



Advisory

Circular

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GUIDANCE ON THE PROVISION OF AERONAUTICAL DATA AND AERONAUTICAL INFORMATION IN ACCORDANCE WITH THE DATA QUALITY SPECIFICATIONS.

1.0 PURPOSE

This Advisory Circular (AC) provides information and guidance on the provision of aeronautical data and/or aeronautical information in accordance with the data quality requirements of The Civil Aviation (Aeronautical Information Services) and (Aeronautical Charts) Regulations, 2022. It outlines the requirements relating to data integrity, data accuracy, data resolution and chart resolution, with the objective of ensuring that aeronautical data and information of high quality and integrity are provided throughout the data chain so as to eliminate corruption of data. The guidance material is applicable to all organizations/entities involved in the aeronautical data chain from origination right up to publication.

2.0 REFERENCE

- 2.1. Regulations 7, 8, 12, 14, 18 of The Civil Aviation (Aeronautical Information Services) Regulations, 2022
- 2.2. Regulation 19 of The Civil Aviation (Aeronautical Charts) Regulations, 2022
- 2.3. ICAO Doc 10066 – PANS AIM
- 2.4. ICAO Doc 8126 – AIS Manual
- 2.5. ICAO Doc 9839 – Manual on the Quality Management System for Aeronautical Information Services
- 2.6. ICAO Doc 9674 – WGS-84 Manual
- 2.7. ICAO Doc 9881 - Guidelines for Electronic Terrain, Obstacle and Aerodrome Mapping Information

3.0 GUIDANCE AND PROCEDURES

3.1. Background

- 3.1.1. Regulations 7, 8, 12, 14 of The Civil Aviation (Aeronautical Information Services) and Regulation 19 of the Civil Aviation (Aeronautical Charts) Regulations, 2022 requires the aeronautical information service provider (AISP) and the aeronautical cartographic service provider (ACSP) respectively, to provide aeronautical data and/or aeronautical information in accordance with the data quality specifications. The data quality specifications pertain to accuracy, resolution, integrity, traceability, timeliness, completeness and format.
- 3.1.2. Regulation 18 of The Civil Aviation (Aeronautical Information Services) Regulations, 2022 requires that all necessary measures are taken to introduce a properly organized quality system containing procedures, processes and resources necessary to implement quality management at each

function stage (reception and/or origination, collation or assembling, editing, formatting, publishing/storing and distribution of aeronautical information/data).

- 3.1.3. The origination of aeronautical data is a critical process with respect to initiating data quality since subsequent processing of that data cannot improve its quality but only maintains it, and may possibly degrade it. It is therefore imperative that all parties originating aeronautical data and aeronautical information are responsible for providing the aeronautical data with the defined data quality requirements to meet the user needs that were determined and agreed with the State.

3.2. Provision of aeronautical data and aeronautical information

- 3.2.1. Aeronautical data and/or aeronautical information shall be collected by the originator and transmitted to the aeronautical information services (AIS) in accordance with the data quality requirements specified in Schedule 1 of The Civil Aviation (Aeronautical Information Services) Regulations, 2022 for aeronautical data properties and sub-properties applicable from origination through to publication.
- 3.2.2. The aeronautical data and/or aeronautical information to be provided by the originators to the AIS for promulgation/distribution shall be submitted as per the following sub-domains as specified in Schedule 1 of The Civil Aviation (Aeronautical Information Services) Regulations, 2022:
- a) aerodrome data
 - b) airspace data
 - c) air traffic services (ATS) and other routes data
 - d) instrument flight procedure data
 - e) radio navigation aids/systems data
 - f) obstacle data
 - g) terrain data
 - h) geographic data; and
 - i) national and local regulations, services and procedures.

Examples of such aeronautical data and/or aeronautical information may include positional data (surveyed points, calculated points or declared points in terms of geographic coordinates referenced to the World Geodetic System – 1984 (WGS-84) geodetic reference datum, elevation data (referenced to the mean sea level), geoid undulations (referenced to the WGS-84 ellipsoid) etc.

- 3.2.3. The aeronautical data and/or aeronautical information originators must have verification and validation processes and procedures in place to ensure the required data quality is met when aeronautical data is provided to the AIS.

3.3. Aeronautical data quality requirements

3.3.1. Accuracy

For data elements without an accuracy value specified in Schedule 1 of The Civil Aviation (Aeronautical Information Services) Regulations, 2022, the required accuracy should be established between the AIS and the next intended users of the data. This requirement should then be passed on to the originators of those data elements in the formal arrangements.

3.3.2. Resolution

The publication and chart resolution for geographical position data (latitude and longitude) are applicable to coordinates formatted in degrees, minutes and seconds. The formal arrangements between AIS and data originators can specify higher accuracy and resolution levels for collection, processing and distribution if a need is identified by the end users of the aeronautical data.

3.3.3. **Integrity**

The aeronautical data and/or aeronautical information should be classified based upon the potential risk resulting from the use of corrupted data and shall take the classification as routine, essential or critical data.

3.3.4. **Traceability**

Traceability is the ability to determine the origin and transaction points of data and information. Keeping a record of the changes made to the data enables an audit trail to be created from the end-user to the data originator, which enables identification of the root cause of any anomalies or errors detected in the data. Traceability must be maintained on each data element throughout its period of validity. Traceability information is collected as metadata.

3.3.5. **Timeliness**

Data timeliness is the degree of confidence that the data is applicable during the period of its intended use, which means that the effective period of the data has to be defined.

3.3.6. **Completeness**

Completeness of aeronautical data must be assured throughout the data chain:

- a) origination: validation procedures should be implemented to assure all data is originated (e.g. relevant aerodrome data is being captured)
- b) processing: procedures and tools must be implemented to assure that no data is lost in the process; and
- c) distribution: procedures and tools must be implemented to assure that data selected for distribution is complete.

3.3.7. **Format**

Even though The Civil Aviation (Aeronautical Information Services) Regulations, 2022 does not define a data format, it specifies that when exchanging or distributing data, the format of the data must be consistent with the intended use. The format requirements should be specified in a written agreement between the providers of the data and the users.

3.4. Metadata

3.4.1. Metadata describes the content, quality, condition and other characteristics of the data. The Civil Aviation (Aeronautical Information Services) Regulations, 2022 requires that metadata be collected for aeronautical data processes and exchange points as well as be provided with each data set. The purpose of metadata is to:

- a) serve as one of the primary information sources of the AIS to validate the data
- b) facilitate traceability by providing information on what interactions have been applied to the data, by whom and when; and
- c) allow users to decide if the data meets the requirements and is fit for the intended use.

3.4.2. The aeronautical data and/or aeronautical information originator shall include as a minimum metadata comprising of (but not be limited to) the following elements:

- a) the names of the organizations or entities performing any action of originating, transmitting or manipulating the data
- b) the action performed; and
- c) the date and time the action was performed.



Director Safety, Security and Economic Regulation.

