



CAR-175

Civil Aviation Regulation

Aeronautical Information Services

Effective: 03 August 2026

Approved by: Eng. Naif Ali Hamed Al-Abri
President of CAA

Record of Amendments

Edition No.	Rev No.	Applicability date	Description
01	01	-	Initial Version
	02	Oct 31, 2018	- Amendment concerning restructure of CAR 175 to facilitate incorporation of aeronautical information management (AIM) requirements. - Changes to the technical content of CAR 175 to facilitate the transition from AIS to AIM. - Consequential amendment in support of space weather information.
	03	Jul 7, 2019	- Provision of flexibility and Exemptions from CAR 175.005 related to the Requirement for Certificate to Aeronautical Information Services providers until 25 December 2021. - Adoption of more restrictive rules.
	04	Nov 5, 2020	Rev 04 Incorporating Amendment 41 to Annex 15 and the followings: - Amendment concerning the improvement of the promulgation of information on hazardous activities to civil aviation through Notice to Airmen (NOTAM), also addressing the specific case of conflict zones activities potentially hazardous to civil aircraft. - Removing requirement to implement and maintain a system for safety management (SMS) by applicant for the grant of an AIS certificate. - Title change of PACA to CAA.
	05	Nov 28, 2024	Rev 05 Incorporating Amendment 43 to Annex 15 and the followings: - Amendment concerning the competency-based training and assessment (CBTA) methodology (CAR 175.100 and 175.325); - Editorial changes; - SWIM and information security; - Amending entry into force for certification requirements; - Removing requirement for Organization Exposition; - Amendment of personal requirement (CAR 175.100); and - Logo change.
	06	Nov 27, 2025	Rev 06 Incorporating Amendment 44 to Annex 15 and the followings: - Consequential changes for the development of space weather information service.
	07	Nov 26, 2026	Rev 07 Incorporating Amendment 45 to Annex 15 and the followings: - Provisions related to definition change of area navigation, navigation specification and PBN; - Revised Glossary of Terms or Abbreviations.

Glossary of Terms or Abbreviations

The following terms or acronyms may be used in any manual or document published by CAA. Reproduction in part or whole is allowed without prior approval. The Document Control Office reserves the rights to include such a listing in any CAA manual or document prior to publishing.

ADIZ	Air Defense Identification Zone
AIC	Aeronautical Information Circular
AIM	Aeronautical Information Management
AIP	Aeronautical Information Publication
AIRAC	Aeronautical Information Regulation and Control
AIS	Aeronautical Information Services
AMC	Acceptable Means of Compliance
ATC	Air Traffic Control
ATS	Air Traffic Service
CAA	Civil Aviation authority
CAR	Civil Aviation Regulation
CAT	Category
eAIP	Electronic Aeronautical Information Publication
EGM-96	Earth Gravitational Model — 1996
FIR	Flight Information Region
ft	Feet
GPS	Global Positioning System
ICAO	International Civil Aviation Organization
IERS	International Earth Rotation Service
ITRS	Terrestrial Reference System
ITRF	IERS Terrestrial Reference Frame
Km	Kilometer
m	Meter
MSL	Mean sea level
NM	Nautical Mile
NOTAM	Notice to Airmen
PANS	Procedures for Air Navigation Services
PBN	Performance-based Navigation
PIB	Pre-flight Information Bulletin
UTC	Coordinated Universal Time
WGS-84	World Geodetic System — 1984

TABLE OF CONTENTS

FOREWORD	1
SUBPART A - GENERAL	2
CAR 175.001 Applicability.....	2
CAR 175.002 Entry into force	2
CAR 175.005 Requirement for Certificate	2
CAR 175.010 Application for Certificate	2
CAR 175.015 Issue of Certificate	2
CAR 175.020 Privileges of Certificate	2
CAR 175.025 Duration of Certificate	2
CAR 175.030 Renewal of Certificate.....	3
CAR 175.035 Safety Inspections and Audits	3
CAR 175.040 Resolution of Safety Issues	3
CAR 175.045 Transferability	4
CAR 175.050 Non-Compliance.....	4
SUBPART B — CERTIFICATION REQUIREMENTS	5
CAR 175.100 Personnel Requirements.....	5
CAR 175.105 Facility Requirements.....	5
CAR 175.110 Documentation	6
CAR 175.115 Error Correction in Published Information	6
CAR 175.120 Records.....	6
CAR 175.125 Operation Manual.....	7
SUBPART C — OPERATING REQUIREMENTS.....	8
CAR 175.150 Continued Compliance	8
CAR 175.155 Operation of Aeronautical Information Services	8
CAR 175.160 Responsibilities & Functions	8
CAR 175.165 Scope of Aeronautical Data and Aeronautical Information.....	8
CAR 175.170 Changes to AIS provider’s Organization.....	8
CAR 175.175 Regulatory Approval of Aeronautical Information and Data	9
SUBPART D – GENERAL SPECIFICATIONS	10
CAR 175.200 Definitions	10
CAR 175.205 Common Reference Systems for Air Navigation.....	10

CAR 175.210	Miscellaneous Specifications	12
SUBPART E — RESPONSIBILITIES AND FUNCTIONS		13
CAR 175.250	ANS Provider	13
CAR 175.255	AIS Provider	13
CAR 175.260	Exchange of Aeronautical data and aeronautical information	14
CAR 175.265	Copyright	15
CAR 175.270	Cost Recovery	15
SUBPART F — AERONAUTICAL INFORMATION MANAGEMENT		16
CAR 175.300	Information Management Requirements	16
CAR 175.305	Data quality requirements	16
CAR 175.310	Aeronautical Data and Aeronautical Information Validation and Verification	17
CAR 175.315	Data Error Detection	17
CAR 175.320	Use of Automation	17
CAR 175.325	Quality Management System	18
CAR 175.330	Human Factors Considerations	19
SUBPART G — SCOPE OF AERONAUTICAL DATA AND AERONAUTICAL INFORMATION		20
CAR 175.350	Scope of Aeronautical Data and Aeronautical Information	20
CAR 175.355	Metadata	20
SUBPART H — AERONAUTICAL INFORMATION PRODUCTS AND SERVICES		21
CAR 175.400	General	21
CAR 175.405	Aeronautical Information in a Standardized Presentation	21
CAR 175.410	Aeronautical Information Publication (AIP)	21
CAR 175.415	AIP Supplement	21
CAR 175.420	Aeronautical Information Circulars (AIC)	22
CAR 175.425	Aeronautical Charts	22
CAR 175.430	NOTAM	23
CAR 175.435	Digital Data Sets	23
CAR 175.440	AIP Data Set	23
CAR 175.445	Terrain and Obstacle Data Sets	23
CAR 175.450	Terrain Data Sets	24
CAR 175.455	Obstacle Data Sets	24
CAR 175.460	Aerodrome Mapping Data Sets	25
CAR 175.465	Instrument Flight Procedure Data Sets	26
CAR 175.470	Distribution Services	26
CAR 175.475	Pre-Flight Information Service	27
CAR 175.480	Post-flight Information Service	27

SUBPART I — AERONAUTICAL INFORMATION UPDATES.....	28
CAR 175.500 General Specifications.....	28
CAR 175.505 Aeronautical Information Regulation and Control (AIRAC)	28
CAR 175.510 Aeronautical Information Product Updates (AIP Updates)	29
CAR 175.515 Aeronautical Information Product Updates (NOTAM)	29
CAR 175.520 Aeronautical Information Product Updates (Data Set Updates)	31

FOREWORD

- (a) This Civil Aviation Regulation (CAR) has been issued by the Civil Aviation authority of Oman (hereinafter referred to as CAA or “the AUTHORITY”) under the provisions of the Civil Aviation Law of the Sultanate of Oman.
- (b) CAR-175 has been modelled upon similar regulations implemented by other member States and includes the subject matter endorsed within ICAO Annex 15 – Aeronautical Information Services.
- (c) CAR-175 prescribes the requirements for:
 - (1) The certification and operation of organization providing an Aeronautical Information Services for the Sultanate of Oman on behalf of the authority;
 - (2) The requirements for Aeronautical Information products.
- (d) Amendments to the text in CAR-175 in revised editions are issued as a complete amendment of pages contained within.
- (e) The editing practices used in this document are as follows:
 - (1) ‘Shall’ is used to indicate a mandatory requirement and may appear in CARs.
 - (2) ‘Should’ is used to indicate a recommendation
 - (3) ‘May’ is used to indicate discretion by the authority, or the industry as appropriate.
 - (4) ‘Will’ indicates a mandatory requirement and is used to advise of action incumbent on the authority.

Note: The use of the male gender implies the female gender and vice versa.

SUBPART A - GENERAL

CAR 175.001 Applicability

This CAR prescribes:

- (a) Civil aviation regulations governing the certification and operation of organization providing an Aeronautical Information Services for the Sultanate of Oman; and
- (b) The requirements for the Aeronautical Information products, technical requirements and provisions including the scope of AIM, the role of AIM, the functions of AIM, the products and services within an AIM environment and the associated update mechanisms.

CAR 175.002 Entry into force

This CAR shall come into force on 03 Aug 2026 (effective date) and shall become applicable on 26 Nov 2026 except for CAR 175.005 concerning the certification requirement for Aeronautical Information Services (AIS) providers, which shall become applicable on 31 December 2028.

CAR 175.005 Requirement for Certificate

No person or organization shall provide Aeronautical Information Services within the Oman FIR; except under the authority of, and in accordance with the provisions of, an AIS certificate issued under this CAR.

CAR 175.010 Application for Certificate

Each applicant for the grant of an AIS certificate shall complete ANS form 175-0 and submit it to the authority with:

- (a) Cover letter for the application;
- (b) Applicant operation manual required by CAR 175.125;
- (c) QMS manual; and
- (d) A payment of the appropriate application fee prescribed by regulations.

CAR 175.015 Issue of Certificate

An applicant is entitled to an AIS certificate if:

- (a) The applicant meets the requirements of Subpart B and applicable subpart of this CAR; and
- (b) The applicant and the applicant's senior person or persons required by CAR 175.100(a) paras (2) and (3) are acceptable to the authority; and
- (c) The operation manual as required by CAR 175.125 is acceptable to the authority; and
- (d) The authority is satisfied that the granting of the certificate is not contrary to the interests of aviation safety.

CAR 175.020 Privileges of Certificate

The AIS certificate specifies the Aeronautical Information Services that the certificate holder is authorized to provide. The scope of the privileges, and any condition thereof, shall be specified in the certificate.

CAR 175.025 Duration of Certificate

- (a) An AIS certificate is granted or renewed for a maximum period of three (3) years.
- (b) An AIS certificate remains in force until it expires, or is suspended or revoked.

- (c) Upon revocation, suspension, or surrender, the AIS certificate shall be returned to the authority without delay.
- (d) The holder of an AIS certificate that expired shall surrender the certificate to the authority.
- (e) The holder of an AIS certificate that is suspended shall immediately return the certificate to the authority for appropriate endorsement.
- (f) The validity of the Certificate is based upon the continued operation in accordance with this CAR.
- (g) The Certificate shall remain valid subject to periodic surveillance audits conducted at the discretion of the authority confirming ongoing compliance with the Civil Aviation Regulations.

CAR 175.030 Renewal of Certificate

- (a) An application for the renewal of an AIS certificate shall be made on ANS form 175-0.
- (b) The application shall be submitted to the authority before the application renewal date specified on the certificate or, if no such date is specified, not less than thirty (30) days before the certificate expires.

CAR 175.035 Safety Inspections and Audits

- (a) The authority shall conduct an initial certification audit and thereafter audits at intervals not exceeding two years (24 months) at the service provider's office/facility.
- (b) The authority may require the service provider to provide such information as the authority considers relevant to the inspection or audit.
- (c) The authority shall be granted unrestricted access to the service provider's facilities and shall be permitted to carry its own equipment (e.g. computers, cameras and recording devices) under all conditions while carrying out its oversight functions.

CAR 175.040 Resolution of Safety Issues

- (a) When objective evidence is found showing non-compliance of the service provider with the requirements, the finding shall be set out as follows:
 - (1) A level one finding is any non-compliance with these regulations, which could lead to uncontrolled non-compliances with applicable requirements and could affect the safety of aircraft.
 - (2) A level two finding is any non-compliance with these regulations, which is not classified as level one.
 - (3) A level three finding is any opportunity of improvement.
- (b) After a receipt of notification of findings:
 - (1) A level one finding must be rectified immediately or within the short timescale specified;
 - (2) In case of level two findings, the corrective action period granted by the authority shall be appropriate to the nature of the finding but in any case, shall not be more than ninety (90) days. In certain circumstances, the authority may extend the ninety (90) days period subject to a satisfactory corrective action plan.
 - (3) the service provider shall:
 - i. Identify the root cause of the non-compliance;
 - ii. Define a corrective action plan; and
 - iii. Demonstrate corrective action implementation to the satisfaction of the authority within a period agreed with the authority.
- (c) In the case of level one or level two findings, the Certificate may be subject to a partial or full suspension or revocation. The service provider shall provide confirmation of receipt of the notice of suspension or revocation of the certificate in a timely manner.

CAR 175.045 Transferability

An AIS certificate, granted in accordance with the requirements of this CAR, is not transferable.

CAR 175.050 Non-Compliance

Non-compliance with this regulation may require the authority to restrict, suspend or revoke the AIS certificate.

SUBPART B — CERTIFICATION REQUIREMENTS

CAR 175.100 Personnel Requirements

- (a) An AIS provider shall engage, employ or contract:
- (1) an accountable manager, who shall:
 - i. have the authority to ensure that each Aeronautical Information Services listed in their operation manual:
 - a. can be financed and is provided to meet operational requirements; and
 - b. is carried out in accordance with the requirements prescribed by this CAR.
 - ii. be responsible for establishing and maintaining an effective Quality Management System.
 - (2) a head of Quality who shall:
 - i. have appropriate Quality Management System knowledge and experience;
 - ii. be responsible for the Compliance Monitoring and Quality Assurance System implementation, maintenance, documentation, performance, effectiveness and oversight of the organization;
 - iii. be a principle communicator with the authority in relation to audits and Quality Management System and compliance issues; and
 - iv. be ultimately responsible to the accountable manager.
 - (3) a senior person or group of senior persons who are responsible for ensuring that the service provider complies with the requirements of this CAR. Such nominated person or persons shall be ultimately responsible to the accountable manager.
 - (4) sufficient personnel to collect, collate, check, coordinate, edit and publish aeronautical information for the Aeronautical Information Services listed in their operation manual.
- (b) The AIS provider shall:
- (1) establish and implement a Competency-Based Training and Assessment (CBTA) program acceptable to the authority for AIS personnel as follows, as appropriate:
 - i. Ab initio training;
 - ii. Initial training;
 - iii. Functional Training (On-the-job training);
 - iv. Specialized training; and
 - v. Refresher training.
 - (2) ensure that job descriptions, training plans and training records are developed, maintained and continuously improved based on the competency framework.
 - (3) ensure establishment of CBTA processes within the context of the established QMS. The CBTA methodology shall be applied for the development of all AIS training phases.
 - (4) establish procedures to assess the competence of those personnel authorized by AIS instructor or AIS assessor to check, edit, and publish aeronautical information for the Aeronautical Information Services listed in their operation manual.

Note: Detailed guidance concerning the CBTA methodology implementation is contained in the Manual on Aeronautical Information Services Training (Doc 9991).

CAR 175.105 Facility Requirements

An AIS provider shall establish offices and facilities that:

- (a) Are appropriate for the Aeronautical Information Services listed in their operation manual; and
- (b) Meet the applicable requirements of this regulation.

CAR 175.110 Documentation

- (a) An AIS provider shall:
 - (1) document the format and standards for the aeronautical data and aeronautical information published under the authority of their certificate;
 - (2) ensure that the format and standards take into account the circumstances under which the information will be used; and
 - (3) hold copies of relevant reference material, standards, practices and procedures, and any other documentation that is necessary for the Aeronautical Information Services listed in their operation manual.
- (b) The AIS provider shall establish a procedure to control all the documentation required by paragraph (a), to ensure that:
 - (1) the documentation is reviewed and authorized by appropriate personnel before issue;
 - (2) current issues of relevant documentation are available to staff at all locations where they need access to such documentation for the Aeronautical Information Services listed in their operation manual;
 - (3) all obsolete documentation is promptly removed from all points of issue or use;
 - (4) changes to documentation are reviewed and approved by appropriate personnel; and
 - (5) the current version of each item of documentation can be identified to preclude the use of out-of-date editions.

CAR 175.115 Error Correction in Published Information

- (a) An AIS provider shall establish procedures to record, investigate, correct, and report any errors that are detected in the aeronautical information published under the authority of their certificate.
- (b) The procedures shall ensure that:
 - (1) the error is corrected by the most appropriate means relative to the operational significance of the error;
 - (2) the correction is clearly identified in the republished information;
 - (3) the source of the error is identified and, where possible, eliminated; and
 - (4) the authority is notified of a promulgated information incident.

CAR 175.120 Records

- (a) An AIS provider shall establish procedures to identify, collect, index, store, maintain and dispose of the records that are necessary for the Aeronautical Information Services listed in their operation manual.
- (b) The procedures shall ensure that:
 - (1) there are records enabling all incoming and outgoing aeronautical information to be readily identified by serial number and date, and that supplementary information can be similarly verified and, where necessary, authenticated;
 - (2) there is a record of each person who is authorized by the AIS provider to check, edit, and publish aeronautical information;
 - (3) there is a record of each occurrence of error correction under the procedures required by CAR 175.115;
 - (4) all records are legible and of a permanent nature; and
 - (5) all records are retained for at least five (5) years except NOTAM, AIP Supplements and Aeronautical Information Circulars (AIC), which need only be retained for thirty (30) days after cancellation.

CAR 175.125 Operation Manual

- (a) An AIS provider shall provide the authority with the operation manual containing:
- (1) a statement signed by the accountable manager on behalf of the service provider organization confirming that:
 - i. the operation manual and any included procedures define the organization and demonstrate its means and methods for ensuring ongoing compliance with this CAR; and
 - ii. the operation manual and any included procedures will be complied with at all times;
 - (2) the titles and names of the senior person or persons required by CAR 175.100 paragraphs (a)(2) and (3);
 - (3) the duties and responsibilities of the senior persons specified in paragraph (a)(2) including matters for which they have responsibility to deal directly with the authority on behalf of the organization;
 - (4) an organization chart showing lines of responsibility of the senior persons specified in paragraph (a)(2);
 - (5) a summary of the AIS provider staffing structure for each Aeronautical Information Services listed under paragraph (a)(6);
 - (6) a list of the Aeronautical Information Services to be covered by the certificate;
 - (7) for a pre-flight information service, details of the area, aerodromes and air routes required by CAR 175.475;
 - (8) the location and address details of the AIS provider offices;
 - (9) the proposed hours of operations of each service;
 - (10) the airspace within which each service is to be provided;
 - (11) details of the AIS provider format and standards required by CAR 175.110 para (a)(1) for their published aeronautical information;
 - (12) details of the AIS provider Standard Operating Procedures (SOP) and instructions required by the operations personnel to perform their duties regarding:
 - i. the competence of personnel;
 - ii. the control of documentation;
 - iii. the collection of information;
 - iv. the publication of aeronautical information;
 - v. the correction of errors in published information;
 - vi. the identification, collection, indexing, storage, maintenance, and disposal of records; and
 - vii. internal quality assurance.
 - (13) procedures to control, amend and distribute the operation manual.
- (b) The operation manual must be acceptable to the authority.

SUBPART C — OPERATING REQUIREMENTS

CAR 175.150 Continued Compliance

An AIS provider shall:

- (a) Hold at least one complete and current copy of their operation manual at each office listed in their operation manual;
- (b) Comply with all procedures and standards detailed in their operation manual;
- (c) Make each applicable part of their operation manual available to personnel who require those parts to carry out their duties;
- (d) Continue to meet the standards and comply with the requirements of Subpart B prescribed for certification under this CAR; and
- (e) Notify the authority of any change of address for service and telephone number within twenty-eight (28) days of the change.

CAR 175.155 Operation of Aeronautical Information Services

- (a) An AIS provider shall comply with requirements of subpart D;
- (b) The AIS provider shall establish resources and processes to ensure the timely collection, processing, storing, integration, exchange and delivery of quality-assured aeronautical data and aeronautical information in accordance with Subpart F
- (c) The AIS provider shall provide Aeronautical information in the form of Aeronautical Information Products and associated services in accordance with Subpart H.
- (d) The AIS provider shall keep up to date Aeronautical data and aeronautical information in accordance with Subpart I.

CAR 175.160 Responsibilities & Functions

An AIS provider shall carry out the functions and assume its share of the responsibilities defined in Subpart E.

CAR 175.165 Scope of Aeronautical Data and Aeronautical Information

The scope of aeronautical data and aeronautical information that is managed by an AIS is described in Subpart G.

CAR 175.170 Changes to AIS provider's Organization

- (a) An AIS provider shall ensure that their operation manual is amended, so as to remain a current description of the service provider's organization and services.
- (b) The AIS provider shall ensure that any amendments made to the operation manual meet the applicable requirements of this CAR and comply with the amendment procedures contained in the operation manual.
- (c) The AIS provider shall provide the authority with a copy of each amendment to the operation manual as soon as practicable.
- (d) Where an AIS provider proposes to make a change to any of the following, prior notification to and acceptance by the authority is required:
 - (1) the accountable manager;
 - (2) the listed senior persons;
 - (3) the Aeronautical Information Services provided; and
 - (4) the format and standards for the aeronautical information published under the authority of their certificate.

- (e) The authority may prescribe conditions under which an AIS provider may operate during or following any of the changes specified in paragraph (d).
- (f) An AIS provider shall comply with any conditions prescribed under paragraph (e).
- (g) Where any of the changes referred to in this CAR requires an amendment to the certificate, the AIS provider shall forward the certificate to the authority as soon as practicable.
- (h) The AIS provider shall make such amendments to the operation manual, as the authority may consider necessary in the interests of aviation safety.

CAR 175.175 Regulatory Approval of Aeronautical Information and Data

- (a) Certain aeronautical information and data submitted to the AIS provider will require regulatory approval by the authority before publication.
- (b) Aeronautical information and data requiring approval by the authority includes but is not limited to:
 - (1) Controlled/Regulated Airspace
 - (2) Ground/Satellite based Navigation Systems
 - (3) Instrument Flight Procedures
 - (4) VHF/UHF frequencies
 - (5) Danger/Restricted Areas
 - (6) Activities of a Dangerous Nature and Other Potential Hazards
 - (7) Aerodrome Traffic Zones
 - (8) Aerodrome Runway Declared Distances
 - (9) Aerodrome Rescue & Fire Fighting categories
- (c) Data originators providing aeronautical data and information shall ensure that an approval has been granted by the authority before submitting for publication new or revised aeronautical data and information specified in paragraph (b).
- (d) For aeronautical data that requires regulatory approval, data originators shall take account of the additional time required by the authority for the approvals process.

SUBPART D – GENERAL SPECIFICATIONS

Note 1: The object of the Aeronautical Information Services (AIS) is to ensure the flow of aeronautical data and aeronautical information necessary for global air traffic management (ATM) system safety, regularity, economy and efficiency in an environmentally sustainable manner. The role and importance of aeronautical data and aeronautical information changed significantly with the implementation of area navigation, performance-based navigation (PBN), airborne computer-based navigation systems, performance-based communication (PBC), performance-based surveillance (PBS), data link systems and satellite voice communications (SATVOICE). Corrupt, erroneous, late, or missing aeronautical data and aeronautical information can potentially affect the safety of air navigation.

Note 2: These regulations are to be used in conjunction with the Procedures for Air Navigation Services — ICAO Abbreviations and Codes (PANS-ABC, Doc 8400).

Note 3: These regulations are to be used in conjunction with the AMC CAR-175.

Note 4: Guidance material on the organization and operation of Aeronautical Information Services is contained in the ICAO Aeronautical Information Services Manual (Doc 8126).

CAR 175.200 Definitions

Definitions existing in ICAO Documents shall form part of this regulation, supplemented by the definitions contained in CAR-1. Where there are differences between the definitions in the two sources, CAR-1 (Definitions and Abbreviations) has precedence.

CAR 175.205 Common Reference Systems for Air Navigation

(a) Horizontal Reference System:

- (1) World Geodetic System — 1984 (WGS-84) shall be used as the horizontal (geodetic) reference system for international air navigation. Consequently, published aeronautical geographical coordinates (indicating latitude and longitude) shall be expressed in terms of the WGS-84 geodetic reference datum.

Note: Comprehensive guidance material concerning WGS-84 is contained in the World Geodetic System — 1984 (WGS-84) Manual (ICAO Doc 9674).

- (2) In precise geodetic applications and some air navigation applications, temporal changes in the tectonic plate motion and tidal effects on the Earth's crust shall be modelled and estimated. To reflect the temporal effect, an epoch shall be included with any set of absolute station coordinates.

Note 1: The latest version of the WGS-84 (G2139) reference frame is realized through coordinates of 17 GPS tracking stations which are part of the GPS Control Segment. They are aligned to IGB14 (considered to be equivalent to ITRF2014 (International Terrestrial Reference System 2014)) at epoch 2005.0.

Note 2: Another precise worldwide terrestrial coordinate system is the International Earth Rotation Service (IERS) Terrestrial Reference System (ITRS), and the realization of ITRS is the IERS Terrestrial Reference Frame (ITRF). Guidance material regarding the ITRS is provided in Appendix C of Doc 9674. WGS-84 (G2139) is consistent with ITRF2014 and in practical realization the difference between these two systems is statistically insignificant for most applications meaning WGS-84 (G2139) and ITRF2014 are essentially identical.

(b) Vertical Reference System

- (1) Mean sea level (MSL) datum shall be used as the vertical reference system for international air navigation.

Note 1: The geoid globally most closely approximates MSL. It is defined as the equipotential surface in the gravity field of the Earth which coincides with the undisturbed MSL extended continuously through the continents.

Note 2: Gravity-related heights (elevations) are also referred to as orthometric heights while distances of points above the ellipsoid are referred to as ellipsoidal heights.

- (2) The Earth Gravitational Model — 1996 (EGM-96) shall be used by international air navigation as the global gravity model.
- (3) At those geographical positions where the accuracy of EGM-96 does not meet the accuracy requirements for elevation and geoid undulation on the basis of EGM-96 data, regional, national or local geoid models containing high resolution (short wavelength) gravity field data shall be developed and used. When a geoid model other than the EGM-96 model is used, a description of the model used, including the parameters required for height transformation between the model and EGM-96, shall be provided in the Aeronautical Information Publication (AIP).

Note: Specifications governing determination and reporting (accuracy of field work and data integrity) of elevation and geoid undulation at specific positions at aerodromes/heliports are given in AMC CAR-175.

(c) Temporal Reference System

- (1) The Gregorian calendar and Coordinated Universal Time (UTC) shall be used as the temporal reference system for international air navigation.

Note 1: A value in the time domain is a temporal position measured relative to a temporal reference system.

Note 2: UTC is a time scale maintained by the Bureau International de l'Heure and the IERS and forms the basis of a coordinated dissemination of standard frequencies and time signals.

Note 3: See CAR-178 for guidance material relating to UTC.

Note 4: ISO Standard 8601¹ specifies the use of the Gregorian calendar and 24-hour local or UTC for information interchange while ISO Standard 19108 prescribes the Gregorian calendar and UTC as the primary temporal reference system for use with geographic information.

- (2) When a different temporal reference system is used for some applications, the feature catalogue, or the metadata associated with an application schema or a data set, as appropriate, shall include either, a description of that system or, a citation for a document that describes that temporal reference system.

Note: ISO Standard 19108¹, Annex D, describes some aspects of calendars that may have to be considered in such a description.

¹ ISO Standards

8601 — Data elements and interchange formats — Information interchange — Representation of dates and times

9000 — Quality Management Systems — Fundamentals and Vocabulary

19101 — Geographic information — Reference model

CAR 175.210 Miscellaneous Specifications

- (a) Aeronautical information products intended for international distribution shall include English text for those parts expressed in plain language.
- (b) Place names shall be spelt in conformity with local usage, transliterated, when necessary, into the ISO-Basic Latin alphabet.
- (c) Units of measurement used in the origination, processing and distribution of aeronautical data and aeronautical information shall be consistent with the decision taken by CAA in respect of the use of the tables contained in CAR-178 Units of Measurement.
- (d) ICAO abbreviations shall be used in the aeronautical information products whenever they are appropriate and their use will facilitate distribution of aeronautical data and aeronautical information.

19104 — Geographic information — Terminology

19108 — Geographic information — Temporal schema

19109 — Geographic information — Rules for application schema

19110 — Geographic information — Feature cataloguing schema

19115 — Geographic information — Metadata

19117 — Geographic information — Portrayal

19131 — Geographic information — Data product specification

SUBPART E — RESPONSIBILITIES AND FUNCTIONS

CAR 175.250 ANS Provider

- (a) The air navigation service provider responsible for the provision of aeronautical information services shall:
 - (1) provide Aeronautical Information Services (AIS); or
 - (2) delegate the authority for the provision of the service wholly or in part to a non-governmental agency, provided that these regulations, in conjunction with the Standards and Recommended Practices of CAR-175, are adequately met by the nominated agency.
- (b) ensure that the provision of aeronautical data and aeronautical information covers Sultanate of Oman territory and those areas over the high seas for which Oman is responsible for the provision of air traffic services.
- (c) remain responsible for the aeronautical data and aeronautical information provided in accordance with paragraph (b). Aeronautical data and aeronautical information provided for and on behalf of Oman shall clearly indicate that they are provided under the authority of Oman CAA, irrespective of the format in which they are provided.
- (d) ensure that the aeronautical data and aeronautical information provided are of required quality in accordance with CAR 175.305.
- (e) ensure that formal arrangements are established between originators of aeronautical data and aeronautical information and the AIS provider, in relation to the timely and complete provision of aeronautical data and aeronautical information.

Note: The scope of aeronautical data and aeronautical information that would be the subject of formal arrangements is specified in Subpart G.

CAR 175.255 AIS Provider

- (a) The AIS provider shall ensure that aeronautical data and aeronautical information necessary for the safety, regularity and efficiency of air navigation are made available in a form suitable for the operational requirements of the air traffic management (ATM) community, including:
 - (1) those involved in flight operations, including flight crews, flight planning and flight simulators; and
 - (2) the air traffic services unit responsible for flight information service and the services responsible for pre-flight information.

Note: A description of the ATM community is contained in the Global Air Traffic Management Operational Concept (ICAO Doc 9854).

- (b) The AIS provider shall receive, collate or assemble, edit, format, publish/store and distribute aeronautical data and aeronautical information concerning the entire territory of the Sultanate of Oman as well as those areas over the high seas in which the ATM provider is responsible for the provision of air traffic services. Aeronautical data and aeronautical information shall be provided as aeronautical information products.

Note: The AIS may include origination functions.

- (c) Where twenty-four (24) hour service is not provided, service shall be available during the whole period an aircraft is in flight in the area of responsibility of the AIS provider, plus a period of at least two hours before and after such a period. Service shall also be available at such other time as may be requested by an appropriate ground organization.
- (d) The AIS provider shall, in addition, obtain aeronautical data and aeronautical information to enable it to provide pre-flight information service and to meet the need for in-flight information:
 - (1) from the AIS of other States;
 - (2) from other sources that may be available.

Note: One such source is the subject of a provision in CAR 175.480.

- (e) Aeronautical data and aeronautical information obtained under paragraph (d) (1) shall, when distributed, be clearly identified as having the authority of the originating State.
- (f) Aeronautical data and aeronautical information obtained under paragraph (d)(2) shall, if possible, be verified before distribution and if not verified shall, when distributed, be clearly identified as such.
- (g) The AIS provider shall promptly make available to the AIS of other States any aeronautical data and aeronautical information necessary for the safety, regularity or efficiency of air navigation required by them, to enable them to comply with sub-regulation CAR 175.255 paragraph (a).

CAR 175.260 Exchange of Aeronautical data and aeronautical information

- (a) The air navigation service provider responsible for the provision of aeronautical information services shall designate the office to which all elements of aeronautical information products provided by other States shall be addressed. Such an office shall be qualified to deal with requests for aeronautical data and aeronautical information provided by other States.
- (b) Formal arrangements shall be established between those parties providing aeronautical data and aeronautical information on behalf of the Sultanate of Oman and their users, in relation to the provision of the service.

Note: Guidance material on such formal arrangements is contained in ICAO Document 8126.

- (c) Where more than one international NOTAM office is designated within the Sultanate of Oman, the extent of responsibility and the territory covered by each office shall be defined.
- (d) The AIS provider shall arrange, as necessary, to satisfy operational requirements for the issuance and receipt of NOTAM distributed by telecommunication.
- (e) Wherever practicable, direct contact between AIS shall be established in order to facilitate the international exchange of aeronautical data and aeronautical information.
- (f) Except as provided in CAR 175.260 paragraph (h), one copy of each of the elements of the Integrated Aeronautical Information Package following aeronautical information products (where available) that have been requested by the AIS of a Contracting State shall be made available by the originating State and provided in the mutually-agreed form(s), without charge, even where authority for publication/storage and distribution has been delegated to a non-governmental agency:
 - (1) Aeronautical Information Publication (AIP), including Amendments and Supplements;
 - (2) Aeronautical Information Circulars (AIC);
 - (3) NOTAM; and
 - (4) Aeronautical Charts.
- (g) The exchange of more than one copy of the elements of aeronautical information products and other air navigation documents, including those containing air navigation legislation and regulations, shall be subject to bilateral agreements between the participating Contracting States and entities.
- (h) Where aeronautical information and aeronautical data is provided in the form of digital data sets to be used by the AIS, it shall be provided on the basis of agreement between the Sultanate of Oman and other Contracting States concerned.

Note: The intention is that; States are able to access foreign data for the purposes specified in CAR 175.255 paragraph (d).

- (i) The procurement of aeronautical data and aeronautical information, including the elements of aeronautical information products, and other air navigation documents, including those containing air navigation legislation and regulations, by States other than Contracting States and by other entities shall be subject to a separate agreement with the Sultanate of Oman.

- (j) Globally interoperable aeronautical data and information exchange models shall be used for the provision of data sets.

Note 1: Specifications concerning the globally interoperable aeronautical information and data exchange models are contained in the AMC CAR-175.

Note 2: Guidance on the globally interoperable aeronautical information and data exchange models may be found in ICAO Document 8126.

CAR 175.265 Copyright

Note: In order to protect the investment in the products of the Sultanate of Oman's AIS as well as to ensure better control of their use, CAA and/or the AIS provider may wish to apply copyright to those products in accordance with national laws.

- (a) Any aeronautical information product which has been granted copyright protection by the *Sultanate of Oman* and provided to another State in accordance with CAR 175.260 shall only be made available to a third party on the condition that the third party is made aware that the product is copyright protected and provided that it is appropriately annotated that the product is subject to copyright by the *Sultanate of Oman*.
- (b) When aeronautical information and aeronautical data is provided to a State in accordance with CAR 175.260 paragraph (h), the receiving State shall not provide digital data sets of the providing State to any third party without the consent of the providing State.

CAR 175.270 Cost Recovery

The overhead cost of collecting and compiling aeronautical data and aeronautical information shall be included in the cost basis for airport and air navigation services charges, or other charges as appropriate.

Note: When costs of collection and compilation of aeronautical data and aeronautical information are recovered through airport and air navigation services charges, the charge to an individual customer for the supply of a particular aeronautical information product may be based on the costs of printing paper copies, production of electronic media and distribution.

SUBPART F — AERONAUTICAL INFORMATION MANAGEMENT

CAR 175.300 Information Management Requirements

The information management resources and processes established by an Aeronautical Information Services (AIS) shall be adequate to ensure the timely collection, processing, storing, integration, exchange and delivery of quality-assured aeronautical data and aeronautical information within the air traffic management (ATM) system.

CAR 175.305 Data quality requirements

(a) Data Accuracy:

The order of accuracy for aeronautical data shall be in accordance with its intended use.

Note: Specifications concerning the order of accuracy (including confidence level) for aeronautical data are contained in the AMC CAR-175, Appendix 1.

(b) Data Resolution:

The order of resolution of aeronautical data shall be commensurate with the actual data accuracy.

Note 1: Specifications concerning the resolution of the aeronautical data are contained in the AMC CAR-175, Appendix 1.

Note 2: The resolution of the data contained in the database may be the same or finer than the publication resolution.

(c) Data Integrity:

- (1) The integrity of aeronautical data shall be maintained throughout the data process from origination to distribution to the next intended user.

Note: Specifications concerning the integrity classification related to aeronautical data are contained in the AMC CAR-175, Appendix 1.

- (2) Based on the applicable integrity classification procedures shall be put in place in order to:

- i. for routine data: avoid corruption throughout the processing of the data;
- ii. for essential data: ensure corruption does not occur at any stage of the data processing life cycle (e.g. collection, processing, storing, integration, exchange and delivery) and include additional measures or steps as needed to address potential risks in the overall processing of aeronautical data to further ensure data integrity at this level; and
- iii. for critical data: ensure corruption does not occur at any stage of the data processing life cycle (e.g. collection, processing, storing, integration, exchange and delivery) and include additional data integrity assurance processes to mitigate the risk of errors.

Note: Guidance concerning measures to ensure data integrity is contained in the Aeronautical Information Service Manual (Doc 8126), Part II, 4.1 and 6.2.

(d) Data Traceability:

Traceability of aeronautical data shall be ensured and retained as long as the data is in use.

(e) Data Timeliness:

Timeliness shall be ensured by including limits on the effective period of the data elements.

Note 1: These limits may be associated with individual data elements or data sets.

Note 2: If the effective period is defined for a data set, it will account for the effective dates of all of the individual data elements.

(f) Data Completeness:

Completeness of the aeronautical data shall be ensured in order to support the intended use.

(g) Data Format:

The format of delivered data shall be adequate to ensure that the data is interpreted in a manner that is consistent with its intended use.

CAR 175.310 Aeronautical Data and Aeronautical Information Validation and Verification

- (a) Aeronautical data and aeronautical information to be published as part of an aeronautical information product shall be checked before being submitted to the AIS, in order to ensure that all necessary information has been included and that it is correct.
- (b) An AIS provider shall establish verification and validation procedures, which ensure that upon receipt of aeronautical data and aeronautical information, quality requirements are met.

CAR 175.315 Data Error Detection

- (a) Digital data error detection techniques shall be used during the transmission and/or storage of aeronautical data and digital data sets.
- (b) Digital data error detection techniques shall be used in order to maintain the integrity levels as specified in CAR 175.305 paragraph (c).

Note: Detailed specifications concerning digital data error detection techniques are contained in the AMC CAR-175.

CAR 175.320 Use of Automation

- (a) Automation shall be applied in order to ensure the efficiency and cost-effectiveness of Aeronautical Information Services.

Note: Guidance material on the development of databases and the establishment of data exchange services is contained in the ICAO Aeronautical Information Services Manual (Doc 8126).

- (b) Due consideration to the integrity of data and information shall be given when automated processes are implemented and mitigating steps taken where risks are identified.

Note: Risks of altering the integrity of data and information may be introduced by automated processes in case of unexpected systems behaviors.

- (c) In order to meet the data quality requirements, automation shall:
 - (1) enable digital aeronautical data exchange between the parties involved in the data processing chain; and
 - (2) use aeronautical information exchange models and data exchange models designed to be globally interoperable.

CAR 175.325 Quality Management System

- (a) Quality management systems shall be implemented and maintained encompassing all functions of an AIS, as outlined in CAR 175.255. The execution of such quality management systems shall be made demonstrable for each function stage.

Note: Guidance material is contained in the Manual on the Quality Management System for Aeronautical Information Services (ICAO Doc 9839) and CAR-100.

- (b) Quality management shall be applicable to the whole aeronautical information data chain from data origination to distribution to the next intended user, taking into consideration the intended use of data.
- (c) The quality management system established in accordance with paragraph (a) shall follow the ISO-9000 series of quality assurance standards, and be certified by an accredited certification body.
- (d) Within the context of the established quality management system, the competencies and the associated knowledge, skills and attitudes required for each function shall be identified, and personnel assigned to perform those functions shall be appropriately trained. Processes shall be in place to ensure that personnel possess the competencies required to perform specific assigned functions. Appropriate records shall be maintained so that the qualifications of personnel can be confirmed. Initial and periodic assessments shall be established that require personnel to demonstrate the required competencies. Periodic assessments of personnel shall be used as a means to detect and correct shortfalls in knowledge, skills and attitudes.
- (e) The training methodology established in accordance with paragraph (d) shall follow the competency-based training and assessment methodology.

Note 1: Provisions related to the competency-based training and assessment methodology are contained in the Procedures for Air Navigation Services — Training (PANS-TRG, Doc 9868) and in the AMC CAR-175.

Note 2: Additional guidance concerning a competency-based training and assessment methodology to ensure the competency of personnel in accordance with the Procedures for Air Navigation Services — Training (PANS-TRG, Doc 9868) is contained in the Manual on Aeronautical Information Services Training (Doc 9991).

- (f) Each quality management system shall include the necessary policies, processes and procedures, including those for the use of metadata, to ensure and verify that aeronautical data is traceable throughout the aeronautical information data chain so as to allow any data anomalies or errors detected in use to be identified by root cause, corrected and communicated to affected users.
- (g) The established quality management system shall provide users with the necessary assurance and confidence that distributed aeronautical data and aeronautical information satisfy the aeronautical data quality requirements.
- (h) All necessary measures shall be taken to monitor compliance with the quality management system in place.
- (i) Demonstration of compliance of the quality management system applied shall be by audit. If nonconformity is identified, initiating action to correct its cause shall be determined and taken without undue delay. All audit observations and remedial actions shall be evidenced and properly documented.

CAR 175.330 Human Factors Considerations

- (a) The organization of an AIS as well as the design, contents, processing and distribution of aeronautical data and aeronautical information shall take into consideration human factors principles, which facilitate their optimum utilization.
- (b) Due consideration shall be given to the integrity of information where human interaction is required and mitigating steps taken where risks are identified.

Note: This may be accomplished through the design of systems, operating procedures or improvements in the operating environment.

SUBPART G — SCOPE OF AERONAUTICAL DATA AND AERONAUTICAL INFORMATION

Note: The scope of aeronautical data and aeronautical information provides the minimum requirement to support aeronautical information products and services, aeronautical navigation databases, air navigation applications and ATM systems.

CAR 175.350 Scope of Aeronautical Data and Aeronautical Information

- (a) The aeronautical data and aeronautical information to be received and managed by the AIS shall include at least the following sub-domains:
- (1) national regulations, rules and procedures;
 - (2) aerodromes and heliports;
 - (3) airspace;
 - (4) ATS routes;
 - (5) instrument flight procedures;
 - (6) radio navigation aids/systems;
 - (7) obstacles;
 - (8) terrain; and
 - (9) geographic information.

Note 1: Detailed specifications concerning the content of each sub-domain are contained in the AMC CAR-175, Appendix 1.

Note 2: More than one organization or authority may originate aeronautical data and aeronautical information in each sub-domain.

- (b) Determination and reporting of aeronautical data shall be in accordance with the accuracy and integrity classification required to meet the needs of the end-user of aeronautical data.

Note: Specifications concerning the accuracy and integrity classification related to aeronautical data are contained in the AMC CAR-175, Appendix 1.

CAR 175.355 Metadata

- (a) Metadata shall be collected for aeronautical data processes and exchange points.
- (b) Metadata collection shall be applied throughout the aeronautical information data chain, from origination to distribution to the next intended user.

Note: Detailed specifications concerning metadata are contained in the AMC CAR-175.

SUBPART H — AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

CAR 175.400 General

- (a) Aeronautical information shall be provided in the form of aeronautical information products and associated services.

Note: Specifications concerning the order of resolution of aeronautical data provided for each aeronautical information product are contained in the AMC CAR-175.

- (b) Where aeronautical data and aeronautical information are provided in multiple formats, processes shall be implemented to ensure data and information consistency between formats.

CAR 175.405 Aeronautical Information in a Standardized Presentation

- (a) Aeronautical information provided in a standardized presentation shall include the AIP, AIP Amendments, AIP Supplements, AICs, NOTAMs and Aeronautical Charts.

Note 1: Detailed specifications about AIP, AIP Amendments, AIP Supplements, AICs and NOTAMs are contained in the AMC CAR-175.

Note 2: Cases where digital data sets may replace the corresponding elements of the standardized presentation are detailed in the AMC CAR-175.

- (b) The AIP, AIP Amendment, AIP Supplement and AIC shall be provided on paper and/or as an electronic document.
- (c) The AIP, AIP Amendment, AIP Supplement and AIC provided as an electronic document (eAIP) shall allow for both displaying on electronic devices and printing on paper.

CAR 175.410 Aeronautical Information Publication (AIP)

Note 1: AIP are intended primarily to satisfy international requirements for the exchange of aeronautical information of a lasting character essential to air navigation.

Note 2: AIP constitute the basic information source for permanent information and long duration temporary changes.

- (a) The AIP shall include:
- (1) a statement of the competent authority responsible for the air navigation facilities, services or procedures covered by the AIP;
 - (2) the general conditions under which the services or facilities are available for international use;
 - (3) a list of significant differences between the national regulations of the Sultanate of Oman and the related ICAO Standards, Recommended Practices and Procedures, given in a form that would enable a user to differentiate readily between the requirements of the Sultanate of Oman and the related ICAO provisions;
 - (4) the choice made by the Sultanate of Oman in each significant case where an alternative course of action is provided for in ICAO Standards, Recommended Practices and Procedures.

CAR 175.415 AIP Supplement

A checklist of valid AIP Supplements shall be regularly provided.

Note: Detailed specifications concerning the frequency for providing checklists of valid AIP Supplements are contained in the AMC CAR-175.

CAR 175.420 Aeronautical Information Circulars (AIC)

- (a) An AIC shall be used to provide:
 - (1) a long-term forecast of any major change in legislation, regulations, procedures or facilities; or
 - (2) information of a purely explanatory or advisory nature liable to affect flight safety; or
 - (3) information or notification of an explanatory or advisory nature concerning technical, legislative or purely administrative matters.
- (b) An AIC shall not be used for information that qualifies for inclusion in AIP or NOTAM.
- (c) The validity of AIC currently in force shall be reviewed at least once a year.
- (d) A checklist of currently valid AIC shall be regularly provided.

Note: Detailed specifications concerning the frequency for providing checklists of valid AIC are contained in the AMC CAR-175.

CAR 175.425 Aeronautical Charts

Note: CAR-177 provides regulations including provision requirements for each chart type.

- (a) The aeronautical charts listed alphabetically below shall, when available for designated international aerodromes/heliports, form part of the AIP, or be provided separately to recipients of the AIP:
 - (1) Aerodrome/Heliport Chart — ICAO;
 - (2) Aerodrome Ground Movement Chart — ICAO;
 - (3) Aerodrome Obstacle Chart — ICAO Type A;
 - (4) Aerodrome Obstacle Chart — ICAO Type B (when available)
 - (5) Aerodrome Terrain and Obstacle Chart — ICAO (Electronic);
 - (6) Aircraft Parking/Docking Chart — ICAO;
 - (7) Area Chart — ICAO;
 - (8) ATC Surveillance Minimum Altitude Chart — ICAO;
 - (9) Instrument Approach Chart — ICAO;
 - (10) Precision Approach Terrain Chart — ICAO;
 - (11) Standard Arrival Chart — Instrument (STAR) — ICAO;
 - (12) Standard Departure Chart — Instrument (SID) — ICAO;
 - (13) Visual Approach Chart — ICAO.
- (b) The “En-route Chart — ICAO” shall, when available, form part of the AIP, or be provided separately to recipients of the AIP.
- (c) The aeronautical charts listed alphabetically below shall, when available, be provided as aeronautical information products:
 - (1) World Aeronautical Chart — ICAO 1:1,000,000;
 - (2) Aeronautical Chart — ICAO 1:500,000;
 - (3) Aeronautical Navigation Chart — ICAO Small Scale;
 - (4) Plotting Chart — ICAO chart; and
- (d) Electronic aeronautical charts shall be provided based on digital databases and the use of geographic information systems.
- (e) The chart resolution of aeronautical data shall be that as specified for a particular chart.

Note: Specifications concerning the chart resolution for aeronautical data are contained in the AMC CAR-175, Appendix 1.

CAR 175.430 NOTAM

A checklist of valid NOTAMs shall be regularly provided.

Note 1: Detailed specifications for NOTAM, including formats for SNOWTAM and ASHTAM, are contained in the AMC CAR-175.

Note 2: Detailed specifications concerning the frequency for providing checklists of valid NOTAM are contained in the AMC CAR-175.

CAR 175.435 Digital Data Sets

(a) Digital data shall be in the form of the following data sets:

- (1) AIP data set;
- (2) terrain data sets;
- (3) obstacle data sets;
- (4) aerodrome mapping data sets; and
- (5) instrument flight procedure data sets.

Note: Detailed specifications concerning the content of the digital data sets are contained in the AMC CAR-175.

(b) Each data set shall be provided to the next intended user together with at least the minimum set of metadata that ensures traceability.

Note: Detailed specifications concerning metadata are contained in the AMC CAR-175.

(c) A checklist of valid data sets shall be regularly provided.

CAR 175.440 AIP Data Set

- (a) An AIP data set, when provided, shall cover the extent of information as provided in the AIP.
- (b) When it is not possible to provide a complete AIP data set, the data subset(s) that are available shall be provided.
- (c) The AIP data set shall contain the digital representation of aeronautical information of lasting character (permanent information and long duration temporary changes) essential to air navigation.

CAR 175.445 Terrain and Obstacle Data Sets

Note 1: Numerical requirements for terrain and obstacle data sets are contained in the AMC CAR-175, Appendices 1 and 8.

Note 2: Requirements for terrain and obstacle data collection surfaces are contained in the AMC CAR-175, Appendix 8.

(a) The coverage areas for sets of terrain and obstacle data shall be specified as:

- (1) Area 1: the entire territory of the Sultanate of Oman;
- (2) Area 2: within the vicinity of an aerodrome, subdivided as follows;
- (3) Area 2a: a rectangular area around a runway that comprises the runway strip plus any clearway that exists.

Note: See CAR-139 for dimensions for runway strip.

- (4) Area 2b: an area extending from the ends of Area 2a in the direction of departure, with a length of 10 km and a splay of 15 per cent to each side;
- (5) Area 2c: an area extending outside Area 2a and Area 2b at a distance of not more than 10 km from the boundary of Area 2a; and

- (6) Area 2d: an area outside the Areas 2a, 2b and 2c up to a distance of 45 km (25 nm) from the aerodrome reference point, or to an existing terminal control area (TMA) boundary, whichever is nearest;
 - (7) Area 3: the area bordering an aerodrome movement area that extends horizontally from the edge of a runway to 90 m (300 ft) from the runway center line and 50 m (165 ft) from the edge of all other parts of the aerodrome movement area.
 - (8) Area 4: The area extending 900 m (3,000 ft) prior to the runway threshold and 60 m (200 ft) each side of the extended runway center line in the direction of the approach on a precision approach runway, CAT II or III.
- (b) Where the terrain at a distance greater than 900 m (3,000 ft) from the runway threshold is mountainous or otherwise significant, the length of Area 4 shall be extended to a distance not exceeding 2,000 m (6,500 ft) from the runway threshold.

CAR 175.450 Terrain Data Sets

- (a) Terrain data sets shall contain the digital representation of the terrain surface in the form of continuous elevation values at all intersections (points) of a defined grid, referenced to common datum.
- (b) Terrain data shall be provided for Area 1.
- (c) For aerodromes regularly used by international civil aviation, terrain data shall be provided for:
 - (1) Area 2a;
 - (2) the take-off flight path area; and
 - (3) an area bounded by the lateral extent of the aerodrome obstacle limitation surfaces.
- (d) for aerodromes regularly used by international civil aviation, additional terrain data shall be provided within Area 2 as follows:
 - (1) in the area extending to 10 km (5 nm) from the ARP; and
 - (2) within the area between 10 km (5 nm) and the TMA boundary or 45-km (25 nm) radius (whichever is smaller) where terrain penetrates a horizontal terrain data collection surface specified as 120 m (400 ft) above the lowest runway elevation.
- (e) Arrangements shall be made for the coordination of providing data for adjacent aerodromes where their respective coverage areas overlap to assure that the data for the same terrain are correct.
- (f) For those aerodromes located near territorial boundaries, arrangements shall be made among States concerned to share terrain data.
- (g) For aerodromes regularly used by international civil aviation, terrain data shall be provided for Area 3.
- (h) For aerodromes regularly used by international civil aviation, terrain data shall be provided for Area 4 for all runways where precision approach CAT II or III operations have been established and where detailed terrain information is required by operators to enable them to assess the effect of terrain on decision height determination by use of radio altimeters.
- (i) Where additional terrain data is collected to meet other aeronautical requirements, the terrain data sets shall be expanded to include this additional data.

CAR 175.455 Obstacle Data Sets

- (a) Obstacle data sets shall contain the digital representation of the vertical and horizontal extent of obstacles.
- (b) Obstacle data shall not be included in terrain data sets
- (c) The obstacle data shall be provided for obstacles in Area 1 whose height is 100 m or higher above ground.
- (d) For aerodromes regularly used by international civil aviation, obstacle data shall be provided for all obstacles within Area 2 that are assessed as being a hazard to air navigation.

- (e) For aerodromes regularly used by international civil aviation, obstacle data shall be provided for:
- (1) Area 2a for those obstacles that penetrate an obstacle data collection surface outlined by a rectangular area around a runway that comprises the runway strip plus any clearway that exists. The Area 2a obstacle collection surface shall have height of 3 m above the nearest runway elevation measured along the runway center line, and for those portions related to a clearway, if one exists, at the elevation of the nearest runway end;
 - (2) objects in the take-off flight path area which project above a plane surface having a 1.2 per cent slope and having a common origin with the take-off flight path area; and
 - (3) penetrations of the aerodrome obstacle limitation surfaces.

Note: Take-off flight path areas are specified in CAR-177. Aerodrome obstacle limitation surfaces are specified in CAR-139

- (f) For aerodromes regularly used by international civil aviation, obstacle data shall be provided for Areas 2b, 2c and 2d for obstacles that penetrate the relevant obstacle data collection surface specified as follows:
- (1) Area 2b: an area extending from the ends of Area 2a in the direction of departure, with a length of 10 km (5 nm) and a splay of 15% to each side. The Area 2b obstacle collection surface has a 1.2% slope extending from the ends of Area 2a at the elevation of the runway end in the direction of departure, with a length of 10 km and a splay of 15% to each side;
 - (2) Area 2c: an area extending outside Area 2a and Area 2b at a distance of not more than 10 km (5 nm) from the boundary of Area 2a. The Area 2c obstacle collection surface has a 1.2% slope extending outside Area 2a and Area 2b at a distance of not more than 10 km (5 nm) from the boundary of Area 2a. The initial elevation of Area 2c shall be the elevation of the point of Area 2a at which it commences; and
 - (3) Area 2d: an area outside the Areas 2a, 2b and 2c up to a distance of 45 km (25 nm) from the aerodrome reference point, or to an existing TMA boundary, whichever is nearest. The Area 2d obstacle collection surface has a height of 100 m (330 ft) above ground; except that data need not be collected for obstacles less than a height of 3 m (10 ft) above ground in Area 2b and less than a height of 15 m (50 ft) above ground in Area 2c.
- (g) Arrangements shall be made for the coordination of providing obstacle data for adjacent aerodromes where their respective coverage areas overlap to assure that the data for the same obstacle are correct.
- (h) For those aerodromes located near territorial boundaries, arrangements shall be made among States concerned to share obstacle data.
- (i) For aerodromes regularly used by international civil aviation, obstacle data shall be provided for Area 3 for obstacles that penetrate the relevant obstacle data collection surface extending a half-meter (0.5 m/ 1.6 ft) above the horizontal plane passing through the nearest point on the aerodrome movement area.
- (j) For aerodromes regularly used by international civil aviation, obstacle data shall be provided for Area 4 for all runways where precision approach CAT II or III operations have been established.
- (k) Where additional obstacle data are collected to meet other aeronautical requirements, the obstacle data sets shall be expanded to include these additional data.

CAR 175.460 Aerodrome Mapping Data Sets

- (a) Aerodrome mapping data sets shall contain the digital representation of aerodrome features.

Note: Aerodrome features consist of attributes and geometries, which are characterized as points, lines or polygons. Examples include runway thresholds, taxiway guidance lines and parking stand areas.

- (b) Aerodrome mapping data sets, when provided, shall be made available for aerodromes regularly used by international civil aviation.

CAR 175.465 Instrument Flight Procedure Data Sets

- (a) Instrument flight procedure data sets shall contain the digital representation of instrument flight procedures.
- (b) Instrument flight procedures data sets, when provided, shall be made available for aerodromes regularly used by international civil aviation.

CAR 175.470 Distribution Services

- (a) General
 - (1) Aeronautical information products shall be distributed to authorized users who request them.
 - (2) AIP, AIP Amendments AIP Supplements and AIC shall be made available by the most expeditious means.
 - (3) Global communication networks such as the Internet shall, whenever practicable, be employed for the provision of aeronautical information products.
- (b) NOTAM distribution
 - (1) NOTAM shall be distributed on the basis of a request.
 - (2) NOTAM shall be prepared in conformity with the relevant provisions of the ICAO communication procedures.
 - (3) The Aeronautical Fixed Service (AFS) shall, whenever practicable, be employed for NOTAM distribution.
 - (4) When a NOTAM is sent by means other than the AFS, a six-digit date-time group indicating the date and time of NOTAM origination, and the identification of the originator shall be used, preceding the text. The originating State shall select the NOTAM that are to be given international distribution.
 - (5) International exchange of NOTAM shall take place only as mutually agreed between the international NOTAM offices concerned and between the NOTAM offices and multinational NOTAM Processing Units.
 - (6) The originating State shall upon request grant distribution of NOTAM series other than those distributed internationally.
 - (7) Selective distribution lists shall be used when practicable.

Note: Guidance material relating to selective distribution lists is contained in the ICAO Aeronautical Information Services Manual (Doc 8126).

- (c) Data set information services
 - (1) When provided, the digital data sets specified in CAR 175.435 shall be made available through information services.

Note 1: In the context of system-wide information management, the notion of information service addresses machine-to-machine interaction in a service-oriented architecture.

Note 2: Procedures on information services are contained in the Procedures for Air Navigation Services Information Management (PANS-IM, Doc 10199).

Note 3: Guidance material on information services can be found in the Manual on System-wide Information Management Implementation (Doc 10203).

- i. A data set information service shall provide, as a minimum, the ability to query and retrieve as a whole each of the digital data sets specified in CAR 175.435.
- ii. A data set information service shall provide the ability to query and retrieve selected elements of the digital data sets specified in CAR 175.435.

Note: Guidance material on how to query digital data sets is contained in the Aeronautical Information Services Manual (Doc 8126), Part IV.

- iii. A data set information service shall provide the option to subscribe to notifications on data set updates.

CAR 175.475 Pre-Flight Information Service

- (a) For any aerodrome/heliport used for international air operations, aeronautical information relative to the route stages originating at the aerodrome/heliport shall be made available to flight operations personnel, including flight crews and services responsible for pre-flight information.
- (b) Aeronautical information provided for pre-flight planning purposes shall include information of operational significance from the elements of the aeronautical information products.

Note. 1: The elements of the aeronautical information products may be limited to national publications and when practicable, those of immediately adjacent States, provided a complete library of aeronautical information is available at a central location and means of direct communications are available with that library.

Note 2: A recapitulation of valid NOTAMs of operational significance and other information of urgent character may be made available to flight crews in the form of plain-language pre-flight information bulletins (PIB). Guidance material on the preparation of PIB is contained in the ICAO Aeronautical Information Services Manual (Doc 8126).

CAR 175.480 Post-flight Information Service

- (a) For any aerodrome/heliport used for international air operations, arrangements shall be made to receive information concerning the state and operation of air navigation facilities or services noted by aircrews.
- (b) The arrangements specified in (a) shall ensure that such information is made available to the Aeronautical Information Services for distribution as the circumstances necessitate.
- (c) For any aerodrome/heliport used for international air operations, arrangements shall be made to receive information concerning the presence of wildlife hazard observed by aircrews.
- (d) The information about presence of wildlife hazard shall be made available to the Aeronautical Information Services for distribution as the circumstances necessitate.

Note: For paragraphs (c) and (d) see CAR-139.

SUBPART I — AERONAUTICAL INFORMATION UPDATES**CAR 175.500 General Specifications**

Aeronautical data and aeronautical information shall be kept up to date.

CAR 175.505 Aeronautical Information Regulation and Control (AIRAC)

- (a) Information concerning the following circumstances shall be distributed under the regulated system (AIRAC), i.e. basing establishment, withdrawal or significant changes upon a series of common effective dates at intervals of twenty-eight (28) days, including, 8 November 2018:
- (1) Limits (horizontal and vertical), regulations and procedures applicable to:
 - i. flight information regions;
 - ii. control areas;
 - iii. control zones;
 - iv. advisory areas;
 - v. ATS routes;
 - vi. permanent danger, prohibited and restricted areas (including type and periods of activity when known) and ADIZ;
 - vii. permanent areas or routes or portions thereof where the possibility of interception exists.
 - (2) Positions, frequencies, call signs, identifiers, known irregularities and maintenance periods of radio navigation aids, and communication and surveillance facilities.
 - (3) Holding and approach procedures, arrival and departure procedures, noise abatement procedures and any other pertinent ATS procedures.
 - (4) Transition levels, transition altitudes and minimum sector altitudes.
 - (5) Meteorological facilities (including broadcasts) and procedures.
 - (6) Runways and stop-ways
 - (7) Taxiways and aprons.
 - (8) Aerodrome ground operating procedures (including low visibility procedures).
 - (9) Approach and runway lighting.
 - (10) Aerodrome operating minima if published by CAA.
- (b) The information notified under the AIRAC system shall not be changed further for at least another twenty-eight (28) days after the effective date, unless the circumstance notified is of a temporary nature and would not persist for the full period.
- (c) Information provided under the AIRAC system shall be made available by the AIS so as to reach recipients at least twenty-eight (28) days in advance of the effective date.
- Note: AIRAC information is distributed by the AIS unit at least forty-two (42) days in advance of the AIRAC effective dates with the objective of reaching recipients at least twenty-eight (28) days in advance of the effective date.*
- (d) When information has not been submitted by the AIRAC date, a NIL notification shall be distributed not later than one cycle before the AIRAC effective date concerned.
- (e) Implementation dates other than AIRAC effective dates shall not be used for pre-planned operationally significant changes requiring cartographic work and/or for updating of navigation databases.
- (f) The regulated system (AIRAC) shall also be used for the provision of information relating to the establishment and withdrawal of, and premeditated significant changes in, the circumstances listed below:
- (1) Position, height and lighting of navigational obstacles.
 - (2) Hours of service of aerodromes, facilities and services.
 - (3) Customs, immigration and health services.

- (4) Temporary danger, prohibited and restricted areas and navigational hazards, military exercises and mass movements of aircraft.
- (5) Temporary areas or routes or portions thereof where the possibility of interception exists.
- (g) Whenever major changes are planned and where advance notice is desirable and practicable, information shall be made available by the AIS so as to reach recipients at least fifty-six (56) days in advance of the effective date. This shall be applied to the establishment of, and premeditated major changes in, the circumstances listed below, and other major changes if deemed necessary.
 - (1) New aerodromes for international IFR operations.
 - (2) New runways for IFR operations at international aerodromes.
 - (3) Design and structure of the air traffic services route network.
 - (4) Design and structure of a set of terminal procedures (including change of procedure bearings due to magnetic variation change).
 - (5) Circumstances listed in (a) if the entire State or any significant portion thereof is affected or if cross-border coordination is required.

CAR 175.510 Aeronautical Information Product Updates (AIP Updates)

- (a) AIP shall be amended or reissued at such regular intervals as may be necessary to keep them up to date.
- (b) Permanent changes to the AIP shall be published as AIP Amendments.
- (c) Temporary changes of long duration (three months or longer) and information of short duration which contains extensive text and/or graphics shall be published as AIP Supplements.

CAR 175.515 Aeronautical Information Product Updates (NOTAM)

- (a) When an AIP Amendment or an AIP Supplement is published in accordance with AIRAC procedures, a “Trigger” NOTAM shall be originated.

Note: Detailed specifications concerning the Trigger NOTAM are contained in the AMC CAR-175.

- (b) A NOTAM shall be originated and issued promptly whenever the information to be distributed is of a temporary nature and of short duration or when operationally significant permanent changes, or temporary changes of long duration are made at short notice, except for extensive text and/or graphics.
- (c) A NOTAM shall be originated and issued concerning the following information:
 - (1) establishment, closure or significant changes in operation of aerodrome(s) or heliport(s) or runways;
 - (2) establishment, withdrawal and significant changes in operation of aeronautical services (AGA, AIS, ATS, CNS, MET, SAR, etc.);
 - (3) establishment, withdrawal and significant changes in operational capability of radio navigation and air-ground communication services. This includes: interruption or return to operation, change of frequencies, change in notified hours of service, change of identification, change of orientation (directional aids), change of location, power increase or decrease amounting to fifty per cent (50%) or more, change in broadcast schedules or contents, or irregularity or unreliability of operation of any radio navigation and air-ground communication services or limitations of relay stations including operational impact, affected service, frequency and area;
 - (4) unavailability of back-up and secondary systems, having a direct operational impact;
 - (5) establishment, withdrawal or significant changes made to visual aids;
 - (6) interruption of or return to operation of major components of aerodrome lighting systems;

- (7) establishment, withdrawal or significant changes made to procedures for air navigation services;
- (8) occurrence or correction of major defects or impediments in the manoeuvring area;
- (9) changes to and limitations on availability of fuel, oil and oxygen;
- (10) major changes to search and rescue facilities and services available;
- (11) establishment, withdrawal or return to operation of hazard beacons marking obstacles to air navigation;
- (12) changes in regulations requiring immediate action, e.g. prohibited areas for SAR action;
- (13) presence of hazards not otherwise promulgated, which affect air navigation (including obstacles, military exercises and operations, intentional and unintentional radio frequency interferences, rocket launches, displays, fireworks, sky lanterns, rocket debris, races and major parachuting events);
- (14) conflict zones which affect air navigation (to include information that is as specific as possible regarding the nature and extent of threats of that conflict and its consequences for civil aviation);

Note: Guidance related to conflict zones is contained in the Risk Assessment Manual for Civil Aircraft Operations Over or Near Conflict Zones (ICAO Doc 10084).

- (15) planned laser emissions, laser displays and search lights if pilots' night vision is likely to be impaired;
- (16) erecting or removal of, or changes to, obstacles to air navigation in the take-off/climb, missed approach, approach areas and runway strip;
- (17) establishment or discontinuance (including activation or deactivation) as applicable, or changes in the status of prohibited, restricted or danger areas;
- (18) establishment or discontinuance of areas or routes or portions thereof where the possibility of interception exists and where the maintenance of guard on the VHF emergency frequency 121.5 MHz is required;
- (19) allocation, cancellation or change of location indicators;
- (20) changes in aerodrome/heliport rescue and firefighting category provided (see CAR-139);
- (21) presence or removal of, or significant changes in, hazardous conditions due to snow, slush, ice, radioactive material, toxic chemicals, volcanic ash deposition or water on the movement area;
- (22) outbreaks of epidemics necessitating changes in notified requirements for inoculations and quarantine measures;
- (23) an operationally significant change in volcanic activity, the location, date and time of volcanic eruptions and/or horizontal and vertical extent of volcanic ash cloud, including direction of movement, flight levels and routes or portions of routes which could be affected;
- (24) release into the atmosphere of radioactive materials or toxic chemicals following a nuclear or chemical incident, the location, date and time of the incident, the flight levels and routes or portions thereof which could be affected and the direction of movement;
- (25) establishment of operations of humanitarian relief missions, such as those undertaken under the auspices of the United Nations, together with procedures and/or limitations which affect air navigation; and
- (26) implementation of short-term contingency measures in cases of disruption, or partial disruption, of air traffic services and related supporting services.

Note: See CAA regulation CAR-172.

Note: Specifications concerning the timely promulgation of information by NOTAM are contained in AMC CAR-175.

(d) The following information shall not be notified by NOTAM:

- (1) routine maintenance work on aprons and taxiways which does not affect the safe movement of aircraft;
- (2) runway marking work, when aircraft operations can safely be conducted on other available runways, or the equipment used can be removed when necessary;
- (3) temporary obstructions in the vicinity of aerodromes/heliports that do not affect the safe operation of aircraft;
- (4) partial failure of aerodrome/heliport lighting facilities where such failure does not directly affect aircraft operations;
- (5) partial temporary failure of air-ground communications when suitable alternative frequencies are known to be available and are operative;
- (6) the lack of apron marshalling services and road traffic control;
- (7) the unserviceability of location, destination or other instruction signs on the aerodrome movement area;
- (8) parachuting when in uncontrolled airspace under VFR (see paragraph (c) (13)), when controlled, at promulgated sites or within danger or prohibited areas;
- (9) training activities by ground units;
- (10) unavailability of back-up and secondary systems if these do not have an operational impact;
- (11) limitations to airport facilities or general services with no operational impact;
- (12) national regulations not affecting general aviation;
- (13) announcement or warnings about possible/potential limitations, without any operational impact;
- (14) general reminders on already published information;
- (15) availability of equipment for ground units without containing information on the operational impact for airspace and facility users;
- (16) information about laser emissions without any operational impact and fireworks below minimum flying heights;
- (17) closure of movement area parts in connection with planned work locally coordinated of duration of less than one hour;
- (18) closure, changes, unavailability in operation of aerodrome(s)/heliport(s) outside the aerodrome(s)/heliport(s) operational hours;
- (19) other non-operational information of a similar temporary nature.

Note: Information which relates to an aerodrome and its vicinity and does not affect its operational status may be distributed locally during pre-flight or in-flight briefing or other local contact with flight crew members.

CAR 175.520 Aeronautical Information Product Updates (Data Set Updates)

- (a) Data sets shall be amended or reissued at such regular intervals as may be necessary to keep them up to date.
- (b) Permanent changes and temporary changes of long duration (three (3) months or longer) made available as digital data shall be issued in the form of a complete data set or a sub-set that includes only the differences from the previously issued complete data set.
- (c) When made available as a completely re-issued data set, the differences from the previously issued complete data set shall be indicated.
- (d) When temporary changes of short duration are made available as digital data (Digital NOTAM), they shall use the same aeronautical information model as the complete data set.
- (e) Updates to AIP and the digital data sets shall be synchronized.