

Requirements for meteorological observations at aerodromes

CAP 746

Published by the Civil Aviation Authority, 2020

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First published 2003

Issue 2 - October 2012
Issue 3 - May 2014
Issue 4 - March 2017
Issue 5 - July 2020

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Contents

Contents	3
Preface	9
Foreword	11
Revision history	13
Chapter 1	17
Introduction	17
Chapter 2	22
General requirements for aerodrome observations	22
Chapter 3	26
Accreditation and competence of observers	26
Introduction	26
The Aerodrome Meteorological Observer's certificate	27
The Restricted Meteorological Observer's certificate	27
Continued accreditation and refresher training	29
Aerodrome meteorological observing service provider contingency	30
Non-accredited meteorological reports	30
Chapter 4	31
METAR structure and UK coding rules	31
Introduction	31
Aviation weather report for METARs – symbolic code	32
UK METAR coding variations	33
Surface wind	34
CAVOK	37
Visibility – meteorological minimum and maximum	37

Runway visual range	40
Present weather	43
Cloud	55
Air temperature and dew point	57
Atmospheric pressure	58
Recent weather	60
Runway states	62
TREND forecast	67
AUTO METAR	69
Chapter 5	73
Local weather reports to air traffic services	73
Introduction	73
Surface wind	74
Visibility	75
RVR	76
Present weather	76
Cloud	77
Temperature	77
Pressure	77
Recent weather	78
Supplementary information	78
Special reports for air traffic services purposes	79
Chapter 6	83
General requirements for observing equipment	83
Introduction	83
General requirements	83
Operation and maintenance requirements of meteorological equipment	84

Installation of meteorological observing equipment	85
Chapter 7	87
Design requirements for meteorological equipment	87
Introduction	87
Meteorological displays	88
Surface wind speed and direction equipment.....	89
Pressure measurement equipment	92
Temperature and dew point measurement.....	95
Cloud base recorder systems.....	96
Visibility measuring systems.....	98
Present weather detectors	99
Integrated Met measurement systems	100
Chapter 8	102
Dissemination of weather reports.....	102
Introduction	102
Timing requirements	102
METAR	103
Chapter 9	104
Reliability and availability of reporting.....	104
Completeness of reports.....	104
Contingency arrangements for the failure of meteorological observing sensors and systems	104
Missing meteorological aerodrome reports	105
Timeliness	106
Chapter 10.....	107
Records and archives	107
Introduction	107

Meteorological information records.....	108
Chapter 11.....	110
Definitions, abbreviations and bibliography.....	110
Glossary	110
Abbreviations	115
Bibliography	116
Appendix A	118
Purpose of the aerodrome meteorological regulatory oversight audit	118
Introduction.....	118
Conduct of meteorological regulatory oversight audit	120
Appendix B	122
Frequently asked questions on the compilation of the METAR.....	122
Introduction.....	122
FAQs	122
Wind	122
Visibility	122
Present weather	123
Cloud	123
Temperature.....	125
Pressure	125
Recent significant weather	125
Runway state group	126
Observing from outside the building	126
Final checks	126
Restricted meteorological observer's (RMO) certificate	126
Annex A to Appendix B	127
Assessing prevailing visibility.....	127

Appendix C	131
Human Observed RVR conversion table.....	131
Foreword	131
Distance-based method	131
Reference copies	132
Annex A to Appendix C	133
Distance based method example	133
Appendix D	134
Daily atmospheric pressure equipment QNH check	134
Appendix E	135
Theoretical observer training requirements for an Aerodrome Meteorological Observer's (AMO/Full) certificate.....	135
Introduction.....	135
Training programme.....	135
Syllabus.....	135
Examinations	136
Appendix F.....	137
Practical observer training requirements for an Aerodrome Meteorological Observer's (AMO/Full), certificate.....	137
Introduction.....	137
Training organisations	137
Training programme.....	138
Assessment details during the practical training.	139
Meteorological observers' competence-based document.....	140
Operational competence	140
Continuous assessment	141
Annex A to Appendix F	141
Appendix G	143

Training requirements for a Restricted Meteorological Observer's (RMO) certificate	143
Introduction	143
Training programme	143
Syllabus	144
Practical training for a restricted meteorological observer's certificate	145
Operational competence	145
Continuous assessment	145
Relocation training	146
Appendix H	147
Basic Meteorological Observer (BMO) competency	147
Introduction	147
Syllabus guidance	148
Appendix I	151
Competency of Observers	151
Appendix J	157
Calibration requirements for wind and pressure measuring equipment	157
Wind measuring equipment	157
Analogue cup or vane systems	157
Digital cup or vane systems	157
All cup or vane systems	158
Ultrasonic wind sensors	158
Pressure measuring equipment	158

Preface

Civil Aviation Authority (CAA) Civil Aviation Publications (CAPs) are based upon national and European Union (EU) legislation and non-legislative regulatory material, such as ICAO Standards and Recommended Practices. They are published in order to provide UK industry with:

- a. guidance and clarification on the means of achieving compliance with global, UK and European regulatory requirements, and where applicable:
- b. details of United Kingdom (UK) 'Alternative Means of Compliance', and
- c. details of any additional national requirements, including CAA administrative procedures.

Details of appropriate supporting administrative procedures are also included where necessary.

In publishing CAPs, the CAA satisfies the obligations placed upon it by the Transport Act 2000¹, Chapter 1 Article 2 'CAA's general duty', which in paragraph 2(a) requires the CAA to exercise its functions under the Act in the manner it thinks best calculated, to further the interests of operators and owners of aircraft, owners and managers of aerodromes, persons travelling in aircraft and persons with rights in property carried in them. The only interests to be considered under subsection (2)(a) are interests regarding the range, availability, continuity, cost and quality of air traffic services.

Publication of CAPs additionally satisfies the requirements set out by the Civil Aviation Authority (Chicago Convention) Directions 2007² to ensure that it acts consistently with the obligations placed on the UK under the Chicago Convention. The CAA is obliged to consider whether it is necessary to amend United Kingdom aviation legislation to ensure appropriate implementation of an ICAO provision.

¹ <http://www.legislation.gov.uk/ukpga/2000/38/contents> or
<http://www.legislation.gov.uk/ukpga/2000/38/data.pdf>

² [https://webarchive.nationalarchives.gov.uk/20100422174722/http://www.caa.co.uk/docs/286/CAA\(ChicagoConvention\)Directions2007\(asamended\).pdf](https://webarchive.nationalarchives.gov.uk/20100422174722/http://www.caa.co.uk/docs/286/CAA(ChicagoConvention)Directions2007(asamended).pdf)

Where (a) the CAA considers it inappropriate to transpose an ICAO provision into domestic legislation and (b) the CAA has discretionary power to enforce the requirements of such a provision through a certificate, licence, or other means of approval, the Civil Aviation Authority (Chicago Convention) Directions 2007 obliges the CAA to shall develop and publish such requirements as are necessary to implement the ICAO provision and shall ensure that it is able to verify adherence to those requirements.

CAPs are subject to periodic revision to take account of changes to source regulatory material, feedback from industry, and recognised best practice. CAP 746 provides applicable guidance and clarification relating to the requirement for meteorological observations at aerodromes and is to be read in conjunction with the regulatory material referenced below. ***Non-inclusion of source regulatory material within this CAP does not preclude the end user from either the need to be aware of, or the need to comply with, the requirements contained within the source regulatory materials unless otherwise exempted from those requirements.***

It is the policy of the UK government that, unless a Difference (from an ICAO requirement) or 'Alternative Means of Compliance' (AltMoc) (related to an EASA 'Acceptable Means of Compliance' (AMC)) has been established, compliance with relevant international (i.e. ICAO and applicable equivalents such as International Telecommunications Union) and European regulatory material is required to the extent mandated in law. Additionally, compliance with national requirements that are not addressed by international or EU regulations is also required.

The words 'must', 'shall' and 'will' indicate that compliance with applicable regulatory requirements is necessary. In the case of AMC the word 'should' indicates that compliance is required, unless complying with an approved AltMoC.

Foreword

1. The Secretary of State for the Department for Transport (DfT) has delegated the responsibilities for the function of the UK Meteorological Authority to the Civil Aviation Authority (CAA) through the (Air Navigation) Directions 2017, in exercise of the powers conferred by Section 66(1) of the Transport Act 2000. Under the Directions, the CAA is required to develop, promulgate, monitor and enforce a policy for the sustainable use of UK airspace and for the provision of necessary supporting infrastructure for air navigation.
2. In particular, the Directions state that the CAA shall discharge the responsibilities of the UK Meteorological Authority:
 - in accordance with International Civil Aviation Organisation (ICAO), Meteorological Service for International Air Navigation, Annex 3 to the Chicago Convention and other international obligations; and
 - subject to international obligations, in such a manner as the CAA may determine from time to time.
3. The CAA has also been appointed as the UK National Supervisory Authority (NSA) under the Single European Sky Regulations and, pursuant to Article 246 of the ANO 2009, the CAA is also the National Aviation Authority (NAA) and the competent authority of the UK for the purposes of European Union Regulations³.
4. Meteorological observations at aerodromes are provided by the aerodrome licensee for use by aviation users, operators and other providers of services to aviation.
5. Whereas ICAO is responsible for establishing aeronautical meteorological requirements, the World Meteorological Organisation (WMO) through its Commission for Aeronautical Meteorology, is responsible for specifying

³ Under the EU (Withdrawal) Act 2018 the Government is in the process of bringing EU aviation law into UK law.

the technical methods and practices recommended for use in providing aeronautical meteorological services.

6. It is the policy of the UK Meteorological Authority that, unless a difference has been declared, meteorological services for both national and international flights are compliant with ICAO Annex 3 Standards and Recommended Practices (SARPs). Where a difference from ICAO SARPs has been declared, requirements for meteorological services will be as specified in the UK Aeronautical Information Publication (UK AIP).

7. The contact address for the UK Meteorological Authority is:

The UK Meteorological Authority
Safety and Airspace Regulation Group
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Aviation House
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8. CAP 746 contains procedures and information which describe the provision of meteorological observations to civil aviation in the UK, and the related regulatory requirements as specified in ICAO Annex 3 and Commission Implementing Regulation (EU) 2017/373.
9. This is a living document and will be revised at intervals to take account of changes in regulations, feedback from industry, and recognised best practice. Contact addresses, should you have any comments concerning the content of this document or wish to obtain subsequent amendments, are given on the inside cover of this publication.

Revision history

Issue 1**4 December 2003**

- Minor editorial amendments.

Amendment 1/2004**27 April 2004**

- Introduction of prevailing visibility.
- Enabling provision for dissemination of AUTO METAR under certain circumstances.
- Clarification of requirements for cloud ceilometer.

Amendment 1/2005**6 October 2005**

- Revised Met Observers competency requirements.
- Introduction of term 'no significant clouds' (NSC) in METAR.
- Introduction of new code for AUTO METAR.

Amendment 1/2006**31 October 2006**

- Clarification regarding when certain present weather phenomena are required to be reported.
- Clarification on how visibility should be reported in reports to air traffic.
- Guidance on how to report prevailing visibility.
- Introduction of requirements for documentation of contingency equipment.
- Introduction of requirements for recording the originator of an observation.
- Clarification on completion times for the METAR.
- Explanatory Note and Foreword unchanged but pages now numbered with Arabic instead of Roman numerals.
- Introduction of a Revision History.

Amendment 1/2007**7 November 2007**

- Addition of e-mail address for UK Meteorological Authority.
- Changes in the definition of prevailing visibility.
- Definition of Aerodrome Reference Point.

- Requirement for observer to self-brief on the expected weather conditions prior to taking over watch.
- Changes to requirement for AUTO METARs.
- Revised Appendix C on requirement for Human Observed RVR Conversion Tables.

Amendment 1/2008**5 November 2008**

- Changes in the reporting of CAVOK.
- Requirement for a quality system to be in place.
- Requirement for AUTO METARs to be issued when duty breaks are taken.
- Clarification of IRVR reporting requirements.
- Clarification of wind reporting requirements to ATS.
- Clarification of siting requirements for visimeters and temperature sensors.
- Clarification of requirements for visibility measuring systems.
- Update to purpose of Aerodrome Meteorological Liaison Visits.

Issue 2**15 October 2012**

- New title for CAP 746.
- Revision to applicability of CAP 746.
- Requirement for CAT II and III aerodromes to have Integrated Met Measurement System.
- Change in the number of observations required by an observer to remain current.
- Staff carrying out Met competency checking role required to undergo refresher training every five years.
- Changes to Runway State Message format.
- Revision of sections related to AUTO METAR.
- Introduction of guidance related to calibration of wind and pressure sensors.

Issue 3**21 May 2014**

- Minor editorial amendments.
- Clarification of Runway State Codes - R88/ and R99/.
- Runway Visual Range Special Reports, change thresholds - updated.

- Cloud Base Recorders, Visibility Measuring Systems and Present Weather Detectors are mandatory at aerodromes providing automated observations.
- Visibility Measuring Systems are mandatory at CAT II and CAT III aerodromes.
- NATS HORVR Calibration Team Contact Details - updated.
- Frequently Asked Questions - Clarification of reporting Sky Obscured, VV///.
- Clarification of Automated Cloud Coding - NCD (no clouds detected).

Issue 4**20 March 2017**

- Minor editorial amendments
- Removal of the Gold Visibility Meter as a method for producing Human Observed RVR Conversion Tables; Copies of HORVR conversion tables are not required to be forwarded to the UK Met Authority.
- Clarification of reporting Mist.
- RETSRA, RETSSN, RETSGR, RETSGS added to the list of permitted recent weather codes
- Clarification of the requirement for records of annual observer competency assessments to be dated, and for the assessments to include a check that observers can use local backup procedures.
- Clarification of reporting SH in observations generated by automatic observing systems.
- Updates to Frequently Asked Questions.

Issue 5**July 2020**

- Minor editorial amendments
- Changes resulting from the introduction of Commission Implementing Regulation (EU) 2017/373:
 - Reporting of RVR tendency codes in METARs;
 - Reporting of minimum and maximum RVR values in local routine and special reports;
 - Reporting the intensity of present weather in local routine and special reports;
 - Reporting of recent weather in Local Routine and Local special Reports by semi-automatic observing systems;

- Criteria for reporting variation in wind speed in METAR and local routine report.
- Guidance on achieving and maintaining Basic Meteorological Observing competency.
- Guidance on requirements for aerodromes that are not certificated as a MET Air Navigation Service Provider under the SES Common Requirements and have Instrument Approach Procedures without an Instrument Runway and/or Approach Control.

Chapter 1

Introduction

- 1.1 Requirements and standards for aerodrome meteorological observations, both within the United Kingdom as well as the surrounding offshore areas are determined in accordance with the standards and recommended practices (SARPs) of the International Civil Aviation Organisation (ICAO) and the guidance issued by the World Meteorological Organisation (WMO).
- 1.2 At licensed aerodromes, the aerodrome licensee is responsible for arranging the provision of aerodrome weather observations and other meteorological information to users.
- 1.3 It is recognised that this function may be performed by staff directly employed or contracted by the aerodrome licensee. In order to maintain clarity of responsibilities in respect of meteorological data, the arrangements for the compilation of aerodrome weather reports are described within this document as the responsibility of the Aerodrome Meteorological Observing Service Provider. Within the UK, the Aerodrome Meteorological Observing Service Provider is commonly the Air Traffic Service (ATS) provider organisation. This document recognises, however, that aerodrome weather reports may be produced by any suitably competent and qualified person.
- 1.4 At aerodromes with an Air Traffic Control unit, weather reports are provided and utilised in accordance with ICAO PANS ATM Doc 4444, and [CAP 493](#), Manual of Air Traffic Services Part 1. At aerodromes that do not have an ATC unit, the procedures for ensuring that weather reports are made available to pilots and other users should be described locally.
- 1.5 All the requirements contained within this document apply to aerodromes that are certificated by the CAA under the Commission

Implementing Regulation (EU) 2017/373 as Air Navigation Service Providers and which routinely disseminate MET information beyond the aerodrome (see Chapter 1, Paragraph 1.14).

- 1.6 Requirements for Aerodrome Meteorological Observing Providers that are certificated by the CAA under the Commission Implementing Regulation (EU) 2017/373 as ANSPs but which do not disseminate MET information beyond the aerodrome are given below:
- a) At aerodromes that **have** published or airport owned instrument approach procedures but do not routinely disseminate MET information beyond the aerodrome Meteorological ANSPs are required to ensure that all Met equipment used on the aerodrome shall meet the specifications stated in Chapter 7 and calibrated in accordance with Chapter 6, Paragraphs 6.11 to 6.17, and Appendix J, and shall ensure that staff providing MET information have and maintain Basic Meteorological Observing competency (see Appendix H).
 - b) At aerodromes that do **not have** published or airport owned instrument approach procedures and do not routinely disseminate MET information beyond the aerodrome, Meteorological ANSPs shall meet the specifications stated in Chapter 7, but may use less stringent requirements for pressure and wind sensors as detailed in Chapter 7, Paragraphs 7.26 and 7.50, Chapter 6, Paragraphs 6.11 to 6.17, and Appendix J, and shall ensure that staff providing MET information have and maintain Basic Meteorological Observing competency (see Appendix H).
- 1.7 Aerodromes that are not certificated as a MET Air Navigation Service Provider (ANSP) under Commission Implementing Regulation (EU) 2017/373 and have Instrument Approach Procedures **without** an Instrument Runway and/or Approach Control should (as a minimum) ensure that Met Equipment for wind, pressure, temperature meet the specifications stated in Chapter 6, Chapter 7 and Appendix J, but may

- use less stringent requirements for pressure and wind sensors as detailed in Chapter 7, Paragraphs 7.26 and 7.50, and should ensure that staff providing MET information have and maintain Basic Meteorological Observing competency (see Appendix H).
- 1.8 For all other aerodromes this document should be used as guidance on best practice.
- 1.9 Aerodrome meteorological observations are used for flight planning purposes and to facilitate safe operation of aircraft in the take off and landing phases of flight. The information includes direction and speed of the surface wind; horizontal visibility; prevailing weather; atmospheric pressure information; surface temperature and dew point; cloud amounts and height of the cloud base. Equipment used to provide real-time information to ATC is subject to requirements specified in [CAP 670](#) ATS Safety Requirements. If the same equipment is used to originate METAR reports and to provide real-time information to ATS, the sensing and data processing equipment will normally be subject to the requirements of the CAA UK Meteorological Authority and the display equipment used within the ATS unit will normally be subject to the relevant requirements of CAP 670 ATS Safety Requirements.
- 1.10 Accurate, timely and complete aerodrome meteorological observations are necessary to support safe and efficient air navigation.
- 1.11 Aerodrome Meteorological Observing Service Providers that are certificated under the Commission Implementing Regulation (EU) 2017/373 as an Air Navigation Service Provider are required to ensure that the unit's quality management system includes an appropriate level of detail of the meteorological processes which are applicable to the provision of meteorological services.
- 1.12 The quality management system should include a system that assures users that the quality of meteorological information supplied complies

with the requirements in this document. When the quality system indicates that the meteorological information does not comply with the requirements in this document it should not be issued.

- 1.13 The purpose of this document is to describe how ICAO standards and recommended practices and the requirements of Commission Implementing Regulation (EU) 2017/373 are applied in the UK and to specify the requirements for observers and equipment to achieve this.
- 1.14 The following types of aerodrome meteorological observations may be provided:
- **Official Meteorological Reports** (produced by Meteorological Service Providers certificated under Commission Implementing Regulation (EU) 2017/373 as an ANSP which, if in the form of a meteorological aerodrome report (METAR), may be disseminated beyond an aerodrome to pilots and other meteorological service providers using processes that adhere to ICAO Standards. An observer shall be accredited and competent to produce these observations, as described in Chapter 3, and, the instrumentation used shall comply with the requirements in Chapters 6 and 7.
 - **Local Routine and Local Special Reports** (produced by Meteorological Service Providers certificated under Commission Implementing Regulation (EU) 2017/373 as an ANSP) that are not disseminated beyond the aerodrome. MET observers must have a Basic Meteorological Observing competency and the Met equipment used on the aerodrome shall meet the specifications stated in Chapter 7 and calibrated in accordance with Chapter 6, Paragraphs 6.11 to 6.17, and Appendix J.
 - **All other meteorological observations** (not produced by certificated Meteorological Service Providers). Whilst the observer does not need to be accredited to give an opinion on the latest meteorological conditions, a basic level of meteorological competency in assessing conditions and reading instrumentation

is required. Such opinions shall be regarded as unofficial for air navigation purposes. Guidance on basic meteorological observer competency can be found in Appendix H.

- 1.15 METAR information is also used by Meteorological Forecast Offices in the production of Terminal Aerodrome Forecasts (TAF) and other forecasts.
- 1.16 The Met Observers at an aerodrome should be located, as far as possible, in a position that enables them to supply observations which are representative of the aerodrome and its vicinity.
- 1.17 Should an aerodrome wish to provide a Remote Aerodrome Meteorological Observing Service then the permission of the CAA is required - see CAP1620 (Remote Towers) for further details.

Chapter 2

General requirements for aerodrome observations

- 2.1 Timely and accurate meteorological information shall be made available to aircraft operators, ATS providers and Meteorological Forecast Offices. TAFs are provided only on receipt of valid METARs and due account should be taken by aerodrome licensees of operator requirements for these forecasts.

A METAR shall contain the following items of information:

- Identification of the type of report (e.g. METAR)
- Location indicator
- Time of Observation, in UTC
- Surface wind direction and speed (including variations in direction)
- Visibility* - see 2.2 below
- Runway visual range (where applicable and equipment/procedures have been approved)* - see 2.2 below
- Present weather* - see 2.2 below
- Cloud amount (and type, if applicable) and height of base* - see 2.2 below
- Air temperature and dew point temperature
- QNH and, where applicable QFE
- Recent Weather, when applicable
- Runway States, when applicable

- 2.2 Asterisked elements are included as necessary. The term CAVOK may replace visibility, present weather and cloud information under certain conditions (see glossary for definition).
- 2.3 Within the UK, METAR reports shall be provided every 30 minutes during the operational hours of the aerodrome.

- 2.4 Within the UK, local routine reports shall be disseminated at fixed intervals.
- 2.5 For ATS purposes, the measurements of meteorological elements should be representative of the landing and take-off areas on the runways. For the METAR, the measurement should be representative over the whole aerodrome operating area. Instrumentation used in the measurement of meteorological elements for METAR reports may also be used for reports to ATS providers, providing that the exposure of the instruments is suitable to provide representative readings for both purposes.

NOTE: Although the content of meteorological reports for ATS purposes and METAR reports are similar, the averaging periods for certain elements in the reports differ. Refer to Chapters 4 and 5 for the requirements for each type of report.

- 2.6 A method to ensure that observing staff are aware of, and competent in, local observing and reporting procedures shall be established.
- 2.7 Local observing and reporting procedures shall include the way in which observations are recorded and disseminated both within and beyond the aerodrome, including any necessary backup arrangements.

NOTE: Prior to taking over watch, observers shall obtain full information regarding the weather to be expected during the period of their watch. This may be accomplished by a study of forecasts and charts routinely supplied by the Met Office.

- 2.8 The observer shall continuously monitor the weather. Observations must be updated, as necessary, in a timely manner. During any period that routine METAR reports are being produced, local special reports shall be produced as dictated by the weather conditions. Unless otherwise agreed by the CAA UK Meteorological Authority, the criteria for the production of a special report shall be those given in Chapter 5, Weather Reports to Air Traffic Services. All special reports shall be issued to the ATS provider and, where possible, should be passed to the Meteorological Forecast Office.

- 2.9 The observer shall provide a full non-routine observation at the time of an aircraft accident on or in the vicinity of the aerodrome. This is to ensure that complete details of the weather at the time of the incident will be available to an official inquiry.
- 2.10 A meteorological services provider shall retain meteorological information issued for a period of at least 30 days from the date of issue (see Chapter 10, Records and Archives).
- 2.11 The CAA UK Meteorological Authority is responsible for arranging regulatory oversight audits of Aerodrome Meteorological Observing Units at regular intervals to ensure that a high standard of observations is maintained, that instruments and their indicators are functioning correctly, and to validate the exposure of the instrumentation. Appendix A, Purpose of aerodrome meteorological regulatory oversight audits, provides further information on such audits.
- 2.12 Automated sensors used to measure certain meteorological elements (typically visibility, present weather and cloud) shall be considered to be an aid to an observer rather than a direct source of information for the official weather report. Such sensors can measure each of these elements, but are limited by the spatial coverage of the sensor and the capability to resolve certain weather phenomena. Procedures shall be in place to ensure that any observation generated by a semi automatic observing system is not disseminated unless it has been checked and qualified by an accredited observer.
- 2.13 Where an aerodrome is closed for more than two hours (for example overnight), two consecutive METARs shall be produced before the aerodrome opens, unless otherwise agreed by the CAA UK Meteorological Authority. The METARs shall be produced by an accredited observer and separated by an interval of not less than 20 minutes and not more than 1 hour.

- 2.14 Aerodromes that operate 24 hours a day are required to provide METAR, or where agreed, AUTO METAR observations, at all times, and to ensure that the ATIS is updated as required.
- 2.15 At aerodromes where a Met observing system is installed that can be operated automatically, it may be possible for the system to generate fully automated weather reports in the form of AUTO METARs. Should an aerodrome wish to provide AUTO METARs then the permission of the CAA UK Meteorological Authority is required.
- 2.16 The Meteorological Forecast Office will monitor the quality of the METAR reports and provide feedback, as appropriate.

Chapter 3

Accreditation and competence of observers

Introduction

- 3.1 The Aerodrome Licensee is responsible for arranging provision of aerodrome weather reports and other meteorological information to users. For the purposes of this document, and to distinguish these responsibilities from other functions that are the responsibility of the Aerodrome Licensee, the responsibilities relating to meteorological information are deemed to be delegated to the Aerodrome Meteorological Observing Service Provider.
- 3.2 The Aerodrome Meteorological Observing Service Provider is responsible for ensuring the competence of each aerodrome meteorological observer employed at the aerodrome. This includes following initial training, during routine observing duties, following changes to observing equipment or METAR coding rules, and following the relocation of an observer from another aerodrome.
- 3.3 The Aerodrome Meteorological Observing Service Provider should ensure that observing staff are sufficiently familiar with all meteorological phenomena that can reasonably be expected to occur at the aerodrome as to permit their competent observation and reporting.
- 3.4 It is recommended that a formal agreement, such as a Service Level Agreement, be reached between the Aerodrome Meteorological Observing Service Provider and the ATS Provider and other agencies to which accurate and timely meteorological information is essential for safe operations.

The Aerodrome Meteorological Observer's certificate

- 3.5 In order to gain an Aerodrome Meteorological Observer (AMO) certificate, each trainee must successfully complete a recognised course of training on the preparation of aerodrome weather reports and must demonstrate basic competence in compiling such reports.
- 3.6 Information on recognised training courses for aerodrome observers is published and updated each year in the UK AIP, GEN 3.5. A provider wishing to utilise an alternative training organisation is advised to consult the CAA UK Meteorology Authority to ascertain the suitability of the training scheme.
- 3.7 The certification process comprises two parts; theory and practical. The theory part will provide the necessary background information on all elements of aerodrome meteorological observing; this is examined to ensure that the concepts have been fully understood. The practical part puts the trainee in the company of an experienced aerodrome meteorological observer in order to enable observing techniques to be practised and allows the trainee's basic competence to be assessed.
- 3.8 The theoretical training syllabus is given in Appendix E (Theoretical Observer Training Requirements for an AMO certificate); requirements for practical training requirements for observers are given in Appendix F (Practical Observer Training Requirements for an AMO certificate).
- 3.9 Following certification, the trainee observer shall continue to carry out all operational observing duties under supervision until such time that the observer can meet the competency requirements listed in Appendix I, Competency of Observers.

The Restricted Meteorological Observer's certificate

- 3.10 Semi-automated observing systems are utilised on many aerodromes for the provision of weather reports. Such systems process data from external sensors located at the aerodrome and compile the basic METAR report incorporating the measurements made by the sensors.

Elements such as surface wind, temperature and pressure are acceptable as measured by the sensors, without verification by an observer.

- 3.11 Whilst automated sensors can measure visibility, weather type, and cloud height and amount, they are limited by the spatial coverage of the sensor and the capability to resolve present weather types.
- 3.12 To comply with internationally agreed practices, the CAA UK Meteorological Authority requires the reporting of prevailing visibility, lowest visibility (if certain criteria are met), present weather phenomena such as thunderstorms, snow, freezing precipitation (including hail and freezing rain), towering cumulus and cumulonimbus cloud. However, the current automatic observing systems in use in the UK are either incapable of reporting these elements or do not have an appropriate high degree of accuracy and consistency. It is for this reason that measurements of horizontal visibility, present weather and cloud must be validated by an accredited observer before being issued as a METAR.
- 3.13 Where a semi-automated observing system is used on an aerodrome, aerodrome meteorological observers need only be competent to provide the visual elements. Reduced training may be provided, concentrating on observing visibility, weather types and cloud details.
- 3.14 Under these circumstances, following successful completion of the appropriate training course, a Restricted Met Observer's (RMO) certificate may be awarded. The programme for this training is given in Appendix G (Training Requirements for a Restricted Meteorological Observer's Certificate).
- 3.15 Contingency procedures and the provision of contingency observing equipment shall take account of the limits of the observers' accreditation. Where a semi-automated observing system is used on an aerodrome, appropriate contingency observing equipment and training shall be provided to enable a suitable level of accuracy and

regularity of observations to be maintained. Contingency observing arrangements shall be tested on a regular basis.

- 3.16 Restricted Met Observers should note that the RMO certificate may only be transferred to another aerodrome where a semi-automated observing system is in operation. In these cases, the Aerodrome Meteorological Observing Service Provider should ensure that the observer is provided with sufficient training to ensure that the observer can competently use the primary and backup observing system at the new aerodrome.

Continued accreditation and refresher training

- 3.17 The Aerodrome Meteorological Observing Service Provider shall ensure that all accredited aerodrome met observers maintain their observing competence.
- 3.18 Competency requirements are listed in Appendix I, Competency of Observers. The process of continuing accreditation shall be documented.
- 3.19 Certificated observers should carry out a minimum of fifteen observations over a consecutive period of ninety days to maintain observing and METAR coding skills; ideally, one of these observations should be during conditions when the visibility is less than 5 km, one should be during a precipitation event and one should be during 'CAVOK' conditions. Where observers do not meet the minimum requirements, the Manager, or other nominated person, of the Aerodrome Met Observing Service Provider should ensure that the observer can demonstrate observing and METAR coding competence before resuming operational observing duties.
- 3.20 Following changes to observing practices or aeronautical codes, the Aerodrome Meteorological Observing Service Provider shall ensure that all staff are aware of the changes, additional training arranged as necessary and that the changes are implemented accordingly.

- 3.21 Met Observers nominated to carry out the met observing competency checking role at an aerodrome shall ensure that they have refreshed their theoretical and practical met observing skills every 5 years by attending an approved course, thereby ensuring they are up to date with the latest coding requirements and observing techniques.
- 3.22 Other observing staff for instance those who have not observed for more than a year and wish to acquaint themselves with changes to observing practices and METAR codes should consider attending a met observing refresher course. Additionally staff who are unable to have their met observing competency checked locally may do so by attending such a course.

Aerodrome meteorological observing service provider contingency

- 3.23 The Aerodrome Meteorological Observing Service Provider shall identify contingency and other mitigation measures as agreed between the Licensee and the Provider in case of such events as observer incapacitation or equipment failure.

Non-accredited meteorological reports

- 3.24 A weather report that has not been produced by an accredited observer may, by agreement with the CAA UK Meteorological Authority, be distributed locally and to the meteorological forecast office. Such a report will need to be clearly identified as an unofficial report and prefixed as such when being passed to aircraft or other agency.

Chapter 4

METAR structure and UK coding rules

Introduction

- 4.1 In the United Kingdom the standard codes used in composing a METAR report are based on [WMO Document No. 306](#), Manual on Codes. The full METAR message may contain up to 18 groups. The Meteorological Authority for each State determines the applicability of codes and practice to that State. The specific coding rules and practice detailed in this chapter are those applicable in the United Kingdom.
- 4.2 Entries for surface wind (including variations of speed and direction), surface visibility (including directional variation), present weather, cloud details, air temperature, dew point, QNH, QFE and supplementary information are normally completed. The quality of such reports shall conform to ICAO Standards and Recommended Practices (SARPs) as specified in ICAO Annex 3.
- 4.3 Appendix B, Frequently Asked Questions on METAR coding provides additional guidance on the compilation of the METAR.

Aviation weather report for METARs – symbolic code

Code name	Location	Date/time of report	Automated	Wind velocity/gust	Extremes in direction
METAR (or METAR COR)	CCCC	YYGGggZ	(AUTO)	dddffG _f m _f m _f KT	(d _n d _n d _n Vd _x d _x d _x)
Prevailing visibility	MNM visibility/direction	Runway Visual Range, RVR	RVR Tendency	Present weather	
VVVV	(V _N V _N V _N V _N D _V)	(RD _R D _R /V _R V _R V _R V _R)	(RD _R D _R /V _R V _R V _R V _R U or D or N)	(w'w') (or CAVOK)	
Cloud	Air temperature and dew point	QNH	Recent weather	Wind shear	
N _s N _s N _s hshshs(CC) (or NSC) (or NCD) (or VVh _s h _s h _s)	T'T' / T _d 'T _d '	QP _H P _H P _H P _H	(REw'w')	(WS RD _R D _R) (or WS ALL RWY)	
Sea surface temperature and sea state	Runway state ⁴	Trend	Remarks		
(WT _s T _s /SS) or (W _t t _s /HH _s H _s H _s)	(RD _R D _R /E _R C _R e _R E _R B _R B _R)	(BECMG ...) or (TEMPO ...) or (NOSIG)			

⁴ At the time of printing - see Chapter 4, Paragraph 4.133.

- 4.4 The table above shows the full METAR coding as given in WMO Document No. 306, Manual on Codes, Volume 1, Part A; FM15-X Ext. The UK does not use all of the codes; variations are listed below. Parentheses indicate groups to be included, as appropriate.

UK METAR coding variations

- 1) 'AUTO' indicates that the report has been prepared by an automated observing system, without any human input or supervision. Automatic observations shall indicate the limitations of the observing equipment through the use of additional codes, where applicable, as given in Paragraphs 4.157 to 4.170
- 2) Wind shear groups (WS.....) are not reported in the United Kingdom.
- 3) Sea surface temperature and sea state are only reported from certain UK offshore installations.
- 4) Not all UK METARs include a TREND forecast. A TREND forecast is a short period forecast, predicting significant weather changes that are likely to occur at the aerodrome in the two hours following the time of the meteorological observation. The TREND forecast may be appended to the METAR either by the forecaster or by the observer at aerodromes where procedures exist for obtaining the TREND message from the meteorological forecasting office.
- 5) 'RMK' indicates that an optional remarks section follows. The remarks section is not used in the United Kingdom by civil aerodromes.
- 6) A correction to a METAR shall be indicated by the use of METAR COR before the ICAO location indicator in the body of the METAR message. The time of the observation shall not be changed (unless the time of the observation requires correction).

Surface wind

Surface wind coding requirements

4.5 General format: dddffG_{f_m}KT d_nd_nd_nVd_xd_xd_x

Where

- ddd is the mean surface wind direction over the previous 10 minutes (but see paragraphs 4.9 and 4.12)
- ff is the mean surface wind speed over the previous 10 minutes (but see paragraph 4.9)
- f_m f_m is the maximum surface wind gust speed over the previous 10 minutes (but see paragraph 4.10)
- d_n d_n d_n and d_x d_x d_x describe the variation in surface wind speed (in clockwise order) over the previous 10 minutes (but see paragraphs 4.11 to 4.14)

4.6 Surface wind information for the METAR report should be taken from an anemometer located on the aerodrome. The anemometer should be sited in a suitable location to provide a representative measurement of conditions over the whole of the runway where there is only one runway or the whole runway complex where there are two or more. The requirements of ATS providers for surface wind information described in Chapter 5, Weather Reports to Air Traffic Services should be noted.

4.7 Where buildings or other obstructions disturb the airflow to an anemometer in certain wind directions, exceptionally a second anemometer may be used to provide surface wind information for the METAR report. Procedures for the implementation of a change in the anemometer used for the METAR should be documented.

4.8 The direction from which the surface wind is blowing shall be given in degrees from true North and the speed shall be given in knots.

4.9 The surface wind direction and speed reported is the average taken over a ten minute period immediately preceding the time of the observation. The only exception is when a marked discontinuity occurs.

This is defined as a change in the mean direction of 30 degrees or more with a mean speed of 10 knots or more before or after the change, or an increase or decrease in the wind speed of 10 knots or more, sustained for at least 2 minutes. In this case, the mean over this latter period shall be reported.

- 4.10 The maximum wind (gust) within the last 10 minutes (or since the marked discontinuity) shall be reported only if it exceeds the mean speed by 10 knots or more.
- 4.11 Variations in wind direction shall be reported only when the total variation in direction over the previous ten-minute period (or since the marked discontinuity) is 60 degrees or more or but less than 180 degrees and the average wind speed is 3 knots or more. Variations are reported in clockwise order (e.g. 290V090 or 170V250).
- 4.12 The mean wind direction shall not be included for variable winds when the total variation in direction over the previous ten-minute period (or since the marked discontinuity) is 60 degrees or more or but less than 180 degrees and the wind speed is less than 3 knots; the wind in this case shall be reported as variable.
- 4.13 The mean wind direction shall not be included for variable winds when the total variation in direction over the previous ten-minute period (or since the marked discontinuity) is 180 degrees or more or where it is not possible to report a mean direction e.g. when a thunderstorm passes over the aerodrome. The wind should be reported as variable and no reference should be made to the two extreme directions between which the wind has varied.
- 4.14 When the wind speed is less than 1 knot, this should be reported as calm.
- 4.15 It is recommended that averages of wind speed and variations in the wind direction and speed should be generated by automatic equipment.

Range and increments

- 4.16 The surface wind direction mean and variations in direction shall be rounded to the nearest 10 degrees in the METAR.
- 4.17 Wind directions of 005, 015 degrees etc. should be rounded down.
- 4.18 Surface wind direction is reported between 010 and 360 degrees.
- 4.19 The surface wind mean speed and maximum speed shall be rounded to the nearest knot in the METAR. Surface wind speed is reported between 01 and 99 knots. If the speed is 100 knots or more, the wind speed should be encoded as "P99" (see example 7 below).
- 4.20 Calm is encoded as '00000KT'.
- 4.21 Variable is encoded 'VRB'.

Examples of METAR surface wind coding

1. 02008KT
wind zero two zero degrees, 8 knots
2. 00000KT
wind calm
3. VRB02KT
wind variable, 2 knots (the variation in direction over the previous ten-minute period has been 60 degrees or more or but less than 180 degrees and the wind speed is less than 3 knots)
4. 33022G34KT
wind three three zero degrees, 22 knots, max 34 knots
5. 16016KT 120V190
wind one six zero degrees, sixteen knots, varying between 120 degrees and 190 degrees
6. 21015G28KT 180V270
wind two one zero degrees, 15 knots, max 28 knots varying between 180 degrees and 270 degrees

7. 27070GP99KT

wind two seven zero degrees, 70 knots, max 100 knots or more

CAVOK

Coding requirements

4.22 General format: CAVOK

4.23 The visibility, RVR, weather and cloud groups are replaced by CAVOK (Cloud And Visibility OK) when the following conditions exist simultaneously:

- Prevailing visibility is 10 km or more.
- No minimum visibility is reported.
- No cloud below 5000 ft or below the highest Minimum Sector Altitude, whichever is the greater.
- No towering cumulus or cumulonimbus clouds.
- No significant weather phenomena at or in the vicinity of the aerodrome.

4.24 Example - CAVOK should be used when the meteorological visibility is 20 km, there is no weather and there is broken cloud (5-7 oktas) at 5000 ft.

Visibility – meteorological minimum and maximum

Visibility coding requirements

4.25 General format: VVVV V_NV_NV_NV_ND_V

Where

- VVVV = prevailing meteorological visibility
- V_NV_NV_NV_N = minimum meteorological visibility
- D_V = one or two letters indicating one of the eight points of the compass that best describes the direction of the meteorological visibility, relative to the aerodrome meteorological observer's station.

- 4.26 Prevailing visibility is defined as “the greatest visibility value that is reached within at least half the horizon circle or within at least half of the surface of the aerodrome. These areas could comprise contiguous or non-contiguous sectors.”
- 4.27 In the METAR, the visibility reported is the prevailing visibility and, under certain circumstances, the minimum visibility. In order to determine the prevailing visibility and any requirement to report the minimum visibility, the variation of visibility in all directions around the aerodrome should be considered. The requirements of ATS providers for visibility information described in Chapter 5, Local Weather Reports to Air Traffic Services should be noted.
- 4.28 The visibility reported in the METAR should be assessed at a height of about 1.5 m above the ground at the observing site. Observers should be aware of possible errors generated by reporting ‘slant’ visibility when meteorological visibility is assessed at heights greater than 1.5 m above the ground.
- 4.29 If the visibility in one direction which is not the prevailing visibility, is less than 1500 m or less than 50% of the prevailing visibility, the lowest visibility observed should be reported after the prevailing visibility and its general direction in relation to the aerodrome indicated by reference to one of the eight points of the compass. If the lowest visibility is observed in more than one direction, then the most operationally significant direction should be reported. When the visibility is fluctuating rapidly and the prevailing visibility cannot be determined, only the lowest visibility should be reported, with no indication of direction.
- 4.30 There is no requirement to report the lowest visibility if it is 10 km or more.
- 4.31 When conditions exist such that ‘CAVOK’ (defined in paragraph 4) applies, visibility shall be omitted from reports, and ‘CAVOK’ shall be reported instead. The applicability of CAVOK shall be based on the

minimum visibility, if reported in the METAR, otherwise on the prevailing visibility.

Range and increments

- 4.32 VVVV shall always appear in the METAR as four figures, expressed in metres when the visibility is less than 10 km (coded as '9999' when the visibility is 10 km or more).
- 4.33 Visibility shall be recorded in metres rounded down to:
- the nearest 50 m when the visibility is less than 800 m;
 - the nearest 100 m when the visibility is 800 m or more but less than 5000 m;
 - the nearest 1000 m when the visibility is 5000 m or more but less than 10 km.
- 4.34 Any observed value which does not fit the reporting scale in use shall be rounded down to the nearest lower step in the scale.
- 4.35 A visibility of less than 50 m shall be encoded as '0000';
- 4.36 A visibility of 50 m shall be encoded '0050';
- 4.37 A visibility of 10 km or more shall be encoded '9999' (unless CAVOK applies).

Examples of METAR visibility coding

1. 5000
Prevailing visibility 5000 metres
2. 1200
Prevailing visibility 1200 metres
3. 9999
Prevailing visibility 10 kilometres or more
4. 0450
5. Prevailing visibility 450 metres

6. 2000 1200SE

Prevailing visibility 2000 metres with minimum visibility 1200 metres to the southeast

7. 6000 2800S

Prevailing visibility 6 kilometres with minimum visibility 2800 metres to the south

- i. Further guidance on assessing prevailing visibility can be found in Annex A to Appendix B.

Runway visual range

Runway visual range coding requirements

4.38 General format: **R**_D**R**_D/**V**_R**V**_R**V**_R**V**_R

Where

- **R** is the group identifier.
- **D**_{**R**}**D**_{**R**} is the runway designator of the threshold nearest to which the RVR is measured, followed (if necessary) by L, C or R to distinguish left, centre and right parallel runways respectively.
- **V**_{**R**}**V**_{**R**}**V**_{**R**}**V**_{**R**} is the RVR value reported in metres.

4.39 Runway Visual Range (RVR) is a measure of the horizontal visibility along the runway. RVR assessments are made either by human observation (HORVR) or an Instrument RVR (IRVR).

4.40 HORVR is only reported for the touchdown zone. IRVR systems may have sensors located at the touchdown zone, mid-point and stop end of each runway. However, for METAR purposes, only the touchdown zone measurement is given. If the touchdown zone value is not available then the RVR group for that runway shall be omitted.

4.41 Where there is more than one runway available for landing, the touchdown zone RVR should be included for all such runways (up to a maximum of four).

4.42 When IRVR systems are used an RVR should not be computed for a light intensity of 3 per cent or less of the maximum light intensity available on a runway. For METAR reports the RVR should be based on the maximum light intensity available on the runway.

4.43 The RVR group shall be reported in the METAR only when either the minimum visibility or the runway visual range is observed to be less than 1500 m.

NOTE: Runway visual range reports may be provided locally in other circumstances to support operational requirements.

4.44 $V_R V_R V_R V_R$ shall be inserted in the METAR after a solidus (/) and always as four figures.

4.45 50 m should be regarded as the minimum value that is possible to report. When the actual RVR is less than this, the minimum value shall be preceded by 'M'.

4.46 2000 m should be regarded as the maximum value that it is possible to report. If the actual value is greater than can be reported by the runway visual range equipment or human observed method, the maximum value shall be preceded by 'P'.

NOTE: The maximum value of runway visual range that can be reported for a particular runway may be significantly less than 2000 m due to equipment limitations or topography.

4.47 IRVR systems shall be sampled at a minimum of once per minute. An averaging period of 1 minute should be used for weather reports to ATS. An averaging period of 10 minutes for METAR reports should be used, however where a marked discontinuity occurs only those values after the discontinuity should be used for obtaining mean values.

NOTE: A marked discontinuity occurs when there is an abrupt and sustained change in runway visual range, lasting at least 2 minutes and which reaches or passes through the criteria for the issuance of special reports to ATS as detailed in Chapter 5 Para 5.44 and 5.45 Runway Visual Range.

RVR tendency (for IRVR systems only)

- 4.48 When the variation of the RVR values shows an upward or downward tendency, this should be indicated in the METAR 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'.
- 4.49 A distinct tendency is such that the mean visibility during the first 5 minutes varies by 100 m or more from the mean visibility during the second 5 minutes of the period.
- 4.50 When indications of tendency are not available, no abbreviations should be included.

Range and increments

- 4.51 $V_R V_R V_R V_R$ shall always appear in the METAR as four figures expressed in metres.
- 4.52 RVR is reported in metres, rounded down to:
- the nearest 25 m for RVR below 400 m;
 - the nearest 50 m for RVR between 400 m and 800 m;
 - the nearest 100 m for RVR above 800 m.
- 4.53 Any observed value which does not fit the reporting scale in use shall be rounded down to the nearest lower step in the scale.

Examples of METAR RVR coding

1. R04/0075
RVR for runway 04 is 75 m
2. R27L/0650
RVR for runway 27 left is 650 m
3. R16R/1100
RVR for runway 16 right is 1100 m

4. R33/M0050
RVR for runway 33 is less than 50 m (the minimum value that is possible to report)
5. R24L/P1500 R24R/1100
RVR for runway 24 left is greater than 1500 m (the maximum value that is possible to report), whilst the RVR for runway 24 right is 1100 m
6. R12/1100U
RVR for runway 12 is 1100 m and shows a distinct upward tendency in visibility in the 10 minutes preceding the observation.

Present weather

Present weather coding requirements

- 4.54 General format: w'w'
- Where
- w'w' is the present weather
- 4.55 Entries of present weather shall only relate to weather occurring at the time of observation on or over the aerodrome, or, in the case of reporting phenomena in the vicinity of the aerodrome, within approximately 8 km of the Aerodrome Reference Point. Visual reference points, information from radar, pilot reports and automatic sensors may be used to assist in this determination.
- 4.56 If there is no weather of significance to aeronautical operations at the time of the observation, either on or in the vicinity of the aerodrome, the group is omitted. The abbreviation 'NSW' (no significant weather) is not used in the METAR.
- 4.57 Present weather groups consist of one or more pairs of letter abbreviations, selected from Table 1. A group shall be constructed by considering the need to specify intensity or proximity, a descriptor, and finally the phenomena, in that order.

- 4.58 A group may contain up to nine characters, and up to three groups may be inserted to report simultaneously occurring independent phenomena. Where two different types of weather are observed, they should be reported in two separate groups. However, different types of precipitation occurring at the time of the observation should 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.
- 4.59 No definitions have been agreed internationally for intensities 'light', 'moderate', 'heavy' or 'well developed'. However, guidance on the assessment of intensity, incorporated into an explanation of the descriptors and the weather phenomena significant to aviation, is provided in paragraphs 4.74 to 4.101 below.
- 4.60 The intensity of weather phenomena shall only be reported if it relates to precipitation (including that qualified by freezing, shower or thunderstorm) and blowing snow. The intensity is indicated by the appropriate symbol given in Table 1.
- 4.61 The symbol for heavy ('+') may also be used to qualify a 'well developed' funnel cloud, water spout or dust/sand whirls.
- 4.62 Only certain phenomena are reported if they occur within approximately 8 km of the Aerodrome Reference Point. These are blowing dust, sand and snow, funnel cloud, waterspout, dust/sand whirls, fog, shower and thunderstorm. In all cases the intensity of the phenomenon is not reported. Also, in the case of shower in the vicinity and thunderstorm in the vicinity, the precipitation type is not specified.
- 4.63 The following restrictions apply to the use of the descriptors:
- a. No more than one descriptor shall be included in a w'w' group.
 - b. The following descriptors shall only be used in combination with fog: shallow (less than 2 m above ground level), patches (fog patches randomly covering the aerodrome) and partial (a substantial part of the aerodrome covered by fog while the remainder is clear).

- c. The following descriptors shall only be used in combination with dust, sand and snow: low drifting if raised by the wind to a height less than 2 m above ground level and blowing if raised by the wind to a height of 2 m or more above ground level.
- d. The freezing descriptor shall be used only in combination with fog, drizzle and rain.
- e. The thunderstorm descriptor may be inserted alone if thunder is heard with no precipitation.
- f. The descriptors for thunderstorm and shower shall be used only in combination with rain, snow, small hail/snow pellets and hail.

- 4.64 The present weather codes for fog patches, fog covering a partial part of the aerodrome and fog in the vicinity of the aerodrome may be reported whatever the meteorological visibility reported.
- 4.65 The present weather code for fog shall be used only when the prevailing visibility is less than 1000 m in all directions from the observer's position. If this is not the case then the observer should consider the use of one of the descriptors given in paragraph 4.63.
- 4.66 The present weather code for freezing fog shall be used only when the prevailing visibility is less than 1000 m in all directions from the observer's position and the air temperature is less than 0°C.
- 4.67 The present weather code for shallow fog and mist shall be used only when the prevailing visibility reported is 1000 m or more. Observers should ensure that the reduction in visibility is due to water droplets (relative humidity should be at least 95%) and not due to smoke or haze.
- 4.68 The present weather codes for mist, dust, smoke and haze shall be used only when the prevailing visibility is 5000 m or less.
- 4.69 There are two present weather codes for hail. Hail is reported if transparent, translucent or opaque balls or pieces of ice (hailstones) are observed. Hailstones have a diameter of 5 mms or more and fall from deep cumuliform cloud. When they fall on hard ground, they

bounce with an audible sound. Small hail and/or snow pellets on the other hand have a diameter of less than 5 mms and take the form of translucent ice particles, or snow pellets encased in ice. The largest stones shall determine which element is reported and it shall be used only in combination with shower or thunderstorm.

- 4.70 If a mixture of precipitation types is falling at the time of the observation, they shall be encoded and combined into a single group in order of dominance, prefixed by intensity (which refers to the intensity of the total precipitation) and/or shower or thunderstorm as appropriate, e.g. ‘-DZRA’, ‘RADZ’, ‘-SHRASN’, ‘+TSSNRAGS’.
- 4.71 When more than one independent phenomenon is occurring simultaneously, separate groups shall be inserted (up to a maximum of three groups), in the order given by the columns, that is: precipitation first, then ‘obscuration’, and finally ‘other’ (e.g. ‘+SHGS BLSN SQ’). However, if a thunderstorm is reported, then this shall take precedence over any precipitation in the coding of present weather groups in the METAR.
- 4.72 When snow falling from cloud and blowing snow are observed simultaneously, both shall be included in the present weather report; e.g. ‘SN BLSN’. However, if due to heavy blowing snow it cannot be ascertained that snow is falling from cloud, only ‘+BLSN’ shall be reported.
- 4.73 Thunderstorm, thunderstorm in the vicinity and thunderstorm with precipitation, shall be reported as ‘present weather’ if thunder is heard within ten minutes preceding the observation. If lightning is seen but thunder not heard, then it is likely that the thunderstorm is not within 8 km of the Aerodrome Reference Point and should not be reported in the METAR. Observers based in buildings that contain sound-reduction materials should try to establish whether thunder is heard or if the thunderstorm is within 8 km of the Aerodrome Reference Point by any appropriate means.

Table 1: Present weather abbreviations for use in the METAR

Qualifier				Weather phenomena					
Intensity or proximity		Descriptor		Precipitation		Obscuration		Other	
1		2		3		4		5	
-	Light	MI	shallow	DZ	Drizzle	BR	Mist	PO	dust/sand whirls
		BC	patches	RA	Rain	FG	Fog	SQ	squalls
(no symbol)	Moderate	PR	partial	SN	Snow	FU	Smoke	FC	funnel cloud or water spout
		DR	low drifting	SG	snow grains	VA	volcanic ash	DS	dust storm
+	Heavy or well developed	BL	blowing	PL	ice pellets	DU	dust (widespread)	SS	sandstorm
		SH	showers	GR	Hail	SA	Sand		
VC	in the vicinity	TS	thunderstorm*	GS	small hail and/or snow pellet	HZ	Haze		
		FZ	freezing						

* Although TS is categorised as a descriptor it can also be used as a weather phenomenon on its own or combined with the qualifier VC. TS takes precedence in the METAR coding of present weather over any precipitation.

A guide to the descriptors and weather phenomena

Blowing (BL)

- 4.74 A descriptor used to indicate that dust, sand or snow has been raised by the wind to a height of 2 m or more.

Drizzle (DZ)

- 4.75 A fairly uniform precipitation of very fine drops of water with a diameter less than 0.5 mms, falling from thin stratiform cloud. The impact of drizzle droplets falling on a water surface is imperceptible, but continuous drizzle may produce run-off from roofs and runway surfaces. Visibility is inversely related to both the intensity of the precipitation and the number of droplets. Also generally, the heavier the drizzle, the lower the cloud base will be. Light drizzle corresponds to negligible run-off from roofs, whilst moderate drizzle, typically associated with visibility less than 3000 m, will produce some run-off. Heavy drizzle corresponds to a rate of accumulation greater than 1 mm per hour.

Dust (DU)

- 4.76 A widespread suspension of small particles of dust raised from the ground, reported when it reduces the prevailing visibility to 5000 m or less. Rarely reported in the UK.

Dust devil (PO)

- 4.77 A near vertical, rapidly rotating column of air, forming a dust and/or sand whirl as a result of very strong local convection over hot, dry ground; lifting dust, sand, grass cuttings and other light materials picked up from the surface. Dust devils are usually only a few metres in diameter and extend no higher than 200-300 ft. They can be qualified by 'well developed' ('+PO'). Rarely reported in the UK.

Fog (FG)

- 4.78 A suspension in the air of very small water droplets (or at very low temperatures, minute ice crystals), the prevailing visibility within which