meet standards, specifications or data quality requirements.
  - (b) Resolution: A number of units or digits to which a measured or calculated value is expressed and used.
  - (c) Accuracy: A degree of conformance between the estimated or measured value and the true value.
  - (d) Integrity: A degree of assurance that an aeronautical data and its value has not been lost or altered since the origination or authorized amendment.
  - (e) Traceability: The degree that a system or a data product can provide a record of the changes made to that product and thereby enable an audit trail to be followed from the end-user to the originator.
  - (f) Timeliness: The degree of confidence that the data is applicable to the period of its intended use.
  - (g) Completeness: The degree of confidence that all of the data needed to support the intended use is provided.

### 4.2 Aeronautical Data Requirements

- (1) To support the data quality of aeronautical data/information, a formal arrangement contains the data requirements for each data element. This facilitates the submission of all data to be of the required format, resolution and accuracy.
- (2) In other words, NAV CANADA provides the data requirements to the ADO to specify what accuracy or resolution the data must be provided thereby eliminating guess work on the part of the data originator as to how each piece of data should look when they are submitting to NAV CANADA.
- (3) Example of the data requirements contained in formal arrangements:

Data Element	Data Entry Format	Description	Accuracy	Integrity	Resolution
Threshold Coordinates	N DDMSS.ss W DDDMMSS.ss	Geographical location for runway threshold.	1m	critical	1/100 sec
Runway True Bearing	123.45°	The true bearing of the runway.	1/100 deg	Routine	1/100 deg

### **4.3 Implementation**

- (1) NAV CANADA has started to establish formal arrangements with data originators for private meteorological services. Examples of other organizations and authorities responsible for data origination which will be supported by a formal arrangement are:
  - (a) Aerodrome operators.
  - (b) Airspace – General Flight Standards, TCCA, Department of National Defence.
  - (c) Instrument Flight Procedure – Sponsors.
  - (d) Navigational Aid owners.
  - (e) AIP Canada GEN - TCCA, NAV CANADA, others.
- (2) Formal arrangements for Private Meteorological Services uses PDF forms and email to facilitate the implementation of the agreement and aeronautical data updates. This is intended only as a temporary solution in this first iteration of formal arrangements. As future data elements are included within the scope of formal arrangements, the intent is for technology to better support the management of aeronautical data for the ADOs through automation.
- (3) As the AIS authority, NAV CANADA will reach out to ADOs to establish a formal arrangement. The recommended steps that an ADO should take in order to assist NAV CANADA with a formal arrangement includes:
  - (a) Engage in development of the formal arrangement.
  - (b) Understand the required tasks.
  - (c) Understand the data quality requirements of aeronautical data.
  - (d) Identify the means of distribution to the AIS provider.
  - (e) Identify responsible personnel for submitting aeronautical data to the AIS provider.
  - (f) Ensure personnel are competent to carry out the specified tasks.
  - (g) Identify the processes to meet the requirements identified in the formal arrangements.
  - (h) Ensure the processes are known and defined.
  - (i) Ensure the required resources to establish the processes.
  - (j) Ensure that the tools and software are available to carry out the tasks.
  - (k) Ensure the available tools and software are maintained, checked and improved, whenever applicable.
  - (l) Ensure the provision and updating of aeronautical data to the AIS provider is in accordance with the AIRAC system.
  - (m) Ensure the distribution of aeronautical data to the AIS provider.
  - (n) Perform regular reviews, at least annually, of aeronautical data provided.

### **5.0 Information management**

- (1) Not applicable.

### **6.0 Document history**

- (1) Not applicable.

## 7.0 Contact us

For more information, please contact:

Chief, Flight Standards (AARTA)

E-mail: [TC.FlightStandards-Normsvol.TC@tc.gc.ca](mailto:TC.FlightStandards-Normsvol.TC@tc.gc.ca)

We invite suggestions for amendment to this document. Submit your comments to:

AART Documentation Services

E-mail: [AARTDocServices-ServicesdocAART@tc.gc.ca](mailto:AARTDocServices-ServicesdocAART@tc.gc.ca)

### ***Original signed by***

Félix Meunier

Director, Standards branch

Civil Aviation