Civil Aviation Authority

CAR-174

Civil Aviation Regulation

METEOROLOGICAL SERVICE

FOR

AIR NAVIGATION

Effective: 1St September 2025

Approved by: H.E.Eng. Naif Ali Hamed Al-Abri

President of CAA

Amendment No.	Applicability date	Subject(s)
01	**October 2018**	1. This CAR has been fully amended including additional sections applicable to Aviation Meteorological Service Organizations - Certification. 2. All users are required to read completely.
02	**January 2020**	CAR-174.650 and 174.655 inserted – Transition period and Exemptions
03	**28 November 2021**	1. Re-issue of the regulation to allow for the publication of Associated Technical Standards in CAP-174, the incorporation of Amendments 79 and 80 of ICAO Annex 3 – Meteorological Services for International Air Navigation State letters have been included.
04	**01 June 2023**	1. Foreword: Reword CAA-DGCAR as the Authority; 2. Establishment of Authority changed as per Foreword; 3. CAR 174.0065 Transitional Period extended 1 February 2025 4. Inclusion CAR 174.0070 Safety Inspections and Audits 5. Inclusion CAR 174.0075 Resolution of Safety Issues 6. Inclusion CAR 174.0080 Suspension and Revocation of Certification 7. Inclusion CAR 174.0085 Enforcement Actions 8. Inclusion APPENDIX 1. Flight documentation — model charts and forms 9. Inclusion APPENDIX2.Technical specifications related to global systems, 10. Inclusion APPENDIX 3. Technical specifications related to meteorological 11. Inclusion APPENDIX 4. Technical specifications related to aircraft observations and reports 12. Inclusion APPENDIX 5. Technical specifications related to forecasts 13. Inclusion APPENDIX 6. Technical specifications related to SIGMET and AIRMET information, 14. Inclusion APPENDIX 7. Technical specifications related to aeronautical climatological information 15. Inclusion APPENDIX 8. Technical specifications related to service for operators and flight crew members 16. Inclusion APPENDIX 9. Technical specifications related to information for ATS, 17. Inclusion APPENDIX 10. Technical specifications related to requirements for and use of communications 18. Inclusion ATTACHMENTS 19. Inclusion ATTACHMENT A. Operationally desirable accuracy of measurement or observation 20. Inclusion ATTACHMENT B. Operationally desirable accuracy of forecasts 21. Inclusion ATTACHMENT C. Selected criteria applicable to aerodrome reports 22. Inclusion ATTACHMENT D. Conversion of instrumented readings into runway visual range and visibility 23. Inclusion ATTACHMENT E. Spatial ranges and resolutions for space weather advisory information
5	**22 July 2024**	Incorporation of Amendment 81 of ICAO Annex 3 – Meteorological Services: 1. Logo Change 2. CAR 174.0003: Entry into Force Alignment with Amendment 81 of the ICAO Annex 3. 3. CAR 174.3005 Supply, Use and Interpretation of Meteorological Information

6	**27 November 2025**	Incorporation of Amendment 82 of ICAO Annex 3 – Meteorological Services. 1. Title changed to Meteorological Services for Air Navigation. 2. Restructure in accordance with Annex 3. 3. All chapters are in line with Annex 3, including Definitions. 4. Glossary of Terms or Abbreviations is added. 5. Sections 0 and 1 changed to subparts A and B. 6. Sections 2 to 5 are replaced by Subpart A to M. 7. Subpart A, as per Annex 3, includes Definitions. 8. All appendices and Attachments are removed and will be transposed to the AMC- CAR 174 in accordance with the PANS-MET (DOC 10157). 9. Associated Technical Standards in CAP-174 removed.

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.

ACC	Area Control Centre
ADS-C	Automatic Dependent Surveillance — Contract
AFIS	Aerodrome Flight Information Service
AFS	Aeronautical Fixed Service
AFTN	Aeronautical Fixed Telecommunication Network
AIC	Aeronautical Information Circular
AIP	Aeronautical Information Publication
AIREP	Air-report
AIS	Aeronautical Information Service
A/C	Aircraft
AMSL	Above Mean Sea Level
APP	Approach Control Unit
ARO	Air Traffic Services Reporting Office
ARP	Aerodrome Reference Point
ATC	Air Traffic Control
ATS	Air Traffic Service
AMO	Aerodrome Meteorological Office
AMSP	Aviation Meteorological Service Provider
CAA	Civil Aviation Authority
CAR	Civil Aviation Regulation
COM	Communications/Equipment
D-VOLMET	Data link-VOLMET
eANP	electronic Air Navigation Plan
FIC	Flight Information Centre
FIR	Flight Information Region
FIS	Flight Information Service
GM	Guidance Material
GTS	Global Telecommunication System
HRP	Heliport Reference Point
IATA	International Air Transport Association
IAVW	International Airways Volcano Watch
ICAO	International Civil Aviation Organisation
ISA	International Standard Atmosphere
ISO	International Organization for Standardization
ISO 9000	a standard that provides the fundamentals and vocabulary for QMS
LRRs	Local Routine Reports
MSA	Minimum Sector Altitude
MOR	Meteorological Optical Range
MWO	Meteorological Watch Office
NOTAM	Notice to Airmen

NPA	Notice of Proposed Amendment
OTSB	Oman Transport Safety Bureau
QMS	Quality Management System
RCC	Rescue Co-ordination Centre
SAR	Search and Rescue
SIGMET	Significant Meteorological Report
SIGWX	Significant Weather
SWXC	Space Weather Centre
TAF	Aerodrome forecasts
TCAC	Tropical cyclone advisory centre
UTC	Coordinated Universal Time
VAAC	Volcanic Ash Advisory Centre
VHF	Very High Frequency
WAFC	World Area Forecast Centre
WAFS	World Area Forecast System
WMO	World Meteorological Organization
WX	Weather

Table of Contents

FOREWORD

(a) These Civil Aviation Requirements (CAR-174) have been issued by the Civil Aviation Authority of Oman — Directorate General of Civil Aviation Regulation (hereinafter referred to as "the Authority") under the provisions of the Civil Aviation Law of the Sultanate of Oman.

(b) This CAR has been developed in alignment with international best practices and regulatory frameworks adopted by other ICAO Contracting States. It incorporates the subject matter outlined in ICAO Annex 3 — Meteorological Service for International Air Navigation, as well as applicable procedures and guidance from related ICAO documents.

(c) CAR-174 prescribes the regulatory requirements for:

1)The establishment, implementation, certification, and continued oversight of Aviation Meteorological Service Providers within the Muscat Flight Information Region (FIR);

2)The provision and operation of meteorological services for air navigation service providers, in accordance with ICAO SARPs and national legislation.

(d) Non-compliance with the provisions of this CAR shall be subject to enforcement action by the Authority, including administrative or punitive measures as provided by applicable law and regulations.

(e) The development of CAR-174 is based on the following international and national references:

1)Civil Aviation Law of the Sultanate of Oman, establishing the legal basis for civil aviation safety, oversight, and enforcement;

2)ICAO Annex 3, which defines the Standards and Recommended Practices for the provision of meteorological services to international air navigation;

3)ICAO PANS-MET, Doc 10157, which provides procedures for air navigation services in meteorology;

4)Other relevant ICAO documents, manuals, and regional air navigation plans that support implementation and harmonization of aviation meteorological services.

(f) Amendments to CAR-174 are issued as complete replacements of affected pages or sections, and each new edition supersedes all previous versions.

(g) The following editorial conventions are used throughout this regulation:

- "**Shall**" indicates a mandatory requirement;
- "**Should**" indicates a recommended practice;
- "**May**" indicates discretionary or optional action;
- "**Will**" denotes a requirement incumbent upon the Authority.

(h) This CAR is supported by the associated Acceptable Means of Compliance (AMC) – CAR-174, which provides detailed technical specifications, guidance, and implementation procedures.

Note: The use of the male gender in this regulation shall be interpreted to include the female gender and vice versa.

SUBPART A – General

CAR 174.001 Applicability

(1) This Civil Aviation Regulation (CAR) prescribes the requirements applicable to:

a) the establishment, implementation, certification, and continued oversight of Aviation Meteorological Service Providers operating within the Muscat Flight Information Region (FIR);

b) the provision and maintenance of aeronautical meteorological services and facilities, in accordance with the standards and recommended practices of ICAO and the technical specifications adopted by the Authority;

c) the supply of meteorological information by certified providers, with the understanding that their obligation is limited to the accurate and timely provision of such information;

d) the use of meteorological information, which, where required by other applicable regulations, remains the responsibility of the user and is not governed by this CAR.

CAR 174.003 Entry into Force

This Civil Aviation Regulation (CAR) shall enter into force on the date of its publication.

It shall become applicable on **27 November 2025**, from which date all designated Aviation Meteorological Service Providers shall comply with the provisions set forth herein for the establishment, operation, and maintenance of meteorological services and facilities in support of international air navigation.

Notwithstanding the above, the requirement for the certification of Aviation Meteorological Service Providers shall enter into force on 31 December 2028.

CAR 174.005 Definitions

For the purposes of this regulation:

(a) Definitions contained in relevant ICAO documents, particularly those referenced in ICAO Annex 3 and PANS-MET (Doc 10157), shall be considered an integral part of this CAR.

(b) These definitions shall be supplemented by those included in CAR-1 (Definitions and Abbreviations). In the event of any inconsistency or conflict between definitions, the provisions in CAR-1 shall take precedence.

Note1. The designation (RR) in these definitions indicates a definition which has been extracted from the Radio Regulations of the International Telecommunication Union (ITU) (see Handbook on Radio Frequency Spectrum Requirements for Civil Aviation including Statement of Approved ICAO Policies (Doc 9718)).

Note 2. These Standards and Recommended Practices are to be used in conjunction with the Procedures for Air Navigation Services — Meteorology (AMC-CAR 174, Doc 10157).

When the following terms are used in the Standards and Recommended Practices for Meteorological Service for International Air Navigation, they have the following meanings:

- **Aerodrome**. A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.
- **Aerodrome climatological summary.** Concise summary of specified meteorological elements at an aerodrome, based on statistical data.
- **Aerodrome climatological table.** Table providing statistical data on the observed occurrence of one or more meteorological elements at an aerodrome.

- **Aerodrome control tower.** A unit established to provide air traffic control service to aerodrome traffic.
- **Aerodrome meteorological office.** An office designated to provide meteorological service for aerodromes serving international air navigation.
- **Aerodrome reference point.** The designated geographical location of an aerodrome.
- **Aeronautical fixed service (AFS).** A telecommunication service between specified fixed points provided primarily for the safety of air navigation and for the regular, efficient and economical operation of air services.
- **Aeronautical fixed telecommunication network (AFTN).** A worldwide system of aeronautical fixed circuits provided, as part of the aeronautical fixed service, for the exchange of messages and/or digital data between aeronautical fixed stations having the same or compatible communications characteristics.
- **Aeronautical meteorological station.** A station designated to make observations and meteorological reports for use in international air navigation.
- **Aeronautical mobile service (RR S1.32).** A mobile service between aeronautical stations and aircraft stations, or between aircraft stations, in which survival craft stations may participate; emergency position-indicating radio beacon stations may also participate in this service on designated distress and emergency frequencies.
- **Aeronautical telecommunication station.** A station in the aeronautical telecommunication service.
- **Aircraft.** Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.
- **Aircraft observation.** The evaluation of one or more meteorological elements made from an aircraft in flight.
- **AIRMET information.** Information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en-route weather phenomena which may affect the safety of low-level aircraft operations and which was not already included in the forecast issued for low-level flights in the flight information region concerned or sub-area thereof.
- **Air-report**. A report from an aircraft in flight prepared in conformity with requirements for position, and operational and/or meteorological reporting.

Note. Details of the AIREP form are given in the PANS-ATM (Doc 4444).

- **Air traffic services unit.** A generic term meaning variously, air traffic control unit, flight information centre or air traffic services reporting office.
- **Alternate aerodrome.** An aerodrome to which an aircraft may proceed when it becomes either impossible or inadvisable to proceed to or to land at the aerodrome of intended landing where the necessary services and facilities are available, where aircraft performance requirements can be met and which is operational at the expected time of use. Alternate aerodromes include the following:
  - ***Take-off alternate****.* An alternate aerodrome at which an aircraft would be able to land should this become necessary shortly after take-off and it is not possible to use the aerodrome of departure.
  - ***En-route alternate****.* An alternate aerodrome at which an aircraft would be able to land in the event that a diversion becomes necessary while en route.
  - ***Destination alternate****.* An alternate aerodrome at which an aircraft would be able to land should it become either impossible or inadvisable to land at the aerodrome of intended landing.

Note. The aerodrome from which a flight departs may also be an en-route or a destination alternate aerodrome for that flight.

- **Altitude.** The vertical distance of a level, a point or an object considered as a point, measured from mean sea level (MSL).

- **Approach control unit.** A unit established to provide air traffic control service to controlled flights arriving at, or departing from, one or more aerodromes.
- **Appropriate ATS authority.** The relevant authority designated by the Sultanate of Oman responsible for providing air traffic services in the airspace concerned.
- **Area control centre (ACC).** A unit established to provide air traffic control service to controlled flights in control areas under its jurisdiction.
- **Automatic dependent surveillance — contract (ADS-C).** A means by which the terms of an ADS-C agreement will be exchanged between the ground system and the aircraft, via a data link, specifying under what conditions ADS-C reports would be initiated, and what data would be contained in the reports.
  Note. The abbreviated term "ADS contract" is commonly used to refer to ADS event contract, ADS demand contract, ADS periodic contract or an emergency mode.
- **Briefing.** Oral commentary on existing and/or expected meteorological conditions.
- **Cloud of operational significance.** A cloud with the height of cloud base below 1 500 m (5 000 ft) or below the highest minimum sector altitude, whichever is greater, or a cumulonimbus cloud or a towering cumulus cloud at any height.
- **Consultation.** Discussion with a meteorologist or another qualified person of existing and/or expected meteorological conditions relating to flight operations; a discussion includes answers to questions.
- **Control area (CTA).** A controlled airspace extending upwards from a specified limit above the earth.
- **Cruising level.** A level maintained during a significant portion of a flight.
- **Flight crew member.** A licensed crew member charged with duties essential to the operation of an aircraft during a flight duty period.
- **Flight documentation.** Written or printed documents, including charts or forms, containing meteorological information for a flight.
- **Flight information centre (FIC).** A unit established to provide flight information service and alerting service.
- **Flight information region (FIR).** An airspace of defined dimensions within which flight information service and alerting service are provided.
- **Flight level.** A surface of constant atmospheric pressure which is related to a specific pressure datum, 1013.2 hectopascals (hPa), and is separated from other such surfaces by specific pressure intervals.
  Note 1. A pressure type altimeter calibrated in accordance with the Standard Atmosphere:
  - *when set to a QNH altimeter setting, will indicate altitude;*
  - *when set to a QFE altimeter setting, will indicate height above the QFE reference datum;*
  - *when set to a pressure of 1 013.2 hPa, may be used to indicate flight levels.*

  Note 2. The terms "height" and "altitude", used in Note 1, indicate altimetric rather than geometric heights and altitudes.
- **Forecast.** A statement of expected meteorological conditions for a specified time or period, and for a specified area or portion of airspace.
- **GAMET area forecast.** An area forecast in abbreviated plain language for low-level flights for a flight information region or sub-area thereof, prepared by the meteorological office designated by the meteorological authority concerned and exchanged with meteorological offices in adjacent flight information regions, as agreed between the meteorological authorities concerned.
- **Grid point data in digital form. (GRIB)** Computer processed meteorological data for a set of regularly spaced points on a chart, for transmission from a meteorological computer to another computer in a code form suitable for automated use.
  Note. In most cases, such data are transmitted on medium- or high-speed telecommunications channels.

- **Height.** The vertical distance of a level, a point or an object considered as a point, measured from a specified datum.
- **Human Factors principles.** Principles which apply to aeronautical design, certification, training, operations and maintenance and which seek safe interface between the human and other system components by proper consideration to human performance.
- **ICAO meteorological information exchange model (IWXXM).** A data model for representing aeronautical meteorological information.
- **International airways volcano watch (IAVW).** International arrangements for monitoring volcanic activity and providing notices, forecasts and warnings to aircraft of volcanic ash in the atmosphere.
  Note. The IAVW is based on the cooperation of aviation and non-aviation operational units using information derived from observing sources and networks that are provided by States. The watch is coordinated by ICAO with the cooperation of other concerned international organizations.
- **Level.** A generic term relating to the vertical position of an aircraft in flight and meaning variously height, altitude or flight level.
- **Meteorological authority.** The entity arranging for the provision of meteorological service for international air navigation on behalf of Sultanate of Oman, and providing regulation and oversight of the meteorological service.
- **Meteorological bulletin.** A text comprising meteorological information preceded by an appropriate heading.
- **Meteorological information.** Meteorological report, analysis, forecast, and any other statement relating to existing or expected meteorological conditions.
- **Meteorological office.** An office designated to provide meteorological service for international air navigation.
- **Meteorological report.** A statement of observed meteorological conditions related to a specified time and location.
- **Meteorological satellite.** An artificial Earth satellite making meteorological observations and transmitting these observations to Earth.
- **Meteorological service provider.** The relevant entity designated to provide meteorological service for international air navigation on behalf of Sultanate of Oman.
- **Meteorological watch office (MWO).** An office designated to provide information concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations within its specified area of responsibility.
- **Minimum sector altitude (MSA).** The lowest altitude which may be used which will provide a minimum clearance of 300 m (1000 ft) above all objects located in an area contained within a sector of a circle of 46 km (25 NM) radius centred on a significant point, the aerodrome reference point (ARP) or the heliport reference point (HRP).
- **Observation (meteorological).** The evaluation of one or more meteorological elements.
- **Operational control.** The exercise of authority over the initiation, continuation, diversion or termination of a flight in the interest of the safety of the aircraft and the regularity and efficiency of the flight.
- **Operational flight plan.** The operator's plan for the safe conduct of the flight based on considerations of aeroplane performance, other operating limitations and relevant expected conditions on the route to be followed and at the aerodromes concerned.
- **Operator.** The person, organization or enterprise engaged in or offering to engage in an aircraft operation.
- **Pilot-in-command.** The pilot designated by the operator, or in the case of general aviation, the owner, as being in command and charged with the safe conduct of a flight.

- **Prevailing visibility.** The greatest visibility value, observed in accordance with the definition of "visibility", which is reached within at least half the horizon circle or within at least half of the surface of the aerodrome. These areas could comprise contiguous or non-contiguous sectors.
- *Note.* This value may be assessed by human observation and/or instrumented systems. When instruments are installed, they are used to obtain the best estimate of the prevailing visibility.
- **Prognostic chart.** A forecast of a specified meteorological element(s) for a specified time or period and a specified surface or portion of airspace, depicted graphically on a chart.
- **Quality assurance.** Part of quality management focused on providing confidence that quality requirements will be fulfilled (ISO 9000).
- **Quality control.** Part of quality management focused on fulfilling quality requirements (ISO 9000).
- **Quality management.** Coordinated activities to direct and control an organization with regard to quality (ISO 9000).
- **Regional air navigation agreement.** Agreement approved by the Council of ICAO normally on the advice of a regional air navigation meeting.
- **Rescue coordination centre.** A unit responsible for promoting efficient organization of search and rescue services and for coordinating the conduct of search and rescue operations within a search and rescue region.
- **Runway.** A defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft.
- **Runway visual range (RVR).** The range over which the pilot of an aircraft on the centre line of a runway can see the runway surface markings or the lights delineating the runway or identifying its centre line.
- **Search and rescue services unit.** A generic term meaning, as the case may be, rescue coordination centre, rescue subcentre or alerting post.
- **SIGMET information.** Information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations.
- **Space weather centre (SWXC).** A global or regional centre designated by ICAO to monitor and provide advisory information regarding space weather phenomena expected to affect high-frequency radio communications, communications via satellite, GNSS-based navigation and surveillance systems and/or pose a radiation risk to aircraft occupants, under the framework of space weather information service.

Note. A regional centre designated by ICAO supports global centres in the fulfilment of its responsibilities.

- **Space weather information service.** A globally coordinated service where space weather centres provide information on space weather phenomena that may affect communications, navigation and surveillance systems and/or pose a radiation risk to aircraft occupants.
- **State volcano observatory.** A volcano observatory, designated by regional air navigation agreement, to monitor active or potentially active volcanoes within a State and to provide information on volcanic activity and/or volcanic ash in the atmosphere.
- **Threshold.** The beginning of that portion of the runway usable for landing.
- **Touchdown zone.** The portion of a runway, beyond the threshold, where it is intended landing aeroplanes first contact the runway.
- **Tropical cyclone.** Generic term for a non-frontal synoptic-scale cyclone originating over tropical or sub-tropical waters with organized convection and definite cyclonic surface wind circulation.
- **Tropical cyclone advisory centre (TCAC).** A meteorological centre designated by regional air navigation agreement to provide advisory information to meteorological watch offices, world area forecast centres and international OPMET databanks regarding the position, forecast direction and speed of movement, central pressure and maximum surface wind of tropical cyclones.

- **Visibility.** Visibility for aeronautical purposes is the greater of:
  - the greatest distance at which a black object of suitable dimensions, situated near the ground, can be seen and recognized when observed against a bright background;
  - the greatest distance at which lights in the vicinity of 1000 candelas can be seen and identified against an unlit background.

Note. The two distances have different values in air of a given extinction coefficient, and the latter b) varies with the background illumination. The former a) is represented by the meteorological optical range (MOR).

- **Volcanic ash advisory centre (VAAC).** A meteorological centre designated by regional air navigation agreement to provide advisory information to meteorological watch offices, area control centres, flight information centres, world area forecast centres and international OPMET databanks regarding the lateral and vertical extent and forecast movement of volcanic ash in the atmosphere following volcanic eruptions.
- **VOLMET.** Meteorological information for aircraft in flight.
  - Data link-VOLMET (D-VOLMET). Provision of current aerodrome routine meteorological reports (METAR) and aerodrome special meteorological reports (SPECI), aerodrome forecasts (TAF), SIGMET, special air-reports not covered by a SIGMET and, where available, AIRMET via data link.
  - VOLMET broadcast. Provision, as appropriate, of current METAR, SPECI, TAF and SIGMET by means of continuous and repetitive voice broadcasts.
- ***World area forecast centre (WAFC).*** A meteorological centre designated to prepare and issue significant weather forecasts and upper-air forecasts in digital form on a global basis direct to States using the aeronautical fixed service Internet-based services.
- ***World area forecast system (WAFS).*** A worldwide system by which world area forecast centres provide aeronautical meteorological en-route forecasts in uniform standardized formats.

CAR 174.007 Terms used with a limited meaning

For the purpose of this CAR, the following terms are used with a limited meaning as indicated below:

a) "provide" is used solely in connection with the provision of service;
b) "issue" is used solely in connection with cases where the obligation specifically extends to sending out the information to a user;
c) "make available" is used solely in connection with cases where the obligation ends with making the information accessible to a user; and
d) "supply" is used solely in connection with cases where either b) or c) applies.

CAR 174.009 Establishment of Authority

(1) This Regulation is issued by the Civil Aviation Authority of Oman (hereinafter referred to as "the Authority") under the provisions of the Civil Aviation Law of the Sultanate of Oman and in accordance with Article 28 of the Convention on International Civil Aviation.

(2) When it is determined that meteorological services are to be provided for international air navigation, the Authority shall:

a) Designate the Aviation Meteorological Service Provider(s) responsible for the provision of such services within the Muscat Flight Information Region (FIR); and
b) Publish the relevant information concerning the designated provider(s), including the type and location of services, in the Aeronautical Information Publication (AIP), in accordance with CAR 175 & AMC CAR-175.

CAR 174.011 Aviation Meteorological Service Provider

(1) To avoid ambiguity with the ICAO-defined term "Meteorological Authority," the Sultanate of Oman uses the term “Authority” to refer to the Civil Aviation Authority of Oman, which is responsible for the regulation and oversight of aeronautical meteorological services.

(2) The term “**Aviation Meteorological Service Provider**” refers to the entity designated by the Authority to arrange for and provide meteorological services for international air navigation, in accordance with Article 28 of the Convention on International Civil Aviation. The designation of such provider(s) shall be published in the Aeronautical Information Publication (AIP), section GEN 3.5.

(3) For the purposes of this Regulation, the following terms shall apply:

a) Authority: The Civil Aviation Authority of Oman, responsible for regulating and overseeing the provision of meteorological services to ensure compliance with applicable requirements and user needs.

b) Aviation Meteorological Service Provider: The entity designated by the Authority to provide aeronautical meteorological services on behalf of the Sultanate of Oman for the purposes of air navigation Service provider.

CAR 174.013 Designation of Meteorological Service Provider

The Authority shall designate one or more Aviation Meteorological Service Providers responsible for the provision or arrangement of meteorological services in support of international air navigation within the Muscat Flight Information Region (FIR), in accordance with Article 28 of the Convention on International Civil Aviation.

a) Details of the designated provider(s), including the type and scope of meteorological services, shall be published in the Oman Aeronautical Information Publication (AIP), in accordance with AMC CAR-175 and the applicable provisions of CAR 175.

b) Any Aviation Meteorological Service Provider whose principal place of operation is located within the Sultanate of Oman shall be required to obtain a certificate in accordance with CAR 174.021

SUBPART B – Certification of Aviation Meteorological Service Providers

CAR 174.021 Obligation to Hold a Certificate for the Provision of Aviation Meteorological Services

No person or organization shall provide aviation meteorological services within the Muscat Flight Information Region (FIR) unless operating under the authority of, and in full compliance with, a valid Aviation Meteorological Service Provider certificate issued by the Authority in accordance with this Regulation.

CAR 174.023 Application for Certificate

Each applicant for the issuance of an Aviation Meteorological Service Provider certificate shall complete the prescribed application form, as specified by the Authority, and submit it along with the following:

1. A cover letter addressed to the Authority;
2. The applicant's Operations Manual;
3. The applicant's Quality Management System (QMS) Manual; and
4. Proof of payment of the applicable application fee, as prescribed by relevant regulations.

All documents shall be submitted in the format and within the timeframe specified by the Authority.

CAR 174.025 Issue of Certificate

The Authority may issue an Aviation Meteorological Service Provider certificate if it is satisfied that:

a) The applicant has demonstrated compliance with all applicable certification requirements set forth in this Regulation;
b) The applicant, as well as the senior personnel required under CAR 174.041(1)(a) and (1)(b), are acceptable to the Authority
c) The issuance of the certificate is not contrary to the interests of aviation safety.

CAR 174.027 Privileges of Certificate Holder

An Aviation Meteorological Service Provider certificate shall specify the types of meteorological offices and facilities that the certificate holder is authorized to operate. The scope of the privileges, including any conditions or limitations, shall be explicitly stated in the certificate issued by the Authority.

CAR 174. 029 Duration of Certificate

(1) An Aviation Meteorological Service Provider certificate shall be valid for a maximum period of three years from the date of issuance, unless renewed in accordance with this Regulation.
(2) A certificate shall remain in effect until it expires, or is suspended or revoked by the Authority.
(3) The holder of a certificate that has expired or been revoked shall immediately surrender the original certificate to the Authority.
(4) In the event of a suspension, the certificate shall be returned to the Authority without delay for appropriate endorsement.
(5) The continued validity of the certificate is contingent upon the certificate holder's ongoing compliance with the requirements of this Regulation.
(6) The certificate shall remain valid subject to periodic surveillance audits conducted at the discretion of the Authority to verify continued compliance with applicable Civil Aviation Regulations.

CAR 174.030 Renewal of Certificate

(1) An application for the renewal of an Aviation Meteorological Service Provider certificate shall be submitted to the Authority using ANS Form 174-0, no later than thirty (30) days prior to the certificate's expiration date.

(2) The application shall be accompanied by any documentation required by the Authority to demonstrate continued compliance with this Regulation.

CAR 174.031 Transfer of Certificate

An Aviation Meteorological Service Provider certificate issued under this Regulation is specific to the holder and shall not be transferred to any other person or organization under any circumstances.

CAR 174. 033 Suspension and Revocation of Certification

The Authority may suspend an Aviation Meteorological Service Provider certificate if it reasonably considers that failure to do so would likely pose a risk to the safety of air navigation.

a) Suspension may be imposed under any of the following circumstances:
   1. The service provider fails to comply with the terms, conditions, or requirements specified in the certificate;
   2. The service provider fails to implement an approved corrective action plan within the specified timeframe;
   3. An official investigation into an accident or serious incident confirms that deficiencies in the meteorological information provided by the service provider contributed to the event.

b) When imposing a suspension, the Authority shall provide written notice to the service provider stating the reasons for the action.

c) The service provider may submit a written appeal to the Authority within thirty (30) days of receiving the suspension notice and shall provide any supporting documents or records deemed relevant.

d) Upon review of the appeal and supporting documentation, the Authority may confirm, amend, or revoke the suspension decision.

e) The Authority may permanently revoke a certificate following a suspension if:
   1. The service provider is found to have violated the Civil Aviation Law or any applicable regulation;
   2. It is determined that the certificate holder is unable or unwilling to rectify identified non-compliances;
   3. The certificate holder ceases to provide the approved meteorological services without valid justification.

f) A certificate that has been revoked shall not be eligible for renewal. However, a new application for certification may be submitted no earlier than one (1) year from the date of revocation.

g) A suspension imposed under paragraph (b) or a revocation under paragraph (f) shall take effect immediately upon issuance of the Authority's decision.

CAR 174.035 Safety Inspections and Audits

The Authority shall exercise ongoing safety oversight of Aviation Meteorological Service Providers in accordance with its certification, monitoring, and enforcement responsibilities. To this end, the Authority may:

a) Subject the certificate holder to inspections and audits of meteorological offices, operational facilities, documents, records, and systems as deemed necessary to verify compliance with this Regulation and ensure the safety and security of civil aviation operations;
b) Conduct such inspections and audits with or without prior notice to the certificate holder;
c) Require the certificate holder to provide any documentation, data, or other relevant information necessary for the conduct of an inspection or audit; and
d) Take appropriate follow-up actions based on the results of such inspections and audits, including the identification of safety issues and initiation of corrective measures where required.

CAR 174. 037 Resolution of Safety Issues

(1) When objective evidence indicates regulatory non-compliance by the holder of an Aviation Meteorological Service Provider certificate, the Authority shall classify the finding as follows:
   a) Level One Finding: A significant non-compliance that reduces the level of safety and requires immediate corrective action.
   b) Level Two Finding: A non-compliance that does not pose an immediate risk to safety but requires timely resolution.
   c) Level Three Finding: A potential issue identified through objective evidence that may lead to future non-compliance. These are classified as observations and do not affect certification status.

(2) Upon receipt of notification of a finding:
   a) A Level One finding shall be rectified immediately or within the time period specified by the Authority, which shall not exceed seven (7) calendar days.
   b) A Level Two finding shall be addressed through a corrective action plan submitted by the certificate holder. The resolution period shall be defined by the Authority and shall not exceed ninety (90) days. An extension may be granted based on a justified request deemed acceptable by the Authority.
   c) The corrective action plan shall:
      i. Be submitted by the date specified by the Authority;
      ii. Identify the root cause of the non-compliance;
      iii. Designate the responsible person, position, or department;
      iv. Outline the corrective measures, including steps and timelines for completion; and
      v. Be reviewed and accepted by the Authority.
   d) Upon implementation of the corrective action, the certificate holder shall notify the Authority and submit evidence demonstrating closure of the finding.
   e) Failure to adequately address Level One or Level Two findings may result in full or partial suspension, restriction, or revocation of the certificate, at the discretion of the Authority.

SUBPART C – Requirements for the Certification of Aviation Meteorological Service Providers

CAR 174.041 Personnel Requirements

(1) An Aviation Meteorological Service Provider shall engage and maintain adequate personnel to ensure the safe, continuous, and compliant provision of meteorological services. The organization shall, at a minimum, appoint or contract the following personnel:
   a) A Chief Executive with the authority and responsibility to ensure that all meteorological services defined in the provider's Operations Manual are adequately resourced and delivered in accordance with this Regulation;
   b) One or more Accountable Senior Persons responsible for ensuring the organization's compliance with all applicable provisions of this Regulation. These persons shall report directly to the Chief Executive;
   c) A Head of Training responsible for developing and maintaining training programs to ensure the competence of operational personnel involved in the provision of meteorological services;
   d) A Quality Management Representative responsible for the establishment and oversight of a documented quality management system (QMS); and
   e) Sufficient qualified personnel to plan, operate, supervise, and evaluate meteorological services and facilities in accordance with the scope of certification.

(2) The Meteorological Service Provider shall establish and maintain procedures to ensure personnel competency, including:
   a) A documented process for the initial assessment of personnel authorized to:
      i. Place meteorological facilities into operational service;
      ii. Oversee the preparation and issuance of meteorological information for aviation use;
   b) A system to maintain and periodically reassess the competence of such personnel;
   c) Issuance of formal authorization documentation specifying each individual's approved scope of responsibility;
   d) Development and maintenance of up-to-date job descriptions for all technical and operational staff.

(3) The Meteorological Service Provider shall implement a structured training and qualification system to ensure that all personnel involved in the provision of aeronautical meteorological services are competent to perform their assigned functions. This system shall be aligned with the ICAO-WMO competency frameworks.

(4) The training program shall include the following components:
   a) Initial training to acquire baseline knowledge and skills;
   b) Recurrent (refresher) training to maintain ongoing competency;
   c) On-the-job training (OJT) for practical skill development;
   d) Specialized training for the introduction of new procedures, systems, or equipment.

(5) The Meteorological Service Provider shall retain records of personnel qualifications, training, and competency assessments for a minimum of three (3) years for all currently active personnel.

(6) The Meteorological Service Provider shall comply with applicable World Meteorological Organization (WMO) standards regarding qualifications, education, and competencies, including:
   a) Implementation of procedures to ensure conformity with WMO Technical Regulations (WMO No. 49), Manual on the Implementation of Education and Training Standards (WMO No. 1083), and Competency Frameworks for Aeronautical Meteorological Personnel (WMO No. 1205);

b) Establishment of a process for ongoing competency assessment and continuous professional development to ensure that personnel providing meteorological services to civil aviation maintain and enhance their technical capabilities.

CAR 174.043 Operation Manual

(1) An Aviation Meteorological Service Provider shall develop and maintain an Operations Manual acceptable to the Authority. This manual shall describe the organization's structure, responsibilities, systems, and procedures, and demonstrate compliance with the requirements of this Regulation, ICAO Annex 3, and applicable WMO standards.

(2) The Operation Manual shall include, at a minimum, the following:

a) A declaration signed by the Chief Executive confirming that:

i. The Operations Manual and associated manuals accurately define the organization and its methods for ensuring continuous compliance with this Regulation; and

(3) The manual shall be adhered to at all times by all personnel.

a) The names and titles of the senior personnel required under CAR 174.041(1) (a) to (d).

b) A description of the duties and responsibilities of each senior person, including functions performed on behalf of the organization in direct coordination with the Authority.

c) An organizational chart clearly illustrating lines of responsibility and authority among senior personnel.

d) A summary of the staffing structure for each meteorological office or facility listed under item (f)(i).

e) A list of all meteorological services covered by the certificate.

f) A comprehensive list of all operational sites and services, including:

i. The location of each meteorological office operated by the provider;

ii. The location of each facility that provides meteorological information directly to users;

iii. The specific meteorological services provided at each location;

iv. The geographical areas and airspace sectors served by these services.

g) Details of the meteorological outputs provided under CAR 174.051, including types, formats, and distribution methods.

h) A description of the procedures and systems supporting compliance with the following CAR 174 provisions:

- CAR 174.041(2) and (3) – Competence and training of personnel;
- CAR 174.045 – Site requirements;
- CAR 174.047 – Communications requirements;
- CAR 174.049 – Meteorological service input requirements;
- CAR 174.051 – Meteorological service output requirements;
- CAR 174.053 – Facility requirements;
- CAR 174.055 – Documentation;
- CAR 174.057 – Verification, inspections, testing and calibration;
- CAR 174.059 – Release of Meteorological Information;
- CAR 174.061 –Notification of Meteorological Office and Facility Status;
- CAR 174.063 –Meteorological Information Check After Accident or incident;
- CAR 174.065 –Malfunctions and Erroneous Information;
- CAR 174.067 – Records;
- CAR 174.069 – Quality Management System.

i) Procedures for control, amendment, approval, and distribution of the Operations Manual, including:

- Version control and revision tracking;
- Distribution list management;
- Review and approval process for changes.

CAR 174.045 Site Requirements

(1) An Aviation Meteorological Service Provider shall establish and implement procedures to ensure that all meteorological offices, facilities, and equipment listed in the Operations Manual are appropriately sited, protected, and maintained to ensure the integrity and reliability of meteorological observations and services. The provider shall ensure that:

a) Each meteorological office and facility listed in the Operations Manual is:
   1. Located and configured in accordance with security and safety measures designed to prevent unlawful interference, unauthorized access, or accidental disruption of operations;
   2. Equipped with appropriate and reliable power supply systems, including backup arrangements, to ensure uninterrupted provision of meteorological services.

b) Each remote weather sensing facility is installed and maintained in a technically suitable location, such that the data produced accurately represent the local meteorological conditions relevant to aviation operations.

c) Wind sensors used for generating local routine meteorological reports are installed in locations that provide the most representative and practicable indication of wind conditions along the active runway and touchdown zone.

Note: Siting and configuration shall be consistent with the applicable standards and guidance in AMC CAR 174, WMO No. 8 (Guide to Instruments and Methods of Observation), and relevant ICAO Aerodrome Design Manuals.

CAR 174.047 Communication Requirements

(1) An Aviation Meteorological Service Provider shall establish and maintain communication systems and procedures in accordance with the provisions of Subpart M of this Regulation. These systems shall ensure that each meteorological office and facility listed in the provider's Operations Manual is capable of transmitting and receiving the meteorological information it is authorized to provide.

(2) Communication systems and associated procedures shall be capable of handling the volume, format, and frequency of meteorological information without undue delay, ensuring that all operationally relevant information is transmitted in a timely manner and remains valid and up-to-date at the time of delivery.

Note: All communication infrastructure shall comply with the relevant provisions of CAR 174, CAR 171 (Annex 10, Volume II (Aeronautical Telecommunications – Communications Procedures), and AMC CAR 174, including the requirements for the Aeronautical Fixed Service (AFS) and digital exchange of meteorological data.

CAR 174.049 Input Requirements

(1) An Aviation Meteorological Service Provider shall establish documented procedures to ensure the continuous availability, acquisition, and use of input meteorological information appropriate to the type and scope of services being provided.

(2) These procedures shall ensure that:

a) Each meteorological office or facility listed in the provider's Operations Manual that delivers forecast services has continuous access to appropriate historical, real-time, and model-based meteorological information relevant to its forecast areas;

b) Each meteorological office or facility providing meteorological briefing services, whether in person or through remote/interactive visual means, is equipped with suitable display systems and

briefing tools to effectively communicate current and forecast meteorological conditions to flight crews and operational staff;

c) Each meteorological office or facility responsible for meteorological reporting services is supported by properly installed and calibrated observing systems capable of providing meteorological observations that are accurate, timely, and consistent with ICAO and WMO standards;

d) Each meteorological office designated for meteorological watch service has access to sufficient meteorological information to maintain an effective, continuous watch and to produce accurate and timely warnings and SIGMETs for its area of responsibility;

e) Each meteorological office or facility tasked with providing climatological services has adequate access to archived meteorological data necessary for the preparation and dissemination of climatological summaries and statistics in accordance with ICAO and WMO guidelines.

Note: All input information sources and systems shall conform to the standards and recommended practices specified in CAR 174, AMC CAR 174 and relevant WMO publications, including WMO No. 1083 (Education and Training Standards) and WMO No. 1205 (Competency Frameworks).

CAR 174.051 Output Requirements

(1) An Aviation Meteorological Service Provider shall establish and implement procedures to ensure the continuous acquisition and availability of all input meteorological data necessary for the provision of accurate, timely, and relevant meteorological services.

(2) These procedures shall ensure that:

a) Each meteorological office or facility listed in the provider's Operations Manual that offers forecast services has continuous access to appropriate historical, real-time, and model-based meteorological data relevant to the forecast areas under its responsibility;

b) Each meteorological office or facility providing meteorological briefing services—whether in-person or via interactive visual means—has appropriate display tools, data visualization systems, and briefing resources to support the operational delivery of such services;

c) Each meteorological office or facility responsible for meteorological reporting is equipped with observing systems capable of generating meteorological observations that are sufficient, accurate, and timely, in accordance with ICAO/WMO standards;

d) Each meteorological office designated to provide meteorological watch services (MWO) has timely access to meteorological information, including satellite imagery, radar data, model outputs, and pilot reports (AIREPs), necessary to maintain an effective meteorological watch over its area of responsibility;

e) Each meteorological office or facility responsible for providing climatological services has access to archived and current meteorological data suitable for compiling, analyzing, and disseminating climatological information and statistics in accordance with ICAO and WMO guidelines.

Note: The acquisition, validation, and integration of meteorological input data shall comply with relevant provisions of CAR 174, AMC CAR 174, and WMO Technical Regulations, including WMO No. 1083 and WMO No. 1205 for data sourcing and competency of personnel handling such data.

CAR 174.053 Facility Requirements

(1) An Aviation Meteorological Service Provider shall determine and establish the types of meteorological offices and facilities required to fulfil its operational responsibilities. These may include one or more of the following:

A. Aerodrome Meteorological Office Located at or associated with an aerodrome, this office shall perform, as applicable, the following functions in support of aerodrome and flight operations:

a) Prepare and/or obtain meteorological forecasts, in accordance with the format and validity criteria specified in AMC–CAR 174, for:
   i. Departing aircraft;
   ii. Arriving aircraft;
   iii. Aircraft overflying or operating in the vicinity of the aerodrome.
b) Maintain a continuous meteorological watch over the aerodrome(s) served.
c) Provide meteorological briefings, consultations, and flight documentation to flight crew and operational personnel.
d) Supply other meteorological information, as required and in compliance with AMC–CAR 174, including:
   i. Routine meteorological observations and reports (e.g. METAR/SPECI);
   ii. Special reports;
   iii. Aerodrome warnings;
   iv. Wind shear warnings;
   v. Other locally agreed warnings.
e) Display relevant meteorological information for operational use.
f) Exchange meteorological data and coordination with other meteorological offices.

B. Meteorological Watch Office (MWO): An MWO shall:

a) Maintain continuous watch over meteorological conditions affecting flight operations within its area of responsibility.
b) Prepare and disseminate SIGMET and other advisories, including to associated air traffic services units.
c) Disseminate SIGMET messages via the Aeronautical Fixed Telecommunication Network (AFTN).
d) When required by regional air navigation agreements or letters of agreement:
   1. Prepare AIRMET information;
   2. Supply AIRMETs to the relevant ATS units;
   3. Disseminate AIRMETs in accordance with ICAO provisions.
e) Supply information on pre-eruption volcanic activity, volcanic eruptions, or volcanic ash clouds (not yet covered by SIGMET) to associated ATS and AIS units, and to the appropriate Volcanic Ash Advisory Centre (VAAC) as required.
f) Supply information related to the accidental release of radioactive materials into the atmosphere to associated ATS and AIS units in its area of responsibility or adjacent areas.

C. Aeronautical Meteorological Station: This facility shall:

a) Be established at aerodromes and offshore platforms as required to support international air operations and offshore helicopter operations.
b) Conduct routine meteorological observations at fixed intervals.
c) At aerodromes, perform special observations when specified changes occur in:
   i. Surface wind;
   ii. Visibility;
   iii. Runway visual range (RVR);
   iv. Present weather;
   v. Cloud conditions;
   vi. Air temperature.

(2) The provider shall also establish procedures to ensure that all electronic data processing systems used in the acquisition, processing, computation, access, or dissemination of meteorological information are properly designed, configured, and maintained to ensure the accuracy, timeliness, and reliability of all operational outputs.

Note: All offices and facilities shall operate in accordance with the relevant provisions of CAR 174, AMC CAR 174, and applicable regional air navigation agreements. Observing systems and data infrastructure shall also comply with the WMO Guide No. 8 and applicable technical specifications.

CAR 174.055 Documentation

(1) An Aviation Meteorological Service Provider shall maintain up-to-date and readily accessible copies of all documentation necessary for the provision of meteorological services listed in its Operations Manual. This includes, but is not limited to:

a. Meteorological office manuals;
b. Facility-specific operating manuals;
c. Technical standards and procedures;
d. Quality management manuals; and
e. Any supporting guidance or operational references essential to service delivery.

(2) The provider shall establish and implement a document control procedure to manage all documentation referred to in paragraph (1). This procedure shall ensure that:

a. All documentation is reviewed, approved, and authorized by designated personnel prior to initial issue;
b. Current and approved versions of all relevant documents are readily accessible to personnel at all locations where such documentation is required to support the provision of meteorological services;
c. Outdated or superseded documentation is promptly removed from all points of issue or operational use;
d. All changes or amendments to documentation are subject to formal review and approval by authorized personnel prior to implementation;
e. A version control system is in place to ensure that the current revision status of each document is identifiable and to prevent the use of obsolete editions.

Note: Document control systems shall be consistent with the quality assurance principles described in ISO 9001, CAR 174 provisions for documentation management, and relevant WMO documentation practices.

CAR 174.057 Verification, Periodic Inspection, Testing and Calibration

(1) An Aviation Meteorological Service Provider shall establish and implement documented procedures to ensure the accuracy, reliability, and representativeness of all meteorological information and supporting systems. These procedures shall address the following:

a) Routine verification of meteorological information generated and disseminated by the provider;
b) Periodic inspection of each meteorological office listed in the provider's Operations Manual;
c) Periodic inspection, testing, and calibration of each meteorological facility and associated equipment included in the Operations Manual.

(2) The procedures shall ensure that:

a) The systems used for the routine verification of meteorological information possess the necessary capability, resolution, and integrity to support the assessment of accuracy and quality;
b) Suitable inspection tools and systems are available and accessible to qualified personnel for the inspection of all operational meteorological offices;
c) Appropriate inspection, testing, and calibration equipment is available and maintained for use at each facility to ensure continued compliance with operational and technical standards;

d) All inspection, measurement, and test equipment used for verification and calibration activities is of sufficient precision and accuracy to support the required level of measurement reliability;
e) All meteorological sensing facilities are calibrated and configured such that their integrated sensors provide the most reliable, accurate, and representative environmental observations practicable, in accordance with applicable ICAO and WMO specifications.

Note: Calibration and testing practices shall be consistent with WMO No. 8 – Guide to Instruments and Methods of Observation, relevant ICAO guidance, and applicable ISO standards (e.g., ISO 17025 where appropriate for calibration laboratories).

CAR 174.059 Release of Meteorological Information

(1) An Aviation Meteorological Service Provider shall establish and maintain documented procedures to ensure the controlled release of meteorological information and the commissioning of operational facilities. These procedures shall address:
   a) The release and dissemination of meteorological information from each meteorological office listed in the provider's Operations Manual;
   b) The commissioning and operational activation of any meteorological facility listed in the provider's Operations Manual.

(2) The procedures shall ensure that:
   a) Only personnel who have been assessed and authorized as competent—pursuant to CAR 174.041(1)(b)—are permitted to supervise the production and release of meteorological information;
   b) Only personnel who have been assessed and authorized as competent are permitted to place meteorological facilities into operational service.

Note: Procedures must ensure traceability and integrity of all released meteorological information in accordance with ICAO Annex 3, and that all newly commissioned facilities meet operational, technical, and safety assurance criteria before entering service.

CAR 174.061 Notification of Meteorological Office and Facility Status

(1) An Aviation Meteorological Service Provider shall establish documented procedures to ensure timely notification to users regarding operational information and any changes in the status of meteorological offices or facilities listed in the provider's Operations Manual.

(2) These procedures shall ensure that:
   a) Operational information related to any meteorological service supporting the Oman Air Navigation System or associated Air Traffic Services (ATS) units is submitted to the Aeronautical Information Service (AIS) for publication in the Oman Aeronautical Information Publication (AIP), in accordance with CAR-175 and ICAO Annex 15 requirements;
   b) Users of a meteorological office or facility are notified without delay of any change in operational status that may impact the safety of air navigation;
   c) For any meteorological office or facility published in the Oman AIP, changes in operational status shall be immediately reported to the Aeronautical Information Service to facilitate the issuance of a NOTAM in accordance with international aeronautical information procedures.

Note: These procedures shall comply with CAR 174, CAR 175, and AMC CAR 174 guidance for ensuring the timely and accurate distribution of aeronautical meteorological information to all relevant stakeholders.

CAR 174.063 Meteorological Information Check After Accident or incident

(1) An Aviation Meteorological Service Provider shall establish documented procedures to verify the adequacy, accuracy, and timeliness of any meteorological information that may have been used by an aircraft or air traffic services unit involved in an accident or serious incident.

(2) These procedures shall ensure that:

a) The verification is conducted as soon as practicable after the provider is notified of the occurrence of an accident or incident potentially involving the use of meteorological information under its responsibility;

b) All relevant meteorological information—forecasts, observations, warnings, briefings, and data exchanged—are preserved and securely stored for potential use by any subsequent accident or incident investigation initiated by the appropriate authority.

Note: These procedures shall align with the provisions of CAR 13 (Aircraft Accident and Incident Investigation), CAR 174, and any applicable national investigation authority (OTSB) requirements for data preservation and support to safety investigations.

CAR 174.065 Malfunctions and Erroneous Information

(1) An Aviation Meteorological Service Provider shall establish and implement procedures to detect, report, and address errors and malfunctions that may impact the accuracy or integrity of meteorological information. These procedures shall include the following:

a) Identification, recording, notification, investigation, and rectification of any instance of erroneous meteorological information provided to users;

b) Identification, recording, notification, investigation, and rectification of any malfunction in equipment, systems, or meteorological services listed in the provider's Operations Manual that may result in the dissemination of inaccurate or misleading meteorological information;

c) Immediate notification to all users who may have received erroneous meteorological information, to prevent operational or safety impacts;

d) Notification to the Authority within 12 hours of any malfunction that cannot be corrected or restored to normal service within 72 hours of its detection;

e) Procedures for continuing malfunction status reporting, where required by the Authority, until resolution or further instruction.

Note: These procedures shall support operational safety and be consistent with the safety management principles described in CAR 100, and with technical reliability provisions of CAR 174, Subpart D and I, as well as relevant sections of AMC CAR 174.

CAR 174.067 Records

(1) An Aviation Meteorological Service Provider shall establish and implement procedures to ensure the systematic identification, collection, indexing, storage, maintenance, and disposal of records necessary for the delivery, oversight, and continuous improvement of meteorological services listed in the provider's Operations Manual.

(2) These procedures shall ensure that:

a) Records are maintained for all input meteorological information obtained under the procedures established in CAR 174.049;

b) Records are maintained for all output meteorological information generated under CAR 174.051;

c) Records specified in paragraphs (1) and (2) are retained for a minimum of sixty (60) days, or longer if required by the Authority;
d) A complete performance and maintenance history are maintained for each meteorological office and facility listed in the Operations Manual. This shall include records of service quality, periodic inspections, responsible personnel, and supporting documentation;
e) Records are maintained for all equipment and systems used for verification, inspection, testing, and calibration in accordance with CAR 174.057, including their location, maintenance, and calibration history;
f) A detailed record is kept for each instance of erroneous meteorological information or equipment malfunction detected or reported, in accordance with CAR 174.065. Each record shall describe the issue, the findings of any investigation, and corrective actions taken;
g) A record is kept for each internal quality assurance review conducted under CAR 174.069, including the scope of the review, findings, conclusions, and resulting corrective or preventive actions;
h) A personnel file is maintained for each individual authorized by the provider to:
    1. Supervise the production and release of meteorological information; and
    2. Commission meteorological facilities into operational service. These records shall include details of qualifications, training, experience, assessments, and current authorization status;
i) All records are legible, identifiable, and stored in a manner that preserves their integrity and accessibility. Records shall be maintained in a durable and permanent form, whether digital or physical;
j) All records other than those specified in paragraph (c) shall be retained for a minimum of one (1) year, or longer if required by the Authority, to support audits, performance tracking, and traceability of service delivery.

Note: Records management practices shall align with the principles outlined in CAR 100, ISO 9001, and applicable WMO documentation standards, ensuring traceability, accountability, and support to safety and quality assurance processes.

CAR 174.069 Quality Management System

(1) An Aviation Meteorological Service Provider shall establish and maintain a Quality Management System (QMS) consisting of documented policies, procedures, processes, and resources necessary to ensure compliance with the requirements of this Regulation and to continuously improve the adequacy, accuracy, and timeliness of meteorological services.
(2) The senior person designated with responsibility for the QMS shall have unrestricted and direct access to the Chief Executive on all matters affecting the quality and performance of meteorological services, including the reliability and operational use of meteorological information.
(3) The internal QMS shall include, at a minimum, the following components:
    a) A clearly defined inspection policy outlining the organization's approach to quality monitoring and assurance;
    b) Documented inspection procedures that are communicated, understood, implemented, and maintained at all functional levels of the organization;
    c) A procedure for monitoring quality performance indicators, including the analysis of incident reports, customer feedback, personnel input, and operational data, in order to verify compliance with required service standards and to identify actual or potential non-conformities;
    d) A procedure for corrective actions, which shall specify how the organization will:

i. Identify and correct any existing non-conformity;
ii. Conduct follow-up evaluations to verify the effectiveness of the corrective action taken;
iii. Measure and document the outcome and impact of the corrective measures;

e) A procedure for preventive actions, detailing how the organization identifies and addresses potential issues before they result in non-conformance.

Note: The QMS shall be consistent with CAR 174, ISO 9001:2015, and relevant WMO guidance (e.g., WMO No. 1100 – Guide to the Implementation of Quality Management Systems for National Meteorological and Hydrological Services). Providers shall demonstrate to the Authority that their QMS is actively implemented, regularly reviewed, and continuously improved.

CAR 174.071 Continued Compliance

(1) Each holder of an Aviation Meteorological Service Provider certificate shall ensure continued compliance with the conditions of certification by:

a) Maintaining at least one complete and current copy of the approved Operations Manual at each meteorological office listed therein;
b) Ensuring full adherence to all procedures, systems, and operational requirements described in the Operations Manual;
c) Making readily available to all relevant personnel the applicable provisions of this Regulation and any associated requirements necessary for the proper discharge of their assigned duties;
d) Continuously meeting the applicable certification standards and maintaining compliance with all technical, operational, and regulatory requirements prescribed under this Regulation and its associated implementing materials;
e) Notifying the Authority in writing of any changes to the provider's official address, telephone number, email address, or facsimile number within twenty-eight (28) days of such change.

Note: Ongoing compliance with this Regulation is a condition for maintaining certification and is subject to surveillance, audit, or enforcement action under the Authority's oversight framework in accordance with This regulation, CAR 100, and CAL Chapter 6.

CAR 174.073 Meteorological Office Operation Manual

(1) An Aviation Meteorological Service Provider shall develop and maintain a dedicated Operations Manual for each meteorological office listed in its organizational Operations Manual. This manual shall outline the specific operational and maintenance procedures for the meteorological office and its associated facilities, and shall include, at a minimum:

a) A detailed list of the meteorological services and products provided by the office, including observations, forecasts, warnings, briefings, and any specialized services;
b) A specification of the minimum input meteorological data and sources required to support those services, including observational data, model data, satellite imagery, and external inputs as applicable;
c) A definition of the minimum performance standards and quality requirements for all output meteorological information and services, in accordance with ICAO and WMO specifications;
d) An inventory of the test equipment and supporting systems used for performance measurement, monitoring, and verification of the meteorological services provided;
e) The applicable mandatory check procedures to be followed before the release or transmission of any operational meteorological information, ensuring its accuracy, consistency, and operational validity.

Note: Each manual shall be version-controlled, reviewed periodically, and made available to operational personnel. The structure and contents shall conform to relevant ICAO documentation practices under This CAR, and WMO best practices for facility-level documentation.

CAR 174.075 Limitations on Certificate Holder

(1) The holder of an Aviation Meteorological Service Provider certificate shall not release, disseminate, or otherwise provide meteorological information under any of the following circumstances:

a) When the required input meteorological information necessary to generate the output product is unavailable or incomplete;
b) When the operational performance of the meteorological office or facility responsible for producing the information does not meet the applicable regulatory or technical requirements;
c) When any associated integrity monitoring system relevant to the meteorological information is not fully functional or has failed;
d) When the applicable verification, inspection, testing, or calibration procedures required for the meteorological system or facility have not been completed, are overdue, or have returned unsatisfactory results;
e) When there is any reason to doubt the integrity, accuracy, or reliability of the meteorological information, regardless of its source.

Note: This provision ensures that meteorological services provided under the certificate are continuously reliable, traceable, and safe for operational use in accordance with This CAR, AMC CAR 174, and recognized quality assurance and safety management principles.

CAR 174.077 Changes to Certificate Holder's Organization

(1) An Aviation Meteorological Service Provider shall ensure that its Operations Manual is kept current and accurately reflects the provider's organizational structure, operational arrangements, and the meteorological services it is authorized to provide.

(2) Any amendment to the Operations Manual shall:

a. Comply with the applicable provisions of this Regulation; and
b. Be made in accordance with the documented amendment procedures contained within the approved Operations Manual.

(3) The certificate holder shall provide the Authority with a copy of each amendment to the Operations Manual as soon as practicable following its incorporation.

Prior notification to and written acceptance by the Authority is required before implementing any of the following organizational changes:

1. A change of the Chief Executive;
2. A change to any of the nominated senior personnel identified under CAR 174.041;
3. A change to the scope or type of meteorological services provided under the certificate;
4. A change to the locations or airspace areas served by the provider's meteorological services.

(4) The Authority may prescribe operational conditions or limitations under which the certificate holder may continue to operate during or following the implementation of any change described in paragraph (3).

(5) The certificate holder shall fully comply with any such conditions imposed by the Authority pursuant to paragraph (4).

(6) Where a change necessitates the amendment of the certificate itself, the certificate holder shall forward the original certificate to the Authority for reissuance without undue delay.

Note: These provisions support continued regulatory oversight, ensure service continuity, and uphold the safety and quality standards required under CAR 174 and CAR 100.

CAR 174.079 Agreement Between Aviation Meteorological Service Provider and Air Traffic Service Provider

(1) An Aviation Meteorological Service Provider shall ensure that a formal agreement is established and maintained with each Air Traffic Services (ATS) Provider to whom it supplies meteorological information.

(2) This agreement shall:

a) Define the scope, format, means of delivery, and responsibilities related to the provision of meteorological services;

b) Ensure coordination of operational interfaces and information flows; and

c) Be developed in accordance with the standards and guidance specified in AMC–CAR 174 and relevant provisions of CAR174 and CAR 172.

Note: The agreement shall be reviewed periodically and updated as necessary to ensure the continued adequacy, accuracy, and operational relevance of meteorological information provided in support of air navigation services.

SUBPART D – General Provisions

CAR 174.200 Objective of Meteorological Service

(1) The objective of meteorological service for international air navigation is to support the safety, regularity, and efficiency of international air navigation.

(2) This objective shall be achieved through the timely and reliable provision of meteorological information to the following users, enabling them to perform their respective aviation-related functions:

a) Aircraft operators;
b) Flight crew members;
c) Air Traffic Services (ATS) units;
d) Search and rescue services units;
e) Aerodrome and airport management entities;
f) Other stakeholders involved in the conduct, planning, or development of international air navigation.

CAR 174.203 Determination the needs of Aviation Meteorological Services

(1) The Authority shall determine the scope and type of meteorological services to be provided in order to meet the operational needs of international air navigation within the Muscat Flight Information Region (FIR) and, where applicable, over international waters or other areas outside the territory of the Sultanate of Oman, in accordance with:

a) The provisions of this Regulation (CAR 174); and
b) The applicable regional air navigation agreements established under the framework of the International Civil Aviation Organization (ICAO).

(2) Such determination shall ensure that the meteorological services provided are consistent with the requirements of international users and contribute to the safety, regularity, and efficiency of air navigation.

CAR 174.205 Determination of Meteorological Authority and Service Provider

(1) The Sultanate of Oman shall designate an entity, hereinafter referred to as the Authority, responsible for the provision or arrangement of meteorological services for international air navigation on its behalf. Details of the designated Authority shall be published in the Aeronautical Information Publication (AIP) in accordance with the requirements of CAR 175.

(2) The Authority shall designate one or more entities, hereinafter referred to as Aviation Meteorological Service Provider(s), to provide meteorological services for international air navigation within the Muscat FIR or other applicable areas on behalf of the Sultanate of Oman.

(3) Details of the designated service provider(s) shall be published in the AIP in accordance with CAR 175.

(4) The Authority shall ensure that each designated Aviation Meteorological Service Provider complies with the relevant requirements of the World Meteorological Organization (WMO) concerning the qualifications, competencies, education, and training of meteorological personnel involved in the provision of services for international air navigation.

Note: The WMO requirements referenced herein are defined in:

- *WMO Technical Regulations (WMO-No. 49), Volume I,*
- *Part V – Qualifications and Competencies of Personnel Involved in the Provision of Meteorological (Weather and Climate) and Hydrological Services;*
- *Part VI – Education and Training of Meteorological Personnel;*
- *Appendix A – Basic Instruction Packages.*

(5) These standards shall be used to guide national implementation and oversight of personnel qualification frameworks in aeronautical meteorology.

CAR 174.207 Supply, Use and Interpretation of Meteorological Information

(1) An Aviation Meteorological Service Provider shall establish and implement procedures to ensure continuous and effective liaison with users of meteorological information. This shall include coordination on all matters affecting the provision and operational use of meteorological services for international air navigation.

(2) The provider shall establish a documented quality management system (QMS) comprising processes, procedures, and resources necessary to manage the quality of all meteorological information supplied to users.

- *The QMS should conform to the ISO 9000 series of quality assurance standards and be certified by an accredited body.*

Note: The ISO 9000 standards provide a generic framework for quality assurance. National implementation may vary depending on organizational structure. Detailed guidance is provided in ICAO Doc 9873 – Manual on the Quality Management System for the Provision of Meteorological Service for International Air Navigation.

- *The QMS should ensure that meteorological information supplied to users meets defined criteria with respect to:*
    - *Geographical and spatial coverage;*
    - *Format and content;*
    - *Time and frequency of issuance;*
    - *Period of validity;*
    - *Accuracy of observations and forecasts.*

Note: Meteorological information that does not meet the stated requirements should not be released unless validated by the originator and where automated error correction is not feasible.

Note: Requirements are detailed in Subparts E, F, H, I, J K and L of CAR 174, Chapters 2, 4, 5, 6, 7, 8 and 9 of AMC–CAR 174, and relevant regional air navigation plans. Guidance on measurement and forecast accuracy is found in Attachments A and B to AMC–CAR 174.

- *The QMS should include procedures and monitoring tools to verify adherence to transmission schedules, including:*
    - *Timeliness of message filing and exchange;*
    - *Detection of excessive delays in transmission;*
    - *Validation of bulletin and message integrity.*

Note: Transmission and exchange requirements are specified in Subpart M of CAR 174 and Chapter 10 of AMC–CAR 174.

(3) Compliance with the quality system shall be demonstrated through audits. Where non-conformities are identified:

a. Corrective actions shall be initiated to address the root cause;
b. Audit findings shall be documented with evidence and followed up.
c. Due to the inherent variability of meteorological phenomena, observational values should be understood by the user as the best approximation of actual conditions at the time of observation.

Note: Accuracy guidance is provided in AMC–CAR 174, Attachment A.

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

CAR 174.209 Notifications required from operators

(1) Any operator requiring meteorological services, or requesting changes to existing services, shall notify the Aviation Meteorological Service Provider sufficiently in advance.

(2) The minimum notice period shall be as mutually agreed between the meteorological provider (or aerodrome meteorological office) and the operator.

(3) The Aviation Meteorological Service Provider shall be notified by the operator in advance when:

a) New routes or new types of operations are planned;
b) Long-term changes are proposed to scheduled operations;
c) Any other operational changes are planned that may affect the scope, coverage, or type of meteorological service required.

(4) Such notifications shall include sufficient detail to allow for proper planning and service adjustments by the provider.

(5) Where required by the Aviation Meteorological Service Provider, in consultation with users, the operator or flight crew member shall notify the relevant aerodrome meteorological office of:

a) Planned flight schedules;
b) The operation of non-scheduled flights;
c) Any significant change, including delays, advances, or cancellations of flights.

– *Notifications to the aerodrome meteorological office concerning individual flights should, where applicable, include the following information, unless otherwise agreed for scheduled operations:*

1. *Aerodrome of departure and estimated time of departure (ETD);*
2. *Destination and estimated time of arrival (ETA);*
3. *Route to be flown and ETAs/ETDs at any intermediate aerodromes;*
4. *Designated alternate aerodromes listed in the regional air navigation plan;*
5. *Planned cruising level;*
6. *Type of flight: IFR or VFR;*
7. *Type of meteorological service requested: flight documentation, briefing, and/or consultation;*
8. *Time(s) at which meteorological services are required.*

Note: This provision ensures that meteorological services can be adapted and delivered effectively to meet operational demands, in line with This CAR Subpart D, and applicable regional procedures.

SUBPART E – Global Systems, Supporting Centres and Meteorological Offices

CAR 174.300 World area forecast centres within the framework of the world area forecast system (WAFC)

(1) This provision is not applicable within the jurisdiction of the Sultanate of Oman, as the State does not host or operate a World Area Forecast Centre (WAFC).

Note: WAFC responsibilities are fulfilled under international arrangements established by ICAO, with data received from designated global centres (e.g., WAFC London or WAFC Washington) for use by aviation stakeholders in Oman.

CAR 174.303 Aerodrome meteorological offices

(1) An Aviation Meteorological Service Provider shall establish one or more aerodrome or other meteorological offices, as necessary, to ensure the provision of meteorological services adequate to meet the operational requirements of international air navigation.

(2) An aerodrome meteorological office shall perform all or part of the following functions, as required to support safe and efficient flight operations at the aerodrome:
   a) Prepare and/or obtain forecasts and related meteorological information for associated flights, with responsibility for forecast generation determined in relation to the availability of en-route and aerodrome forecasts from other authorized sources;
   b) Prepare and/or obtain forecasts specific to local meteorological conditions affecting the aerodrome;
   c) Maintain a continuous meteorological watch over the aerodrome(s) for which it has forecast responsibilities;
   d) Provide briefings, consultations, and flight documentation to flight crew members and/or flight operations personnel;
   e) Supply other relevant aeronautical meteorological information to users as required;
   f) Display meteorological information available for operational use;
   g) Exchange meteorological information with other aerodrome meteorological offices and relevant providers;
   h) Supply information received concerning pre-eruption volcanic activity, volcanic eruptions, or volcanic ash clouds to the associated Air Traffic Services (ATS) unit, Aeronautical Information Services (AIS) unit, and Meteorological Watch Office (MWO) in accordance with arrangements agreed between the provider and the relevant ATS authority.

(3) The determination of which aerodromes require landing forecasts shall be made in accordance with regional air navigation agreements approved under the ICAO framework.

(4) For any aerodrome not served by an on-site aerodrome meteorological office, the following shall apply:
   a) The Authority shall designate one or more aerodrome meteorological offices responsible for supplying the required meteorological services to that aerodrome; and
   b) The relevant competent authorities shall ensure the establishment of appropriate means for the timely and reliable delivery of meteorological information to the aerodrome concerned.

CAR 174.305 Meteorological watch offices (MWO)

(1) An Aviation Meteorological Service Provider responsible for supporting air traffic services within the Muscat FIR or a designated Control Area (CTA) shall, in accordance with regional air navigation agreements, either:
      a) Establish one or more Meteorological Watch Offices (MWOs), or
      b) Arrange for the provision of MWO services by another Contracting State under bilateral or multilateral agreement.

Note: Further guidance on the establishment, cooperation, and delegation of MWO services can be found in ICAO Doc 8896 – Manual of Aeronautical Meteorological Practice.

(2) Each MWO shall perform the following functions within its defined area of responsibility:

a) Maintain a continuous meteorological watch over conditions affecting flight operations;
b) Prepare SIGMET information and other operational advisories for significant weather phenomena relevant to aviation safety;
c) Supply SIGMETs and related information to associated Air Traffic Services (ATS) units;
d) Disseminate SIGMETs in accordance with applicable procedures and communication protocols;
e) Where required by regional air navigation agreements and in accordance with CAR 174.709:
    1. Prepare AIRMET information for lower-level en-route weather affecting light aircraft;
    2. Supply AIRMETs to associated ATS units;
    3. Disseminate AIRMETs appropriately.
f) Provide information received regarding pre-eruption volcanic activity, volcanic eruptions, or volcanic ash clouds—for which a SIGMET has not yet been issued—to:
    1. The relevant Area Control Centre (ACC) or Flight Information Centre (FIC);
    2. The associated Volcanic Ash Advisory Centre (VAAC), in line with regional air navigation agreements;
    3. In accordance with coordination arrangements established between the MET provider and ATS authority.
g) Provide information on the accidental release of radioactive materials into the atmosphere, whether within or near the MWO's area of responsibility, to:
    1. The associated ACC/FIC;
    2. The relevant Aeronautical Information Services (AIS) unit(s), as agreed with the civil aviation authority.
    3. Such information shall include:
    i. Location, date, and time of the release;
    ii. Forecast trajectory and dispersion of radioactive material.

Note: Such data are supplied by Regional Specialized Meteorological Centres (RSMCs), coordinated via the International Atomic Energy Agency (IAEA) and distributed to States through national contact points. VAAC London (the ICAO-designated focal point) ensures operational notification to affected ACCs/FICs.

- *The boundaries of each MWO's area of responsibility should coincide with the boundaries of an FIR, CTA, or a combination thereof, as specified by regional air navigation planning documents.*
- *MWOs should coordinate the content and issuance of SIGMET information with neighbouring MWOs, particularly when hazardous weather phenomena are forecast or observed to extend across MWO boundaries.*

Note: Guidance on coordination practices for SIGMETs is provided in ICAO Doc 8896 – Manual of Aeronautical Meteorological Practice.

CAR 174.307 Volcanic ash advisory centres (VAAC)

(1) This provision is not applicable within the jurisdiction of the Sultanate of Oman, as the State does not operate or host a Volcanic Ash Advisory Centre (VAAC).

Note: *Oman receives volcanic ash advisory information from designated ICAO VAACs (e.g., VAAC Toulouse or London) under the International Airways Volcano Watch (IAVW) framework. The use and dissemination of such information are coordinated through the relevant Meteorological Watch Office (MWO) and Air Traffic Services (ATS) units as per regional air navigation agreements.*

CAR 174.309 State volcano observatories

(1) This provision is not applicable within the jurisdiction of the Sultanate of Oman, as there are no designated State Volcano Observatories responsible for monitoring or reporting volcanic activity.

Note: Volcanic activity affecting Oman's airspace, if any, is monitored through the International Airways Volcano Watch (IAVW) system and regional cooperation with VAACs.

CAR 174.311 Tropical cyclone advisory centres

(1) This provision is not applicable within the jurisdiction of the Sultanate of Oman, as Oman does not host or operate a Tropical Cyclone Advisory Centre (TCAC).

Note: Advisory information related to tropical cyclones is received through designated ICAO TCACs under regional air navigation arrangements and is managed by the relevant Meteorological Watch Offices (MWOs) and ATS units.

CAR 174.313 Space weather centres (SWXC)

(1) This provision is not applicable within the jurisdiction of the Sultanate of Oman, as Oman does not operate a Space Weather Advisory Centre (SWXC).

Note: Oman receives space weather advisories from ICAO-designated SWXCs, such as those operated by the United States, European Union, and other States, as part of the global ICAO Space Weather Advisory System.

SUBPART F – AERODROME METEOROLOGICAL OBSERVATIONAL INFORMATION

Note: The provisions in this Subpart establish the Standards and Recommended Practices (SARPs) applicable to the observation and reporting of meteorological conditions at aerodromes.

(1) These SARPs shall be applied in conjunction with the corresponding procedures and guidance detailed in AMC–CAR 174, Chapter 2.

CAR 174.400 Aeronautical meteorological stations and observations

(1) The Aviation Meteorological Service Provider shall establish aeronautical meteorological stations at aerodromes within the Muscat FIR, as deemed necessary to meet the requirements of international air navigation.

– *An aeronautical meteorological station may be a standalone facility or co-located with a synoptic station.*

Note: Such stations may include remote sensors situated outside aerodrome boundaries, where justified, to ensure compliance with CAR 174 and ICAO Annex 3 requirements.

– *The Aviation Meteorological Service Provider should establish or coordinate the establishment of aeronautical meteorological stations on offshore structures or at significant locations to support helicopter operations, as required by regional air navigation agreements.*

(2) Aeronautical meteorological stations shall conduct:

a. Routine observations at fixed intervals; and
b. Special observations at aerodromes whenever specified meteorological conditions change significantly (e.g., surface wind, visibility, RVR, weather, clouds, temperature).

(3) The Aviation Meteorological Service Provider shall ensure regular inspection of meteorological stations to verify:

a. Observation accuracy and standardization;
b. Proper functioning of instruments and indicators; and
c. That instrument exposure remains appropriate.

Note: Refer to ICAO Doc 9837 – Manual on Automatic Meteorological Observing Systems at Aerodromes for guidance on inspection frequency and procedures.

(4) At aerodromes with runways certified for Category II or III precision approaches, the provider shall install automated meteorological systems capable of:

a. Measuring and monitoring surface wind, visibility, RVR, cloud base height, temperature, dew point, and pressure;
b. Providing real-time data acquisition, processing, dissemination, and display;
c. Integrating system design with Human Factors considerations and backup capabilities.

Note 1: Category definitions are provided in CAR OPS 1 & CAR 1.

Note 2: Guidance on Human Factors is found in ICAO Doc 9683 – Human Factors Training Manual.

– *Similar automated systems should also be installed at aerodromes with Category I approach and landing operations.*
– *Where a semi-automatic observing system is used, it should allow manual entry of data for meteorological parameters not observable by automated means.*

(5) Observations shall form the basis for the preparation of:

a. Local reports for aerodrome use; and
b. Reports intended for dissemination beyond the aerodrome of origin.

– *Meteorological instruments should be sited to provide representative data for the intended area of measurement.*

Note: Siting guidance is provided in CAR 139 PART 1, Chapter 9 for aircraft safety and obstacle clearance.

- *Meteorological instruments at stations should be installed, operated, and maintained according to WMO standards and procedures.*

Note: See WMO-No. 8 – Guide to Instruments and Methods of Observation, Volumes I–III, for specifications on measurement, observing systems, and quality assurance.

- *Observers at aerodromes should be positioned to ensure their observations are representative of local operational conditions.*

- *Where automated systems are part of a semi-automatic observation network, data displays provided to ATS units should be:*
    a. *A subset of those available to the meteorological unit;*
    b. *Clearly annotated with location identifiers for each meteorological element.*

CAR 174.403 Agreement between the Aviation Meteorological Service Provider and appropriate ATS authority

- *An agreement should be established between the Aviation Meteorological Service Provider and the relevant Air Traffic Services (ATS) authority to define roles, responsibilities, and coordination procedures regarding meteorological support for air navigation operations.*

- *This agreement should include, but not be limited to, provisions for:*
    a. *The provision and maintenance within ATS units of displays and interfaces related to integrated automatic meteorological observing systems;*
    b. *The calibration, maintenance, and performance monitoring of meteorological instruments and displays used by ATS personnel;*
    c. *The use, interpretation, and operational integration of these meteorological displays by ATS personnel, including in support of safety-critical decisions;*
    d. *Where necessary, the conduct and relay of supplementary visual meteorological observations by ATS personnel, such as:*
        1. *Weather phenomena of operational significance in climb-out and approach areas;*
        2. *Pilot reports on wind shear or other in-flight meteorological hazards during takeoff and landing.*
    e. *The exchange of meteorological information derived from ground-based weather radar, where available, including agreed methods of interpretation and usage.*

Note: Guidance on effective coordination between ATS and aeronautical meteorological services is provided in ICAO Doc 9377 – Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services.

CAR 174.405 Routine observations and reports

Note: The procedures and technical specifications applicable to this section are detailed in AMC–CAR 174, Chapter 2.

(1) At aerodromes, routine meteorological observations shall be conducted continuously throughout 24 hours per day, unless otherwise agreed between the Aviation Meteorological Service Provider, the appropriate ATS authority, and the concerned operator.
    a) Observations shall be made at hourly intervals, or at half-hourly intervals if required by regional air navigation agreement.
    b) At other aeronautical meteorological stations, observation intervals shall be determined by the Aviation Meteorological Service Provider, taking into account the operational needs of air traffic services and aircraft operations.

(2) Reports based on routine observations shall be issued as follows:

a) Local Routine Reports (LRRs): Prepared exclusively for dissemination within the aerodrome of origin, primarily for use by arriving and departing aircraft.

Note: Technical requirements for the format and issuance of LRRs are provided in AMC–CAR 174, Chapter 2.

b) METAR Reports: Issued for dissemination beyond the aerodrome of origin, primarily for flight planning, VOLMET broadcasts, and D-VOLMET systems.

Note 1: Technical requirements for METAR format, content, and dissemination are provided in AMC–CAR 174, Chapter 2.

Note 2: Meteorological data for use in ATIS (both voice-ATIS and D-ATIS) shall be extracted from the Local Routine Report, in accordance with CAR 172.

(3) At aerodromes not operational 24 hours a day, a METAR shall be issued prior to the resumption of aerodrome operations, in accordance with applicable regional air navigation agreements.

CAR 174.407 Special observations and reports

Note: The procedures and technical specifications applicable to this section are detailed in AMC–CAR 174.

(1) The Aviation Meteorological Service Provider shall establish a list of criteria that require the issuance of special observations, in consultation with the appropriate ATS authority, aircraft operators, and other concerned stakeholders.

(2) Reports based on special observations shall be issued in the following forms:

a) Local Special Reports (LSRs): Issued solely for dissemination at the aerodrome of origin, intended primarily for use by arriving and departing aircraft.

Note: Technical details concerning the issuance and formatting of LSRs are provided in AMC–CAR 174.

b) SPECI Reports: Issued for dissemination beyond the aerodrome of origin, primarily intended for flight planning, VOLMET, and D-VOLMET, unless METARs are issued at half-hourly intervals.

Note 1: Detailed specifications for SPECI issuance and dissemination are found in AMC–CAR 174.

Note 2: Meteorological information for ATIS (voice and D-ATIS) shall be derived from the Local Special Report, in accordance with CAR 172.

(3) At aerodromes not operational on a 24-hour basis as specified in CAR 174.405, the issuance of SPECI shall resume, as necessary, after the resumption of METAR issuance.

CAR 174.409 Characteristics of meteorological reports

(1) The following meteorological elements shall be included in all Local Routine Reports, Local Special Reports, METAR, and SPECI:

a) Surface wind direction and speed;
b) Visibility;
c) Runway Visual Range (RVR), where applicable;
d) Present weather conditions;
e) Cloud amount, cloud type (limited to cumulonimbus and towering cumulus), and height of cloud base, or vertical visibility where measured;
f) Air temperature and dew-point temperature;
g) QNH (altimeter setting), and where applicable, QFE (included only in Local Routine and Local Special Reports).

– *In addition to the elements listed in paragraphs (a) to (g), supplementary meteorological information should be included in Local Routine Reports, Local Special Reports, METAR, and SPECI. Such information should appear in the designated supplementary section (after element "k") of the report.*

(2) Any optional elements included under supplementary information shall be incorporated into METAR and SPECI in accordance with applicable regional air navigation agreements.

CAR 174.411 Observing and reporting meteorological elements

Note: Procedures and technical specifications related to this section are detailed in AMC–CAR 174.

A. Surface Wind

(1) The mean wind direction and speed, along with significant variations, shall be measured and reported in degrees true and in metres per second (or knots), respectively.

- *Surface wind reported in Local Routine Reports and Local Special Reports should be representative of:*
  - *a. Runway conditions for departing aircraft;*
  - *b. The touchdown zone for arriving aircraft.*
- *Surface wind in METAR and SPECI should reflect conditions over:*
  - *a. The entire runway (if single); or*
  - *b. The full runway complex (if multiple).*

B. Visibility

(1) Visibility shall be measured or observed in accordance with the definition in CAR 174, Subpart A, and reported in metres or kilometres.

- *Visibility for departing aircraft should represent runway conditions; for arriving aircraft, it should reflect the touchdown zone.*
- *For METAR and SPECI, visibility observations should be representative of the aerodrome as a whole.*

C. Runway Visual Range (RVR)

Note: Further guidance is available in ICAO Doc 9328 – Manual on RVR Observing and Reporting Practices.

(1) RVR shall be assessed on all runways intended for Category II and III instrument approach and landing operations.

- *RVR should also be assessed on runways used in low visibility operations, including:*
  - a. Category I precision approach runways;
  - b. Take-off runways with high-intensity edge and/or centerline lighting.

Note: Definitions for precision approach runways are found in Annex CAR 139 P1 and CAR 1.

(2) When visibility or RVR < 1500 m, RVR shall be reported in metres.

(3) RVR assessments shall be representative of:

- a. The touchdown zone for non-precision/Category I approaches;
- b. The touchdown and mid-point for Category II;
- c. The touchdown, mid-point, and stop-end for Category III operations.

(4) ATS and AIS units shall be promptly informed of any changes in the serviceability status of automated RVR assessment equipment.

D. Present Weather

(1) Present weather at the aerodrome shall be observed and reported, including at a minimum:

- a) Precipitation: rain, drizzle, snow, and freezing precipitation, including intensity;
- b) Obscurations: haze, mist, fog, and freezing fog;
- c) Thunderstorms, including those in the vicinity.

- *Present weather information should be representative of the aerodrome in Local Routine, Local Special, METAR, and SPECI reports.*

E. Clouds

(1) Cloud amount, type (CB and TCU only), and cloud base height shall be observed and reported. If the sky is obscured, vertical visibility shall be measured and reported instead.

- *For Local Reports, cloud observations should be representative of the runway threshold(s) in use.*
- *For METAR and SPECI, observations should represent aerodrome and vicinity conditions.*

F. Air Temperature and Dew-Point Temperature

(1) These parameters shall be measured and reported in degrees Celsius.

- *Observations should be representative of the entire runway complex.*

G. Atmospheric Pressure

(1) QNH and, where applicable, QFE shall be calculated and reported in hectopascals.

H. Supplementary Information

- *Where available, supplementary information should be included regarding significant meteorological conditions, especially within approach and climb-out areas. If practicable, the location of the condition should be indicated.*

CAR 174.413 Reporting meteorological information from automatic observing systems

- *METAR and SPECI reports generated by automatic meteorological observing systems should be used by the State during:*
    1. Non-operational hours of the aerodrome; and
    2. Operational hours, as determined by the Aviation Meteorological Service Provider in consultation with relevant users, considering personnel availability and the efficient use of resources.

Note: Guidance on the implementation and operational use of automatic systems is provided in ICAO Doc 9837.

- *Local Routine Reports and Local Special Reports produced by automatic observing systems should also be used during aerodrome operational hours, subject to agreement between the Aviation Meteorological Service Provider and users, based on operational needs and resource optimization.*

CAR 174.415 Observing and reporting of volcanic activity

Note: Procedures and technical specifications applicable to this section are detailed in AMC–CAR 174.

- *The occurrence of pre-eruption volcanic activity, volcanic eruptions, or volcanic ash clouds should be reported without delay to the following entities:*
    1. *The associated Air Traffic Services (ATS) unit;*
    2. *The relevant Aeronautical Information Services (AIS) unit;*
    3. *The designated Meteorological Watch Office (MWO).*
- *The report should be submitted in the form of a Volcanic Activity Report (VAR), using the standardized format and transmission procedures as prescribed in This CAR and associated ICAO guidance materials.*

CAR 174.417 Dissemination of meteorological reports

Note: Procedures and technical specifications applicable to this section are detailed in AMC–CAR 174.

A. METAR and SPECI Reports

(1) METAR and SPECI shall be disseminated to:

a) International OPMET databanks, and

b) Designated centres supporting Internet-based services within the Aeronautical Fixed Service (AFS),

in accordance with applicable regional air navigation agreements.

(2) METAR and SPECI shall be disseminated to other aerodromes as specified by regional air navigation agreements.

(3) A SPECI report that reflects a deterioration in meteorological conditions shall be disseminated immediately after the observation.

(4) If a SPECI includes both deterioration in one weather element and improvement in another, it shall also be disseminated immediately.

- *A SPECI report indicating an improvement in conditions should only be disseminated after the improvement has persisted for at least 10 minutes.*

- *Where applicable, the report should be updated prior to dissemination to reflect the conditions prevailing at the end of the 10-minute period.*

B. Local Routine Reports and Local Special Reports

(1) Local Routine Reports shall be transmitted to local Air Traffic Services (ATS) units and made available to aircraft operators and other users at the aerodrome.

(2) Local Special Reports shall be transmitted to local ATS units as soon as the specified meteorological conditions occur.

However, issuance of such reports may be waived, by agreement between the Aviation Meteorological Service Provider and the ATS authority, in the following cases:

a) For any meteorological element where the ATS unit has a display identical to that used at the meteorological station, and where arrangements are in place to use that display to automatically update the Local Routine and Local Special Reports;

b) For Runway Visual Range (RVR), if all changes in reporting step(s) are being reported directly to the ATS unit by an on-site observer.

(3) Local Special Reports shall also be made available to aircraft operators and other authorized users at the aerodrome.

SUBPART G – Aircraft Meteorological Observational Information

Note: The Standards and Recommended Practices (SARPs) in this subpart shall be applied in conjunction with the procedures and specifications contained in AMC–CAR 174, Chapter 3.

CAR 174.500 Obligations of Authority

(1) In accordance with CAR OPS-1.340(e), aircraft registered in the Sultanate of Oman and engaged in international air operations shall be required to make, record, and report meteorological observations during flight, as applicable.

CAR 174.503 Types of aircraft observations

(1) The following categories of aircraft meteorological observations shall be made:
   a) Routine observations, conducted during the en-route and climb-out phases of flight; and
   b) Special or other non-routine observations, conducted during any phase of flight as operationally required.

CAR 174.505 Routine aircraft observations — designation

- *Where air-ground data link capabilities exist, and where Automatic Dependent Surveillance–Contract (ADS-C) or Secondary Surveillance Radar (SSR) Mode S is used, automated routine observations should be generated at:*
   a) 15-minute intervals during the en-route phase; and
   b) Every 30 seconds during the first 10 minutes of climb-out.
- *For offshore helicopter operations, routine meteorological observations should be performed at locations and times agreed between the Aviation Meteorological Service Provider and the relevant helicopter operator(s).*

(1) On high-density air routes (e.g., organized tracks), at least one aircraft per flight level shall be designated at approximately hourly intervals to perform routine observations.
(2) Designation procedures shall be in accordance with regional air navigation agreements.
(3) For climb-out phase observations, one aircraft at each aerodrome shall be designated at approximately hourly intervals to conduct the required observations.

CAR 174.507 Routine aircraft observations — exemptions

(1) Aircraft that lack air-ground data link capabilities shall be exempt from the obligation to perform routine aircraft meteorological observations.

CAR 174.509 Special aircraft observations

(1) Special aircraft observations shall be reported immediately whenever any of the following meteorological phenomena are encountered or observed:
   a) Moderate or severe turbulence;
   b) Moderate or severe icing;
   c) Severe mountain wave activity;
   d) Thunderstorms without hail, when obscured, embedded, widespread, or occurring in squall lines;
   e) Thunderstorms with hail, when obscured, embedded, widespread, or occurring in squall lines;
   f) Heavy duststorms or heavy sandstorms;
   g) Volcanic ash cloud;
   h) Pre-eruption volcanic activity or volcanic eruption;

Note: Pre-eruption volcanic activity refers to unusual and/or increasing volcanic activity that may precede an eruption.

   i) A runway braking action that is worse than previously reported.

CAR 174.511 Other non-routine aircraft observations

Note: Procedures and technical specifications related to this section are contained in AMC–CAR 174.

(1) When meteorological conditions not listed under CAR 174.509 are encountered—such as wind shear—and the pilot-in-command determines that these conditions may adversely affect flight safety or significantly impact the efficiency of other aircraft operations, the pilot-in-command shall report such conditions to the appropriate air traffic services (ATS) unit as soon as practicable.

CAR 174.513 Reporting of aircraft observations

Note: Procedures and technical specifications related to this section are contained in AMC–CAR 174.

(1) Aircraft meteorological observations shall be reported primarily via air-ground data link.

Where such data link capability is not available or appropriate, special and non-routine observations shall be transmitted via voice communications.

(2) Aircraft meteorological observations shall be reported during flight, either:
   a) At the time the observation is made, or
   b) As soon thereafter as practicable.

(3) The following distinctions and content requirements shall apply:
   a) Routine aircraft observations shall be reported as routine air-reports;
   b) Special aircraft observations shall be reported as special air-reports.

(4) All air-reports transmitted via air-ground data link shall, at a minimum, include:
   a) Wind direction;
   b) Wind speed;
   c) Air temperature; and
   d) For special air-reports only, the meteorological condition prompting the issuance of the report.

CAR 174.515 Relay of air-reports by air traffic services units

(1) The Aviation Meteorological Service Provider, in coordination with the appropriate Air Traffic Services (ATS) authority, shall establish arrangements to ensure the following:
   a) Upon receipt of special air-reports via voice communications, the ATS unit shall relay the report without delay to the associated Meteorological Watch Office (MWO);
   b) Upon receipt of routine and special air-reports via air-ground data link, the ATS unit shall promptly forward the information to the following entities:
      i. The associated Meteorological Watch Office (MWO);
      ii. The World Area Forecast Centres (WAFCs); and
      iii. The centres designated under regional air navigation agreements for the operation of Internet-based Aeronautical Fixed Service (AFS) systems.

– *The meteorological authority should coordinate with the ATS authority to ensure the following practices are applied:*
   a) Special air-reports should be made available for uplink to aircraft for a period of 60 minutes after issuance;
   b) Automated special air-reports containing only wind and temperature data should not be uplinked to other aircraft in flight.

CAR 174.517 Dissemination of air-reports

(1) The Meteorological Watch Office (MWO) shall, without delay, transmit special air-reports received via voice communications to the following entities:
   a) The World Area Forecast Centres (WAFCs); and
   b) The centres designated under regional air navigation agreements for the provision of Internet-based Aeronautical Fixed Service (AFS).

(2) The MWO shall promptly forward special air-reports concerning:

a) Pre-eruption volcanic activity,
b) Volcanic eruptions, or
c) Volcanic ash clouds,

to the associated Volcanic Ash Advisory Centres (VAACs).

(3) If a special air-report is received by the MWO but the meteorological forecaster determines that the associated phenomenon is not expected to persist, and hence does not warrant a SIGMET, the special air-report shall still be disseminated using the same procedures as SIGMETs, in accordance with CAR 174.707.

a) This includes transmission to:
b) Other Meteorological Watch Offices;
c) The WAFCs; and
d) Other meteorological offices designated under regional air navigation agreements.

Note: The template used for up linking special air-reports to aircraft in flight is provided in AMC–CAR 174.

(4) Air-reports received by WAFCs shall be further disseminated as basic meteorological data.

Note: Such dissemination is generally performed via the World Meteorological Organization (WMO) Global Telecommunication System (GTS).

– *Where additional dissemination of air-reports is required to meet special aeronautical or meteorological needs, such dissemination shall be subject to bilateral or multilateral agreement between the relevant meteorological authorities.*

(5) All air-reports shall be exchanged in the format in which they were originally received, without modification.

SUBPART H– Aerodrome and En-Route Meteorological Forecast Information

Note: The Standards and Recommended Practices in this subpart shall be applied in conjunction with the detailed procedures provided in AMC–CAR 174, Chapters 4 and 5.

CAR 174.600 Use of forecasts

(1) The issuance of a new forecast by an aerodrome meteorological office—such as a routine aerodrome forecast (TAF)—shall be deemed to automatically cancel any previous forecast of the same type issued for:
   a) The same aerodrome (location indicator); and
   b) The same period of validity, or any overlapping portion thereof.

CAR 174.603 Aerodrome meteorological forecast information

Note: The provisions of this section shall be applied in conjunction with the procedures and technical specifications outlined in AMC–CAR 174, Chapter 4.

A. Aerodrome Forecasts (TAF)

(1) Aerodrome forecasts (TAF) shall be prepared by the aerodrome meteorological office, in accordance with the relevant regional air navigation agreement.

Note: The list of aerodromes for which TAFs are to be issued, and the associated periods of validity, are detailed in the regional electronic Air Navigation Plan (eANP), Volume II.

(2) A TAF shall be issued no earlier than one hour prior to the start of its validity period, and shall consist of a concise statement of the expected meteorological conditions at the aerodrome for the specified period.

(3) TAFs, including amendments, shall include the following meteorological elements:
   a) Surface wind;
   b) Visibility;
   c) Weather phenomena;
   d) Clouds; and
   e) Any significant changes expected in one or more of the above elements during the forecast period.

(4) Optional elements shall be included as agreed by regional air navigation agreements.

Note 1: Technical specifications are found in AMC–CAR 174, Chapter 4.

Note 2: Visibility refers to forecast prevailing visibility.

(5) Aerodrome meteorological offices shall maintain continuous monitoring of TAFs and issue amendments without delay whenever necessary.

(6) The length and number of change groups within the TAF shall be kept to a minimum.

Note: Guidance on TAF monitoring is available in ICAO Doc 8896 – Manual of Aeronautical Meteorological Practice, Chapter 3.

(7) Any TAF that cannot be kept under continuous review shall be cancelled.

- *The validity period of a routine TAF should be:*
  a) Not less than 6 hours and not more than 30 hours;
  b) Determined through regional air navigation agreement.
- *TAFs valid for:*
  a) Less than 12 hours → issued every 3 hours;
  b) 12 to 30 hours → issued every 6 hours.

(8) No more than one TAF shall be valid at any single aerodrome at a given time.

(9) TAFs and their amendments shall be disseminated to:
   a) International OPMET databanks, and
   b) Centres designated by regional air navigation agreements for Internet-based AFS services

B. Landing Forecasts (Trend Forecasts)

(1) A landing forecast shall be issued by the aerodrome meteorological office as specified by the regional air navigation agreement. These forecasts serve local users and aircraft within approximately one hour's flying time from the aerodrome.

(2) The landing forecast shall be issued in the form of a trend forecast.

(3) A trend forecast shall:

a) Be appended to a local routine report, local special report, METAR, or SPECI;
b) Consist of a concise description of significant expected changes at the aerodrome;
c) Have a validity period of 2 hours from the time of the associated report.

Note: Full technical specifications are available in AMC–CAR 174, Chapter 4.

(4) The units and scales used in the trend forecast shall match those of the base report to which it is appended.

C. Forecasts for Take-Off

(1) A take-off forecast shall be prepared by the aerodrome meteorological office, in accordance with local agreements between the Aviation Meteorological Service Provider and the concerned aircraft operators.

- *A take-off forecast should refer to a specified time window and include:*

a) Surface wind direction and speed, including variations;
b) Temperature;
c) Pressure (QNH); and
d) Any other element agreed locally between stakeholders.

- *Take-off forecasts should be provided to operators and flight crew upon request, ideally within 3 hours prior to the expected departure time.*
- *Take-off forecasts should be kept under continuous review, with prompt amendments issued whenever conditions change significantly*

CAR 174.605 En-route meteorological forecast information

Note: The provisions of this section shall be applied in conjunction with the technical procedures specified in AMC–CAR 174.

A. Forecasts by World Area Forecast Centres (WAFCs)

(1) Not applicable in the Sultanate of Oman.

Note: Oman does not operate as a designated World Area Forecast Centre (WAFC), nor is it responsible for the issuance or dissemination of global en-route meteorological forecast products under ICAO Annex 3 provisions.

B. Area Forecasts for Low-Level Flights (GAMET and Chart-Based Forecasts)

(1) Where the traffic density operating below FL 100 (or up to FL 150 in mountainous regions, or higher where operationally justified) warrants the routine issuance and dissemination of area forecasts, the following parameters shall be defined by the meteorological authority in consultation with airspace users:

a) Frequency of issuance;
b) Format of the forecast (textual or chart-based);
c) Validity period and issuance times;
d) Dissemination procedures; and
e) Amendment criteria.

(2) In cases where traffic density below FL 100 also necessitates the issuance of AIRMET information (as per CAR 174.709), area forecasts shall be prepared in a format agreed between meteorological authorities of the affected States:

a) When abbreviated plain language is used → Forecast shall be in GAMET format.
b) When charts are used → Forecast shall include combined charts of upper wind, upper-air temperature, and significant weather (SIGWX) phenomena.

(3) These forecasts shall:

a) Cover the airspace from the surface to FL 100 (or up to FL 150 in mountainous terrain, or higher, if needed);
b) Provide information on hazardous en-route weather to support AIRMET issuance; and
c) Include any additional information required for low-level flight operations.

Note: The standard GAMET template is contained in AMC–CAR 174.

(4) Area forecasts for low-level flights supporting AIRMET issuance shall:
a) Be issued every 6 hours;
b) Cover a 6-hour validity period; and
c) Be transmitted to the Meteorological Watch Offices (MWOs) and/or Aerodrome Meteorological Offices (AMOs) concerned at least one hour before the start of their validity period.

(5) These forecasts shall also be exchanged between AMOs and/or MWOs that are responsible for preparing flight documentation for low-level flights within the applicable Flight Information Regions (FIRs).
– *Such area forecasts should also be disseminated via aeronautical fixed service (AFS) Internet-based services, to ensure broad accessibility by users*.

Note: Forecasts described in paragraphs 4 and 5 are issued in accordance with the relevant regional air navigation agreements, similar to the associated AIRMET information.

C. Forecasts by Volcanic Ash Advisory Centres (VAACs)

(1) Not applicable in the Sultanate of Oman.

Note: Oman does not host or operate a Volcanic Ash Advisory Centre (VAAC) and is not designated to issue volcanic ash forecasts. However, Oman may receive volcanic ash advisories from other VAACs as part of regional or global coordination, when applicable.

SUBPART I – Meteorological Information Containing Advisories, Alerts, Warnings and Notices

Note: The Standards and Recommended Practices (SARPs) in this Subpart shall be applied in conjunction with the detailed procedures and guidance contained in AMC–CAR 174, Chapter 6.

CAR 174.700 Volcanic ash advisory information and information from State volcano observatories

(1) Not applicable in the Sultanate of Oman.

Note: Oman is not designated to host or operate a Volcanic Ash Advisory Centre (VAAC), nor does it maintain any State volcano observatory for aviation purposes.

CAR 174.703. Tropical cyclone advisory information

(1) Not applicable in the Sultanate of Oman.

Note: Oman is not designated to host a Tropical Cyclone Advisory Centre (TCAC) and is not responsible for the issuance of tropical cyclone advisory messages under ICAO Annex 3.

CAR 174.705 Space weather advisory information

(1) Not applicable in the Sultanate of Oman.

Note: Oman is not designated to issue or disseminate Space Weather Advisory Information, which is handled by the designated Space Weather Advisory Centres (SWXCs) under ICAO provisions.

CAR 174.707 SIGMET information

Note: Procedures and technical specifications applicable to this section are contained in AMC–CAR 174.

A. General Provisions

(1) SIGMET information shall be issued by a Meteorological Watch Office (MWO) and shall provide a concise description of the occurrence or expected occurrence of specified hazardous en-route weather phenomena that may endanger aircraft operations, including their evolution in time and space.

(2) The following phenomena shall be reported in SIGMET information:
   a) Thunderstorm (including squall lines, embedded or severe thunderstorms);
   b) Tropical cyclone;
   c) Severe or extreme turbulence;
   d) Severe icing;
   e) Severe mountain wave;
   f) Duststorm;
   g) Sandstorm;
   h) Volcanic ash cloud;
   i) Radioactive cloud.

(3) A SIGMET shall be cancelled once the reported or forecast phenomena are no longer occurring or expected to occur within the FIR/UIR.

(4) The validity period of a SIGMET shall not exceed 4 hours, except for:
   a) Volcanic ash clouds and
   b) Tropical cyclones,

for which the validity may be extended up to 6 hours.

– *SIGMET information concerning volcanic ash and tropical cyclones should be based on the advisories issued by the designated VAACs or TCACs, as per regional air navigation agreements.*

(5) The MWO shall maintain close coordination with the associated ACC/FIC to ensure that:
   a) SIGMET and NOTAM information concerning volcanic ash are mutually consistent.

(6) SIGMETs shall be issued:

a) Not more than 4 hours before the start of their validity period;
b) For volcanic ash or tropical cyclone SIGMETs, not more than 12 hours before the start of the validity period, and updated at least every 6 hours.

– *In FIRs that are subdivided vertically (i.e. into a FIR and UIR), the SIGMET should be identified by the location indicator of the ATS unit serving the FIR.*

Note: A SIGMET applies to the entire airspace within the FIR's lateral boundaries, including any upper airspace. The specific affected flight levels or areas are to be stated explicitly in the SIGMET content.

B. Dissemination of SIGMET Information

(1) SIGMET information shall be disseminated to:
a) Other MWOs;
b) WAFCs;
c) Other meteorological offices as per regional air navigation agreements;
d) VAACs (in the case of volcanic ash).

(2) SIGMETs shall also be distributed to:
a) International OPMET databanks, and
b) Designated centres responsible for Internet-based services within the Aeronautical Fixed Service (AFS),

in accordance with the applicable regional air navigation agreements.

CAR 174.709 AIRMET information

Note: Procedures and technical specifications for the issuance, format, and dissemination of AIRMET information are contained in AMC–CAR 174, Chapter 6.

A. General Provisions

(1) AIRMET information shall be issued by a Meteorological Watch Office (MWO) in accordance with regional air navigation agreements, particularly in areas with significant low-level air traffic operating:
a) Below FL 100, or
b) Up to FL 150 in mountainous areas, or higher, as deemed necessary.

(2) The AIRMET shall provide a concise description of the occurrence or expected occurrence of specified hazardous en-route weather phenomena not already included in Section I of the low-level area forecast (issued under CAR 174.605), but which may impact the safety of low-level flights. The following phenomena may be reported:
a. Surface wind speed changes;
b. Surface visibility deterioration;
c. Thunderstorms;
d. Mountain obscuration;
e. Cloud (relevant to VFR/IFR operations);
f. Icing;
g. Turbulence;
h. Mountain wave activity.

Note: The format and criteria for issuance are further specified in AMC–CAR 174, Chapter 6.

(3) AIRMET information shall be cancelled once the reported or forecast phenomena are no longer occurring or expected to occur in the affected airspace.

(4) The maximum validity period of an AIRMET shall be 4 hours.

B. Dissemination of AIRMET Information

– *AIRMET information should be disseminated to:*
a) Meteorological Watch Offices in adjacent FIRs, and
b) Other Meteorological Watch Offices or Aerodrome Meteorological Offices,

as agreed between the concerned meteorological authorities.

- *AIRMET information should be transmitted to:*
  - *a) International OPMET databanks, and*
  - *b) Designated centres for Aeronautical Fixed Service (AFS) Internet-based operations,*

in accordance with the relevant regional air navigation agreements.

CAR 174.711 Aerodrome warnings

Note: The procedures and technical specifications for aerodrome warnings are detailed in AMC–CAR 174.

A. General Provisions

(1) Aerodrome warnings shall be issued by the Aerodrome Meteorological Office as designated by the meteorological Service provider. These warnings shall provide concise information on meteorological conditions that may adversely affect:

a) Aircraft on the ground (including parked aircraft), and

b) Aerodrome facilities and services.

Note: The standard template for aerodrome warnings is included in AMC–CAR 174.

- *Aerodrome warnings should address the occurrence or expected occurrence of any of the following phenomena:*
- *Tropical cyclone (when 10-minute mean surface wind speed ≥ 17 m/s (34 kt));*

a. Thunderstorm;
b. Hail;
c. Snow (including accumulation);
d. Freezing precipitation;
e. Frost;
f. Hoar frost or rime;
g. Sandstorm;
h. Duststorm;
i. Rising sand or dust;
j. Strong surface winds and gusts;
k. Squall;
l. Volcanic ash (including ash deposition);
m. Tsunami;
n. Toxic chemical release;
o. Any other locally agreed phenomena relevant to aerodrome safety.

Note: Warnings related to tsunamis are not required if a national public safety plan for tsunami response is already integrated into the emergency response system of the "at-risk" aerodrome.

- *Aerodrome warnings should be cancelled when the meteorological conditions are no longer occurring or expected to occur at the aerodrome.*

B. Dissemination of Aerodrome Warnings

(1) Aerodrome warnings shall be disseminated in accordance with local arrangements to all concerned stakeholders, including:

a. Air traffic services units,
b. Aerodrome operators,
c. Aircraft operators, and
d. Other relevant entities involved in aerodrome operations and safety.

CAR 174.713 Wind shear warnings and alerts

Note: Procedures and technical specifications related to wind shear warnings and alerts are provided in AMC–CAR 174.

– Wind shear alerts are intended to complement wind shear warnings and together enhance pilot situational awareness.

A. General Provisions

(1) Wind shear warnings shall be issued by the Aerodrome Meteorological Office at aerodromes where wind shear is identified as a safety factor. Issuance shall be based on local arrangements with the:
   a. Appropriate Air Traffic Services (ATS) unit; and
   b. Aircraft operators concerned.

(2) These warnings shall provide concise information on the observed or expected presence of wind shear conditions that could adversely affect aircraft:
   a. On the approach path,
   b. On the take-off path,
   c. During circling approach, or
   d. On the runway during landing roll or take-off run,

between runway level and 500 m (1 600 ft) above that level.

Note: Where local topography has been shown to generate significant wind shear above 500 m (1 600 ft), this height shall not be considered a limiting threshold.

Note: A standardized template for wind shear warnings is provided in AMC–CAR 174.

– *Wind shear warnings for arrivals and/or departures should be cancelled based on:*
   a. Pilot reports confirming the cessation of wind shear; or
   b. Elapsed time criteria as locally agreed.

(3) Such cancellation criteria shall be established by the Aviation Meteorological Service Provider, in coordination with the ATS authority and aircraft operators, and tailored to each specific aerodrome.

(4) At aerodromes equipped with automated ground-based wind shear remote-sensing or detection systems, wind shear alerts shall be issued automatically by those systems. Alerts shall provide real-time, concise information on the observed presence of wind shear affecting:
   a. The final approach path,
   b. The initial take-off path, and
   c. The runway during landing roll or take-off run.

B. Dissemination of Wind Shear Warnings and Alerts

(1) Wind shear warnings shall be disseminated to all concerned parties in accordance with local arrangements, which may include:
   a. ATS units,
   b. Aerodrome operators, and
   c. Aircraft operators.

Wind shear alerts generated by automated detection equipment shall be disseminated in real time to affected stakeholders, also in accordance with locally established protocols.

SUBPART J – Aeronautical Climatological Information

Note: The Standards and Recommended Practices (SARPs) in this Subpart shall be applied in conjunction with AMC–CAR 174, Chapter7.

CAR 174.800 General Provisions of Aeronautical Climatological Information

Note 1: Procedures and technical specifications related to this provision are detailed in AMC–CAR 174.
Note 2: When it is impracticable for a State to fulfill climatological information requirements nationally, international cooperation may be established. This may involve the use of regional or international computer facilities for data collection, processing, and storage, and the delegation of responsibilities for preparing aeronautical climatological products, as agreed between the meteorological authorities concerned.

(1) Aeronautical climatological information required for the planning of flight operations shall be prepared in the form of:
   a. Aerodrome climatological tables, and
   b. Aerodrome climatological summaries.

(2) Such information shall be provided to aeronautical users in accordance with agreements established between the Aviation Meteorological Service Provider and the user(s) concerned.

- *Climatological information should generally be based on observations spanning a minimum of five years, and the reference period should be clearly stated in the data products supplied*.
- *For new aerodrome sites or new runways at existing aerodromes, climatological data collection should commence as early as possible in advance of the commissioning of those facilities, to ensure an adequate climatological record is available.*

CAR 174.803 Aerodrome climatological tables

Note: Procedures and technical specifications relevant to this provision are detailed in AMC–CAR 174.

- *The Sultanate of Oman, as a Contracting State should ensure that appropriate arrangements are in place for the systematic collection, retention, and processing of aeronautical meteorological observation data, and that it possesses the capability:*
   a. *To prepare aerodrome climatological tables for each international regular and alternate aerodrome within its territory, based on a statistically valid observation period and in accordance with international standards; and*
   b. *To make these climatological tables available to aeronautical users within a timeframe mutually agreed between the Aviation Meteorological Service Provider and the user(s) concerned.*

CAR 174.805 Aerodrome climatological summaries

- *Aerodrome climatological summaries in the Sultanate of Oman should be developed in accordance with the standards and procedures prescribed by the World Meteorological Organization (WMO). Where automated or computerized facilities are available for the storage, processing, and retrieval of meteorological data, these summaries should be:*
   a. *Published or*
   b. *Made available upon request to aeronautical users.*

Where such facilities are not available, climatological summaries should be prepared using the WMO-specified models and kept up to date as necessary.

CAR 174.807 Copies of meteorological observational data

(1) The Civil Aviation Authority of Oman, through its designated meteorological authority, shall, upon request and to the extent practicable, make available meteorological observational data to:

a. Other meteorological authorities;

b. Aircraft operators; and

c. Other stakeholders concerned with the application of meteorology to international air navigation,

for the purposes of research, investigation, or operational analysis.

CAR 174.809 Exchange of aeronautical climatological information

- *Aeronautical climatological information should be exchanged upon request between meteorological authorities.*
- *Operators and other aeronautical users who require such information should direct their requests to the Aviation Meteorological Service Provider responsible for its preparation within the Sultanate of Oman.*

SUBPART K – Meteorological Service for Operators and Flight Crew Members

Note: The Standards and Recommended Practices in this Subpart shall be applied in conjunction with AMC–CAR 174, Chapter 8.

CAR 174.900 General Provisions

Note: Procedures and technical specifications applicable to this section are outlined in AMC–CAR 174.

(1) The Aviation Meteorological Service Provider (AMSP) shall ensure that appropriate meteorological information is supplied to operators and flight crew members for the following operational purposes:
   a. Pre-flight planning by the operator;
   b. In-flight re-planning by operators using centralized operational control;
   c. Use by flight crew members prior to departure;
   d. Aircraft in flight.

(2) The type, format, method, and means of supplying such meteorological information shall be determined by the Aviation Meteorological Service Provider, in consultation with the operator concerned.

(3) The meteorological information provided shall cover the entire flight profile—in terms of time, altitude, and geographical extent—from departure to the destination aerodrome and shall also include conditions expected between the destination and alternate aerodromes, as designated by the operator.

(4) The meteorological information supplied to operators and flight crew members shall be current and shall include:
   a. Aerodrome and en-route observational information; and
   b. Aerodrome and en-route forecast information.

Note: The complete list of meteorological information required is specified in AMC–CAR 174.

(5) En-route forecast information shall be derived from digital forecasts issued by World Area Forecast Centres (WAFCs), whenever such data sufficiently covers the intended flight profile, unless otherwise agreed between the AMSP and the operator.

(6) When forecasts are clearly identified as being originated by WAFCs, no modifications shall be made to the meteorological content of those forecasts.

(7) Forecasts of upper winds, upper-air temperatures, and significant weather (SIGWX) phenomena above flight level 100, requested for pre-flight or in-flight re-planning, shall be supplied as soon as available, but not later than three (3) hours before departure. Other meteorological information required shall be supplied as soon as practicable.

– *For helicopter operators conducting flights to offshore structures, meteorological information for pre-flight and in-flight planning should include data covering the layer from sea level up to FL100.*

(8) When necessary, the Authority, in arranging for the provision of meteorological service, shall initiate coordinating actions with the meteorological authorities of other States to obtain the required reports and/or forecasts.

(9) Meteorological information shall be supplied to operators and flight crew members at locations mutually agreed between the AMSP and the operator concerned. The timing of information provision shall also be agreed upon.

(10) Pre-flight planning support shall be limited to flights originating within the territory of Oman.

(11) For aerodromes without an established aerodrome meteorological office, alternate arrangements shall be established and agreed between the Aviation Meteorological Service Provider and the operator.

CAR 174.903 Briefing, consultation and display

Note: Requirements related to the use of automated pre-flight information systems for the provision of briefing, consultation, and display are contained in CAR 174.907.

(1) The Aviation Meteorological Service Provider (AMSP) shall ensure that briefing and/or consultation is made available, upon request, to flight crew members and/or other flight operations personnel. The purpose is to provide the latest available meteorological information concerning:
   a. The planned route of flight;
   b. The aerodrome of intended landing;
   c. Any alternate aerodromes; and
   d. Other relevant aerodromes,

either to clarify or amplify the meteorological content of the flight documentation, or, if agreed between the AMSP and the operator, to serve in lieu of flight documentation.

(2) The meteorological information used for briefing, consultation, and display shall include all applicable content specified in CAR 174.900 (4) (i.e., aerodrome and en-route observational and forecast information).

(3) If the aerodrome meteorological office offers a professional opinion on meteorological developments at an aerodrome which significantly deviates from the aerodrome forecast (TAF) included in the flight documentation, this divergence shall be clearly communicated to the flight crew members. The briefing record concerning such divergence shall be documented at the time of briefing and made available to the operator.

(4) The required briefing, consultation, display, and/or flight documentation shall typically be provided by the aerodrome meteorological office associated with the aerodrome of departure.

(5) Where these services are not available at a specific aerodrome, alternative arrangements shall be established between the AMSP and the operator concerned.

(6) In exceptional circumstances (e.g., significant delays), the aerodrome meteorological office shall either issue updated information or arrange for its provision through alternate means.
   - *The flight crew member and/or flight operations personnel for whom briefing or consultation is requested should visit the aerodrome meteorological office at the agreed time, as coordinated between the operator and the AMSP. Where in-person briefing is not feasible, services should be provided via telephone or other telecommunications means.*
   - *Meteorological information displayed for operational use should be readily accessible to the flight crew members or flight operations personnel for whom it is intended.*

CAR 174.905 Flight documentation

Note 1: Procedures and technical specifications applicable to this section are contained in AMC–CAR 174.

Note 2: Requirements related to the use of automated pre-flight information systems for flight documentation are described in CAR 174.907.

(1) The flight documentation made available to flight crew members and operators shall include the meteorological information specified in CAR 174.900 (4), namely:
   a. Aerodrome and en-route observational information, and
   b. Aerodrome and en-route forecast information.

(2) If it becomes evident that meteorological information intended for inclusion in the flight documentation will materially differ from that previously provided for pre-flight planning or in-flight re-planning, the operator shall be immediately informed. When practicable, updated information shall be supplied as per arrangements agreed between the aerodrome meteorological office and the operator.
   - *In cases where an amendment becomes necessary after the flight documentation has been issued but before take-off, the aerodrome meteorological office should, as per local agreement, provide the updated or amended information either directly to the operator or to the local air traffic services unit for relay to the aircraft.*

- *Flight documentation that includes concatenated, route-specific charts of upper wind and upper-air temperature forecasts should be prepared and delivered in accordance with arrangements agreed upon between the Aviation Meteorological Service Provider (AMSP) and the operator.*

Note: Guidance on the design, formulation, and use of concatenated charts is contained in the ICAO Manual of Aeronautical Meteorological Practice (Doc 8896).

(3) Meteorological information received from other meteorological offices shall be included in the flight documentation without any modification.

- *Meteorological charts included in the flight documentation should be of a high standard of clarity and legibility.*

Note: Detailed specifications for the characteristics of such charts are provided in the AMC–CAR 174.

(4) The Civil Aviation Authority of Oman shall ensure that the Aviation Meteorological Service Provider retains copies of the meteorological information provided to flight crew members (either in printed or digital format) for a minimum of 30 days from the date of issue.

(5) This information shall be made available upon request for the purpose of inquiries or investigations and shall be retained until such inquiries or investigations are concluded.

CAR 174.907 Automated pre-flight information systems for briefing, consultation, flight planning and flight documentation

Note: Procedures and technical specifications related to this section are detailed in the AMC-CAR 174.

(1) When automated pre-flight information systems are used by the Aviation Meteorological Service Provider to supply and display meteorological information for self-briefing, flight planning, and flight documentation purposes, the system shall ensure that the information complies with the relevant requirements of CAR 174.900, CAR 174.903, and CAR 174.905, inclusive.

- *Automated pre-flight information systems that offer a harmonized and common point of access to both meteorological and aeronautical information services (AIS) for operators, flight crew members, and other aeronautical personnel should be implemented in coordination with the Authority or the delegated agency in accordance with CAR 175.*

Note: The specific meteorological and AIS content is defined in CAR 174.900, CAR 174.903, CAR 174.905, AMC-CAR 174 Chapter 8, and AMC-CAR 175.

(2) Where such systems provide integrated access to both meteorological and AIS information, the meteorological authority shall retain full responsibility for ensuring that quality control and quality management of meteorological information are applied by the Aviation Meteorological Service Provider, in accordance with CAR 174.207.

Note: Responsibilities for AIS quality assurance are addressed under CAR 175.

(3) Automated pre-flight information systems that support self-briefing shall also ensure that operators and flight crew members have access, when necessary, to consultation services with an aerodrome meteorological office, via telephone or other suitable telecommunications means.

CAR 174.909 Information for aircraft in flight

Note: Procedures and technical specifications related to this section are contained in the AMC-CAR 174.

(1) Meteorological information intended for use by aircraft in flight shall be provided by an aerodrome meteorological office or meteorological watch office (MWO) to its associated air traffic services (ATS) unit, and via D-VOLMET or VOLMET broadcasts as determined by regional air navigation agreements.

(2) Additionally, meteorological information required by the operator for in-flight planning shall be provided upon request, in accordance with arrangements agreed between the meteorological authorities and the

operator concerned. Meteorological information supplied to ATS units for use by aircraft in flight shall comply with the relevant specifications detailed in Subpart L of this Regulation.

- -*When an aircraft in flight requests meteorological information, the aerodrome meteorological office or MWO receiving the request should coordinate the provision of such information, enlisting assistance from another aerodrome meteorological office or MWO if necessary.*

(3) Meteorological information shall be provided through D-VOLMET or VOLMET broadcasts in accordance with the specifications outlined in Subpart M.

SUBPART L – Information for Air Traffic Services, Search and Rescue Services and Aeronautical Information Services

Note. The Standards and Recommended Practices in this chapter are to be used in conjunction with the AMC-CAR 174, Chapter 9.

CAR 174.1000 Information for air traffic services units

Note: Procedures and technical specifications related to this section are provided in AMC-CAR 174.

A. General Provisions

(1) The Authority shall designate an Aerodrome Meteorological Office (AMO) or a Meteorological Watch Office (MWO) to be associated with each Air Traffic Services (ATS) unit. The designated AMO or MWO shall, in coordination with the ATS unit, provide or arrange the provision of up-to-date meteorological information necessary for the discharge of its functions.

- *An AMO should be associated with an aerodrome control tower or approach control unit for the provision of meteorological services.*

(2) An MWO shall be associated with a Flight Information Centre (FIC) or Area Control Centre (ACC) for the provision of meteorological services.

- *Where, due to local operational circumstances, it is appropriate for the responsibilities of the designated AMO or MWO to be shared between two or more offices, the division of responsibilities should be clearly defined by the Aviation Meteorological Service Provider in consultation with the appropriate ATS authority.*

(3) Any meteorological information requested by an ATS unit in relation to an aircraft emergency situation shall be provided without delay and with the highest priority.

B. Supply, Dissemination and Transmission Arrangements

(1) For flight information purposes, current meteorological reports and forecasts shall be supplied to the designated aeronautical telecommunication stations. Where required, a copy shall also be forwarded to the associated FIC or ACC.

- *When computer-processed upper-air grid point data in digital form is available for use by ATS computers, the transmission arrangements should be established by mutual agreement between the Aviation Meteorological Service Provider and the ATS authority. Such data should be provided promptly upon completion of the forecast processing.*

CAR 174.1003 Information for search and rescue services units

Note: Procedures and technical specifications related to this section are contained in AMC-CAR 174.

A. General Provisions

(1) Aerodrome Meteorological Offices (AMOs) or Meteorological Watch Offices (MWOs) designated by the Authority, in accordance with applicable regional air navigation agreements, shall supply Search and Rescue (SAR) services units with the meteorological information required to support SAR operations.

(2) The information shall be provided in a format and manner mutually agreed upon between the designated meteorological office and the SAR services unit.

(3) The designated AMO or MWO shall maintain continuous liaison with the SAR unit throughout the duration of a SAR operation to ensure timely provision of relevant meteorological updates.

B. Information to be Provided

(1) The following meteorological information shall be supplied, as applicable, to Rescue Coordination Centres (RCCs) or other SAR units involved:

a. Significant en-route weather phenomena potentially affecting search operations;
b. Cloud amount and type, with emphasis on cumulonimbus clouds; including height of cloud bases and tops;
c. Visibility conditions and any obscuring phenomena (e.g. fog, haze, sand/dust storms);
d. Surface wind and upper wind conditions along the intended flight route and search area;
e. Surface conditions, including snow cover, waterlogging, or flooding affecting ground operations;
f. Sea-surface meteorological data, such as temperature, state of the sea, ice cover, and ocean currents, when relevant to the search area;
g. Sea-level pressure data.

CAR 174.1005 Information for aeronautical information services units

Note: Procedures and technical specifications related to this section are contained in AMC-CAR 174.

A. General Provisions

(1) The Aviation Meteorological Service Provider, in coordination with the Authority, shall ensure the provision of current and relevant meteorological information to Aeronautical Information Services (AIS) units, as required for the performance of their functions.

B. Categories of Information to be Provided

(1) The following categories of information shall be supplied, as necessary, to the appropriate AIS unit:

a. Information on meteorological services for international air navigation intended for inclusion in the Aeronautical Information Publication (AIP).

Note: Details of this information are provided in AMC-CAR 175.

b. Information required for the preparation of NOTAMs or ASHTAMs, including, but not limited to:
    1. The establishment, withdrawal, or significant changes in the operation of aeronautical meteorological services.
    2. Such information shall be supplied to the AIS unit sufficiently in advance of the effective date to allow for timely issuance of NOTAMs in accordance with CAR 175.
    3. The occurrence of volcanic activity.

Note: Refer to CAR 174.303 (2)-h and CAR 174.415 for specific requirements.

    4. The release of radioactive materials into the atmosphere, in coordination with the relevant civil aviation authority.

Note: Refer to CAR 174.305, paragraph 2(g).

c. Information necessary for the preparation of Aeronautical Information Circulars (AICs), including:
    1. Anticipated significant changes in meteorological procedures, services, or facilities;
    2. Information on weather phenomena that may affect the safety or efficiency of aircraft operations.

SUBPART M – Use of Communications to Exchange Meteorological Information

Note 1: The Standards and Recommended Practices in this subpart are to be used in conjunction with AMC-CAR 174, Chapter 10.

Note 2: Each Contracting State is responsible for determining the internal organizational arrangements and responsibilities for implementing the telecommunications facilities addressed in this Subpart.

CAR 174.1100 Requirements for communications

A. Aerodrome Communication:

(1) Suitable telecommunications facilities shall be provided to allow aerodrome meteorological offices and, where necessary, aeronautical meteorological stations to supply meteorological information to the associated ATS units, particularly control towers, approach control units, and aeronautical telecommunications stations.

B. MWO Communication:

(1) Meteorological watch offices shall be supported by appropriate telecommunications to deliver meteorological information to ATS and Search and Rescue (SAR) units for the FIRs, CTAs, and SAR regions under their responsibility—especially to FICs, ACCs, RCCs, and relevant telecom stations.

C. WAFC Product Transmission:

(1) Suitable communication facilities shall be available to enable WAFCs to disseminate World Area Forecast System (WAFS) products to aerodrome meteorological offices, Aviation Meteorological Service Providers, and other authorized users.

D. Direct Speech Communication:

(1) Telecommunication facilities between aerodrome meteorological offices (and, where applicable, aeronautical meteorological stations) and control towers or approach units shall support direct speech with connection times not exceeding 15 seconds.

- *ATS Linkages: Communication between aerodrome or meteorological watch offices and FICs, ACCs, RCCs, and telecom stations should:*
  1. *Support direct speech, with connection times ideally within 15 seconds;*
  2. *Allow for printed communication, with message transit times not exceeding 5 minutes.*

Note: "15 seconds" applies to telephony via switchboards; "5 minutes" applies to printed communications requiring retransmission.

- *Supplementary Systems:* Where necessary, supplementary systems such as closed-circuit television or dedicated data processing systems should complement existing telecommunications infrastructure.
- *Operator Access: Operators should have arrangements in place, in coordination with the Aviation Meteorological Service Provider, to establish telecommunications links for receiving meteorological information.*

E. Meteorological Office Interchange:

(1) Facilities shall be provided for the exchange of operational meteorological information between meteorological offices.

- *Internet Use: The Aeronautical Fixed Service (AFS) should be used for real-time meteorological communication. For non-time-critical exchanges, the public Internet may be used if:*
  a. *Availability and operation are satisfactory;*
  b. *Supported by bilateral, multilateral, or regional agreements.*

Note 1: WAFC-operated aeronautical fixed Internet services support global OPMET exchange.

Note 2: See ICAO Doc 9855 – Guidelines on the Use of the Public Internet for Aeronautical Applications.

- *ATS Upper-Air Data: When upper-air digital grid point data is made available to ATS computers, transmission protocols should be mutually agreed between the Aviation Meteorological Service Provider and the ATS authority.*
- *Operator Flight Planning: When such digital data is used by operators, transmission arrangements should be agreed between the relevant WAFC, the Aviation Meteorological Service Provider, and the operators.*

CAR 174.1103 Use of aeronautical fixed service communications and the public Internet

Note: Detailed procedures and technical specifications are provided in AMC-CAR 174.

A. Meteorological Bulletins

(1) Meteorological bulletins to be transmitted via AFS or Internet shall be originated by the appropriate meteorological office or aeronautical meteorological station.

Note: Bulletins authorized for transmission via AFS are listed in CAR-171.205 (6) (h), including priority levels.

(2) Bulletins and messages shall achieve message transit times below 5 minutes, unless otherwise specified in regional air navigation agreements.

B. WAFC Forecast Products

Not applicable in Oman.

C. Aeronautical Mobile Service Communication

Note: Procedures and technical specifications are provided in AMC-CAR 174.

1) Meteorological data transmitted to or from aircraft shall comply with the content and format requirements specified in this CAR and its associated AMC.

D. D-VOLMET (Aeronautical Data Link Service)

Not applicable in Oman.

E. Aeronautical Broadcasting Service — VOLMET

Note: See AMC-CAR 174 for broadcast configuration and content.

1) Continuous VOLMET Broadcasts (VHF):

Continuous VOLMET broadcasts, typically transmitted on Very High Frequency (VHF) channels, shall include:

- **METAR** reports;
- **SPECI** reports;
- **Trend forecasts**, where available.

2) Scheduled VOLMET Broadcasts (HF):

Scheduled VOLMET broadcasts, typically transmitted on **High Frequency (HF)** channels, shall include:

- **METAR** reports;
- **SPECI** reports;
- **Trend forecasts**, where available;
- **TAF** and **SIGMET**, where required by **regional air navigation agreements**.

Note: The inclusion of TAF and SIGMET in HF VOLMET broadcasts shall be determined in accordance with ICAO Regional Air Navigation Plans (e.g., MID ANP.).