**COMPLIANCE MATRIX**

**UK Regulation (EU) No 2017/373**

**Meteorological Service Requirements**

**ANNEX V — PART-MET**

**SPECIFIC REQUIREMENTS FOR PROVIDERS OF METEOROLOGICAL SERVICES**

|  |  |  |  |
| --- | --- | --- | --- |
| **Service Provider** |  | | |
| **Matrix version number** |  | Date |  |

Complete all relevant sections and send the compliance matrix and supporting documents to [ansp.certification@caa.co.uk](mailto:ansp.certification@caa.co.uk)

|  |  |  |
| --- | --- | --- |
| **Amendment record** | | |
| **Issue** | **Date** | **Purpose** |
| 4 | April 2021 | Amended by ED Decision 2020/008/R |
| 5 | September 2022 | Amended to include technical requirements and associated AMC. Include ref to Annex VII Part DAT |
|  |  |  |
|  |  |  |

**General Introduction to the ATM/ANS UK (EU) Regulation No 2017/373 Compliance Matrices**

Regulation (EU) No 373/2017 as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018 is applicable to all the service providers and functions shown in the diagram below which has been extracted from the regulation.



The Compliance matrices have been divided into the following Parts:

ANNEX III ATM/ANS ORGANISATIONAL REQUIREMENTS

ANNEX IV AIR TRAFFIC SERVICES

ANNEX V METEOROLOGICAL SERVICES

ANNEX VI AERONAUTICAL INFORMATION SERVICES

ANNEX VII DATA SERVICES

ANNEX VIII COMMUNICATION NAVIGATION OR SURVEILLANCE SERVICES

ANNEX IX AIR TRAFFIC FLOW MANAGEMENT

ANNEX X AIRSPACE MANAGEMENT

ANNEX XI PROCEDURE DESIGN

ANNEX XIII AIR TRAFFIC SAFETY PERSONNEL

Note: ANNEX XII Part NM not included.

**The table below indicates which of the compliance matrices must be complete by which type of service provider**

**Service Providers must complete the relevant Compliance Matrices sections as indicated below**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Compliance Matrix** | | **Compliance Matrix Section** | **ATS** | **MET** | | | **AIS** | **DAT** | **CNS** | **ATFM** | | **ASM** | **FPD** |
| **Local only** | **METARS** | **Forecast** | **NATS (En Route)** | **ATS Units** |
| ANNEX III | | Section 1 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** |
| Section 2 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** |
| Section 3 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** |  |  |
| Section 4 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** |
| Section 5 | **X** |  |  |  |  |  |  |  |  |  |  |
| Section 6 | **\*** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** |
| ANNEX IV | | Sections 1 to 4 | **X** |  |  |  |  |  |  |  |  |  |  |
| ANNEX V | | Section 1 |  | **X** | **X** | **X** |  |  |  |  |  |  |  |
| Section 2 |  | **X** | **X** |  |  |  |  |  |  |  |  |
| Section 3 |  |  |  | **X** |  |  |  |  |  |  |  |
| Section 4 |  |  |  | **X** |  |  |  |  |  |  |  |
| Section 5 |  |  |  | **X** |  |  |  |  |  |  |  |
| Section 6 |  |  |  |  |  |  |  |  |  |  |  |
| Section 7 |  |  |  | **X** |  |  |  |  |  |  |  |
| ANNEX VI | |  |  |  |  |  | **X** |  |  |  |  |  |  |
| ANNEX VII | |  |  |  |  |  |  | **X** |  |  |  |  |  |
| ANNEX VIII | |  |  |  |  |  |  |  | **X** |  |  |  |  |
| ANNEX IX | | Section 1 |  |  |  |  |  |  |  | **X** |  |  |  |
| Section 2 |  |  |  |  |  |  |  |  | **X** |  |  |
| ANNEX X | |  |  |  |  |  |  |  |  |  |  | **X** |  |
| ANNEX XI | |  |  |  |  |  |  |  |  |  |  |  | **X** |
| ANNEX XIII | |  |  |  |  |  |  |  | **X** |  |  |  |  |
|  | **\*ANNEX III Section 6 may be applicable to some ATS providers. See notes in Section 6**  **\*The Applicability of ANNEX XIII is dependent upon the type of service provided, refer to Tables 1 and 2 of the ANNEX XIII Matrix** | | | | | | | | | | | | |

**Introduction to Compliance Matrix ANNEX V METEOROLOGICAL SERVICE REQUIREMENTS**

UK Regulation (EU) 2017/373 requires that Meteorological service providers must comply with the specific requirements detailed in Annex V of the regulation.

This Compliance Matrix contains all the Annex V MET specific Organisational Requirements (OR), Technical Requirements (TR) and Acceptable Means of Compliance (AMC).

It should be noted that some AMCs contain words ‘Should’ and ‘May’, unless an Alternative Means of Compliance (AltMoC) is approved and used the words ‘Should’ and ‘May’ are to be interpreted as ‘Shall’ and ‘Must’.

The compliance matrix should be used as a checklist to enable you to establish the level of compliance of your organisation with the new regulation and to identify areas where further action is required.

A list of the supporting documents referred to in the compliance matrix should be entered into the table below.

This Compliance Matrix is to be maintained and amended when changes are made to the supporting documents.

Applicants are to submit the completed compliance matrices and the referenced supporting documentation.

**How to complete this Compliance Matrix**

The Matrix is divided into seven sections:

**SECTION 1** - To be completed by all Meteorological Service Providers.

**SECTION 2** – To be Completed by Service Providers providing Local Reports and METARS only.

**SECTIONS 3, 4, 5 and 7** - To be completed the Meteorological Office.

**SECTION 6** Is not applicable in the UK and does not require completion. Included for reference only.

The Matrix is laid out in the format shown in the example below.

The first column lists the regulation and associated AMC. Where there is no AMC, compliance must be indicated against the regulation or the part of the regulation that has no AMC associated.

The second column provides a very brief description of the requirements.

The third column provides a link to the actual regulation or AMC so full details of the requirement can be viewed as shown below. After viewing the regulation or AMC clicking on the ‘return link’ will bring you back to where you were in the compliance matrix.

Where there is a Technical Requirement (TR) associated with an Organisational Requirement (OR), links are provided underneath the OR to the TR and its AMC. The TR should be considered when declaring compliance with the OR.

The Appendices to the regulation are not included. Where reference is made to them, they can be viewed in the original regulation.

The original UK Regulation (EU) No 2017/373 and current AMC and Guidance Material (GM) can be accessed via the CAA web site. [ATM/ANS provision of services | Civil Aviation Authority (caa.co.uk)](https://info.caa.co.uk/uk-regulations/atmans-provision-of-services/)

The requirements and AMC listed below are in the order shown in the regulation

Under each requirement a space is provided to enable you to indicate in which of your organisation’s documents compliance can be demonstrated.

Unless specifically asked for, statements of compliance are not required within the compliance matrix.

Where your organisation is not yet compliant with a requirement enter ‘UNDER DEVELOPMENT’ followed by a target date for completion. This should be no more than 6 months. Items marked as under development will be in the scope of the next routine oversight audit.

Complete all relevant sections and send the compliance matrix and supporting documentation to [ansp.certification@caa.co.uk](mailto:ansp.certification@caa.co.uk)

**Example of compliance matrix**

|  |  |  |
| --- | --- | --- |
| **The Regulation and AMC** | **Requirements for all providers (except where indicated)** | **Link** |
| **ATM/ANS.OR.A.055 Findings and corrective actions** | Document a process for dealing with findings raised by the CAA. Identify root cause and development of corrective action plan | 373 |
| **AMC1 ATM/ANS.OR.A.055(b) Findings and corrective actions** | This relates to the scope of the corrective action, include in above documented process | 373 |
| **Enter reference(s) where compliance is indicated** | Detailed in Management system procedure MSP.002 Audits and Findings |  |

|  |  |
| --- | --- |
| **ATM/ANS.OR.A.055 Findings and corrective actions**  After receipt of notification of findings from the competent authority, the service provider shall:  (a) identify the root cause of the non-compliance;  (b) define a corrective action plan that meets the approval by the competent authority;  (c) demonstrate corrective action implementation to the satisfaction of the competent authority within the time period proposed by the service provider and agreed with that authority, as defined in point ATM/ANS.AR.C.050(e). | Return Link |
| **AMC1 ATM/ANS.OR.A.055(b) Findings and corrective actions**  **GENERAL**  The corrective action plan defined by the service provider should address the effects of the non-conformity and its root cause. | Return Link |

|  |  |  |  |
| --- | --- | --- | --- |
| **Referenced Documents** | | | |
| **Index** | **Title of Document** | **Current Issue No.** | **Date of Issue** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Referenced Documents** | | | |
| **Index** | **Title of Document** | **Current Issue No.** | **Date of Issue** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**Compliance Matrix SECTION 1**

**ANNEX V —SUBPART A — ADDITIONAL ORGANISATIONAL REQUIREMENTS FOR PROVIDERS OF METEOROLOGICAL SERVICES (MET.OR)**

**GENERAL REQUIREMENTS**

This section of the compliance matrix contains extracts from the above annexe and subpart of the regulation that are applicable to **all meteorological service providers**

|  |  |  |
| --- | --- | --- |
| **The Regulation and AMC** | **Requirements for all meteorological providers (except where indicated)** | **Link** |
| **MET.OR.100 Meteorological data and information** **(a)** | A meteorological services provider shall provide operators, flight crew members, air traffic services units, search and rescue services units, aerodrome operators, accident and incident investigation bodies, and other service providers and aviation entities with the meteorological information necessary for the performance of their respective functions, as determined by the competent authority. *(Note AMC requirements below).* | [373](#OR_100) |
| **AMC1 MET.OR.100(a)** **Meteorological data and information** | Provide a reference that indicates that an agreement between the meteorological services provider and the appropriate ATS unit has been established that covers the following:  (a) the provision in air traffic services units of displays related to semi-automatic observing systems or automatic observing systems and;  (b) the calibration and maintenance of these displays/instruments and,  (c) the use to be made of these displays/instruments by air traffic services personnel and.  (d) as and where necessary, supplementary visual observations, such as meteorological phenomena of operational significance in the climb-out and approach areas, if and when made by air traffic services personnel to update or supplement the information supplied by the meteorological station and.  (e) meteorological information obtained from aircraft taking off or landing such as on wind shear; and  (f) if available, meteorological information obtained from ground weather radar. | [373](#AMC1_OR_100a) |
| **Enter reference(s) where compliance is indicated** |  |  |
| **MET.OR.100 Meteorological data and information (b****)** | Provide a reference that indicates how the following is achieved:  Confirmation of the operationally desirable accuracy of the information distributed for operations, including the source of such information, whilst also ensuring that such information is distributed in a timely manner and updated, as required. | [373](#OR_100) |
| **Enter reference(s) where compliance is indicated** |  |  |
| **MET.OR.105 Retention of meteorological information (a)** | Provide a reference that indicates that a process is documented for ensuring that meteorological information issued is retained for a period of at least 30 days from the date of issue. | [373](#OR_105) |
| **Enter reference(s) where compliance is indicated** |  |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **MET.OR.105 Retention of meteorological information (b)** | Provide a reference which indicates that a process is documented for ensuring that meteorological information issued shall be made available, on request, for inquiries or investigations and which shall be retained until the inquiry or investigation is completed. | | | | | | [373](#OR_105) |
| **Enter reference(s) where compliance is indicated** |  | | | | | |  |
| **MET.OR.110 Meteorological** **information exchange requirements (a)** | Provide a reference which indicates that your organisation ensures that it has systems and processes in place, as well as access to suitable telecommunications facilities to:  (a) enable the exchange of operational meteorological information with other meteorological services providers. | | | | | | [373](#OR_110) |
| **Enter reference(s) where compliance is indicated** |  | | | | | |  |
| **MET.OR.110 Meteorological information exchange requirements (b)** | Provide a reference which indicates that your organisation ensures that it has systems and processes in place, as well as access to suitable telecommunications facilities to:  (b) provide the required meteorological information to the users in a timely manner. | | | | | | [373](#OR_110) |
| **Enter reference(s) where compliance is indicated** |  | | | | | |  |
| **MET.OR.115 Meteorological** **bulletins** | Provide a reference which indicates that your organisation details how meteorological bulletins are provided to the relevant users, via the aeronautical fixed service or the internet. | | | | | | [373](#OR_115) |
| **Enter reference(s) where compliance is indicated** |  | | | | | |  |
| **Associated Technical Requirements** (**TR) for MET.OR.115** | | | | | | | |
| [MET.TR.115](#TR_115) |  |  |  |  |  |  | |

|  |  |  |
| --- | --- | --- |
| **MET.OR.120 Notification of** **discrepancies to the world area forecast centres (WAFC)** | Provide a reference which indicates that, when your organisation is the services provider responsible for the area concerned, how the WAFC concerned is notified immediately, using WAFS BUFR data, if significant discrepancies are detected or reported in respect of WAFS significant weather (SIGWX) forecasts, concerning:  (a) icing, turbulence, cumulonimbus clouds that are obscured, frequent, embedded, or occurring at a squall line, and sandstorms/dust storms.  (b) volcanic eruptions or a release of radioactive materials into the atmosphere of significance to aircraft operations. | [373](#OR_120) |
| **Enter reference(s) where compliance is indicated** |  |  |

**Compliance Matrix SECTION 2**

**ANNEX V —SUBPART A — ADDITIONAL ORGANISATIONAL REQUIREMENTS FOR PROVIDERS OF METEOROLOGICAL SERVICES (MET.OR)**

**SPECIFIC REQUIREMENTS**

**CHAPTER 1 — REQUIREMENTS FOR AERONAUTICAL METEOROLOGICAL STATIONS**

This section of the compliance matrix contains extracts from the above annexe and subpart of the regulation that are applicable service providers providing METARS and/or Local Reports only.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **The Regulation and AMC** | **Requirements for Local Reports and METARS providers only (except where indicated)** | | | | | | **Link** | | |
| **MET.OR.200 Meteorological reports and other information (a) (1)** | Provide a reference which indicates that your organisation details how the following are disseminated:  (1) local routine reports at fixed intervals, only for dissemination at the aerodrome of origin; *(Note AMC requirements below).* | | | | | | [373](#OR_200) | | |
| **AMC1 MET.OR.200(a)(1)** **Meteorological reports and other information** | **ROUTINE OBSERVATIONS**  Meteorological stations should make routine observations throughout the 24 hours of each day or as determined by the competent authority. | | | | | | [373](#AMC1_OR_200a1) | | |
| **Enter reference(s) where compliance is indicated** |  | | | | | |  | | |
| **MET.OR.200 Meteorological reports and other information (a) (2)** | Provide a reference which indicates that your organisation details how the following are disseminated  (2) local special reports, only for dissemination at the aerodrome of origin; | | | | | | [373](#OR_200) | | |
| **Enter reference(s) where compliance is indicated** |  | | | | | |  | | |
| **MET.OR.200 Meteorological** **reports and other information (a) (3)** | **Only applicable to aerodromes providing METARS**  Provide a reference which indicates that your organisation details how the following are disseminated:  METAR at half-hourly intervals at aerodromes serving scheduled international commercial air transport operations for dissemination beyond the aerodrome of origin. *(Note AMC requirements below and complete as applicable).* | | | | | | | [373](#OR_200) | |
| **Enter reference(s) where compliance is indicated** |  | | | | | | |  | |
| **AMC1 MET.OR.200(a)(3)** **Meteorological reports and other information** | **Only applicable to aerodromes providing METARS**  **METAR**  At aerodromes that are not operational throughout the 24 hours provide a reference that indicates that how your organisation ensures that the issuance of a METAR commences at least 3 hours prior to the aerodrome resuming operations, or as agreed between the meteorological services provider and the operators concerned to meet pre-flight and in-flight planning requirements for flights due to arrive at the aerodrome as soon as it is opened for use. | | | | | | | [373](#AMC1_OR_200a3) | |
| **Enter reference(s) where compliance is indicated** |  | | | | | | |  | |
| **MET.OR.200 Meteorological** **reports and other information (b)** | Provide a reference which indicates that your organisation details how the air traffic service units and aeronautical information service of an aerodrome are informed of changes in the serviceability status of the automated equipment used for assessing runway visual range. | | | | | | | [373](#OR_200) | |
| **Enter reference(s) where compliance is indicated** |  | | | | | | |  | |
| **MET.OR.200 Meteorological reports and other information (c)** | Provide a reference which indicates that your organisation details how reports are made to the associated air traffic services unit, aeronautical information services unit, and meteorological watch office relating to the occurrence of pre-eruption volcanic activity, volcanic eruptions and volcanic ash cloud and formatted in accordance with the requirements of AMC1 MET.OR.200(c) *(Note AMC requirements below).* | | | | | | | | [373](#OR_200) |
| **AMC1 MET.OR.200(c)** **Meteorological reports and other information** | **VOLCANIC ACTIVITY REPORT**  The report of occurrence of pre-eruption volcanic activity, volcanic eruptions and volcanic ash clouds should be made in the format of a volcanic activity report comprising the following meteorological information in the order indicated:  (a) message type, VOLCANIC ACTIVITY REPORT.  (b) station identifier, location indicator or name of station.  (c) date/time of message.  (d) location of volcano and name, if known. and  (e) concise description of the event including, as appropriate, level of intensity of volcanic activity, occurrence of an eruption and its date and time and the existence of a volcanic ash cloud in the area together with direction of ash cloud movement and height | | | | | | | | [373](#AMC1_OR_200c) |
| **Enter reference(s) where compliance is indicated** |  | | | | | | | |  |
| **MET.OR.200 Meteorological reports and other information (d)** | Provide a reference which indicates that your organisation has established a list of criteria to provide local special reports in consultation with the appropriate ATS units, operators and others concerned. | | | | | | | | [373](#OR_200) |
| **Enter reference(s) where compliance is indicated** |  | | | | | | | |  |
| **Associated Technical Requirements** (**TR) and (TR AMC) for MET.OR.200** | | | | | | | | | |
| [MET.TR.200](#TR_200) | [AMC1.MET.TR.200(a) (4)](#AMC1_TR_200_a_4) | [AMC1.MET.TR.200(a) (12)](#AMC1_TR_200_a_12) | [AMC2.MET.TR.200(a) 12](#AMC2_TR_200_a_12) | [AMC3.MET.TR.200(a)](#AMC3_TR_200_a_12) | [AMC5.MET.200(a) (12)](#AMC5_TR_200_a_12) |  | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **MET.OR.205 Reporting of** **meteorological elements (First Part)** | **Only applicable to aerodromes providing METARS**  Provide a reference which indicates how your organisation ensures that the contents of the aeronautical meteorological station report comply with that detailed in this requirement (a) to (h) | | | | | | [373](#OR_205) |
| **Enter reference(s) where compliance is indicated** |  | | | | | |  |
| **MET.OR.205 Reporting of meteorological elements**  **(Second Part)** | **Only applicable to aerodromes that DO NOT provide METARS**  Where authorised by the competent authority, at aerodromes not serving scheduled international commercial air transport operations, an aeronautical meteorological station may report only a subset of the meteorological elements as relevant to the types of flights at that aerodrome. This data set shall be published in the aeronautical information publication.  Provide a reference which indicates how your organisation ensures that the contents of the aeronautical meteorological station report comply with that detailed in this requirement and how the data is published in the AIP. | | | | | | [373](#OR_205) |
| **Enter reference(s) where compliance is indicated** |  | | | | | |  |
| **Associated Technical Requirements** (**TR) and (TR AMC) for MET.OR.205** | | | | | | | |
| [**MET.TR.205**](#TR_205) | [**AMC1 MET.TR.205(b)(3**](#AMC1_TR_205_b_3)**)** | [**AMC1 MET.TR.205(c)**](#AMC1_TR_205_c) | [**AMC1 MET.TR.205(c)(1)**](#AMC1_TR_205_c_1) | [**AMC1 MET.TR.205(c)(3)**](#AMC1_TR_205_c_3) | [**AMC1 MET.TR.205(c)(4)(iii)**](#AMC1_TR_205_c_4_iii) | [**AMC1 MET.TR.205(d)**](#AMC1_TR_205_d) | |
| [**AMC2 MET.TR.205(d)**](#AMC2_TR_205_d) | [**AMC3 MET.TR.205(d)**](#AMC3_TR_205_d) | [**AMC1 MET.TR.205(d)(3)**](#AMC1_TR_205_d_3) | [**AMC2 MET.TR.205(d)(3)**](#AMC2_TR_205_d_3) | [**AMC1 MET.TR.205(e)(1)**](#AMC1_TR_205_e_1) | [**AMC2 MET.TR.205(e)(1)**](#AMC2_TR_205_e_1) | [**AMC1 MET.TR.205(e)(3**](#AMC1_TR_205_e_3)**)** | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **MET.OR.210 Observing** **meteorological elements (First Part)** | **Only applicable to aerodromes providing METARS**  Provide a reference which indicates how your organisation ensures that observations and/or measurements made/taken comply with that detailed in this requirement (a) to (h). | | | | | | | [373](#OR_210) |
| **Enter reference(s) where compliance is indicated** |  | | | | | | |  |
| **MET.OR.210 Observing meteorological elements (Second Part)** | **Only applicable to aerodromes that DO NOT provide METARS**  Where authorized by the competent authority, at aerodromes not serving scheduled international commercial air transport operations, an aeronautical meteorological station may observe and/or measure only a subset of the meteorological elements as relevant to the types of flights at that aerodrome. This data set shall be published in the aeronautical information publication.  Provide a reference which indicates how your organisation ensures that observations/measurements made comply with that detailed in this requirement. | | | | | | | [373](#OR_210) |
| **Enter reference(s) where compliance is indicated** |  | | | | | | |  |
| **AMC1 MET.OR.210 Observing meteorological elements** | **DISPLAY** Where automated equipment forms part of an integrated semi-automatic observing system or automatic observing systems, displays of data which are made available to the local ATS units should be a subset of and displayed parallel to those available in the aeronautical meteorological stations or meteorological offices. In those displays, each meteorological element should be annotated to identify, as appropriate, the locations for which the element is representative. | | | | | | [373](#AMC1_OR_210) | |
|  | **Statement Only** | | | | | |  | |
| **AMC2 MET.OR.210 Observing meteorological elements (a)** | **CLIMATOLOGICAL INFORMATION**  (a) Meteorological observations for regular and alternate aerodromes should be collected, processed and stored in a form suitable for the preparation of aerodrome climatological information. State where it is detailed | | | | | | [373](#AMC2_OR_210) | |
|  | ‘Response not required - Climatological information for certain UK aerodromes is available for civil aviation purposes from the Met Office, according to certain criteria. For details refer to the UK Aeronautical Information Package, General Information section, GEN 3.5 Meteorological Services’. | | | | | |  | |
| **AMC2 MET.OR.210 Observing meteorological elements (b)** | **CLIMATOLOGICAL INFORMATION**  (b) Aeronautical climatological information should be exchanged on request between meteorological services providers. | | | | | | [373](#AMC2_OR_210) | |
|  | ‘Response not required - Climatological information for certain UK aerodromes is available for civil aviation purposes from the Met Office, according to certain criteria. For details refer to the UK Aeronautical Information Package, General Information section, GEN 3.5 Meteorological Services’. | | | | | |  | |
| **Associated Technical Requirements (TR) and (TR AMC) for MET.OR.210** | | | | | | | | |
| [**MET.TR.210**](#TR_210) | [**AMC1 MET.TR.210**](#AMC1_TR_210)**)** | [**AMC1 MET.TR.210(a)**](#AMC1_TR_210_a) | [**AMC1 MET.TR.210 (a) (1)**](#AMC1_TR_210_a_1) | [**AMC1 MET.TR.210 (a) (2)**](#AMC1_TR_210_a_2) | [**AMC1 MET.TR.205 (a) (3)**](#AMC1_TR_210_a_3) | [**AMC1 MET.TR.210 (b) (1)**](#AMC1_TR_210_b_1) | | |
| [**AMC1 MET.TR.210 (b) (2)**](#AMC1_TR_210_b_2) | [**AMC1 MET.TR.210 (b) (4)**](#AMC1_TR_210_b_4) | [**AMC1 MET.TR.210 (c)**](#AMC1_TR_205_d_3) | [**AMC1 MET.TR.210 (c) (1)**](#AMC1_TR_210_c_1) | [**AMC1 MET.TR.210 (c) (2)**](#AMC1_TR_210_c_2) | [**AMC1 MET.TR.210 (d) (1)**](#AMC2_TR_205_e_1) | [**AMC1 MET.TR.210 (d) (2)**](#AMC1_TR_205_e_3)**)** | | |
| [**AMC1 MET.TR.210 (e)**](#AMC1_TR_210_e) | [**AMC1 MET.TR.210 (e) (2)**](#AMC1_TR_210_e_2) | [**AMC1 MET.TR.210 (f)**](#AMC1_TR_210_f) | [**AMC1 MET.TR.210 (g) (3)**](#AMC1_TR_210_g_3) |  |  |  | | |

**Compliance Matrix SECTION 3**

**ANNEX V —SUBPART A — ADDITIONAL ORGANISATIONAL REQUIREMENTS FOR PROVIDERS OF METEOROLOGICAL SERVICES (MET.OR)**

**SPECIFIC REQUIREMENTS**

**CHAPTER 2 — REQUIREMENTS FOR AERODROME METEOROLOGICAL OFFICES**

This section of the compliance matrix contains extracts from the above annexe and subpart of the regulation that are applicable to the Meteorological Office only

|  |  |  |
| --- | --- | --- |
| **The Regulation and AMC** | **Requirements for the Meteorological Office** | **Link** |
| **MET.OR.215 (a) Forecasts and other information** | Provide a reference which indicates how your organisation prepares and/or obtains forecasts and other relevant meteorological information necessary for the performance of its respective functions for flights with which it is concerned, as determined by the competent authority. *(Note AMC requirements below).* | [373](#OR_215) |
| **AMC1 MET.OR.215(a) Forecasts and other information** | **METEOROLOGICAL DATA TYPE**  On request by the operator, the meteorological information supplied for flight planning should include data for the determination of the lowest usable flight level. | [373](#AMC1_OR_215a) |
| **Enter reference(s) where compliance is indicated** |  |  |
| **MET.OR.215 (b) Forecasts and other information** | Provide a reference which indicates how your organisation provides forecasts and/or warnings for local meteorological conditions on aerodromes for which it is responsible. | [373](#OR_215) |
| **Enter reference(s) where compliance is indicated** |  |  |
| **MET.OR.215 (c) Forecasts and other information** | Provide a reference which indicates how your organisation keeps the forecasts and warnings under continuous review and issues amendments promptly when necessary and cancel any forecast of the same type previously issued for the same place and for the same period of validity or part thereof. *(Note AMC requirements below).* | [373](#OR_215) |
| **AMC1 MET.OR.215(c) Forecasts and other information** | **FORMAT OF FORECASTS**  The length of the forecast messages and the number of changes indicated in the forecast should be kept to a minimum. | [373](#AMC1_OR_215c) |
| **Enter reference(s) where compliance is indicated** |  |  |
| **MET.OR.215 (d) Forecasts and other information** | Provide a reference which indicates how your organisation provides briefing, consultation and flight documentation to flight crew members and/or other flight operations personnel. | [373](#OR_215) |
| **Enter reference(s) where compliance is indicated** |  |  |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **MET.OR.215 (e) Forecasts and other information** | Provide a reference which indicates how your organisation provides climatological information. *(Note AMC requirements below).* | | | | | | | | [373](#OR_215) |
| **AMC1 MET.OR.215(e) Forecasts and other information** | **CLIMATOLOGICAL INFORMATION**  The aerodrome meteorological office should make available such climatological tables within a time period as agreed between the competent authority and the relevant user. | | | | | | | | [373](#AMC1_OR_215e) |
| **Enter reference(s) where compliance is indicated** |  | | | | | | | |  |
| **MET.OR.215 (f) Forecasts and other information** | Provide a reference which indicates how your organisation provides its associated air traffic services unit, aeronautical information service unit and meteorological watch office with information received on pre-eruption volcanic activity, a volcanic eruption or volcanic ash cloud. *(Note AMC requirements below).* | | | | | | | | [373](#OR_215) |
| **AMC1 MET.OR.215(f) Forecasts and other information (a) (b)** | **AIS — NOTAM/ASHTAM AND AIC**  The aerodrome meteorological office should provide the relevant aeronautical information service provider with meteorological information:  (a) necessary for the preparation of NOTAM or ASHTAM, including, in particular, information on the establishment, withdrawal and significant changes in operation of aeronautical meteorological services sufficiently in advance of the effective date to permit issuance of NOTAM. and  (b) necessary for the preparation of aeronautical information circulars, including, in particular, meteorological information on expected important changes in aeronautical meteorological procedures, services and facilities provided. | | | | | | | | [373](#AMC1_OR_215f) |
| **Enter reference(s) where compliance is indicated** |  | | | | | | | |  |
| **MET.OR.215 (g) Forecasts and other information** | Provide a reference which indicates how your organisation provides, if applicable, meteorological information to search and rescue services units and maintains liaison with the search and rescue services unit(s) throughout a search and rescue operation. *(Note AMC requirements below).* | | | | | | | | [373](#OR_215) |
| **AMC1 MET.OR.215(g) Forecasts and other information** | **SEARCH AND RESCUE**  To facilitate search and rescue operations, the aerodrome meteorological office or meteorological watch office should provide:  (a) complete and detailed meteorological information on the current and forecast meteorological conditions in the search area.  (b) current and forecast conditions en-route, covering flights by search aircraft from and returning to the aerodrome from which the search is being conducted. and  (c) on request from the rescue coordination centre, meteorological information required by ships undertaking search and rescue operations. | | | | | | | | [373](#AMC1_OR_215g) |
| **Enter reference(s) where compliance is indicated** |  | | | | | | | |  |
| **MET.OR.215 (h) Forecasts and other information** | Provide a reference which indicates how your organisation provides meteorological information to relevant aeronautical information services units, as necessary, for the conduct of their functions. | | | | | | | | [373](#OR_215) |
| **Enter reference(s) where compliance is indicated** |  | | | | | | | |  |
| **MET.OR.215 (i) Forecasts and other information** | | Provide a reference which indicates how your organisation prepares and/or obtains forecast and other relevant meteorological information necessary for the performance of the ATS units functions in accordance with point MET.OR.242. | | | | | | [373](#OR_215) | |
| **Enter reference(s) where compliance is indicated** | |  | | | | | |  | |
| **MET.OR.215 (j) Forecasts and other information** | | Provide a reference which indicates how your organisation provides its associated air traffic services unit, aeronautical information service unit and meteorological watch offices with information received on the release of radioactive materials into the atmosphere. | | | | | | [373](#OR_215) | |
| **Enter reference(s) where compliance is indicated** | |  | | | | | |  | |
| **Associated Technical Requirements (TR) and (TR AMC) for MET.OR.215** | | | | | | | | | |
| [**MET.TR.215**](#TR_215) | | [**AMC1 MET.TR.215 (a)**](#AMC1_TR_215_a)**)** | [**AMC2 MET.TR.215 (a)**](#AMC2_TR_215_a) | [**AMC3 MET.TR.215 (a)**](#AMC3_TR_215_a) | [**AMC1 MET.TR.215 (d) (5)**](#AMC1_TR_215_d_5) | [**AMC1 MET.TR.215 (e)**](#AMC1_TR_215_e) | [**AMC1 MET.TR.215 (e) (1) & (2)**](#AMC1_TR_215_e_1_2) | | |
| [**AMC2 MET.TR.215 (e) (1) & (2)**](#AMC2_TR_215_e_1_2) | | [**AMC1 MET.TR.215 (f)**](#AMC1_TR_215_f) | [**AMC2 MET.TR.215 (f)**](#AMC1_TR_215_f) | [**AMC1 MET.TR.215 (i)**](#AMC1_TR_215_i) | [**AMC2 MET.TR.215 (i)**](#AMC2_TR_215_i) | [**AMC3 MET.TR.215 (i)**](#AMC3_TR_215_i) | [**AMC4 MET.TR.215 (i)**](#AMC4_TR_215_i)**)** | | |
| [**AMC5 MET.TR.215 (i)**](#AMC5_TR_215_i) | | [**AMC6 MET.TR.215 (i)**](#AMC6_TR_215_i) |  |  |  |  |  | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MET.OR.220 Aerodrome forecasts (a) (b) | | Provide a reference which indicates how your organisation,  (a) Issues aerodrome forecasts as a TAF at a specified time and.  (b) When issuing TAF, the aerodrome meteorological office shall ensure that not more than one TAF is valid at an aerodrome at any given time. | | | | | | [373](#OR_220) |
| **Enter reference(s) where compliance is indicated** | |  | | | | | |  |
| **Associated Technical Requirements (TR) and (TR AMC) for MET.OR.220** | | | | | | | | |
| [**MET.TR.220**](#TR_220) | [**AMC1 MET.TR.220 (c)**](#AMC1_TR_220_c)**)** | | [**AMC1 MET.TR.220 (f)**](#AMC1_TR_220_f) | [**AMC1 MET.TR.220 (g)**](#AMC1_TR_220_g) |  |  |  | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **MET.OR.225 Forecasts for landing (a) (b) (c)** | | Provide a reference which indicates how your organisation,  (a) prepares forecasts for landing as determined by the competent authority and ensures that.  (b) This forecast for landing shall be issued in the form of a TREND forecast and that.  (c) The period of validity of a TREND forecast shall be 2 hours from the time of the report which forms part of the landing forecast. | | | | | | [373](#OR_225) |
| **Enter reference(s) where compliance is indicated** | |  | | | | | |  |
| **Associated Technical Requirements (TR) and (TR AMC) for MET.OR.22****5** | | | | | | | | |
| [**MET.TR.225**](#TR_225) | [**AMC1 MET.TR.220 (c) (1) (iii)**](#AMC1_TR_225_c_1_iii)**)** | | [**AMC1 MET.TR.225 (c) (7) (ii)**](#AMC1_TR_225_c_7_ii) | [**AMC1 MET.TR.225 (c) (7) (iii)**](#AMC1_TR_225_c_7_iii) |  |  |  | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **MET.OR.230 Forecasts for take-off (a) (b)** | | Provide a reference which indicates how your organisation,  (a) prepares forecasts for take-off as determined by the competent authority.  (b) supply’s forecasts for take-off to operators and flight crew members on request within the 3 hours before the expected time of departure. | | | | | | [373](#OR_230) |
| **Enter reference(s) where compliance is indicated** | |  | | | | | |  |
| **Associated Technical Requirements (TR) and (TR AMC) for MET.OR.230** | | | | | | | | |
| [**MET.TR.230**](#TR_230) | [**AMC1 MET.TR.230 (a)**](#AMC1_TR_230_a)**)** | |  |  |  |  |  | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **MET.OR.235 Aerodrome warnings and wind shear warnings and alerts (a) (b) (c) (d)** | | Provide a reference which indicates how your organisation,  (a) provides aerodrome warnings information and.  (b) prepares wind shear warnings for aerodromes where wind shear is considered a factor, in accordance with local arrangements with the appropriate ATS unit and operators concerned and.  (c) issues, at aerodromes where wind shear is detected by automated, ground-based, wind shear remote-sensing or detection equipment, wind shear alerts generated by these systems and.  (d) cancel warnings when the conditions are no longer occurring and/or no longer expected to occur at the aerodrome. *(Note AMC requirements below).* | | | | | | [373](#OR_235) |
| **AMC1 MET.OR.235(c) Aerodrome warnings and wind shear warnings and alerts** | | **WIND SHEAR FOLLOW-UP**  Wind shear alerts should be updated at least every minute. They should be cancelled as soon as the headwind/tailwind change falls below 15 kt (7.5 m/s).  Amended by ED Decision 2020/008/R | | | | | | [373](#AMC1_OR_235b) |
| **Enter reference(s) where compliance is indicated** | |  | | | | | |  |
| **Associated Technical Requirements (TR) and (TR AMC) for MET.OR.235** | | | | | | | | |
| [**MET.TR.235**](#TR_235) | [**AMC1 MET.TR.235**](#AMC1_TR_235)**)** | | [**AMC1 TR.235 (a)**](#AMC1_TR_235_a) | [**AMC1 TR.235 (c)**](#AMC1_TR_235_c) |  |  |  | |

|  |  |  |
| --- | --- | --- |
| **MET.OR.240 Information for use by operator or flight crew (a)** **(1)** | Provide a reference which indicates how your organisation provides operators and flight crew members with,  (1) forecasts, originating from the WAFS, of the elements listed in points (1) and (2) of point MET.OR.275(a). | [373](#OR_240) |
| **Enter reference(s) where compliance is indicated** |  |  |
| **MET.OR.240 Information for use by operator or flight crew (a) (2)** | Provide a reference which indicates how your organisation provides operators and flight crew members with,  METAR or SPECI, including TREND forecasts, TAF or amended TAF for the aerodromes of departure and intended. | [373](#OR_240) |
| **Enter reference(s) where compliance is indicated** |  |  |
| **MET.OR.240 Information for use by operator or flight crew (a) (3)** | Provide a reference which indicates how your organisation provides operators and flight crew members with,  Aerodrome forecasts for take-off. | [373](#OR_240) |
| **Enter reference(s) where compliance is indicated** |  |  |
| **MET.OR.240 Information for use by operator or flight crew (a) (4)** | Provide a reference which indicates how your organisation provides operators and flight crew members with,  SIGMET and special air-reports relevant to the whole route. ( | [373](#OR_240) |
| **Enter reference(s) where compliance is indicated** |  |  |
| **MET.OR.240 Information for use by operator or flight crew (a) (5****)** | Provide a reference which indicates how your organisation provides operators and flight crew members with,  Volcanic ash and tropical cyclone advisory information relevant to the whole route. | [373](#OR_240) |
| **Enter reference(s) where compliance is indicated** |  |  |
| **MET.OR.240 Information for use by operator or flight crew (a) (6)** | Provide a reference which indicates how your organisation provides operators and flight crew members with,  Area forecasts for low-level flights in chart form prepared in support of the issuance of an AIRMET message, and an AIRMET message for low-level flights relevant to the whole route. | [373](#OR_240) |
| **Enter reference(s) where compliance is indicated** |  |  |
| **MET.OR.240 Information for use by operator or flight crew (a) (7)** | Provide a reference which indicates how your organisation provides operators and flight crew members with,  Aerodrome warnings for the local aerodrome. | [373](#OR_240) |
| **Enter reference(s) where compliance is indicated** |  |  |
| **MET.OR.240 Information for use by operator or flight crew (a) (8)** | Provide a reference which indicates how your organisation provides operators and flight crew members with,  Meteorological satellite images. | [373](#OR_240) |
| **Enter reference(s) where compliance is indicated** |  |  |
| **MET.OR.240 Information for use by operator or flight crew (a) (9)** | Provide a reference which indicates how your organisation provides operators and flight crew members with,  Ground-based weather radar information. (1) forecasts, originating from the WAFS, of the elements listed in points (1) and (2) of point MET.OR.275(a). | [373](#OR_240) |
| **Enter reference(s) where compliance is indicated** |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **MET.OR.240 Information for use by operator or flight crew (b)** | | Provide a reference which indicates how your organisation ensures that whenever the meteorological information to be included in the flight documentation differs materially from that made available for flight planning, the aerodrome meteorological office shall:  (1) advise immediately the operator or flight crew concerned.  (2) if practicable, provide the revised meteorological information in agreement with the operator. | [373](#OR_240) |
| **Enter reference(s) where compliance is indicated** | |  |  |
| **MET.OR.242 Information to be provided to air traffic services units (a)** | Provide a reference which indicates how your organisation provides, as necessary, its associate aerodrome control tower with:  (1) local routine and special reports, METAR, TAF and TREND forecasts and amendments thereto and.  (2) SIGMET and AIRMET information, wind shear warnings and alerts and aerodrome warnings and .  (3) any additional meteorological information agreed upon locally, such as forecasts of surface wind for the determination of possible runway changes and.  (4) information received on volcanic ash cloud, for which a SIGMET has not already been issued, as agreed between the aerodrome meteorological office and the aerodrome control tower concerned and.  (5) information received on pre-eruption volcanic activity and/or a volcanic eruption as agreed between the aerodrome meteorological office and the aerodrome control tower concerned. | | [373](#OR_242) |
| **Enter reference(s) where compliance is indicated** |  | |  |
| **MET.OR.242 Information to be provided to air traffic services units (b)** | Provide a reference which indicates how your organisation provides its associate approach control unit with:  (1) local routine and special reports, METAR, TAF and TREND forecasts and amendments thereto.  (2) SIGMET and AIRMET information, wind shear warnings and alerts and appropriate special air-reports and aerodrome warnings.  (3) any additional meteorological information agreed upon locally.  (4) information received on volcanic ash cloud, for which a SIGMET has not already been issued, as agreed between the aerodrome meteorological office and the approach control unit concerned.  (5) information received on pre-eruption volcanic activity and/or a volcanic eruption as agreed between the aerodrome meteorological office and the approach control unit concerned. | | [373](#OR_242) |
| **Enter reference(s) where compliance is indicated** |  | |  |

**Compliance Matrix SECTION 4**

**ANNEX V —SUBPART A — ADDITIONAL ORGANISATIONAL REQUIREMENTS FOR PROVIDERS OF METEOROLOGICAL SERVICES (MET.OR)**

**SPECIFIC REQUIREMENTS**

**CHAPTER 3 — REQUIREMENTS METEOROLOGICAL WATCH OFFICES**

This section of the compliance matrix contains extracts from the above annexe and subpart of the regulation that are applicable to the Meteorological Office only

|  |  |  |
| --- | --- | --- |
| **The Regulation and AMC** | **Requirements for the Meteorological Office** | **Link** |
| **MET.OR.245 Meteorological watch and other information (a)** | Provide a reference which indicates how your organisation maintains, within its area of responsibility, continuous watch over meteorological conditions affecting flight operations. *(Note AMC requirements below).* | [373](#OR_245) |
| **AMC1 MET.OR.245(a) Meteorological watch and other information** | **BOUNDARIES**  The boundaries of the area over which meteorological watch is to be maintained by a meteorological watch office should be coincident with the boundaries of a flight information region or a control area or a combination of flight information regions and/or control areas. | [373](#AMC1_OR_245a) |
| **Enter reference(s) where compliance is indicated** |  |  |
| **MET.OR.245 Meteorological watch and other information (b)** | Provide a reference which indicates how your organisation coordinates with the organisation responsible for the provision of NOTAM and/or ASHTAM to ensure that meteorological information on volcanic ash included in SIGMET and NOTAM and/or ASHTAM messages is consistent. | [373](#OR_245) |
| **Enter reference(s) where compliance is indicated** |  |  |
| **MET.OR.245 Meteorological watch and other information (c)** | Provide a reference which indicates how your organisation coordinates with selected volcano observatories to ensure that information on volcanic activity is received in an efficient and timely manner. | [373](#OR_245) |
| **Enter reference(s) where compliance is indicated** |  |  |
| **MET.OR.245 Meteorological watch and other information (d****)** | Provide a reference which indicates how your organisation provides its associated VAAC with information received on pre-eruption volcanic activity, a volcanic eruption and volcanic ash cloud for which a SIGMET has not already been issued. | [373](#OR_245) |
| **Enter reference(s) where compliance is indicated** |  |  |
| **MET.OR.245 Meteorological watch and other information (e)** | Provide a reference which indicates how your organisation provides its aeronautical information service units with information received on the release of radioactive materials into the atmosphere in the area or adjacent areas for which it maintains watch and for which a SIGMET has not already been issued. | [373](#OR_245) |
| **Enter reference(s) where compliance is indicated** |  |  |
| **MET.OR.245 Meteorological watch and other information (f)** **(1)** | Provide a reference which indicates how your organisation provides its associated area control centre and flight information centre (ACC/FIC), as necessary, with relevant:  (1) METAR, including current pressure data for aerodromes and other locations, TAF and trend forecasts and amendments thereto. | [373](#OR_245) |
| **Enter reference(s) where compliance is indicated** |  |  |
| **MET.OR.245 Meteorological watch and other information (f) (2)** | Provide a reference which indicates how your organisation provides its associated area control centre and flight information centre (ACC/FIC), as necessary, with relevant:  Forecasts of upper winds, upper-air temperatures and significant en-route weather phenomena and amendments thereto, SIGMET and AIRMET information and appropriate special air-reports. | [373](#OR_245) |
| **Enter reference(s) where compliance is indicated** |  |  |
| **MET.OR.245 Meteorological watch and other information (f) (3)** | Provide a reference which indicates how your organisation provides its associated area control centre and flight information centre (ACC/FIC), as necessary, with relevant:  Any other meteorological information required by the ACC/FIC to meet requests from aircraft in flight. *(Note AMC requirements below).* | [373](#OR_245) |
| **AMC1 MET.OR.245(f)(3)** **Meteorological watch and other information** | **AIRCRAFT IN FLIGHT**  If the information requested from an aircraft in flight is not available in the associated meteorological watch office, that meteorological watch office should request the assistance of another meteorological office in providing it.  State where the above requirement is detailed | [373](#AMC1_OR_245f3) |
| **Enter reference(s) where compliance is indicated** |  |  |
| **MET.OR.245 Meteorological watch and other information (f) (4)** | Provide a reference which indicates how your organisation provides its associated area control centre and flight information centre (ACC/FIC), as necessary, with relevant:  Information received on volcanic ash cloud, for which a SIGMET has not already been issued, as agreed between the meteorological watch office and the ACC/FIC. | [373](#OR_245) |
| **Enter reference(s) where compliance is indicated** |  |  |
| **MET.OR.245 Meteorological watch and other information (f) (5)** | Provide a reference which indicates how your organisation provides its associated area control centre and flight information centre (ACC/FIC), as necessary, with relevant  Information received concerning the release of radioactive material into the atmosphere, as agreed between the meteorological watch office and the ACC/FIC. | [373](#OR_245) |
| **Enter reference(s) where compliance is indicated** |  |  |
| **MET.OR.245 Meteorological watch and other information (f) (6)** | Provide a reference which indicates how your organisation provides its associated area control centre and flight information centre (ACC/FIC), as necessary, with relevant:  Tropical cyclone advisory information issued by a TCAC in its area of responsibility. | [373](#OR_245) |
| **Enter reference(s) where compliance is indicated** |  |  |
| **MET.OR.245 Meteorological watch and other information (f) (7)** | Provide a reference which indicates how your organisation provides its associated area control centre and flight information centre (ACC/FIC), as necessary, with relevant:  Volcanic ash advisory information issued by a VAAC in its area of responsibility. | [373](#OR_245) |
| **Enter reference(s) where compliance is indicated** |  |  |
| **MET.OR.245 Meteorological watch and other information (f) (8)** | Provide a reference which indicates how your organisation provides its associated area control centre and flight information centre (ACC/FIC), as necessary, with relevant:  Information received on pre-eruption volcanic activity and/or a volcanic eruption as agreed between the meteorological watch office and the ACC/FIC. | [373](#OR_245) |
| **Enter reference(s) where compliance is indicated** |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **MET.OR.250 SIGMET messages (a)** | | Provide a reference which indicates how your organisation provides and disseminates SIGMET messages. *(Note AMC requirements below).* | | | | | | [373](#OR_250) |
| **AMC1 MET.OR.250(a) SIGMET** | | **FIR AND CTA**  Meteorological watch offices whose area of responsibility encompasses more than one FIR and/or CTA should provide separate SIGMET for each FIR and/or CTA. | | | | | | [373](#AMC1_OR_250a) |
| **Enter reference(s) where compliance is indicated** | |  | | | | | |  |
| **MET.OR.250 SIGMET messages (b)** | | Provide a reference which indicates how your organisation ensures that the SIGMET message is cancelled when the phenomena are no longer occurring or are no longer expected to occur in the area covered by the SIGMET message. | | | | | | [373](#OR_250) |
| **Enter reference(s) where compliance is indicated** | |  | | | | | |  |
| **MET.OR.250 SIGMET messages (c)** | | Provide a reference which indicates how your organisation ensures that the period of validity of a SIGMET message is not more than 4 hours, and in the special case of SIGMET messages for volcanic ash cloud and tropical cyclones, it shall be extended up to 6 hours. *(Note AMC requirements below).* | | | | | | [373](#OR_250) |
| **AMC1 MET.OR.250(c) SIGMET** **messages** | | **SOURCE**  SIGMET concerning volcanic ash clouds and tropical cyclones should be based on advisory information provided by VAACs and Tropical Cyclone Advisory Centres (TCACs), respectively. | | | | | | [373](#AMC1_OR_250c) |
| **Enter reference(s) where compliance is indicated** | |  | | | | | |  |
| **MET.OR.250 SIGMET messages (d)** | | Provide a reference which indicates how your organisation ensures that SIGMET messages are issued not more than 4 hours before the commencement of the period of validity, and in the special case of SIGMET messages for volcanic ash cloud and tropical cyclones, as soon as practicable, but not more than 12 hours before the commencement of the period of validity, and updated at least every 6 hours. | | | | | | [373](#OR_250) |
| **Enter reference(s) where compliance is indicated** | |  | | | | | |  |
| **Associated Technical Requirements (TR) and (TR AMC) for MET.OR.250** | | | | | | | | |
| [**MET.TR.250**](#TR_250) | [**AMC1 MET.TR.250 (a)**](#AMC1_TR_250_a)**)** | | [**AMC1 TR.250 (c)**](#AMC1_TR_250_c) | [**AMC1 TR.250 (d)**](#AMC1_TR_250_d) | [**AMC1 TR.250 (g)**](#AMC1_TR_250_g) |  |  | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **MET.OR.255 AIRMET messages (a)** | | Provide a reference which indicates how your organisation provides and disseminate AIRMET messages when the competent authority has determined that the density of traffic operating below flight level 100, or up to flight level 150 in mountainous areas, or higher, where necessary, warrants the issue and dissemination of area forecasts for such operations. *(Note AMC requirements below).* | | | | | | [373](#OR_255) |
| **Enter reference(s) where compliance is indicated** | |  | | | | | |  |
| **MET.OR.255 AIRMET messages (b)** | | Provide a reference which indicates how your organisation cancels the AIRMET message when the phenomena are no longer occurring or are no longer expected to occur in the area. | | | | | | [373](#OR_255) |
| **Enter reference(s) where compliance is indicated** | |  | | | | | |  |
| **MET.OR.255 AIRMET messages (c)** | | Provide a reference which indicates how your organisation ensures that the period of validity of an AIRMET message is not more than 4 hours. | | | | | | [373](#OR_255) |
| **Enter reference(s) where compliance is indicated** | |  | | | | | |  |
| **Associated Technical Requirements (TR) and (TR AMC) for MET.OR.255** | | | | | | | | |
| [**MET.TR.255**](#TR_255) | [**AMC1 MET.TR.255 (d)**](#AMC1_TR_255_d)**)** | |  |  |  |  |  | |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **MET.OR.260 Area forecasts for low-level flights (a)** | | Provide a reference which indicates how your organisation provides area forecast for low-level flights when the density of traffic operating below flight level 100, or up to flight level 150 in mountainous areas, or higher, where necessary, warrants the routine issue and dissemination of area forecasts for such operations. | | | | | | | | [373](#OR_260) |
| **Enter reference(s) where compliance is indicated** | |  | | | | | | | |  |
| **MET.OR.260 Area forecasts for low-level flights (b)** | | | Provide a reference which indicates how your organisation ensures that the frequency of issue, the form, and the fixed time or period of validity of area forecast for low-level flights and the criteria for amendments thereto, are as determined by the competent authority. | | | | | | [373](#OR_260) | |
| **Enter reference(s) where compliance is indicated** | | |  | | | | | |  | |
| **MET.OR.260 Area forecasts for low-level flights (c)** | | | Provide a reference which indicates how your organisation ensures that area forecasts for low-level flights prepared in support of the issuance of an AIRMET message are issued every 6 hours for a period of validity of 6 hours and transmitted to the meteorological watch offices concerned not later than 1 hour prior to the beginning of their validity period. | | | | | | [373](#OR_260) | |
| **Enter reference(s) where compliance is indicated** | | |  | | | | | |  | |
| **Associated Technical Requirements (TR) and (TR AMC) for MET.OR.260** | | | | | | | | | | |
| [**MET.TR.260**](#TR_260) | [**AMC1 MET.TR.260**](#AMC1_TR_260) | | |  |  |  |  |  | | |

**Compliance Matrix SECTION 5**

**ANNEX V —SUBPART A — ADDITIONAL ORGANISATIONAL REQUIREMENTS FOR PROVIDERS OF METEOROLOGICAL SERVICES (MET.OR)**

**SPECIFIC REQUIREMENTS**

**CHAPTER 4 — REQUIREMENTS FOR VOLCANIC ASH ADVISORY CENTRE (VAAC)**

This section of the compliance matrix contains extracts from the above annexe and subpart of the regulation that are applicable to the Meteorological Office only

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **The Regulation and AMC** | | **Requirements for the Meteorological Office** | | | | | | **Link** |
| **MET.OR.265 Volcanic ash advisory centre responsibilities (a)** | | In its role as the VAAC and within its area of responsibility, provide a reference which indicates how your organisation will meet the following requirements:  When a volcano has erupted, or is expected to erupt, or volcanic ash is reported, provide advisory information regarding the extent and forecast movement of the volcanic ash cloud to:  (1) the European aviation crisis coordination cell and.  (2) meteorological watch offices serving flight information regions in its area of responsibility which may be affected and.  (3) operators, area control centres, and flight information centres serving flight information regions in its area of responsibility which may be affected and.  (4) world area forecast centres, international OPMET databanks, international NOTAM offices and centres designated by regional air navigation agreement for the operation of aeronautical fixed service satellite distribution systems and.  (5) other VAACs whose areas of responsibility may be affected. | | | | | | [373](#OR_265) |
| **Enter reference(s) where compliance is indicated** | |  | | | | | |  |
| **MET.OR.265 Volcanic ash advisory centre responsibilities (b)** | | In its role as the VAAC and within its area of responsibility, provide a reference which indicates how your organisation will meet the following requirement:  Coordinate with selected volcano observatories to ensure that information on volcanic activity is received in an efficient and timely manner. | | | | | | [373](#OR_265) |
| **Enter reference(s) where compliance is indicated** | |  | | | | | |  |
| **MET.OR.265 Volcanic ash advisory centre responsibilities (c)** | | In its role as the VAAC and within its area of responsibility, provide a reference which indicates how your organisation will meet the following requirement:  Provide the advisory meteorological information referred to in point (a)of MET.OR.265 at least every 6 hours until such time as the volcanic ash cloud is no longer identifiable from satellite data, no further meteorological reports of volcanic ash are received from the area and no further eruptions of the volcano are reported. | | | | | | [373](#OR_265) |
| **Enter reference(s) where compliance is indicated** | |  | | | | | |  |
| **MET.OR.265 Volcanic ash advisory centre responsibilities (d)** | | In its role as the VAAC and within its area of responsibility, provide a reference which indicates how your organisation will meet the following requirement:  Maintain a 24-hour watch. | | | | | | [373](#OR_265) |
| **Enter reference(s) where compliance is indicated** | |  | | | | | |  |
| **Associated Technical Requirements (TR) and (TR AMC) for MET.OR.265** | | | | | | | | |
| [**MET.TR.265**](#TR_265) | [**AMC1 MET.TR.265 (c)**](#AMC1_TR_265_c) | |  |  |  |  |  | |

**Compliance Matrix SECTION 6**

**ANNEX V —SUBPART A — ADDITIONAL ORGANISATIONAL REQUIREMENTS FOR PROVIDERS OF METEOROLOGICAL SERVICES (MET.OR)**

**SPECIFIC REQUIREMENTS**

**CHAPTER 5 — REQUIREMENTS FOR TROPICAL CYCLONE ADVISORY CENTRE (TCAC)**

This section of the compliance matrix contains extracts from the above annexe and subpart of the regulation NOT APPLICABLE IN THE UK

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **MET.OR.270 Tropical cyclone advisory centre responsibilities (a)** | | A TCAC shall issue:  (a) advisory information concerning the position of the cyclone centre, its direction and speed of movement, central pressure and maximum surface wind near the centre in abbreviated plain language to:  (1) meteorological watch offices in its area of responsibility.  (2) other TCACs whose areas of responsibility may be affected.  (3) world area forecast centres, international OPMET databanks and centres responsible for the operation of aeronautical fixed service satellite distribution systems. | | | | | |  |
|  | | No content required | | | | | |  |
| **MET.OR.270 Tropical cyclone advisory centre responsibilities (b)** | | (b) updated advisory information to meteorological watch offices for each tropical cyclone, as necessary, but at least every 6 hours. | | | | | |  |
|  | | No content required | | | | | |  |
| **Associated Technical Requirements (TR) and (TR AMC) for MET.OR.270** | | | | | | | | |
| [**MET.TR.270**](#TR_270) | [**AMC1 MET.TR.270 (d)**](#AMC1_TR_270_d) | |  |  |  |  |  | |

**Compliance Matrix SECTION 7**

**ANNEX V —SUBPART A — ADDITIONAL ORGANISATIONAL REQUIREMENTS FOR PROVIDERS OF METEOROLOGICAL SERVICES (MET.OR)**

**SPECIFIC REQUIREMENTS**

**CHAPTER 5 — REQUIREMENTS FOR WORLD AREA FORECAST CENTRE (WAFC)**

This section of the compliance matrix contains extracts from the above annexe and subpart of the regulation that are applicable to the Meteorological Office only

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **The Regulation and AMC** | | **Requirements for the Meteorological Office** | | | | | | **Link** |
| **MET.OR.275 World area forecast centre responsibilities (a) (1)** | | Provide a reference which indicates how your organisation ensures that the WAFC shall provide, in a digital form, gridded global forecasts of:  (i) upper wind.  (ii) upper-air temperature and humidity.  (iii) geopotential altitude of flight levels.  (iv) flight level and temperature of tropopause.  (v) direction, speed and flight level of maximum wind.  (vi) cumulonimbus clouds.  (vii) icing.  (viii) turbulence. | | | | | | [373](#OR_275) |
| **Enter reference(s) where compliance is indicated** | |  | | | | | |  |
| **MET.OR.275 World area forecast centre responsibilities (a) (2)** | | Provide a reference which indicates how your organisation ensures that the WAFC shall provide, in a digital form, global forecasts of significant weather (SIGWX) phenomena, including volcanic activity and release of radioactive materials. | | | | | | [373](#OR_275) |
| **Enter reference(s) where compliance is indicated** | |  | | | | | |  |
| **MET.OR.275 World area forecast centre responsibilities (b)** | | Provide a reference which indicates how your organisation ensures that world area forecast system products, in digital form, are transmitted using binary data communications techniques. | | | | | | [373](#OR_275) |
| **Enter reference(s) where compliance is indicated** | |  | | | | | |  |
| **Associated Technical Requirements (TR) and (TR AMC) for MET.OR.275** | | | | | | | | |
| [**MET.TR.275**](#TR_275) | [**AMC1 MET.TR.275 (a)**](#AMC1_TR_275_a) | | [**AMC1 MET.TR.275 (d)**](#AMC1_TR_275_d) |  |  |  |  | |

**The UK (EU) Regulations and the AMC reference material**

|  |  |
| --- | --- |
| **MET.OR.100 Meteorological data and information**  (a) A meteorological services provider shall provide operators, flight crew members, air traffic services units, search and rescue services units, aerodrome operators, accident and incident investigation bodies, and other service providers and aviation entities with the meteorological information necessary for the performance of their respective functions, as determined by the competent authority.  (b) A meteorological services provider shall confirm the operationally desirable accuracy of the information distributed for operations, including the source of such information, whilst also ensuring that such information is distributed in a timely manner and updated, as required. | [Return OR 100 (a)](#RETURN_OR_100a) |
| [Return OR 100 (b)](#RETURN_OR_100b) |
|  |
| **AMC1 MET.OR.100(a) Meteorological data and information**  **INFORMATION TO BE PROVIDED**  An agreement between the meteorological services provider and the appropriate ATS unit should be established to cover:  (a) the provision in air traffic services units of displays related to semi-automatic observing systems or automatic observing systems.  (b) the calibration and maintenance of these displays/instruments.  (c) the use to be made of these displays/instruments by air traffic services personnel.  (d) as and where necessary, supplementary visual observations, such as meteorological phenomena of operational significance in the climb-out and approach areas, if and when made by air traffic services personnel to update or supplement the information supplied by the meteorological station.  (e) meteorological information obtained from aircraft taking off or landing such as on wind shear. and  (f) if available, meteorological information obtained from ground weather radar.  Amended by ED Decision 2020/008/R | [Return AMC1 0R 100 (a)](#RETURN_AMC1_OR_100a) |
|  | |
| **MET.OR.105 Retention of meteorological information**  (a) A meteorological services provider shall retain meteorological information issued for a period of at least 30 days from the date of issue.  (b) This meteorological information shall be made available, on request, for inquiries or investigations and, for these purposes, shall be retained until the inquiry or investigation is completed. | [Return OR 105 (a)](#RETURN_OR_105) |
| [Return OR 105 (b)](#RETURN_OR_105_b) |

|  |  |
| --- | --- |
| **MET.OR.110 Meteorological information exchange requirements**  A meteorological services provider shall ensure it has systems and processes in place, as well as access to suitable telecommunications facilities to:  (a) enable the exchange of operational meteorological information with other meteorological services providers.  (b) provide the required meteorological information to the users in a timely manner. | [Return OR 110 (a)](#RETURN_OR_110a) |
| [Return OR 110 (b)](#RETURN_OR_110b) |
|  |
| **MET.OR.115 Meteorological bulletins**  The meteorological services provider responsible for the area concerned shall provide meteorological bulletins to the relevant users, via the aeronautical fixed service or the internet. | [Return OR 115](#RETURN_OR_115) |
|  | |
| **MET.OR.120 Notification of discrepancies to the world area forecast centres (WAFC)**  The meteorological services provider responsible for the area concerned shall, using WAFS BUFR data, notify the WAFC concerned immediately if significant discrepancies are detected or reported in respect of WAFS significant weather (SIGWX) forecasts, concerning:  (a) icing, turbulence, cumulonimbus clouds that are obscured, frequent, embedded, or occurring at a squall line, and sandstorms/dust storms.  (b) volcanic eruptions or a release of radioactive materials into the atmosphere of significance to aircraft operations. | [Return OR 120](#RETURN_OR_120) |
|  |  |
| **MET.OR.200 Meteorological reports and other information**  (a) An aeronautical meteorological station shall disseminate:  (1) local routine reports at fixed intervals, only for dissemination at the aerodrome of origin.  (2) local special reports, only for dissemination at the aerodrome of origin.  (3) METAR at half-hourly intervals at aerodromes serving scheduled international commercial air transport operations for dissemination beyond the aerodrome of origin.  (b) An aeronautical meteorological station shall inform the air traffic service units and aeronautical information service of an aerodrome of changes in the serviceability status of the automated equipment used for assessing runway visual range.  (c) An aeronautical meteorological station shall report to the associated air traffic services unit, aeronautical information services unit, and meteorological watch office the occurrence of pre-eruption volcanic activity, volcanic eruptions and volcanic ash cloud.  (d) An aeronautical meteorological station shall establish a list of criteria to provide local special reports in consultation with the appropriate ATS units, operators and others concerned. | [Return OR 200 (a) (1)](#RETURN_OR_200_a_1) |
| [Return OR 200 (a) (2)](#RETURN_OR_200_a_2) |
| [Return OR 200 (a) (3)](#RETURN_OR_200_a_3) |
| [Return OR 200 (b)](#RETURN_OR_200b) |
| [Return OR 200 (c)](#RETURN_OR_200c) |
| [Return OR 200 (d)](#RETURN_OR_200d) |

|  |  |  |
| --- | --- | --- |
| **AMC1 MET.OR.200(a)(1) Meteorological reports and other information**  **ROUTINE OBSERVATIONS**  Meteorological stations should make routine observations throughout the 24 hours of each day or as determined by the competent authority. | [Return AMC1 OR 200 (a) (1)](#RETURN_AMC1_OR_200a1) | |
|  | | |
| **AMC1 MET.OR.200(a)(3) Meteorological reports and other information**  **METAR**  At aerodromes that are not operational throughout the 24 hours, the issuance of a METAR should commence at least 3 hours prior to the aerodrome resuming operations, or as agreed between the meteorological services provider and the operators concerned to meet pre-flight and in-flight planning requirements for flights due to arrive at the aerodrome as soon as it is opened for use. | [Return AMC1 OR 200 (a) (3)](#RETURN_AMC1_OR_200a3) | |
|  | | |
| **AMC1 MET.OR.200(c) Meteorological reports and other information**  **VOLCANIC ACTIVITY REPORT**  The report of occurrence of pre-eruption volcanic activity, volcanic eruptions and volcanic ash clouds should be made in the format of a volcanic activity report comprising the following meteorological information in the order indicated:  (a) message type, VOLCANIC ACTIVITY REPORT.  (b) station identifier, location indicator or name of station.  (c) date/time of message.  (d) location of volcano and name, if known. and  (e) concise description of the event including, as appropriate, level of intensity of volcanic activity, occurrence of an eruption and its date and time and the existence of a volcanic ash cloud in the area together with direction of ash cloud movement and height | | [Return AMC1 OR 200 (c)](#RETURN_AMC1_OR_200c) |

|  |  |
| --- | --- |
| **MET.OR.205 Reporting of meteorological elements**  At aerodromes serving scheduled international commercial air transport operations, an aeronautical meteorological station shall report:  (a) surface wind direction and speed.  (b) visibility.  (c) runway visual range, if applicable.  (d) present weather at the aerodrome and its vicinity.  (e) clouds.  (f) air temperature and dew point temperature.  (g) atmospheric pressure.  (h) supplementary information when applicable.  Where authorised by the competent authority, at aerodromes not serving scheduled international commercial air transport operations, an aeronautical meteorological station may report only a subset of the meteorological elements as relevant to the types of flights at that aerodrome. This data set shall be published in the aeronautical information publication. | [Return OR 200 First Part](#RETURN_OR_205_FirstPart) |
| [Return OR 200 Second Part](#RETURN_OR_205_SecondPart) |
|  | |
| **MET.OR.210 Observing meteorological elements**  At aerodromes serving scheduled international commercial air transport operations, an aeronautical meteorological station shall observe and/or measure:  (a) surface wind direction and speed.  (b) visibility.  (c) runway visual range, if applicable.  (d) present weather at the aerodrome and its vicinity.  (e) clouds.  (f) air temperature and dew point temperature.  (g) atmospheric pressure.  (h) supplementary information, when applicable:  Where authorized by the competent authority, at aerodromes not serving scheduled international commercial air transport operations, an aeronautical meteorological station may observe and/or measure only a subset of the meteorological elements as relevant to the types of flights at that aerodrome.  This data set shall be published in the aeronautical information publication (possible cut and paste error NA here) | [Return OR 210 First Part](#RETURN_OR_210_FirstPart) |
| [Return OR 210 Second Part](#RETURN_OR_210_SecondPart) |

|  |  |
| --- | --- |
| **AMC1 MET.OR.210 Observing meteorological elements**  **DISPLAY**  Where automated equipment forms part of an integrated semi-automatic observing system, displays of data which are made available to the local ATS units should be a subset of and displayed parallel to those available in the aeronautical meteorological stations or meteorological offices. In those displays, each meteorological element should be annotated to identify, as appropriate, the locations for which the element is representative.  Amended by ED Decision 2020/008/R | [Return AMC1 OR 210](#RETURN_AMC1_OR_210) |
|  | |
| **AMC2 MET.OR.210 Observing meteorological elements**  **CLIMATOLOGICAL INFORMATION**  (a) Meteorological observations for regular and alternate aerodromes should be collected, processed and stored in a form suitable for the preparation of aerodrome climatological information.  (b) Aeronautical climatological information should be exchanged on request between meteorological services providers.  Amended by ED Decision 2020/008/R | [ReturnAMC2 OR 210](#RETURN_AMC2_OR_210a) |

|  |  |
| --- | --- |
| **MET.OR.215 Forecasts and other information**  An aerodrome meteorological office shall:  (a) prepare and/or obtain forecasts and other relevant meteorological information necessary for the performance of its respective functions for flights with which it is concerned, as determined by the competent authority.  (b) provide forecasts and/or warnings for local meteorological conditions on aerodromes for which it is responsible.  (c) keep the forecasts and warnings under continuous review and issue amendments promptly when necessary, and cancel any forecast of the same type previously issued for the same place and for the same period of validity or part thereof.  (d) provide briefing, consultation and flight documentation to flight crew members and/or other flight operations personnel.  (e) provide climatological information.  (f) provide its associated air traffic services unit, aeronautical information service unit and meteorological watch office with information received on pre-eruption volcanic activity, a volcanic eruption or volcanic ash cloud.  (g) provide, if applicable, meteorological information to search and rescue services units and maintain liaison with the search and rescue services unit(s) throughout a search and rescue operation.  (h) provide meteorological information to relevant aeronautical information services units, as necessary, for the conduct of their functions.  (i) prepare and/or obtain forecast and other relevant meteorological information necessary for the performance of the ATS units functions in accordance with point MET.OR.242.  (j) provide its associated air traffic services unit, aeronautical information service unit and meteorological watch offices with information received on the release of radioactive materials into the atmosphere. | [Return OR 215 (a)](#RETURN_OR_215) |
| [Return OR 215 (b)](#RETURN_OR_215b) |
| [Return OR 215 (c)](#RETURN_OR_215c) |
| [Return OR 215 (d)](#RETURN_OR_215d) |
| [Return OR 215 (e)](#RETURN_OR_215e) |
| [Return OR 215 (f)](#RETURN_OR_215f) |
| [Return OR 215 (g)](#RETURN_OR_215g) |
| [Return OR 215 (h)](#RETURN_OR_215h) |
| [Return OR 215 (i)](#RETURN_OR_215i) |
| [Return OR 215 (j)](#RETURN_OR_215j) |
|  | |
| **AMC1 MET.OR.215(a) Forecasts and other information**  **METEOROLOGICAL DATA TYPE**  On request by the operator, the meteorological information supplied for flight planning should include data for the determination of the lowest usable flight level. | [Return AMC1 OR 215 (a)](#RETURN_AMC1_OR_215a) |

|  |  |
| --- | --- |
| **AMC1 MET.OR.215(c) Forecasts and other information**  **FORMAT OF FORECASTS**  The length of the forecast messages and the number of changes indicated in the forecast should be kept to a minimum. | [Return AMC1 OR 215 (c)](#RETURN_AMC1_OR_215c) |
|  | |
| **AMC1 MET.OR.215(e) Forecasts and other information**  **CLIMATOLOGICAL INFORMATION**  The aerodrome meteorological office should make available such climatological tables within a time period as agreed between the competent authority and the relevant user. | [Return AMC1 or 215 (e)](#RETURN_AMC1_OR_215e) |
|  |  |
| **AMC1 MET.OR.215(f) Forecasts and other information**  **AIS — NOTAM/ASHTAM AND AIC**  The aerodrome meteorological office should provide the relevant aeronautical information service provider with meteorological information:  (a) necessary for the preparation of NOTAM or ASHTAM, including, in particular, information on the establishment, withdrawal and significant changes in operation of aeronautical meteorological services sufficiently in advance of the effective date to permit issuance of NOTAM. and  (b) necessary for the preparation of aeronautical information circulars, including, in particular, meteorological information on expected important changes in aeronautical meteorological procedures, services and facilities provided. | [Return AMC1 OR 215 (f)](#RETURN_AMC1_OR_215f) |
|  |  |
| **AMC1 MET.OR.215(g) Forecasts and other information**  **SEARCH AND RESCUE**  To facilitate search and rescue operations, the aerodrome meteorological office or meteorological watch office should provide:  (a) complete and detailed meteorological information on the current and forecast meteorological conditions in the search area.  (b) current and forecast conditions en-route, covering flights by search aircraft from and returning to the aerodrome from which the search is being conducted. and  (c) on request from the rescue coordination centre, meteorological information required by ships undertaking search and rescue operations. | [Return AMC1 OR 215 (g)](#RETURN_AMC1_OR_215g) |

|  |  |
| --- | --- |
| **MET.OR.220 Aerodrome forecasts**  (a) An aerodrome meteorological office shall issue aerodrome forecasts as a TAF at a specified time.  (b) When issuing TAF, the aerodrome meteorological office shall ensure that not more than one TAF is valid at an aerodrome at any given time. | [Return OR 220](#RETURN_OR_220) |
|  | |
| **MET.OR.225 Forecasts for landing**  (a) An aerodrome meteorological office shall prepare forecasts for landing as determined by the competent authority.  (b) This forecast for landing shall be issued in the form of a TREND forecast.  (c) The period of validity of a TREND forecast shall be 2 hours from the time of the report which forms part of the landing forecast. | [Return OR 225](#RETURN_OR_225) |
|  | |
| **MET.OR.230 Forecasts for take-off**  An aerodrome meteorological office shall:  (a) prepare forecasts for take-off as determined by the competent authority.  (b) supply forecasts for take-off to operators and flight crew members on request within the 3 hours before the expected time of departure. | [Return OR 230](#RETURN_OR_230) |
|  | |
| **MET.OR.235 Aerodrome warnings and wind shear warnings and alerts**  An aerodrome meteorological office shall:  (a) provide aerodrome warnings information.  (b) prepare wind shear warnings for aerodromes where wind shear is considered a factor, in accordance with local arrangements with the appropriate ATS unit and operators concerned.  (c) issue, at aerodromes where wind shear is detected by automated, ground-based, wind shear remote-sensing or detection equipment, wind shear alerts generated by these systems.  (d) cancel warnings when the conditions are no longer occurring and/or no longer expected to occur at the aerodrome. | [Return OR 235](#RETURN_OR_235) |
|  | |
| **AMC1 MET.OR.235(c) Aerodrome warnings and wind shear warnings and alerts**  **WIND SHEAR FOLLOW-UP**  Wind shear alerts should be updated at least every minute. They should be cancelled as soon as the headwind/tailwind change falls below 15 kt (7.5 m/s). | [Return AMC1 OR 235 (b)](#RETURN_AMC1_OR_235b) |

|  |  |
| --- | --- |
| **MET.OR.240 Information for use by operator or flight crew**  a) An aerodrome meteorological office shall provide operators and flight crew members with:  (1) forecasts, originating from the WAFS, of the elements listed in points (1) and (2) of point MET.OR.275(a).  (2) METAR or SPECI, including TREND forecasts, TAF or amended TAF for the aerodromes of departure and intended landing, and for take-off, en-route and destination alternate aerodromes.  (3) aerodrome forecasts for take-off.  (4) SIGMET and special air-reports relevant to the whole route.  (5) volcanic ash and tropical cyclone advisory information relevant to the whole route.  (6) area forecasts for low-level flights in chart form prepared in support of the issuance of an AIRMET message, and an AIRMET message for low-level flights relevant to the whole route.  (7) aerodrome warnings for the local aerodrome.  (8) meteorological satellite images.  (9) ground-based weather radar information.  (b) Whenever the meteorological information to be included in the flight documentation differs materially from that made available for flight planning, the aerodrome meteorological office shall:  (1) advise immediately the operator or flight crew concerned.  (2) if practicable, provide the revised meteorological information in agreement with the operator | [Return OR 240 (a)(1)](#RETURNOR_240a) |
| [Return OR 240 (a)(2)](#RETURNOR_240a2) |
| [Return OR 240 (a)(3)](#RETURNOR_240a3) |
| [Return OR 240 (a)(4)](#RETURNOR_240a4) |
| [Return OR 240 (a)(5)](#RETURNOR_240a5) |
| [Return OR 240 (a)(6)](#RETURNOR_240a6) |
| [Return OR 240 (a)(7)](#RETURNOR_240a7) |
| [Return OR 240 (a)(8)](#RETURNOR_240a8) |
| [Return OR 240 (a)(9)](#RETURNOR_240a9) |
| [Return OR 240 (b)](#RETURNOR_240b) |

|  |  |
| --- | --- |
| **MET.OR.242 Information to be provided to air traffic services units**  (a) An aerodrome meteorological office shall provide, as necessary, its associate aerodrome control tower with:  (1) local routine and special reports, METAR, TAF and TREND forecasts and amendments thereto.  (2) SIGMET and AIRMET information, wind shear warnings and alerts and aerodrome warnings.  (3) any additional meteorological information agreed upon locally, such as forecasts of surface wind for the determination of possible runway changes.  (4) information received on volcanic ash cloud, for which a SIGMET has not already been issued, as agreed between the aerodrome meteorological office and the aerodrome control tower concerned.  (5) information received on pre-eruption volcanic activity and/or a volcanic eruption as agreed between the aerodrome meteorological office and the aerodrome control tower concerned.  (b) An aerodrome meteorological office shall provide its associate approach control unit with:  (1) local routine and special reports, METAR, TAF and TREND forecasts and amendments thereto.  (2) SIGMET and AIRMET information, wind shear warnings and alerts and appropriate special air-reports and aerodrome warnings.  (3) any additional meteorological information agreed upon locally.  (4) information received on volcanic ash cloud, for which a SIGMET has not already been issued, as agreed between the aerodrome meteorological office and the approach control unit concerned.  (5) information received on pre-eruption volcanic activity and/or a volcanic eruption as agreed between the aerodrome meteorological office and the approach control unit concerned. | [Return OR 242 (a)](#RETURN_OR_242a) |
| [Return OR 242 (b)](#RETURN_OR_242b) |

|  |  |
| --- | --- |
| **MET.OR.245 Meteorological watch and other information**  Within its area of responsibility, the meteorological watch office shall:  (a) maintain continuous watch over meteorological conditions affecting flight operations.  (b) coordinate with the organisation responsible for the provision of NOTAM and/or ASHTAM to ensure that meteorological information on volcanic ash included in SIGMET and NOTAM and/or ASHTAM messages is consistent.  (c) coordinate with selected volcano observatories to ensure that information on volcanic activity is received in an efficient and timely manner.  (d) provide its associated VAAC with information received on pre-eruption volcanic activity, a volcanic eruption and volcanic ash cloud for which a SIGMET has not already been issued.  (e) provide its aeronautical information service units with information received on the release of radioactive materials into the atmosphere in the area or adjacent areas for which it maintains watch and for which a SIGMET has not already been issued.  (f) provide its associated area control centre and flight information centre (ACC/FIC), as necessary, with relevant:  (1) METAR, including current pressure data for aerodromes and other locations, TAF and trend forecasts and amendments thereto.  (2) forecasts of upper winds, upper-air temperatures and significant en-route weather phenomena and amendments thereto, SIGMET and AIRMET information and appropriate special air-reports.  (3) any other meteorological information required by the ACC/FIC to meet requests from aircraft in flight.  (4) information received on volcanic ash cloud, for which a SIGMET has not already been issued, as agreed between the meteorological watch office and the ACC/FIC.  (5) information received concerning the release of radioactive material into the atmosphere, as agreed between the meteorological watch office and the ACC/FIC.  (6) tropical cyclone advisory information issued by a TCAC in its area of responsibility.  (7) volcanic ash advisory information issued by a VAAC in its area of responsibility.  (8) information received on pre-eruption volcanic activity and/or a volcanic eruption as agreed between the meteorological watch office and the ACC/FIC. | [Return OR 245 (a)](#RETURN_OR_245a) |
| [Return OR 245 (b)](#RETURN_OR_245b) |
| [Return OR 245 (c)](#RETURN_OR_245c) |
| [Return OR 245 (d)](#RETURN_OR_245d) |
| [Return OR 245 (e)](#RETURN_OR_245e) |
| [Return OR 245 (f)(1)](#RETURN_OR_245f1) |
| [Return OR 245 (f)(2)](#RETURN_OR_245f2) |
| [Return OR 245 (f)(3)](#RETURN_OR_245f3) |
| [Return OR 245 (f)(4)](#RETURN_OR_245f4) |
| [Return OR 245 (f)(5)](#RETURN_OR_245f5) |
| [Return OR 245 (f)(6)](#RETURN_OR_245f6) |
| [Return OR 245 (f)(7)](#RETURN_OR_245f7) |
| [Return OR 245 (f)(8)](#RETURN_OR_245f8) |

|  |  |  |
| --- | --- | --- |
| **AMC1 MET.OR.245(a) Meteorological watch and other information**  **BOUNDARIES**  The boundaries of the area over which meteorological watch is to be maintained by a meteorological watch office should be coincident with the boundaries of a flight information region or a control area or a combination of flight information regions and/or control areas. | [ReturnAMC1 OR 245 (a)](#RETURN_AMC1_OR_245a) | |
|  | | |
| **AMC1 MET.OR.245(f)(3) Meteorological watch and other information**  **AIRCRAFT IN FLIGHT**  If the information requested from an aircraft in flight is not available in the associated meteorological watch office, that meteorological watch office should request the assistance of another meteorological office in providing it. | | [Return AMC1 OR 245 (f) (3)](#RETURN_AMC1_OR_245f3) |
|  | | |
| **MET.OR.250 SIGMET messages**  A meteorological watch office shall:  (a) provide and disseminate SIGMET messages.  (b) ensure that the SIGMET message is cancelled when the phenomena are no longer occurring or are no longer expected to occur in the area covered by the SIGMET message.  (c) ensure that the period of validity of a SIGMET message is not more than 4 hours, and in the special case of SIGMET messages for volcanic ash cloud and tropical cyclones, it shall be extended up to 6 hours.  (d) ensure that SIGMET messages are issued not more than 4 hours before the commencement of the period of validity, and in the special case of SIGMET messages for volcanic ash cloud and tropical cyclones, as soon as practicable, but not more than 12 hours before the commencement of the period of validity, and updated at least every 6 hours. | | [Return OR 250 (a)](#RETURN_OR_250a) |
| [Return OR 250 (b)](#RETURN_OR_250b) |
| [Return OR 250 (c)](#RETURN_OR_250c) |
| [Return OR 250 (d)](#RETURN_OR_250d) |
|  | | |
| **AMC1 MET.OR.250(a) SIGMET messages**  **FIR AND CTA**  Meteorological watch offices whose area of responsibility encompasses more than one FIR and/or CTA should provide separate SIGMET messages for each FIR and/or CTA.  Amended by ED Decision 2020/008/R | | [Return AMC1 OR 250 (a)](#RETURN_AMC1_OR_250a) |

|  |  |
| --- | --- |
| **AMC1 MET.OR.250(c) SIGMET**  **SOURCE**  SIGMET messages concerning volcanic ash clouds and tropical cyclones should be based on advisory information provided by VAACs and Tropical Cyclone Advisory Centres (TCACs), respectively.  Amended by ED Decision 2020/008/R | [Return AMC1 OR 250 (c)](#RETURN_AMC1_OR_250c) |
|  | |
| **MET.OR.255 AIRMET messages**  A meteorological watch office shall:  (a) provide and disseminate AIRMET messages when the competent authority has determined that the density of traffic operating below flight level 100, or up to flight level 150 in mountainous areas, or higher, where necessary, warrants the issue and dissemination of area forecasts for such operations.  (b) cancel the AIRMET message when the phenomena are no longer occurring or are no longer expected to occur in the area.  (c) ensure that the period of validity of an AIRMET message is not more than 4 hours. | [Return OR 255 (a)](#RETURN_OR_255a) |
| [Return OR 255 (b)](#RETURN_OR_255b) |
| [Return OR 255 (c)](#RETURN_OR_255c) |
|  | |
| **AMC1 MET.OR.255(a) AIRMET messages**  **DIGITAL FORMAT**  In addition to the issuance of AIRMET information in abbreviated plain language, AIRMET information should be issued in a digital format. | [Return AMC1 OR 255 (a)](#RETURN_AMC1_OR_255a) |
|  | |
| **MET.OR.260 Area forecasts for low-level flights**  A meteorological watch office shall:  (a) provide area forecast for low-level flights when the density of traffic operating below flight level 100, or up to flight level 150 in mountainous areas, or higher, where necessary, warrants the routine issue and dissemination of area forecasts for such operations.  (b) ensure that the frequency of issue, the form, and the fixed time or period of validity of area forecast for low-level flights and the criteria for amendments thereto, are as determined by the competent authority.  (c) ensure that area forecasts for low-level flights prepared in support of the issuance of an AIRMET message are issued every 6 hours for a period of validity of 6 hours and transmitted to the meteorological watch offices concerned not later than 1 hour prior to the beginning of their validity period. | [Return OR 260 (a)](#RETURN_OR_260a) |
| [Return OR 260 (b)](#RETURN_OR_260b) |
| [Return OR 260 (c)](#RETURN_OR_260c) |

|  |  |
| --- | --- |
| **MET.OR.265 Volcanic ash advisory centre responsibilities**  In its area of responsibility, the VAAC shall:  (a) when a volcano has erupted, or is expected to erupt, or volcanic ash is reported, provide advisory information regarding the extent and forecast movement of the volcanic ash cloud to:  (1) the European aviation crisis coordination cell.  (2) meteorological watch offices serving flight information regions in its area of responsibility which may be affected.  (3) operators, area control centres, and flight information centres serving flight information regions in its area of responsibility which may be affected.  (4) world area forecast centres, international OPMET databanks, international NOTAM offices and centres designated by regional air navigation agreement for the operation of aeronautical fixed service satellite distribution systems.  (5) other VAACs whose areas of responsibility may be affected.  (b) coordinate with selected volcano observatories to ensure that information on volcanic activity is received in an efficient and timely manner.  (c) provide the advisory meteorological information referred to in point (a) at least every 6 hours until such time as the volcanic ash cloud is no longer identifiable from satellite data, no further meteorological reports of volcanic ash are received from the area and no further eruptions of the volcano are reported. and  (d) maintain a 24-hour watch. | [Return OR 265 (a)](#RETURN_OR_265a) |
| [Return OR 265 (b)](#RETURN_OR_265b) |
| [Return OR 265 (c)](#RETURN_OR_265c) |
| [Return OR 265 (d)](#RETURN_OR_265d) |
|  | |
| **MET.OR.275 World area forecast centre responsibilities**  (a) The WAFC shall provide, in a digital form:  (1) gridded global forecasts of:  (i) upper wind.  (ii) upper-air temperature and humidity.  (iii) geopotential altitude of flight levels.  (iv) flight level and temperature of tropopause.  (v) direction, speed and flight level of maximum wind.  (vi) cumulonimbus clouds.  (vii) icing.  (viii) turbulence.  (2) global forecasts of significant weather (SIGWX) phenomena, including volcanic activity and release of radioactive materials.  (b) The WAFC shall ensure that world area forecast system products in digital form are transmitted using binary data communications techniques. | [Return OR 275 (a)(1)](#RETURN_OR_275a1) |
| [Return OR 275 (a)(2)](#RETURN_OR_275a2) |
| [Return OR 275 (b)](#RETURN_OR_275b) |

**TECHNICAL REQUIREMENTS**

|  |  |
| --- | --- |
| **MET.TR.115 Meteorological bulletins**  (a) Meteorological bulletins shall contain a heading consisting of:  (1) an identifier of four letters and two figures.  (2) the ICAO four-letter location indicator corresponding to the geographical location of the meteorological service provider originating or compiling the meteorological bulletin.  (3) a day-time group.  (4) if required, a three-letter indicator.  (b) Meteorological bulletins containing operational meteorological information to be transmitted via the AFTN shall be encapsulated in the text part of the AFTN message format | [Return Link](#RETURN_ATR_115) |
|  | |
| **MET.TR.200 Meteorological reports and other information**  (a) Local routine and local special reports and METAR shall contain the following elements in the order indicated:  (1) identification of the type of report.  (2) location indicator.  (3) time of the observation.  (4) identification of an automated or missing report, when applicable.  (5) surface wind direction and speed.  (6) visibility.  (7) runway visual range, when the reporting criteria are met.  (8) present weather.  (9) cloud amount, cloud type only for cumulonimbus and towering cumulus clouds and height of cloud base or, where measured, vertical visibility.  (10) air temperature and dew-point temperature.  (11) QNH and, when applicable, in local routine and local special reports, QFE.  (12) supplementary information, when applicable.  (b) In local routine and local special reports:  (1) if the surface wind is observed from more than one location along the runway, the locations for which these values are representative shall be indicated.  (2) when there is more than one runway in use and the surface wind related to these runways is observed, the available wind values for each runway shall be given, and the runways to which the values refer shall be reported.  (3) when variations from the mean wind direction are reported in accordance with point MET.TR.205(a)(3)(ii)(B), the two extreme directions between which the surface wind has varied shall be reported.  (4) when variations from the mean wind speed (gusts) are reported in accordance with point MET.TR.205(a)(3)(iii), they shall be reported as the maximum and minimum values of the wind speed attained.  (c) METAR  (1) METAR shall be issued in accordance with the template shown in Appendix 1 and disseminated in the METAR code form prescribed by the World Meteorological Organisation.  (2) If disseminated in digital form, METAR shall be:  (i) formatted in accordance with a globally interoperable information exchange model and shall use geography markup language (GML).  (ii) accompanied by the appropriate metadata.  (3) METAR shall be filed for transmission not later than 5 minutes after the actual time of observation.  (d) Information on visibility, runway visual range, present weather and cloud amount, cloud type and height of cloud base shall be replaced in all meteorological reports by the term ‘CAVOK’ when the following conditions occur simultaneously at the time of observation:  (1) visibility, 10 km or more, and the lowest visibility is not reported.  (2) no cloud of operational significance.  (3) no weather of significance to aviation.  (e) The list of criteria to provide local special reports shall include:  (1) those values which most closely correspond to the operating minima of the operators using the aerodrome.  (2) those values which satisfy other local requirements of the ATS units and of the operators.  (3) an increase in air temperature of 2 °C or more from that given in the latest local report, or an alternative threshold value as agreed between the meteorological service providers, the appropriate ATS unit and the operators concerned.  (4) the available supplementary information concerning the occurrence of significant meteorological conditions in the approach and climb-out areas.  (5) when noise abatement procedures are applied and the variation from the mean surface wind speed has changed by 5 kt (2,5 m/s) or more from that at the time of the latest local report, the mean speed before and/or after the change being 15 kt (7,5 m/s) or more.  (6) when the mean surface wind direction has changed by 60° or more from that given in the latest report, the mean speed before and/or after the change being 10 kt (5 m/s) or more.  (7) when the mean surface wind speed has changed by 10 kt (5 m/s) or more from that given in the latest local report.  (8) when the variation from the mean surface wind speed (gusts) has changed by 10 kt (5 m/s) or more from that at the time of the latest local report, the mean speed before and/or after the change being 15 kt (7,5 m/s) or more.  (9) when the onset, cessation or change in intensity of any of the following weather phenomena occurs:  (i) freezing precipitation.  (ii) moderate or heavy precipitation, including showers thereof. and  (iii) thunderstorm, with precipitation.  (10) when the onset or cessation of any of the following weather phenomena occurs:  (i) freezing fog.  (ii) thunderstorm, without precipitation.  (11) when the amount of a cloud layer below 1 500 ft (450 m) changes:  (i) from scattered (SCT) or less to broken (BKN) or overcast (OVC). or  (ii) from BKN or OVC to SCT or less.  (f) When so agreed between the meteorological services provider and the competent authority, local special reports shall be issued whenever the following changes occur:  (1) when the wind changes through values of operational significance. The threshold values shall be established by the meteorological service provider in consultation with the appropriate ATS unit and operators concerned, taking into account changes in the wind which would:  (i) require a change in runway(s) in use.  (ii) indicate that the runway tailwind and crosswind components have changed through values representing the main operating limits for typical aircraft operating at the aerodrome.  (2) when the visibility is improving and changes to or passes through one or more of the following values, or when the visibility is deteriorating and passes through one or more of the following values:  (i) 800, 1 500 or 3 000 m. (ii) 5 000 m, in cases where significant numbers of flights are operated in accordance with the visual flight rules.  (3) when the runway visual range is improving and changes to or passes through one or more of the following values, or when the runway visual range is deteriorating and passes through one or more of the following values: 50, 175, 300, 550 or 800 m.  (4) when the onset, cessation or change in intensity of any of the following weather phenomena occurs:  (i) dust storm.  (ii) sandstorm.  (iii) funnel cloud (tornado or waterspout).  (5) when the onset or cessation of any of the following weather phenomena occurs:  (i) low drifting dust, sand or snow.  (ii) blowing dust, sand or snow.  (iii) squall.  (6) when the height of base of the lowest cloud layer of BKN or OVC extent is lifting and changes to or passes through one or more of the following values, or when the height of base of the lowest cloud layer of BKN or OVC extent is lowering and passes through one or more of the following values:  (i) 100, 200, 500 or 1 000 ft (30, 60, 150 or 300 m).  (ii) 1 500 ft (450 m), in cases where significant numbers of flights are operated in accordance with the visual flight rules.  (7) when the sky is obscured and the vertical visibility is improving and changes to or passes through one or more of the following values, or when the vertical visibility is deteriorating and passes through one or more of the following values: 100, 200, 500 or 1 000 ft (30, 60, 150 or 300 m).  (8) any other criteria based on local aerodrome operating minima, as agreed between the meteorological services providers and the operators. | [Return Link](#RETURN_ATR_200) |
|  |
|  |

|  |  |
| --- | --- |
| **AMC1 MET.TR.200(a) Meteorological reports and other information**  **TEMPLATE FOR THE LOCAL ROUTINE REPORTS AND LOCAL SPECIAL REPORTS**  Local routine reports and local special reports should be issued in abbreviated plain language, in accordance with the below template.  **REFER TO REGUALTION FOR FULL DETAILS OF TEMPLATE** | [Return Link](#RETURN_ATR_200) |
|  | |
| **AMC1 MET.TR.200(a) (4) Meteorological reports and other information**  **AUTOMATED REPORTING**  Local routine reports and local special reports and METAR from automatic observing systems should be identified with the word ‘AUTO’. | [Return Link](#RETURN_ATR_200) |

|  |  |
| --- | --- |
| **AMC1 MET.TR.200(a) (12) Meteorological reports and other information**  **SUPPLEMENTARY INFORMATION — SEMI-AUTOMATIC OBSERVING SYSTEM**  **(**a) In local routine reports and local special reports and in METAR when reported by a semi-automatic observing system, the following recent weather phenomena should be reported, up to a maximum of three groups, in the supplementary information:  (1) freezing precipitation.  (2) moderate or heavy precipitation, including showers thereof.  (3) blowing snow.  (4) dust storm, sandstorm.  (5) thunderstorm.  (6) funnel cloud, tornado or water spout. and  (7) volcanic ash.  (b) In local routine reports and local special reports when reported by a semi-automatic observing system, the following significant meteorological conditions, or combinations thereof, should be reported in the supplementary information:  (1) cumulonimbus clouds (CB).  (2) thunderstorm (TS).  (3) moderate or severe turbulence (MOD TURB, SEV TURB).  (4) wind shear (WS).  (5) hail (GR).  (6) severe squall line (SEV SQL).  (7) moderate or severe icing (MOD ICE, SEV ICE).  (8) freezing precipitation (FZDZ, FZRA).  (9) severe mountain waves (SEV MTW).  (10) dust storm, sandstorm (DS, SS).  (11) blowing snow (BLSN). and  (12) funnel cloud (tornado or water spout) (FC).  The location of the condition should be indicated. Where necessary, additional information should be included using abbreviated plain language | [Return Link](#RETURN_ATR_200) |

|  |  |
| --- | --- |
| **AMC2 MET.TR.200(a) (12) Meteorological reports and other information**  **SUPPLEMENTARY INFORMATION — AUTOMATIC OBSERVING SYSTEM**  In local routine reports and local special reports and in METAR reported by an automatic observing system, the following recent weather phenomena should be reported, up to a maximum of three groups, in the supplementary information:  (a) FZDZ, FZRA and FZUP.  (b) moderate or heavy DZ, RA and SN.  (c) thunderstorm. and  (d) moderate or heavy unknown precipitation (UP). | [Return Link](#RETURN_ATR_200) |
|  | |
| **AMC3 MET.TR.200(a) (12) Meteorological reports and other information**  **SUPPLEMENTARY INFORMATION — WIND SHEAR**  Information on wind shear should be included as supplementary information in local routine reports and local special reports and in METAR, where local circumstances so warrant. | [Return Link](#RETURN_ATR_200) |
|  | |
| **AMC4 MET.TR.200(a) (12) Meteorological reports and other information**  **SUPPLEMENTARY INFORMATION — SEA-SURFACE TEMPERATURE AND STATE OF THE SEA AND OF THE RUNWAY**  In METAR, information on sea-surface temperature and the state of the sea or the significant wave height, from aeronautical meteorological stations established on offshore structures in support of helicopter operations, should be included in the supplementary information. | [Return Link](#RETURN_ATR_200) |
|  | |
| **AMC5 MET.TR.200(a) (12) Meteorological reports and other information**  **SUPPLEMENTARY INFORMATION — SIGNIFICANT METEOROLOGICAL CONDITIONS**  **(**a) Observations made at aerodromes should include the available supplementary information concerning significant meteorological conditions, particularly those in the approach and climb-out areas.  (b) Where practicable, the information should identify the location of the meteorological condition. | [Return Link](#RETURN_ATR_200) |

|  |  |
| --- | --- |
| **MET.TR.205 Reporting of meteorological elements**  (a) Surface wind direction and speed  (1) In local routine and local special reports and in METAR, the surface wind direction and speed shall be reported in steps of 10 degrees true and 1 kt (0,5 m/s) respectively.  (2) Any observed value that does not fit the reporting scale in use shall be rounded to the nearest step in the scale.  (3) In local routine and local special reports and in METAR:  (i) the units of measurement used for the wind speed shall be indicated.  (ii) variations from the mean wind direction during the past 10 minutes shall be reported as follows, if the total variation is 60° or more, alternatively:  (A) when the total variation is 60° or more and less than 180° and the wind speed is 3 kt (1,5 m/s) or more, such directional variations shall be reported as the two extreme directions between which the surface wind has varied.  (B) when the total variation is 60° or more and less than 180° and the wind speed is less than 3 kt (1,5 m/s), the wind direction shall be reported as variable with no mean wind direction.  (C) when the total variation is 180° or more, the wind direction shall be reported as variable with no mean wind direction.  (iii) variations from the mean wind speed (gusts), during the past 10 minutes shall be reported when the maximum wind speed exceeds the mean speed by, alternatively:  (A) 5 kt (2,5 m/s) or more in local routine and local special reports when noise abatement procedures are applied.  (B) 10 kt (5 m/s) or more otherwise.  (iv) when a wind speed of less than 1 kt (0,5 m/s) is reported, it shall be indicated as calm.  (v) when a wind speed of 100 kt (50 m/s) or more is reported, it shall be indicated to be more than 99 kt (49 m/s).  (vi) when variations from the mean wind speed (gusts) are reported in accordance with point MET.TR.205(a), the maximum value of the wind speed attained shall be reported.  (vii) when the 10-minute period includes a marked discontinuity in the wind direction and/or speed, only variations from the mean wind direction and mean wind speed occurring since the discontinuity shall be reported.  (b) Visibility  (1) In local routine and local special reports and in METAR, the visibility shall be reported in steps of 50 m when the visibility is less than 800 m. in steps of 100 m when it is 800 m or more, but less than 5 km. in kilometre steps when the visibility is 5 km or more, but less than 10 km. and it shall be given as 10 km when the visibility is 10 km or more, except when the conditions for the use of CAVOK apply.  (2) Any observed value which does not fit the reporting scale in use shall be rounded down to the nearest lower step in the scale.  (3) In local routine and local special reports, visibility along the runway(s) shall be reported together with the units of measurement used to indicate visibility.  (c) Runway visual range (RVR)  (1) In local routine and local special reports and in METAR, the RVR shall be reported in steps of 25 m when it is less than 400 m. in steps of 50 m when it is between 400 and 800 m. and in steps of 100 m when it is more than 800 m.  (2) Any observed value which does not fit the reporting scale in use shall be rounded down to the nearest lower step in the scale.  (3) In local routine and local special reports and in METAR:  (i) when the RVR is above the maximum value that can be determined by the system in use, it shall be reported using the abbreviation ‘ABV’ in local routine and local special reports, and the abbreviation ‘P’ in METAR followed by the maximum value that can be determined by the system.  (ii) when the RVR is below the minimum value that can be determined by the system in use, it shall be reported using the abbreviation ‘BLW’ in local routine and local special reports, and the abbreviation ‘M’ in METAR, followed by the minimum value that can be determined by the system.  (4) In local routine and local special reports:  (i) the units of measurement used shall be included.  (ii) if the RVR is observed from only one location along the runway, such as the touchdown zone, it shall be included without any indication of location.  (iii) if the RVR is observed from more than one location along the runway, the value representative of the touchdown zone shall be reported first, followed by the values representative of the mid-point and stop- end, and the locations for which these values are representative shall be indicated.  (iv) when there is more than one runway in use, the available RVR values for each runway shall be reported, and the runways to which the values refer shall be indicated.  (d) Present weather phenomena  (1) In local routine and local special reports, observed present weather phenomena shall be reported in terms of type and characteristics and qualified with respect to intensity, as appropriate.  (2) In METAR, observed present weather phenomena shall be reported in terms of type and characteristics and qualified with respect to intensity or proximity to the aerodrome, as appropriate.  (3) In local routine and local special reports and in METAR, the following characteristics of present weather phenomena, as necessary, shall be reported using their respective abbreviations and relevant criteria, as appropriate:  (i) Thunderstorm (TS) Used to report a thunderstorm with precipitation. When thunder is heard or lightning is detected at the aerodrome during the 10-minute period preceding the time of observation but no precipitation is observed at the aerodrome, the abbreviation ‘TS’ shall be used without qualification.  (ii) Freezing (FZ) Supercooled water droplets or precipitation, used with types of present weather phenomena in accordance with Appendix 1.  (4) In local routine and local special reports and in METAR:  (i) one or more, up to a maximum of three, of the present weather abbreviations shall be used, as necessary, together with an indication, where appropriate, of the characteristics and intensity or proximity to the aerodrome, so as to convey a complete description of the present weather of significance to flight operations.  (ii) the indication of intensity or proximity, as appropriate, shall be reported first followed respectively by the characteristics and the type of weather phenomena.  (iii) where two different types of weather are observed, they shall be reported in two separate groups, where the intensity or proximity indicator refers to the weather phenomenon which follows the indicator. However, different types of precipitation occurring at the time of observation shall be reported as one single group with the dominant type of precipitation reported first and preceded by only one intensity qualifier which refers to the intensity of the total precipitation.  (e) Clouds  (1) In local routine and local special reports and in METAR, the height of cloud base shall be reported in steps of 100 ft (30 m) up to 10 000 ft (3 000 m).  (2) Any observed value which does not fit the reporting scale in use shall be rounded down to the nearest lower step in the scale.  (3) In local routine and local special reports:  (i) the units of measurement used for the height of cloud base and vertical visibility shall be indicated.  (ii) when there is more than one runway in use and the heights of cloud bases are observed by instruments for these runways, the available heights of cloud bases for each runway shall be reported, and the runways to which the values refer shall be indicated.  (f) Air temperature and dew-point temperature  (1) In local routine and local special reports and in METAR, the air temperature and the dew-point temperature shall be reported in steps of whole degrees Celsius.  (2) Any observed value which does not fit the reporting scale in use shall be rounded to the nearest whole degree Celsius, with observed values involving 0,5° rounded up to the next higher whole degree Celsius.  (3) In local routine and local special reports and in METAR, a temperature below 0 °C shall be identified.  (g) Atmospheric pressure  (1) In local routine and local special reports and in METAR, QNH and QFE shall be computed in tenths of hectopascals and reported therein in steps of whole hectopascals, using four digits.  (2) Any observed value which does not fit the reporting scale in use shall be rounded down to the nearest lower whole hectopascal.  (3) In local routine and local special reports:  (i) QNH shall be included.  (ii) QFE shall be included if required by users or, if so agreed locally between the provider of meteorological services, the ATS unit and the operators concerned, on a regular basis.  (iii) the units of measurement used for QNH and QFE values shall be included.  (iv) if QFE values are required for more than one runway, the required QFE values for each runway shall be reported, and the runway(s) to which the values refer shall be indicated.  (4) In METAR, only QNH values shall be included. | [Return Link](#RETURN_ATR_205) |
|  | |
| **AMC1 MET.TR.205(b)(3) Reporting of meteorological elements**  **VISIBILITY — VALUES**  In local routine reports and local special reports, when instrumented systems are used for the measurement of visibility:  (a) if the visibility is observed from more than one location along the runway, the values representative of the touchdown zone should be reported first, followed, as necessary, by the values representative of the mid-point and stop-end of the runway, and the locations for which these values are representative should be indicated. and  (b) when there is more than one runway in use and the visibility is observed related to these runways, the available visibility values for each runway should be reported, and the runways to which the values refer should be indicated. | [Return Link](#RETURN_ATR_205) |
|  | |
| **AMC1 MET.TR.205(c) Reporting of meteorological elements**  **RUNWAY VISUAL RANGE (RVR) — TOUCHDOWN ZONE VALUES**  **In METAR:**  (a) only the value representative of the touchdown zone should be reported and no indication of location on the runway should be included. and  (b) where there is more than one runway available for landing, touchdown zone RVR values should be included for all such runways, up to a maximum of four, and the runways to which the values refer should be indicated. | [Return Link](#RETURN_ATR_205) |
|  | |
| **AMC1 MET.TR.205(c) (1) Reporting of meteorological elements**  **RUNWAY VISUAL RANGE (RVR) — THRESHOLD LIMIT**  (a) 50 m should be considered the lower limit, and 2 000 m the upper limit for RVR.  (b) Outside of these limits, local routine reports and local special reports and METAR should merely indicate that the RVR is less than 50 or more than 2 000 m. | [Return Link](#RETURN_ATR_205) |

|  |  |
| --- | --- |
| **AMC1 MET.TR.205(c) (3) Reporting of meteorological elements**  **RUNWAY VISUAL RANGE (RVR) — VALUES FOR METAR**  (a) When instrumented systems are used for the assessment of RVR, the variations in RVR during the 10-minute period immediately preceding the observation should be included if the RVR values during the 10-minute period have shown a distinct tendency, such that the mean during the first 5 minutes varies by 100 m or more from the mean during the second 5 minutes of the period.  (b) When the variation of the RVR values shows an upward or downward tendency, this should be indicated by the abbreviation ‘U’ or ‘D’, respectively. In cases when actual fluctuations during the 10-minute period show no distinct tendency, this should be indicated using the abbreviation ‘N’.  (c) When indications of tendency are not available, no abbreviations should be included. | [Return Link](#RETURN_ATR_205) |
|  | |
| **AMC1 MET.TR.205(c) (4) (iii) Reporting of meteorological elements**  **RUNWAY VISUAL RANGE (RVR) — VALUES REPRESENTATION**  (a) RVR assessments should be representative of:  (1) the touchdown zone of the runway intended for Category I instrument approach and landing operations.  (2) the touchdown zone and the mid-point of the runway intended for Category II instrument approach and landing operations. and  (3) the touchdown zone, mid-point and stop-end of the runway intended for Category III instrument approach and landing operations.  (b) Where RVR is determined by human observers, it should be reported to the appropriate local ATS units, whenever there is a change in the value to be reported in accordance with the reporting scale.  (c) The transmission of such reports should normally be completed within 15 seconds after the termination of the observation. | [Return Link](#RETURN_ATR_205) |

|  |  |
| --- | --- |
| **AMC1 MET.TR.205(d) Reporting of meteorological elements**  **PRESENT WEATHER PHENOMENA — AUTOMATIC OBSERVING SYSTEM**  In local routine reports and local special reports and in METAR reported by an automatic observing system, the following types of present weather phenomena should be reported, using their respective abbreviations and relevant criteria, as appropriate:  (a) Precipitation:  (1) drizzle (DZ).  (2) rain (RA).  (3) snow (SN). and  (4) Unidentified precipitation (UP)  (b) Obscurations (hydrometeors).  (c) Fog (FG): reported when visibility is less than 1 000 m .  (d) Mist (BR): reported when visibility is at least 1 000 m, but not more than 5 000 m.  (e) Obscurations (lithometeors). Haze (HZ) should be used when the obscuration consists predominantly of lithometeors and the visibility is 5 000 m or less. and  (f) Temporary failure of system/sensor: the present weather should be replaced by ‘//’ when it cannot be observed due to a temporary failure of the system/sensor. | [Return Link](#RETURN_ATR_205) |

|  |  |
| --- | --- |
| **AMC2 MET.TR.205(d) Reporting of meteorological elements**  **PRESENT WEATHER PHENOMENA — SEMI-AUTOMATIC OBSERVING SYSTEM**  In local routine reports and local special reports and in METAR reported by a semi-automatic observing system, the following types of present weather phenomena should be reported, using their respective abbreviations and relevant criteria, as appropriate:  (a) Precipitation:  (1) drizzle (DZ).  (2) rain (RA).  (3) snow (SN).  (4) snow grains (SG).  (5) ice pellets (PL).  (6) hail (GR): reported when the diameter of the largest hailstones is 5 mm or more.  (7) small hail and/or snow pellets (GS): reported when the diameter of the largest hailstones is less than 5 mm.  (b) Obscurations (hydrometeors):  (1) fog (FG): reported when visibility is less than 1 000 m, except when qualified by ‘MI’, ‘BC’, ‘PR’ or ‘VC’.  (2) mist (BR): reported when visibility is at least 1 000 m, but not more than 5 000 m.  (c) Obscurations (lithometeors)  The following should be used only when the obscuration consists predominantly of lithometeors and the visibility is 5 000 m or less, except ‘SA’ when qualified by ‘DR’ and volcanic ash:  (1) sand (SA).  (2) dust (widespread) (DU).  (3) haze (HZ).  (4) smoke (FU). and  (5) volcanic ash (VA).  (d) Other phenomena:  (1) dust/sand whirls (dust devils) (PO).  (2) squall (SQ).  (3) funnel cloud (tornado or waterspout) (FC).  (4) dust storm (DS).  (5) sandstorm (SS). | [Return Link](#RETURN_ATR_205) |

|  |  |
| --- | --- |
| **AMC3 MET.TR.205(d) Reporting of meteorological elements**  **PRESENT WEATHER PHENOMENA — UNIDENTIFIED PRECIPITATION (UP)**  In automated local routine reports and local special reports and in METAR, in addition to drizzle (DZ), rain (RA) and snow (SN), the abbreviation ‘UP’ should be used for unidentified precipitation when the type of precipitation cannot be identified by the automatic observing system. | [Return Link](#RETURN_ATR_205) |
|  | |
| **AMC1 MET.TR.205(d) (3 Reporting of meteorological elements**  **PRESENT WEATHER PHENOMENA — ADDITIONAL CHARACTERISTICS**  (a) In local routine report and local special report and in METAR, only when reported by a semi-automatic observing system, the following characteristics of present weather phenomena, as necessary, should be reported using their respective abbreviations and relevant criteria, as appropriate:  (1) Shower (SH): used to report showers. Showers observed in the vicinity of the aerodrome should be reported as ‘VCSH’ without qualification regarding type or intensity of precipitation  . (2) Blowing (BL): used with types of present weather phenomena raised by the wind to a height of 6 ft (2 m) or more above the ground.  (3) Low drifting (DR): used with types of present weather phenomena raised by the wind to less than 6 ft (2 m) above ground level.  (4) Shallow (MI): less than 6 ft (2 m) above ground level.  (5) Patches (BC): fog patches randomly covering the aerodrome.  (6) Partial (PR): a substantial part of the aerodrome covered by fog while the remainder is clear. (b) In automated local routine report, local special report and in METAR, when showers (SH) referred to above cannot be determined based upon a method that takes account of the presence of convective cloud, the precipitation should not be characterised by ‘SH’.. | [Return Link](#RETURN_ATR_205) |

|  |  |
| --- | --- |
| **AMC2 MET.TR.205(d) (3) Reporting of meteorological elements**  **PRESENT WEATHER PHENOMENA — INTENSITY**  In local routine reports and local special reports and METAR, the relevant intensity or, as appropriate, the proximity to the aerodrome of the reported present weather phenomena should be indicated as follows: | [Return Link](#RETURN_ATR_205) |

|  |  |
| --- | --- |
| **AMC1 MET.TR.205(e) (1) Reporting of meteorological elements**  **CLOUD**  In local routine reports and local special reports and in METAR:  (a) the cloud amount should be reported using the abbreviations ‘FEW’ (1 to 2 oktas), ‘SCT’ (3 to 4 oktas), ‘BKN’ (5 to7 oktas) or ‘OVC’ (8 oktas).  (b) cumulonimbus clouds and towering cumulus clouds should be indicated as ‘CB’ and ‘TCU’, respectively.  (c) the vertical visibility should be reported in steps of 100 ft (30 m) up to 2 000 ft (600 m).  (d) if there are no clouds of operational significance and no restriction on vertical visibility and the abbreviation ‘CAVOK’ is not appropriate, the abbreviation ‘NSC’ should be used.  (e) when several layers or masses of cloud of operational significance are observed, their amount and height of cloud base should be reported in increasing order of the height of cloud base, and in accordance with the following criteria:  (1) the lowest layer or mass, regardless of the amount to be reported as FEW, SCT, BKN or OVC, as appropriate.  (2) the next layer or mass, covering more than 2/8 to be reported as SCT, BKN or OVC, as appropriate.  (3) the next higher layer or mass, covering more than 4/8 to be reported as BKN or OVC, as appropriate. and  (4) cumulonimbus and/or towering cumulus clouds, whenever observed and not reported in (1) to (3).  (f) when the cloud base is diffuse or ragged or fluctuating rapidly, the minimum height of cloud base or cloud fragments, should be reported. and  (g) when an individual layer (mass) of cloud is composed of cumulonimbus and towering cumulus clouds with a common cloud base, the type of cloud should be reported as cumulonimbus only. | [Return Link](#RETURN_ATR_205) |
|  | |
| **AMC2 MET.TR.205(e) (1) Reporting of meteorological elements**  **CLOUD — AUTOMATIC OBSERVING SYSTEM**  When an automatic observing system is used to report local routine reports and local special reports and METAR:  (a) when the cloud type cannot be observed, the cloud type in each cloud group should be replaced by ‘///’.  (b) when no clouds are detected, it should be indicated by using the abbreviation ‘NCD’.  (c) when cumulonimbus clouds or towering cumulus clouds are detected and the cloud amount and/or the height of cloud base cannot be observed, the cloud amount and/or the height of cloud base should be replaced by ‘///’. and  (d) when the sky is obscured and the value of the vertical visibility cannot be determined due to a temporary failure of the system/sensor, the vertical visibility should be replaced by ‘///’. | [Return Link](#RETURN_ATR_205) |

|  |  |
| --- | --- |
| **AMC1 MET.TR.205(e) (3) Reporting of meteorological elements**  **CLOUD — HEIGHT OF CLOUD BASE**  At aerodromes where low-visibility procedures are established for approach and landing, as agreed between the meteorological station and the appropriate ATS unit, in local routine reports and local special reports, the height of cloud base should be reported in steps of 50 ft up to and including 300 ft (90 m) and in steps of 100 ft (30 m) between 300 ft (90 m) and 10 000 ft (3 000 m), and the vertical visibility in steps of 50 ft (15 m) up to and including 300 ft (90 m) and in steps of 100 ft (30 m) between 300 ft (90 m) and 2 000 ft (600 m). | [Return Link](#RETURN_ATR_205) |
|  | |
| **MET.TR.210 Observing meteorological elements**  The following meteorological elements shall be observed and/or measured with specified accuracy and disseminated by automatic or semi-automatic meteorological observing system.  (a) Surface wind direction and speed The mean direction and the mean speed of the surface wind shall be measured, as well as significant variations of the wind direction and speed (gusts), and reported in degrees true and knots, respectively.  (1) Siting The meteorological instrument used to measure surface wind direction and speed shall be situated in such a way as to provide data which is representative of the area for which the measurements are required.  (2) Display Surface wind displays relating to each sensor shall be located in the meteorological station. The displays in the meteorological station and in the air traffic services units shall relate to the same sensors, and where separate sensors are required, the displays shall be clearly marked to identify the runway and section of runway monitored by each sensor.  (3) Averaging The averaging period for surface wind observations shall be:  (i) 2 minutes for local routine and local special reports and for wind displays in ATS units.  (ii) 10 minutes for METAR, except that when the 10-minute period includes a marked discontinuity in the wind direction and/or speed. only data occurring after the discontinuity shall be used for obtaining mean values. hence, the time interval in these circumstances shall be correspondingly reduced.  (b) Visibility  (1) The visibility shall be measured or observed, and reported in metres or kilometres.  (2) Siting The meteorological instrument used to measure visibility shall be situated in such a way as to supply data which is representative of the area for which the measurements are required.  (3) Displays When instrumented systems are used for the measurement of visibility, visibility displays relating to each sensor shall be located in the meteorological station. The displays in the meteorological station and in the air traffic services units shall relate to the same sensors, and where separate sensors are required, the displays shall be clearly marked to identify the area monitored by each sensor.  (4) Averaging The averaging period shall be 10 minutes for METAR, except that when the 10-minute period immediately preceding the observation includes a marked discontinuity in the visibility, only those values occurring after the discontinuity shall be used for obtaining mean values.  (c) Runway visual range (RVR)  (1) Siting The meteorological instrument used to assess the RVR shall be situated in such a way as to provide data which is representative of the area for which the observations are required.  (2) Instrumented systems Instrumented systems based on transmissometers or forward-scatter meters shall be used to assess RVR on runways intended for Categories II and III instrument approach and landing operations, and for Category I instrument approach and landing operations as determined by the competent authority.  (3) Display Where the RVR is determined by instrumented systems, one display or more, if required, shall be located in the meteorological station. The displays in the meteorological station and in the air traffic services units shall relate to the same sensors, and where separate sensors are required, the displays shall be clearly marked to identify the runway and section of runway monitored by each sensor.  (4) Averaging  (i) Where instrumented systems are used for the assessment of the RVR, their output shall be updated at least every 60 seconds to permit the provision of current, representative values.  (ii) The averaging period for RVR values shall be:  (A) 1 minute for local routine and special reports and for RVR displays in ATS units.  (B) 10 minutes for METAR, except that when the 10-minute period immediately preceding the observation includes a marked discontinuity in RVR values. then only those values occurring after the discontinuity shall be used for obtaining mean values.  (d) Present weather phenomena  (1) The following present weather phenomena shall be reported, as a minimum: rain, drizzle, snow and freezing precipitation, including intensity thereof, haze, mist, fog, freezing fog and thunderstorms, including thunderstorms in the vicinity.  (2) Siting The meteorological instrument used to measure present weather at the aerodrome and its vicinity shall be situated in such a way as to provide data which is representative of the area for which the measurements are required.  (e) Clouds  (1) Cloud amount, cloud type and height of cloud base shall be observed and reported as necessary to describe the clouds of operational significance. When the sky is obscured, vertical visibility shall be observed and reported, where measured, instead of cloud amount, cloud type and height of cloud base. The height of cloud base and vertical visibility shall be reported in feet.  (2) Siting The meteorological instrument used to measure clouds amount and height shall be situated in such a way as to provide data which is representative of the area for which the measurements are required.  (3) Display When automated equipment is used for the measurement of the height of cloud base, at least one display shall be located in the meteorological station. The displays in the meteorological station and in the air traffic services units shall relate to the same sensors, and where separate sensors are required, the displays shall be clearly marked to identify the area monitored by each sensor.  (4) Reference level  (i) The height of cloud base shall be reported above aerodrome elevation.  (ii) When a precision approach runway in use has a threshold elevation of 50 ft (15 m) or more below the aerodrome elevation, local arrangements shall be made in order that the height of cloud bases reported to arriving aircraft shall refer to the threshold elevation.  (iii) In the case of reports from offshore structures, the height of cloud base shall be given above mean sea level.  (f) Air temperature and dew-point temperature  (1) The air temperature and dew-point temperature shall be measured, displayed and reported in degrees Celsius.  (2) When automated equipment is used for the measurement of air temperature and dew-point temperature, the displays shall be located in the meteorological station. The displays in the meteorological station and in the air traffic services units shall relate to the same sensors.  (g) Atmospheric pressure  (1) The atmospheric pressure shall be measured, and QNH and QFE values shall be computed and reported in hectopascals.  (2) Display  (i) When automated equipment is used for the measurement of atmospheric pressure, QNH and, if required in accordance with point MET.TR.205(g)(3)(ii), QFE displays relating to the barometer shall be located in the meteorological station with corresponding displays in the appropriate air traffic services units.  (ii) When QFE values are displayed for more than one runway, the displays shall be clearly marked to identify the runway to which the QFE value displayed refers.  (3) Reference level A reference level for the computation of QFE shall be used. | [Return Link](#RETURN_ATR_210) |
|  | |
| **AMC1 MET.TR.210 Reporting of meteorological elements**  **HUMAN OBSERVATION**  Observers at an aerodrome should be located, as far as practical, so as to provide data which is representative of the area for which the observations are required. | [Return Link](#RETURN_ATR_210) |
|  | |
| **AMC1 MET.TR.210 (a) Reporting of meteorological elements**  **SURFACE WIND**  (a) When local routine reports and local special reports are used for departing or arriving aircraft, the surface wind observations for these reports should be representative of conditions along the runway or the touchdown zone respectively.  (b) For METAR, the surface wind observations should be representative of the conditions above the whole runway where there is only one runway and the whole runway complex where there is more than one runway. | [Return Link](#RETURN_ATR_210) |
|  | |
| **AMC1 MET.TR.210 (a) (1) Reporting of meteorological elements**  **SURFACE WIND — SITING**  (a) Reported surface wind should be representative of a wind at a height of 30 ± 3 ft (10 ± 1 m) above the ground.  (b) Representative surface wind observations should be obtained by the use of sensors appropriately sited.  (c) Sensors for surface wind observations for local routine reports and local special reports should be sited to give the best practicable indication of conditions along the runway and touchdown zones.  (d) At aerodromes where topography or prevalent weather conditions cause significant differences in surface wind at various sections of the runway, additional sensors should be provided. | [Return Link](#RETURN_ATR_210) |
|  | |
| **AMC1 MET.TR.210 (a) (2) Reporting of meteorological elements**  **SURFACE WIND — DISPLAY**  The mean values of, and significant variations in, the surface wind direction and speed for each sensor should be derived and displayed by automated equipment. | [Return Link](#RETURN_ATR_210) |
|  | |
| **AMC1 MET.TR.210 (a) (3) Reporting of meteorological elements**  **SURFACE WIND — AVERAGING**  The averaging period for measuring variations from the mean wind speed (gusts) reported in accordance with MET.TR.205(a)(3)(iii) should be 3 seconds for local routine reports, local special reports, METAR, and for wind displays used for depicting variations from the mean wind speed (gusts) in ATS units. | [Return Link](#RETURN_ATR_210) |
|  | |
| **AMC1 MET.TR.210 (b) (1) Reporting of meteorological elements**  **VISIBILITY — GENERAL**  (a) When instrumented systems are used for the measurement of visibility, their output should be updated at least every 60 seconds to permit provision of current representative values.  (b) When instrumented systems are used for the measurement of visibility, it should be measured at a height of approximately 7.5 ft (2.5 m) above the runway.  (c) When local routine reports and local special reports are used for departing aircraft, the visibility observations for these reports should be representative of the conditions along the runway.  (d) When local routine reports and local special reports are used for arriving aircraft, the visibility observations for these reports should be representative of the touchdown zone of the runway.  (e) For METAR, the visibility observations should be representative of the aerodrome. | [Return Link](#RETURN_ATR_210) |
|  | |
| **AMC1 MET.TR.210 (b) (2) Reporting of meteorological elements**  **VISIBILITY — SITING**  (a) When instrumented systems are used for the measurement of visibility, representative visibility observations should be obtained by the use of sensors appropriately sited.  (b) Sensors for visibility observations for local routine reports and local special reports should be sited to give the best practicable indications of visibility along the runway and touchdown zone.  (d) When local routine reports and local special reports are used for arriving aircraft, the visibility observations for these reports should be representative of the touchdown zone of the runway.  (e) For METAR, the visibility observations should be representative of the aerodrome. | [Return Link](#RETURN_ATR_210) |
|  | |
| **AMC1 MET.TR.210 (b) (4) Reporting of meteorological elements**  **VISIBILITY — AVERAGING**  The averaging period for visibility should be 1 minute for local routine reports and local special reports and for visibility displays in ATS units. | [Return Link](#RETURN_ATR_210) |
|  | |
| **AMC1 MET.TR.210 (c) Reporting of meteorological elements**  **RUNWAY VISUAL RANGE (RVR) — ASSESSMENT**  RVR should be assessed:  (a) at a height of approximately 7.5 ft (2.5 m) above the runway for instrument systems or at a height of approximately 15 ft (5 m) above the runway by a human observer.  (b) at a lateral distance from the runway centre line of not more than 120 m. | [Return Link](#RETURN_ATR_210) |
|  | |
| **AMC1 MET.TR.210 (c) (1) Reporting of meteorological elements**  **RUNWAY VISUAL RANGE (RVR) — SITING**  (a) The site for observations to be representative of the touchdown zone should be located about 300 m along the runway from the threshold.  (b) The sites for observations to be representative of the mid-point and stop-end of the runway should be located at a distance of 1 000 to 1 500 m along the runway from the threshold and at a distance of about 300 m from the other end of the runway.  (c) The exact position of these sites and, if necessary, additional sites should be decided after considering aeronautical, meteorological and climatological factors such as long runways, swamps and other fog-prone areas. | [Return Link](#RETURN_ATR_210) |
|  | |
| **AMC1 MET.TR.210 (c) (2) Reporting of meteorological elements**  **RUNWAY VISUAL RANGE (RVR) — RUNWAY LIGHT INTENSITY**  (a) Instrumented systems should consider the runway light intensity.  (b) When instrumented systems are used for the assessment of RVR, computations should be made separately for each available runway.  (c) For local routine and special reports, the light intensity to be used for the computation should be:  (1) for a runway with the lights switched on and a light intensity of more than 3 % of the maximum light intensity available, the light intensity actually in use on that runway.  (2) for a runway with the lights switched on and a light intensity of 3 % or less of the maximum light intensity available, the optimum light intensity that would be appropriate for operational use in the prevailing conditions. and  (3) for a runway with lights switched off (or at the lowest setting pending the resumption of operations), the optimum light intensity that would be appropriate for operational use in the prevailing conditions.  (d) In METAR, the RVR should be based on the maximum light intensity available on the runway. | [Return Link](#RETURN_ATR_210) |
|  | |
| **AMC1 MET.TR.210 (d) (1) Reporting of meteorological elements**  **PRESENT WEATHER — GENERAL**  (a) For local routine reports and local special reports, the present weather information should be representative of the conditions at the aerodrome.  (b) For METAR, the present weather information should be representative of the conditions at the aerodrome and, for certain specified present weather phenomena, in its vicinity. | [Return Link](#RETURN_ATR_210) |
|  | |
| **AMC1 MET.TR.210 (d) (2) Reporting of meteorological elements**  **PRESENT WEATHER — SITING**  When instrumented systems are used for observing present weather phenomena listed under AMC2 MET.TR.205(d), MET.TR.205(d)(3) and AMC1 MET.TR.205(d)(3), representative information should be obtained by the use of sensors appropriately sited. | [Return Link](#RETURN_ATR_210) |
|  | |
| **AMC1 MET.TR.210 (e) Reporting of meteorological elements**  **CLOUDS — GENERAL**  (a) Cloud observations for local routine reports and local special reports should be representative of the runway threshold(s) in use.  (b) Cloud observations for METAR should be representative of the aerodrome and its vicinity. | [Return Link](#RETURN_ATR_210) |
|  | |
| **AMC1 MET.TR.210 (e) (2) Reporting of meteorological elements**  **CLOUDS — SITING**  (a) When instrumented systems are used for the measurement of the cloud amount and the height of cloud base, representative observations should be obtained by the use of sensors appropriately sited.  (b) For local routine reports and local special reports, in the case of aerodromes with precision approach runways, sensors for cloud amount and height of cloud base should be sited to give the best practicable indications of the cloud amount and height of cloud base at the threshold of the runway in use. For that purpose, a sensor should be installed at a distance of less than 4 000 ft (1 200 m) before the landing threshold. | [Return Link](#RETURN_ATR_210) |
|  | |
| **AMC1 MET.TR.210 (f) Reporting of meteorological elements**  **AIR TEMPERATURE AND DEW-POINT TEMPERATURE**  Observations of air temperature and dew-point temperature for local routine reports and local special reports and METAR should be representative of the whole runway complex. | [Return Link](#RETURN_ATR_210) |
|  | |
| **AMC1 MET.TR.210 (g) (3) Reporting of meteorological elements**  **ATMOSPHERIC PRESSURE — REFERENCE LEVEL**  (a) The reference level for the computation of QFE should be the aerodrome elevation.  (b) For non-precision approach runways, whose thresholds are 7 ft (2 m) or more below the aerodrome elevation, and for precision approach runways, the QFE, if required, should refer to the relevant threshold elevation. | [Return Link](#RETURN_ATR_210) |
|  | |
| **MET.TR.215 Forecast and other information**  (a) Meteorological information for operators and flight crew members shall:  (1) cover the flight in respect of time, altitude and geographical extent.  (2) relate to appropriate fixed times or periods of time.  (3) extend to the aerodrome of intended landing, also covering the meteorological conditions expected between the aerodrome of intended landing and alternate aerodromes designated by the operator.  (4) be up to date.  (b) Meteorological information provided to rescue coordination centres shall include the meteorological conditions that existed in the last known position of a missing aircraft and along the intended route of that aircraft with particular reference to elements which are not being distributed routinely.  (c) Meteorological information provided to aeronautical information services units shall include:  (1) information on meteorological service intended for inclusion in the aeronautical information publication(s) concerned.  (2) information necessary for the preparation of NOTAM or ASHTAM.  (3) information necessary for the preparation of aeronautical information circulars.  (d) Meteorological information included in flight documentation shall be represented as follows:  (1) winds on charts shall be depicted by arrows with feathers and shaded pennants on a sufficiently dense grid.  (2) temperatures shall be depicted by figures on a sufficiently dense grid.  (3) wind and temperature data selected from the data sets received from a world area forecast centre shall be depicted in a sufficiently dense latitude/longitude grid.  (4) wind arrows shall take precedence over temperatures and chart background.  (5) height indications referring to *en-route* meteorological conditions shall be expressed as determined to be appropriate for the situation, for instance in flight levels, pressure, altitude or height above ground level, whilst all references referring to aerodrome meteorological conditions shall be expressed in height above the aerodrome elevation.  (e) Flight documentation shall comprise:  (1) forecasts of upper-wind and upper-air temperature.  (2) SIGWX phenomena.  (3) METAR or, when issued, SPECI for the aerodromes of departure and intended landing, and for take-off, *en-route* and destination alternate aerodromes.  (4) TAF or amended TAF for the aerodromes of departure and intended landing, and for take-off, *en-route* and destination alternate aerodromes.  (5) a SIGMET message, and, when issued, an AIRMET message and appropriate special air-reports relevant to the whole route.  (6) volcanic ash and tropical cyclone advisory information relevant to the whole route. However, when agreed between the aerodrome meteorological office and the operators concerned, flight documentation for flights of two hours' duration or less, after a short stop or turnaround, may be limited to the information operationally needed, but in all cases the flight documentation shall at least comprise the meteorological information listed in points (3), (4), (5) and (6).  (f) Charts generated from digital forecasts shall be made available, as required by operators, for fixed areas of coverage as shown in Appendix 2.  (g) When forecasts of upper-wind and upper-air temperature listed under point MET.OR.275(a)(1) are supplied in chart form, they shall be fixed-time prognostic charts for flight levels as specified in points MET.TR.260(b), MET.TR.275(c) and MET.TR.275(d). When forecasts of SIGWX phenomena listed under point MET.OR.275(a)(2) are supplied in chart form, they shall be fixed-time prognostic charts for an atmospheric layer limited by flight levels as specified in point MET.TR.275(b)(3).  (h) The forecasts of upper-wind and upper-air temperature and of SIGWX phenomena above flight level 100 shall be supplied as soon as they become available, but not later than 3 hours before departure.  (i) Aeronautical climatological information shall be prepared in the form of aerodrome climatological tables and aerodrome climatological summaries. | [Return Link](#RETURN_ATR_215) |
|  | |
| **AMC1 MET.TR.215(a) Forecasts and other information**  **METEOROLOGICAL INFORMATION FOR OPERATORS AND FLIGHT CREW**  Meteorological information provided to operators and flight crew members should be provided by means of one or more of the following:  (a) written or printed material, including specified charts and forms.  (b) data in a digital form.  (c) briefing.  (d) consultation.  (e) display. or  (f) an automated pre-flight information system providing self-briefing and flight documentation facilities while retaining access by operators and aircrew members to consultation, as necessary, with the aerodrome meteorological office. | [Return Link](#RETURN_ATR_215) |
|  | |
| **AMC2 MET.TR.215(a) Forecasts and other information**  **SPECIFIC INFORMATION FOR HELICOPTER OPERATIONS**  (a) Meteorological information for pre-flight planning and in-flight replanning by operators of helicopters flying to offshore structures should include data covering the layers from sea level to flight level 100.  (b) Particular mention should be made of the expected surface visibility, the amount, type, where available, base and tops of cloud below flight level 100, sea state and sea-surface temperature, mean sea-level pressure, and the occurrence and expected occurrence of turbulence and icing. . | [Return Link](#RETURN_ATR_215) |
|  | |
| **AMC3 MET.TR.215(a) Forecasts and other information**  **AUTOMATED PRE-FLIGHT INFORMATION SYSTEMS**  Automated pre-flight information systems for the supply of meteorological information for self-briefing, pre-flight planning and flight documentation should:  (a) provide for the continuous and timely updating of the system database and monitoring of the validity and integrity of the meteorological information stored.  (b) permit access to the system by operators and flight crew members and also by other aeronautical users concerned through suitable telecommunications means.  (c) use access and interrogation procedures based on abbreviated plain language and, as appropriate, ICAO location indicators, and aeronautical meteorological code data-type designators prescribed by WMO, or based on a menu-driven user interface, or other appropriate mechanisms as agreed between the meteorological authority and the operators concerned. and  (d) provide for rapid response to a user request for information. | [Return Link](#RETURN_ATR_215) |
|  | |
| **AMC1 MET.TR.215(d) (5) Forecasts and other information**  **HEIGHT INDICATIONS REFERENCES TO EN-ROUTE METEOROLOGICAL CONDITIONS**  All references to en-route meteorological conditions, such as height indications of upper winds, turbulence or bases and tops of clouds, should be expressed in flight levels. Height indications referred to en-route meteorological conditions may also be expressed in pressure, altitude or, for low-level flights, in height above ground level. | [Return Link](#RETURN_ATR_215) |

|  |  |
| --- | --- |
|  | |
| **AMC1 MET.TR.215(e) Forecasts and other information**  **FLIGHT DOCUMENTATION**  (a) Where the forecasts are supplied in chart form, flight documentation for low-level flights, including those in accordance with the visual flight rules, operating up to flight level 100 or up to flight level 150 in mountainous areas or higher, where necessary, should contain the following as appropriate to the flight:  (1) information from relevant SIGMET and AIRMET messages.  (2) upper wind and upper-air temperature charts. and  (3) significant weather charts.  (b) Where the forecasts are not supplied in chart form, flight documentation for low-level flights, including those in accordance with the visual flight rules, operating up to flight level 100 or up to flight level 150 in mountainous areas or higher, where necessary, should contain the following information as appropriate to the flight: SIGMET and AIRMET information. | [Return Link](#RETURN_ATR_215) |

|  |  |
| --- | --- |
| **AMC1 MET.TR.215(e) (1) & (2) Forecasts and other information**  **FLIGHT DOCUMENTATION — LEGEND FOR THE CHARTS**  When the flight documentation related to forecasts of upper wind and upper-air temperature and SIGWX phenomena is presented in the form of charts, it should be in accordance with the below sheet of notations used in flight documentation. | [Return Link](#RETURN_ATR_215) |
|  | |
| **AMC2 MET.TR.215(e) (1) & (2) Forecasts and other information**  **FORMAT OF FLIGHT DOCUMENTATION**  The location indicators and the abbreviations used should be explained in the flight documentation. | [Return Link](#RETURN_ATR_215) |
|  | |
| **AMC1 MET.TR.215(f) Forecasts and other information**  **CHARTS**  Charts included in flight documentation should have a high standard of clarity and legibility and should have the following physical characteristics:  (a) For convenience, the largest size of charts should be about 42 × 30 cm (standard A3 size) and the smallest size should be about 21 × 30 cm (standard A4 size). The choice between these sizes should depend on the route lengths and the amount of detail that needs to be given in the charts as agreed between the meteorological authorities and the users concerned.  (b) Major geographical features, such as coastlines, major rivers and lakes, should be depicted in a way that makes them easily recognisable.  (c) For charts prepared by computer, meteorological data should take preference over basic chart information, the former cancelling the latter wherever they overlap.  (d) Major aerodromes should be shown as a dot and identified by the first letter of the name of the city the aerodrome serves as given in Table AOP of the EUR air navigation plan.  (e) A geographical grid should be shown with meridians and parallels represented by dotted lines at each 10°-latitude and longitude. dots should be spaced one degree apart.  (f) Latitude and longitude values should be indicated at various points throughout the charts. and  (g) Labels on the charts for flight documentation should be clear and simple and should present the name of the world area forecast centre or, for non-WAFS products, the originating centre, the type of chart, date and valid time and, if necessary, the types of units used in an unambiguous way. | [Return Link](#RETURN_ATR_215) |
|  | |
| **AMC2 MET.TR.215(f) Forecasts and other information**  **CHARTS**  (a) The minimum number of charts for flights between flight level 250 and flight level 630 should include a high-level SIGWX chart (flight level 250 to flight level 630) and a forecast 250 hPa wind and temperature chart.  (b) The actual charts provided for pre-flight and in-flight planning and for flight documentation should be agreed between the meteorological providers and the users concerned. | [Return Link](#RETURN_ATR_215) |
|  | |
| **AMC1 MET.TR.215(i) Forecasts and other information**  **CLIMATOLOGICAL INFORMATION — PERIOD OF OBSERVATION**  Aeronautical climatological information should be based on observations made over a period of at least five years. The period should be indicated in the information supplied. | [Return Link](#RETURN_ATR_215) |
|  | |
| **AMC2 MET.TR.215(i) Forecasts and other information**  **CLIMATOLOGICAL DATA RELATED TO SITES FOR NEW AERODROMES**  Climatological data related to sites for new aerodromes and to additional runways at existing aerodromes should be collected starting as early as possible before the commissioning of those aerodromes or runways. | [Return Link](#RETURN_ATR_215) |
|  | |
| **AMC3 MET.TR.215(i) Forecasts and other information**  **CLIMATOLOGICAL SUMMARIES**  Aerodrome climatological summaries should follow the procedures prescribed by the World Meteorological Organization and should be made available in a form to meet a specific user request. | [Return Link](#RETURN_ATR_215) |
|  | |
| **AMC4 MET.TR.215(i) Forecasts and other information**  **CLIMATOLOGICAL TABLE**  An aerodrome climatological table should indicate:  (a) mean values and variations therefrom, including maximum and minimum values, of meteorological elements. and/or  (b) the frequency of occurrence of present weather phenomena affecting flight operations at the aerodrome. and/or  (c) the frequency of occurrence of specified values of one, or of a combination of two or more, elements. | [Return Link](#RETURN_ATR_215) |
|  | |
| **AMC5 MET.TR.215(i) Forecasts and other information**  **CLIMATOLOGICAL TABLE**  Aerodrome climatological tables should include information required for the preparation of aerodrome climatological summaries. | [Return Link](#RETURN_ATR_215) |
|  | |
| **AMC6 MET.TR.215(i) Forecasts and other information**  **CLIMATOLOGICAL SUMMARIES**  Aerodrome climatological summaries should cover:  (a) frequencies of the occurrence of runway visual range/visibility and/or height of base of the lowest cloud layer of BKN or OVC extent below specified values at specified times.  (b) frequencies of visibility below specified values at specified times.  (c) frequencies of the height of base of the lowest cloud layer of BKN or OVC extent below specified values at specified times.  (d) frequencies of occurrence of concurrent wind direction and speed within specified ranges.  (e) frequencies of surface temperature in specified ranges of 5°C at specified times. and  (f) mean values and variations therefrom, including maximum and minimum values of meteorological elements required for operational planning purposes, including take-off performance calculations. | [Return Link](#RETURN_ATR_215) |
|  | |
| **MET.TR.220 Aerodrome forecasts**  (a) Aerodrome forecasts and amendments thereto shall be issued as a TAF and shall include, in the order indicated, the:  (1) identification of the type of forecast.  (2) location indicator.  (3) time of issue of forecast.  (4) identification of a missing forecast, when applicable.  (5) date and period of validity of forecast.  (6) identification of a cancelled forecast, when applicable.  (7) surface wind.  (8) visibility.  (9) weather.  (10) cloud.  (11) expected significant changes to one or more of these elements during the period of validity.  (b) TAF shall be issued in accordance with the template shown in Appendix 3 and disseminated in the TAF code form.  (c) The period of validity of a routine TAF shall be either 9 or 24 or 30 hours and shall be filed for transmission not earlier than 1 hour before the commencement of their period of validity.  (d) TAF, if disseminated in digital form, shall:  (1) be formatted in accordance with a globally interoperable information exchange model.  (2) use geography markup language (GML).  (3) be accompanied by the appropriate metadata.  (e) The meteorological elements included in TAF shall be:  (1) Surface wind  (i) In forecasting surface wind, the expected prevailing direction shall be given.  (ii) When it is not possible to forecast a prevailing surface wind direction due to its expected variability, the forecasted wind direction shall be indicated as variable using ‘VRB’.  (iii) When the wind is forecasted to be less than 1 kt (0,5 m/s), the forecasted wind speed shall be indicated as calm.  (iv) When the forecasted maximum speed exceeds the forecasted mean wind speed by 10 kt (5 m/s) or more, the forecasted maximum wind speed shall be indicated.  (v) When a wind speed of 100 kt (50 m/s) or more is forecasted, it shall be indicated to be more than 99 kt (49 m/s).  (2) Visibility  (i) When the visibility is forecasted to be less than 800 m, it shall be expressed in steps of 50 m. when it is forecasted to be 800 m or more, but less than 5 km, in steps of 100 m. when it is forecasted to be 5 km or more, but less than 10 km, in kilometre steps. and when it is forecasted to be 10 km or more, it shall be expressed as 10 km, except when conditions of CAVOK are forecasted to apply. The prevailing visibility shall be forecasted.  (ii) When visibility is forecasted to vary in different directions and the prevailing visibility cannot be forecasted, the lowest forecasted visibility shall be given.  (3) Weather phenomena  (i) One or more, up to a maximum of three, of the following weather phenomena or combinations thereof, together with their characteristics and, where appropriate, intensity, shall be forecasted if they are expected to occur at the aerodrome:  (A) freezing precipitation.  (B) freezing fog.  (C) moderate or heavy precipitation (including showers thereof).  (D) low drifting dust, sand or snow.  (E) blowing dust, sand or snow.  (F) dust storm.  (G) sandstorm.  (H) thunderstorm (with or without precipitation).  (I) squall.  (J) funnel cloud (tornado or waterspout).  (K) other weather phenomena, as agreed by the aerodrome meteorological office with the ATS units and operators concerned.  (ii) The expected end of occurrence of those phenomena shall be indicated by the abbreviation ‘NSW’.  (4) Cloud  (i) The cloud amount shall be forecast using the abbreviations ‘FEW’, ‘SCT’, ‘BKN’ or ‘OVC’, as necessary. When it is expected that the sky will remain or become obscured and clouds cannot be forecasted and information on vertical visibility is available at the aerodrome, the vertical visibility shall be forecasted in the form ‘VV’ followed by the forecasted value of the vertical visibility.  (ii) When several layers or masses of cloud are forecasted, their amount and height of base shall be included in the following order:  (A) the lowest layer or mass regardless of amount, to be forecasted as FEW, SCT, BKN or OVC as appropriate.  (B) the next layer or mass covering more than 2/8, to be forecast as SCT, BKN or OVC as appropriate.  (C) the next higher layer or mass covering more than 4/8, to be forecast as BKN or OVC as appropriate.  (D) cumulonimbus clouds and/or towering cumulus clouds, whenever forecasted and not already included under points (A) to (C).  (iii) Cloud information shall be limited to cloud of operational significance. when no cloud of operational significance is forecasted and ‘CAVOK’ is not appropriate, the abbreviation ‘NSC’ shall be used.  (f) Use of change groups  (1) The criteria used for the inclusion of change groups in TAF or for the amendment of TAF shall be based on any of the following weather phenomena, or combinations thereof, being forecasted to begin or end or change in intensity:  (i) freezing fog.  (ii) freezing precipitation.  (iii) moderate or heavy precipitation (including showers thereof).  (iv) thunderstorm.  (v) dust storm.  (vi) sandstorm.  (2) When a change in any of the elements given in point  (a) is required to be indicated, the change indicators ‘BECMG’ or ‘TEMPO’ shall be used followed by the time period during which the change is expected to occur. The time period shall be indicated as the beginning and end of the period in whole hours UTC. Only those elements for which a significant change is expected shall be included following a change indicator. However, in the case of significant changes in respect of cloud, all cloud groups, including layers or masses not expected to change, shall be indicated.  (3) The change indicator ‘BECMG’ and the associated time group shall be used to describe changes where the meteorological conditions are expected to reach or pass through specified threshold values at a regular or irregular rate and at an unspecified time during the time period. The time period shall not exceed 4 hours.  (4) The change indicator ‘TEMPO’ and the associated time group shall be used to describe expected frequent or infrequent temporary fluctuations in the meteorological conditions which reach or pass specified threshold values and last for a period of less than 1 hour in each instance and, in the aggregate, cover less than one half of the forecast period during which the fluctuations are expected to occur. If the temporary fluctuation is expected to last 1 hour or longer, the change group ‘BECMG’ shall be used in accordance with point (3), or the validity period should be subdivided in accordance with point (5).  (5) Where one set of prevailing weather conditions is expected to change significantly and more or less completely to a different set of conditions, the period of validity shall be subdivided into self-contained periods using the abbreviation ‘FM’ followed immediately by a six-figure time group in days, hours and minutes UTC indicating the time the change is expected to occur. The subdivided period following the abbreviation ‘FM’ shall be self- contained and all forecasted conditions given before the abbreviation shall be superseded by those following the abbreviation.  (g) The probability of occurrence of an alternative value of a forecast element or elements shall be included when:  (1) a 30 or 40 % probability of alternative meteorological conditions exists during a specific forecast time period. or  (2) a 30 or 40 % probability of temporary fluctuations in meteorological conditions exists during a specific forecast time period. This shall be indicated in the TAF by using the abbreviation ‘PROB’ followed by the probability in tens of per cent and, in the case referred to in point (1), the time period during which the values are expected to apply, or in the case referred to in point (2), by using the abbreviation ‘PROB’ followed by the probability in tens of per cent, the change indicator ‘TEMPO’ and associated time group. | [Return Link](#RETURN_ATR_220) |
|  | |
| **AMC1 MET.TR.220(c) Aerodrome forecasts**  **PERIOD OF VALIDITY**  (a) The periods of validity for 9-hour TAF should commence at 00, 03, 06, 09, 12, 15, 18 and 21 UTC and for 24- and 30-hour TAF at 00, 06, 12 and 18 UTC or 03, 09, 15, and 21 UTC.  (b) The 24- and 30-hour TAF periods of validity should be determined based on the types of operations, as agreed between the aerodrome meteorological office and the operators concerned.  At aerodromes with limited hours of operation, the beginning of the period of validity of a TAF should commence at least 1 hour prior to the aerodrome resuming operations, or more as agreed between the aerodrome meteorological office and the operators concerned, to meet planning requirements for flights that arrive at the aerodromes as soon as it is opened for use.  (c) Routine TAF valid for 9 hours should be issued every 3 hours, and those valid for 24 or 30 hours should be issued every 6 hours.  (d) At aerodromes with limited hours of operation, the beginning of the period of validity of a TAF should commence at least 1 hour prior to the aerodrome resuming operations, or more as agreed between the aerodrome meteorological office and the operators concerned, to meet planning requirements for flights that arrive at the aerodromes as soon as it is opened for use. | [Return Link](#RETURN_ATR_220) |
|  | |
| **AMC1 MET.TR.220(f) Aerodrome forecasts**  **TAF — USE OF CHANGE GROUPS**  The criteria used for the inclusion of change groups in TAF or amendments to TAF should be based on the following:  (a) when the mean surface wind direction is forecasted to change by 60° or more, the mean speed before and/or after the change being 10 kt (5 m/s) or more.  (b) when the mean surface wind speed is forecasted to change by 10 kt (5 m/s) or more.  (c) when the variation from the mean surface wind speed (gusts) is forecasted to change by 10 kt (5 m/s) or more, the mean speed before and/or after the change being 15 kt (7.5 m/s) or more.  (d) when the surface wind is forecasted to change through values of operational significance.  (e) when the visibility is forecasted to improve and change to or pass through one or more of the following values, or when the visibility is forecasted to deteriorate and pass through one or more of the following values:  (1) 150, 350, 600, 800, 1 500 or 3 000 m. and  (2) 5 000 m in cases where significant numbers of flights are operated in accordance with the visual flight rules.  (f) when any of the following weather phenomena, or combinations thereof, are forecasted to begin or end:  (1) low drifting dust, sand or snow.  (2) blowing dust, sand or snow.  (3) squall. and  (4) funnel cloud (tornado or waterspout).  (g) when the height of base of the lowest layer or mass of cloud of BKN or OVC extent is forecasted to lift and change to or pass through one or more of the following values, or when the height of the lowest layer or mass of cloud of BKN or OVC extent is forecasted to lower and pass through one or more of the following values:  (1) 100, 200, 500 or 1 000 ft (30, 60, 150 or 300 m). or  (2) 1 500 ft (450 m) in cases where significant numbers of flights are operated in accordance with the visual flight rules.  (h) when the amount of a layer or mass of cloud below 1 500 ft (450 m) is forecasted to change:  (1) from NSC, FEW or SCT to BKN or OVC. or  (2) from BKN or OVC to NSC, FEW or SCT.  (i) when the vertical visibility is forecasted to improve and change to or pass through one or more of the following values, or when the vertical visibility is forecasted to deteriorate and pass through one or more of the following values: 100, 200, 500 or 1 000 ft (30, 60, 150 or 300 m). and  (j) any other criteria based on local aerodrome operating minima, as agreed between the aerodrome meteorological office and the operators. | [Return Link](#RETURN_ATR_220) |
|  | |
| **AMC1 MET.TR.220(g) Aerodrome forecasts**  **USE OF PROBABILITY INDICATORS**  (a) The number of change and probability groups should be kept to a minimum.  (b) The probability of occurrence of an alternative value of a forecast element or elements should be placed after the element or elements forecast and be followed by the alternative value of the element or elements. | [Return Link](#RETURN_ATR_220) |

|  |  |
| --- | --- |
| **MET.TR.225 Forecasts for landing**  (a) TREND forecasts shall be issued in accordance with Appendix 1.  (b) The units and scales used in the TREND forecast shall be the same as those used in the report to which it is appended.  (c) The TREND forecast shall indicate significant changes in respect of one or more of the elements: surface wind, visibility, weather phenomena and clouds. Only those elements for which a significant change is expected shall be included. However, in the case of significant changes in respect of cloud, all cloud groups, including layers or masses not expected to change, shall be indicated. In the case of a significant change in visibility, the phenomenon causing the reduction of visibility shall also be indicated. When no change is expected to occur, this shall be indicated by the term ‘NOSIG’.  (1) Surface wind The TREND forecast shall indicate changes in the surface wind which involve:  (i) a change in the mean wind direction of 60° or more, the mean speed before and/or after the change being 10 kt (5 m/s) or more.  (ii) a change in mean wind speed of 10 kt (5 m/s) or more.  (iii) changes in the wind through values of operational significance.  (2) Visibility  (i) When the visibility is expected to improve and change to or pass through one or more of the following values, or when the visibility is expected to deteriorate and pass through one or more of the following values: 150, 350, 600, 800, 1 500 or 3 000 m, the trend forecast shall indicate the change.  (ii) When significant numbers of flights are conducted in accordance with the visual flight rules, the forecast shall additionally indicate changes to or passing through 5 000 m.  (iii) In TREND forecasts appended to METAR, visibility shall refer to the forecast prevailing visibility. (  3) Weather phenomena  (i) The TREND forecast shall indicate the expected onset, cessation or change in intensity of any of the following weather phenomena or combinations thereof:  (A) freezing precipitation.  (B) moderate or heavy precipitation, including showers thereof.  (C) thunderstorm, with precipitation.  (D) dust storm.  (E) sandstorm.  (F) other weather phenomena as agreed by the aerodrome meteorological office with the ATS units and operators concerned.  (ii) The TREND forecast shall indicate the expected onset or cessation of any of the following weather phenomena or combinations thereof:  (A) freezing fog.  (B) low drifting dust, sand or snow.  (C) blowing dust, sand or snow.  (D) thunderstorm (without precipitation).  (E) squall.  (F) funnel cloud (tornado or waterspout).  (iii) The total number of phenomena reported in points (i) and (ii) shall not exceed three.  (iv) The expected end of occurrence of the weather phenomena shall be indicated by the abbreviation ‘NSW’.  (4) Clouds  (i) When the height of base of a cloud layer of BKN or OVC extent is expected to lift and change to or pass through one or more of the following values, or when the height of base of a cloud layer of BKN or OVC extent is expected to lower and pass through one or more of the following values: 100, 200, 500, 1 000 and 1 500 ft (30, 60, 150, 300 and 450 m), the TREND forecast shall indicate the change.  (ii) When the height of base of a cloud layer is below or is expected to fall below or rise above 1 500 ft (450 m), the TREND forecast shall also indicate changes in cloud amount from FEW, or SCT increasing to BKN or OVC, or changes from BKN or OVC decreasing to FEW or SCT.  (iii) When no clouds of operational significance are forecast and ‘CAVOK’ is not appropriate, the abbreviation ‘NSC’ shall be used.  (5) Vertical visibility When the sky is expected to remain or become obscured and vertical visibility observations are available at the aerodrome, and the vertical visibility is forecast to improve and change to or pass through one or more of the following values, or when the vertical visibility is forecast to deteriorate and pass through one or more of the following values: 100, 200, 500 or 1 000 ft (30, 60, 150 or 300 m), the TREND forecast shall indicate the change.  (6) Additional criteria The aerodrome meteorological office and the users may agree on additional criteria to be used, based on local aerodrome operating minima.  (7) Use of change groups  (i) When a change is expected to occur, the TREND forecast shall begin with one of the change indicators ‘BECMG’ or ‘TEMPO’.  (ii) The change indicator ‘BECMG’ shall be used to describe forecast changes where the meteorological conditions are expected to reach or pass through specified values at a regular or irregular rate. The period during which, or the time at which, the change is forecast to occur shall be indicated using the abbreviations ‘FM’, ‘TL’ or ‘AT’, as appropriate, each followed by a time group in hours and minutes.  (iii)The change indicator ‘TEMPO’ shall be used to describe forecast temporary fluctuations in the meteorological conditions which reach or pass specified values and last for a period of less than 1 hour in each instance and, in the aggregate, cover less than one half of the period during which the fluctuations are forecast to occur. The period during which the temporary fluctuations are forecast to occur shall be indicated using the abbreviations ‘FM’ and/or ‘TL’, as appropriate, each followed by a time group in hours and minutes.  (8) Use of the probability indicator The indicator ‘PROB’ shall not be used in TREND forecasts. | [Return Link](#RETURN_ATR_225) |
|  | |
| **AMC1 MET.TR.225(c)(1)(iii) Forecasts for landing**  **THRESHOLD VALUES**  The threshold values should be established by the aerodrome meteorological office in consultation with the appropriate ATS units and operators concerned, taking into account changes in the wind which would:  (a) require a change in runway(s) in use. and  (b) indicate that the runway tailwind and crosswind components will change through values representing the main operating limits for typical aircraft operating at the aerodrome. | [Return Link](#RETURN_ATR_225) |
|  | |
| **AMC1 MET.TR.225(c)(7)(ii) Forecasts for landing**  **USE OF CHANGE GROUPS — BECMG**  (a) When the change is forecast to begin and end wholly within the trend forecast period, the beginning and end of the change should be indicated by using the abbreviations ‘FM’ and ‘TL’, respectively, with their associated time groups.  (b) When the change is forecast to commence at the beginning of the trend forecast period but be completed before the end of that period, the abbreviation ‘FM’ and its associated time group should be omitted and only ‘TL’ and its associated time group should be used.  (c) When the change is forecast to begin during the trend forecast period and be completed at the end of that period, the abbreviation ‘TL’ and its associated time group should be omitted and only ‘FM’ and its associated time group should be used.  (d) When the change is forecast to occur at a specified time during the trend forecast period, the abbreviation ‘AT’ followed by its associated time group should be used.  (e) When the change is forecast to commence at the beginning of the trend forecast period and be completed by the end of that period, or when the change is forecast to occur within the trend forecast period but the time is uncertain, the abbreviations ‘FM’, ‘TL’ or ‘AT’ and their associated time groups should be omitted and the change indicator ‘BECMG’ should be used alone. | [Return Link](#RETURN_ATR_225) |

|  |  |
| --- | --- |
| **AMC1 MET.TR.225(c)(7)(iii) Forecasts for landing**  **USE OF CHANGE GROUPS — TEMPO**  (a) When the change is forecast to begin and end wholly within the trend forecast period, the beginning and end of the change should be indicated by using the abbreviations ‘FM’ and ‘TL’ respectively, with their associated time groups.  (b) When the change is forecast to commence at the beginning of the trend forecast period but be completed before the end of that period, the abbreviation ‘FM’ and its associated time group should be omitted and only ‘TL’ and its associated time group should be used.  (c) When the change is forecast to begin during the trend forecast period and be completed at the end of that period, the abbreviation ‘TL’ and its associated time group should be omitted and only ‘FM’ and its associated time group should be used.  (d) When the change is forecast to occur at a specified time during the trend forecast period, the abbreviation ‘AT’ followed by its associated time group should be used.  (e) When the change is forecast to commence at the beginning of the trend forecast period and be completed by the end of that period, or when the change is forecast to occur within the trend forecast period but the time is uncertain, the abbreviations ‘FM’, ‘TL’ or ‘AT’ and their associated time groups should be omitted and the change indicator ‘TEMPO’ should be used alone. | [Return Link](#RETURN_ATR_225) |
|  | |
| **MET.TR.230 Forecasts for take-off**  (a) A forecast for take-off shall refer to a specified period of time and shall contain information on expected conditions over the runway complex in regard to surface wind direction and speed and any variations thereof, temperature, pressure, and any other elements as agreed between the aerodrome meteorological office and the operators.  (b) The order of the elements and the terminology, units and scales used in forecasts for take-off shall be the same as those used in reports for the same aerodrome. | [Return Link](#RETURN_ATR_230) |
|  | |
| **AMC1 MET.TR.230(a) Forecasts for take-off**  **AMENDMENTS TO FORECASTS**  (a) The criteria for the issuance of amendments to forecasts for take-off for surface wind direction and speed, temperature and pressure, and any other elements agreed locally should be agreed between the aerodrome meteorological office and the operators concerned.  (b) The criteria should be consistent with the corresponding criteria for special reports established for the aerodrome. | [Return Link](#RETURN_ATR_230) |
| **MET.TR.235 Aerodrome warnings and wind shear warnings and alerts**  (a) Wind shear warnings shall be issued in accordance with the template in Appendix 4.  (b) The sequence number referred to in the template in Appendix 4 shall correspond to the number of wind shear warnings issued for the aerodrome since 00.01 UTC on the day concerned.  (c) Wind shear alerts shall give concise, up-to-date information related to the observed existence of wind shear involving a headwind/tailwind change of 15 kt (7,5 m/s) or more which could adversely affect aircraft on the final approach path or initial take-off path and aircraft on the runway during the landing roll or take-off run.  (d) Wind shear alert shall, if practicable, relate to specific sections of the runway and distances along the approach path or take-off path as agreed between the aerodrome meteorological office, the appropriate ATS units and the operators concerned. | [Return Link](#RETURN_ATR_235) |
|  | |
| **AMC1 MET.TR.235 Aerodrome warnings and wind shear warnings and alerts**  **AERODROME WARNINGS — FORMAT**  (a) Aerodrome warnings should be issued in accordance with the template below or in another format where required by operators or aerodrome meteorological offices.      (b) When the above template is used, the sequence number referred to in the template should correspond to the number of aerodrome warnings issued for the aerodrome since 00.01 UTC on the day concerned.  . | [Return Link](#RETURN_ATR_235) |
|  | |
| **AMC1 MET.TR.235(a) Aerodrome warnings and wind shear warnings and alerts**  **AERODROME WARNINGS - FORMAT**  (a) The additional text should be prepared in abbreviated plain language using approved ICAO abbreviations and numerical values. If no ICAO-approved abbreviations are available, English plain language text should be used.  (b) When quantitative criteria are necessary for the issuance of aerodrome warnings, the criteria used should be as agreed between the aerodrome meteorological office and the users concerned.  for the aerodrome. | [Return Link](#RETURN_ATR_235) |
|  | |
| **AMC1 MET.TR.235(c) Aerodrome warnings and wind shear warnings and alerts**  **FORMAT OF WIND SHEAR WARNINGS**  (a) The use of text additional to the abbreviations listed in the template in Table 6 of Appendix 1 should be kept to a minimum. The additional text should be prepared in abbreviated plain language using ICAO-approved abbreviations and numerical values.  (b) When an aircraft report is used to prepare a wind shear warning or to confirm a warning previously issued, the corresponding aircraft report, including the aircraft type, should be disseminated unchanged in accordance with the local arrangements to those concerned | [Return Link](#RETURN_ATR_235) |

|  |  |
| --- | --- |
| **MET.TR.250 SIGMET messages**  (a) The content and order of elements in a SIGMET message shall be in accordance with the template shown in Appendix 5.  (b) SIGMET messages shall consist of three types:  (1) SIGMET for *en-route* weather phenomena other than volcanic ash or tropical cyclones, referred as WS SIGMET.  (2) SIGMET for volcanic ash, referred as WV SIGMET.  (3) SIGMET for tropical cyclones, referred as WC SIGMET.  (c) The sequence number of SIGMET messages shall consist of three characters comprising one letter and two numbers.  (d) Only one of the phenomena listed in Appendix 5 shall be included in a SIGMET message, using the appropriate abbreviations and the following threshold value of surface wind speed of 34 kt (17 m/s) or more for tropical cyclone.  (e) SIGMET information concerning thunderstorms or a tropical cyclone shall not include references to associated turbulence and icing.  (f) SIGMET, if disseminated in digital form, shall be:  (1) formatted in accordance with a globally interoperable information exchange model and shall use geography markup language (GML). (2) accompanied by the appropriate metadata. | [Return Link](#RETURN_ATR_250) |
|  | |
| **AMC1 MET.TR.250(a) SIGMET**  **AIRSPACE I**  In cases where the airspace is divided into a flight information region (FIR) and an upper-flight information region (UIR), the SIGMET should be identified by the location indicator of the ATS unit serving the FIR. | [Return Link](#RETURN_ATR_250) |
|  | |
| **AMC1 MET.TR.250(c) SIGMET messages**  **SEQUENCE NUMBER**  (a) The three-character sequence number should be constructed using a single letter identifying the phenomenon, followed by two numeric characters corresponding to the number of SIGMET  issued for that phenomenon for the specified flight information region since 00.01 UTC on the day concerned.  (b) The letters to be used as the first character for the SIGMET sequence number to indicate the specified en-route weather phenomena for which the SIGMET has been issued should be: | [Return Link](#RETURN_ATR_250) |

|  |  |
| --- | --- |
| **AMC1 MET.TR.250(d) SIGMET messages**  **CRITERIA RELATED TO PHENOMENA**  Sandstorm/dust storm should be considered:  (a) heavy whenever the visibility is below 200 m and the sky is obscured. and  (b) moderate whenever the visibility is:  (1) below 20 m and the sky is not obscured. or  (1) between 200 and 600 m. | [Return Link](#RETURN_ATR_250) |
|  | |
| **AMC1 MET.TR.250(g) SIGMET messages**  **FORMAT**  **SIGMET, when issued in graphical format, should be as specified below:**  **(a) SIGMET FOR TROPICAL CYCLONE — MODEL STC**    **(b) SIGMET FOR VOLCANIC ASH — MODEL SVA**    **(c) SIGMET FOR PHENOMENA OTHER THAN TROPICAL CYCLONE AND VOLCANIC ASH — MODEL SGE** | [Return Link](#RETURN_ATR_250) |

|  |  |
| --- | --- |
| **MET.TR.255 AIRMET messages**  (a) The content and order of elements in an AIRMET message shall be in accordance with the template shown in Appendix 5.  (b) The sequence number referred to in the template in Appendix 5 shall correspond to the number of AIRMET messages issued for the flight information region since 00.01 UTC on the day concerned.  (c) Only one of the phenomena in Appendix 5 shall be included in an AIRMET message, using the appropriate abbreviations and the following threshold values, when the phenomena is below flight level 100, or below flight level 150 in mountainous areas, or higher, where necessary:  (1) wind speed above 30 kt (15 m/s).  (2) widespread areas affected by reduction of visibility to less than 5 000 m, including the weather phenomenon causing the reduction of visibility.  (3) widespread areas of broken or overcast cloud with height of base less than 1 000 ft (300 m) above ground level. (d) AIRMET messages concerning thunderstorms or cumulonimbus clouds shall not include references to associated turbulence and icing. | [Return Link](#RETURN_ATR_255) |
|  | |
| **AMC1 MET.TR.255(d) AIRMET messages**  **CRITERIA RELATED TO PHENOMENA**  In reference to sandstorm/dust storm, please refer to AMC1 MET.TR.250(d).  GM1 MET.TR.255(e) AIRMET  AIRMET — DIGITAL FORM  (a) When AIRMET is disseminated in digital form, this is in addition to the AIRMET code form.  (b) Guidance on the information exchange model, GML, and metadata profile is provided in ICAO Doc 10003 ‘Manual on the ICAO Meteorological Information Exchange Model’. | [Return Link](#RETURN_ATR_255) |

|  |  |
| --- | --- |
| **MET.TR.260 Area forecasts for low-level flights**  (a) When chart form is used for area forecasts for low-level flights, the forecast of upper wind and upper-air temperature shall be issued for points separated by no more than 300 NM and for, as a minimum, the following altitudes: 2 000, 5 000 and 10 000 ft (600, 1 500 and 3 000 m) and 15 000 ft (4 500 m) in mountainous areas. The issuance of forecasts of upper wind and upper-air temperature at an altitude of 2 000 ft (600 m) may be subject to local orographic considerations as determined by the competent authority.  (b) When chart form is used for area forecasts for low-level flights, the forecast of SIGWX phenomena shall be issued as low-level SIGWX forecast for flight levels up to 100, or up to flight level 150 in mountainous areas, or higher, where necessary. Low-level SIGWX forecasts shall include:  (1) the following phenomena warranting the issuance of a SIGMET: icing, turbulence, cumulonimbus clouds that are obscured, frequent, embedded or occurring at a squall line, sandstorms/dust storms and volcanic eruptions or a release of radioactive materials into the atmosphere, and which are expected to affect low-level flights.  (2) the following elements in area forecasts for low-level flights: surface wind, surface visibility, significant weather phenomena, mountain obscuration, cloud, icing, turbulence, mountain wave and height of zero-degree isotherm.  (c) When the competent authority has determined that the density of traffic operating below flight level 100 warrants the issuance of an AIRMET message, the area forecasts shall be issued to cover the layer between the ground and flight level 100, or up to flight level 150 in mountainous areas, or higher, where necessary, and shall contain information on *en-route* weather phenomena hazardous to low-level flights, in support of the issuance of the AIRMET message and the additional information required for low-level flights. | [Return Link](#RETURN_ATR_260) |
|  | |
| **AMC1 MET.TR.260 Area forecasts for low-level flights**  **AMENDMENT OF LOW-LEVEL FORECASTS**  (a) In case the AIRMET/low-level forecast concept is not fully implemented, the criteria for amendments should as a minimum include the weather phenomena hazardous to low-level flights, which constitute the criteria for the issuance of AIRMET.  (b) When low-level forecast is issued as an SIGWX chart or as a wind and temperature (W+T) chart, it should, as appropriate, include the cloud/visibility information in the form of visibility/cloud base category which should be provided for well-defined sub-areas and/or route segments. For each sub-area and/or route segment, the reference height to which the cloud base information refers should be specified.  (c) The graphical part of an SIGWX chart should depict the weather situation at the beginning of the validity period. Significant changes of initial weather parameters should be depicted together with time intervals determining the duration of expected changes. | [Return Link](#RETURN_ATR_260) |

|  |  |
| --- | --- |
| **MET.TR.265 Volcanic ash advisory centre responsibilities**  a) The advisory information on volcanic ash shall be issued in abbreviated plain language and in accordance with the template shown in Appendix 6. When no abbreviations are available, English plain language text, to be kept to a minimum, shall be used.  (b) Volcanic ash advisory, if disseminated in digital form, shall be:  (1) formatted in accordance with a globally interoperable information exchange model and shall use geography markup language (GML).  (2) accompanied by the appropriate metadata.  (c) Volcanic ash advisory information, when prepared in graphical format, shall be issued using the portable network graphics (PNG) format. | [Return Link](#RETURN_ATR_265) |

|  |  |
| --- | --- |
| **AMC1 MET.TR.265(c) Volcanic ash advisory centre responsibilities**  **VOLCANIC ASH ADVISORY INFORMATION — GRAPHICAL FORMAT**  The volcanic ash advisory information listed in Appendix 6 to Annex V (Part-MET) to Regulation (EU)  2017/373, when prepared in graphical format, should be as specified below. | [Return Link](#RETURN_ATR_265) |

|  |  |
| --- | --- |
| **MET.TR.270 Tropical cyclone advisory centre responsibilities**  (a) The advisory information on tropical cyclones shall be issued for tropical cyclones when the maximum of the 10-minute mean surface wind speed is expected to reach or exceed 34 kt during the period covered by the advisory.  (b) The advisory information on tropical cyclones shall be in accordance with Appendix 7.  (c) Tropical cyclone advisory, if disseminated in digital form, shall be:  (1) formatted in accordance with a globally interoperable information exchange model and shall use geography markup language (GML).  (2) accompanied by the appropriate metadata.  (d) Tropical cyclone advisory information, when prepared in graphical format, shall be issued using the portable network graphics (PNG) format. | [Return Link](#RETURN_ATR_270) |

|  |  |
| --- | --- |
| **AMC1 MET.TR.270(d) Tropical cyclone advisory centre responsibilities** | [Return Link](#RETURN_ATR_270) |

|  |  |
| --- | --- |
| **MET.TR.275 World area forecast centre responsibilities**  (a) WAFCs shall use processed meteorological data in the form of grid point values expressed in binary form (GRIB code form) for the supply of gridded global forecasts and BUFR code form for the supply of forecast of significant weather phenomena.  (b) For global gridded forecasts, WAFCs shall:  (1) prepare forecasts of:  (i) upper wind.  (ii) upper-air temperature.  (iii) humidity.  (iv) direction, speed and flight level of maximum wind.  (v) flight level and temperature of tropopause.  (vi) areas of cumulonimbus clouds.  (vii) icing.  (viii) clear-air and in-cloud turbulence.  (ix) geopotential altitude of flight levels. four times a day and be valid for fixed valid times at 6, 9, 12, 15, 18, 21, 24, 27, 30, 33 and 36 hours after the time (00.00, 06.00, 12.00 and 18.00 UTC) of the synoptic data on which the forecasts were based.  (2) issue forecasts in the order referred to in point (1) and complete their dissemination as soon as technically feasible, but not later than 6 hours after standard time of observation.  (3) provide grid point forecasts in a regular grid with a horizontal resolution of 1,25° of latitude and longitude and comprising:  (i) wind data for flight levels 50 (850 hPa), 100 (700 hPa), 140 (600 hPa), 180 (500 hPa), 240 (400 hPa), 270 (350 hPa), 300 (300 hPa), 320 (275 hPa), 340 (250 hPa), 360 (225 hPa), 390 (200 hPa), 410 (175 hPa), 450 (150 hPa) and 530 (100 hPa).  (ii) temperature data for flight levels 50 (850 hPa), 100 (700 hPa), 140 (600 hPa), 180 (500 hPa), 240 (400 hPa), 270 (350 hPa), 300 (300 hPa), 320 (275 hPa), 340 (250 hPa), 360 (225 hPa), 390 (200 hPa), 410 (175 hPa), 450 (150 hPa) and 530 (100 hPa).  (iii) humidity data for flight levels 50 (850 hPa), 100 (700 hPa), 140 (600 hPa) and 180 (500 hPa). (iv) horizontal extent and flight levels of base and top of cumulonimbus clouds. (v) icing for layers centred at flight levels 60 (800 hPa), 100 (700 hPa), 140 (600 hPa), 180 (500 hPa), 240 (400 hPa) and 300 (300 hPa).  (vi) clear-air turbulence for layers centred at flight levels 240 (400 hPa), 270 (350 hPa), 300 (300 hPa), 340 (250 hPa), 390 (200 hPa) and 450 (150 hPa).  (vii) in-cloud turbulence for layers centred at flight levels 100 (700 hPa), 140 (600 hPa), 180 (500 hPa), 240 (400 hPa) and 300 (300 hPa).  (viii) geopotential altitude data for flight levels 50 (850 hPa), 100 (700 hPa), 140 (600 hPa), 180 (500 hPa), 240 (400 hPa), 270 (350 hPa), 300 (300 hPa), 320 (275 hPa), 340 (250 hPa), 360 (225 hPa), 390 (200 hPa), 410 (175 hPa), 450 (150 hPa) and 530 (100 hPa).  (c) For global forecasts of *en-route* significant weather phenomena, WAFCs shall:  (1) prepare SIGWX forecasts four times a day and shall be valid for fixed valid times at 24 hours after the time (00.00, 06.00, 12.00 and 18.00 UTC) of the synoptic data on which the forecasts were based. The dissemination of each forecast shall be completed as soon as technically feasible, but not later than 9 hours after standard time of observation.  (2) issue SIGWX forecasts as high-level SIGWX forecasts for flight levels between 250 and 630. (3) include in SIGWX forecasts the following items:  (i) tropical cyclone provided that the maximum of the 10-minute mean surface wind speed is expected to reach or exceed 34 kt (17 m/s).  (ii) severe squall lines.  (iii) moderate or severe turbulence (in cloud or clear air).  (iv) moderate or severe icing.  (v) widespread sandstorm/dust storm.  (vi) cumulonimbus clouds associated with thunderstorms and with points (i) to (v).  (vii) non-convective cloud areas associated with in-cloud moderate or severe turbulence and/or moderate or severe icing.  (viii) flight level of tropopause.  (ix) jet streams.  (x) information on the location of volcanic eruptions that are producing ash clouds of significance to aircraft operations, comprising: volcanic eruption symbol at the location of the volcano and, in a separate text box on the chart, the volcanic eruption symbol, the name of the volcano, if known, and the latitude/longitude of the eruption. In addition, the legend of SIGWX charts should indicate ‘CHECK SIGMET, ADVISORIES FOR TC AND VA, AND ASHTAM AND NOTAM FOR VA’.  (xi) information on the location of a release of radioactive materials into the atmosphere of significance to aircraft operations, comprising: the radioactive materials in the atmosphere symbol at the location of the release and, in a separate box on the chart, the radioactive materials in the atmosphere symbol, latitude/ longitude of the site of the release and, if known, the name of the site of the radioactive source. In addition, the legend of SIGWX charts on which a release of radiation is indicated should contain ‘CHECK SIGMET AND NOTAM FOR RDOACT CLD’.  (4) The following criteria shall be applied for SIGWX forecasts:  (i) points (i) to (vi) of point (3) shall only be included if expected to occur between the lower and upper levels of the SIGWX forecast.  (ii) the abbreviation ‘CB’ shall only be included when it refers to the occurrence or expected occurrence of cumulonimbus clouds:  (A) affecting an area with a maximum spatial coverage of 50 % or more of the area concerned.  (B) along a line with little or no space between individual clouds. or  (C) embedded in cloud layers or concealed by haze.  (iii) the inclusion of ‘CB’ shall be understood to include all weather phenomena normally associated with cumulonimbus clouds, i.e. thunderstorm, moderate or severe icing, moderate or severe turbulence, and hail.  (iv) where a volcanic eruption or a release of radioactive materials into the atmosphere warrants the inclusion of the volcanic activity symbol or the radioactivity symbol in SIGWX forecasts, the symbols shall be included on SIGWX forecasts irrespective of the height to which the ash column or radioactive material is reported or expected to reach.  (v) in the case of coincident or the partial overlapping of points (i), (x) and (xi) of point (3), the highest priority shall be given to point (x), followed by points (xi) and (i). The point with the highest priority shall be placed at the location of the event, and an arrow shall be used to link the location of the other point(s) to its (their) associated symbol(s) or text box(es).  (d) Medium-level SIGWX forecasts for flight levels between 100 and 250 for limited geographical areas shall be issued. | [Return Link](#RETURN_ATR_275) |
|  | |
| **AMC1 MET.TR.275(a) World area forecast centres (WAFCs) responsibilities**  **GRIDDED GLOBAL FORECASTS**  The telecommunications facilities used for the supply of world area forecast system products should:  (a) be the aeronautical fixed service or the public Internet.  (b) be continuous. and  (c) not have interruptions exceeding 10 minutes during any period of 6 hours. | [Return Link](#RETURN_ATR_275) |
|  | |
| **AMC1 MET.TR.275(d) World area forecast centres (WAFCs) responsibilities**  **MEDIUM-LEVEL SIGWX FORECASTS**  The medium-level SIGWX forecasts provided for flight levels between 100 and 250 for limited geographical areas should cover the areas as shown in in Table 2 of Appendix 1. | [Return Link](#RETURN_ATR_275) |