



Australian Government
Bureau of Meteorology

Qualifications & Competencies

Aerodrome Weather Observers

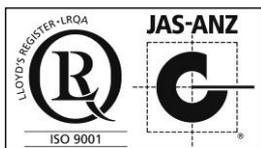


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Glossary & acronyms

Term	Description
Accredited Aerodrome Weather Observer	A person who holds a current Aerodrome Weather Observer Certificate.
ADF	Australian Defence Force.
Aerodrome¹	A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.
Aerodrome Weather Observer (AWO)	A person who, has been trained and certified as competent to make meteorological observations.
Aerodrome Meteorological Observations	This means the evaluation of one or more meteorological elements for use in an aerodrome meteorological report.
Aerodrome Meteorological Reports	This means an aerodrome meteorological observation issued as a Meteorological Report for use by aviation. Individuals other than Bureau staff require authorisation by CASA under CAR120 to issue aerodrome meteorological reports.
Aerodrome Weather Observer Certificate Class A	The certificate awarded to personnel who have been trained and certified as competent to make both Aerodrome Weather Reports and Take-off and Landing Reports.
Aerodrome Weather Observer Certificate Class B	The certificate awarded to personnel who have been trained and certified as competent to make Take-off and Landing Reports.
Aerodrome Weather Reports	Reports of observations of meteorological conditions at aerodromes which are made available to aeronautical users in the METAR/SPECI message format.
AIP	Aeronautical Information Publication.
Annex 3	Annex 3 to the Convention on International Civil Aviation – Meteorological Service for International Air Navigation.
AsA	Airservices.
ATIS	Automatic Terminal Information Service.
Aviation Meteorological Reporting Service Provider	A company or organisation authorised by the Director to provide aviation meteorological reporting services.
AWS	Automatic weather station.
Bureau	Australian Bureau of Meteorology.
CA/GRS	Certified Air/Ground Radio Service.
CAR120	Civil Aviation Regulations 1988, regulation 120 - Weather reports not to be used if not made with authority.
CASA	Civil Aviation Safety Authority.

¹ Annex 3 (ICAO, 2013), Chapter 1. Definitions

Check and training department	An organisation with a demonstrated internal training and checking mechanism in place to ensure the ongoing competency standards of those performing weather observations under their direction meet the requirements outlined by the relevant Bureau, WMO and ICAO standards.
Chicago Convention	The 1944 United Nations Convention on International Civil Aviation.
CMET	CASA Commercial Pilot Licence meteorology theory exam.
Contracting State	A country that is a signatory to the 1944 Convention on International Civil Aviation (the Chicago Convention) is a Contracting State.
Director	Director of Meteorology.
Dual Shift	A Dual Shift is an operational shift where the aeronautical meteorological observations and reports provided by an Accredited Aerodrome Weather Observer are overseen by an Accredited Aerodrome Weather Observer.
Extended Leave	Extended leave is any period in excess of 90 days.
ICAO	International Civil Aviation Organization.
METAR	Routine Aerodrome Weather Report.
Meteorological Authority	The authority providing or arranging for the provision of meteorological service for international air navigation on behalf of a Contracting State. In Australia, the Meteorological Authority is the Bureau of Meteorology.
Meteorologist	A person who holds a university-level degree, or equivalent; has acquired an appropriate level of knowledge of mathematics, physics, chemistry and computer science; and has completed the Basic Instruction Package for Meteorologists (BIP-M) as defined by WMO.
Meteorological Observer (Technician)	A person who has completed the Basic Instruction Package for Meteorological Technicians (BIP-MT) as defined by WMO.
Meteorological Observation²	The evaluation of one or more meteorological elements.
Meteorological Report³	A statement of observed meteorological conditions related to a specific time and location which can be for Aerodrome Weather Reports or Take-off and Landing Reports.
Registered Differences	Any differences between the national practices of a Contracting State to the Convention on International Civil Aviation (Chicago, 1944) and the International Standards contained in ICAO Annex 3 – Meteorological Service for International Air Navigation, notified and registered with ICAO.
SARPs	Standards and Recommended Practices.
SPECI	Special Aerodrome Weather Report.
Take-off and Landing Reports	Take-off and Landing reports are intended for arriving and departing aircraft and are disseminated to users via a number of methods such as

² Annex 3 (ICAO, 2013), Chapter 1. Definitions

³ Annex 3 (ICAO, 2013), Chapter 1. Definitions

	ATIS broadcast and UNICOM or plain language telephony.
UNICOM	Universal Communications.
WMO	World Meteorological Organization.

1 Introduction

- 1.1 The Convention on International Civil Aviation, signed in Chicago on 7 December 1944 (the Chicago Convention), came into force on 4 April 1947. Australia is a 'Contracting State' to the Chicago Convention. The legal instrument that gives effect to this in Australia is the *Air Navigation Act 1920* (Cth). The Convention established certain principles and arrangements so international civil aviation can develop in a safe and orderly manner, and that international air transport services be established on the basis of equality of opportunity and operated soundly and economically.⁴
- 1.2 International Civil Aviation Organization (ICAO) Annex 3 to the Chicago Convention sets out the relevant international standards and recommended practices (SARPs) pertaining to the provision of the meteorological service for international air navigation. Australia observes the SARPs as set out in Annex 3 apart from specific Registered Differences. For the purpose of the Chicago Convention, the Bureau of Meteorology (Bureau) is the designated Meteorological Authority for Australia.
- 1.3 Annex 3, (ICAO, 2013) states that:

*"Each Contracting State shall ensure that the designated meteorological authority complies with the requirements of the World Meteorological Organization in respect of qualifications and training of meteorological personnel providing service for international air navigation."*⁵
- 1.4 Accordingly, as Australia's designated meteorological authority, the Bureau is required to implement the requirements of the World Meteorological Organization (WMO) with respect to the qualifications and training of meteorological personnel providing service for international air navigation.
- 1.5 This policy document implements the decision of the Sixteenth World Meteorological Congress of the WMO in 2011 to revise the WMO Technical Regulations contained in WMO-No.49 Vol1, to include a mandatory implementation of a system of assessing and documenting the competence of aeronautical meteorological personnel (AMP) including Aeronautical Forecasters and Observers.
- 1.6 WMO and ICAO have stipulated that the requirement to have a mandatory system of assessing and documenting the competence of aeronautical meteorological personnel was to be implemented by 1 December 2013 as a standard.
- 1.7 This document sets out the qualifications and competency requirements for Aerodrome Weather Observers (AWO) employed by organisations to provide aerodrome meteorological observations and reports for aviation within Australia. These requirements apply to both international and domestic air navigation.

⁴ www.infrastructure.gov.au/aviation/international/icao

⁵ Annex 3 (ICAO, 2013) Clause – 2.1.5

1.8 In addition to meeting the qualifications and competency requirements set out in this document, persons who hold an Aerodrome Weather Observer (AWO) certificate A or B and who are not employed by the Bureau, cannot provide aerodrome weather observations and reports to aviation operators or pilots in command of aircraft unless authorised under Civil Aviation Regulations 1988 (CAR120), regulation 120 (CAR120) by the Civil Aviation Safety Authority (CASA).

1.9 Annex 3 (ICAO, 2013) refers to:

“...the desirability of [Contracting States] using in their own national regulations, as far as is practicable, the precise language of those ICAO Standards that are of a regulatory character...”⁶

1.10 Insofar as practicable, Australia abides by this invitation to ensure uniformity between the standards and recommended practices applicable to international and domestic air navigation services. Accordingly, where appropriate, this document seeks to use language that is consistent with the ICAO Standards.

⁶ Annex 3 (ICAO, 2013) – Foreword

2 Aerodrome Meteorological Observations and Reports

- 2.1 The Aerodrome Weather Observer certification process is primarily centred on the making of meteorological observations and reports for aviation purposes. The format and reporting mechanism of the meteorological observations and reports depends upon,
- a) the AWO certificate level of the person making the observation and report, and
 - b) how the observation and report are delivered to end users.
- 2.2 This policy relates to the provision of surface based weather observations under two specific categories:
- Aerodrome Weather Reports (METAR/SPECI); and
 - Take-off and Landing Reports for arriving and departing aircraft.
- 2.3 **Aerodrome Weather Reports** originate from Automatic Weather Stations (AWS).⁷ At some locations, Accredited Aerodrome Weather Observers add visual information prior to dissemination. These reports are made available to aeronautical users in the METAR/SPECI message format. It is primarily Bureau of Meteorology (Bureau) Observers and Meteorologists, as well as several specialist roles who make and transmit Aerodrome Weather Reports.
- 2.4 **Take-off and Landing Reports** are normally provided at aerodromes where a control tower is established and broadcast in the ATIS format.⁸ This service may also be provided by other approved aerodrome operators, such as CA/GRS and UNICOM operators.⁹
- 2.5 Individuals, who qualify to provide Aerodrome Weather Reports (METAR/SPECI), are also certified to perform Take-off and Landing Reports and will receive an *Aerodrome Weather Observer Certificate Class A*.
- 2.6 Individuals whose certification is to perform only Take-off and Landing Reports are not qualified to issue Aerodrome Weather Reports (METAR/SPECI) and will receive an *Aerodrome Weather Observer Certificate Class B*.

⁷ AIP, GEN 3.5, 4.1

⁸ AIP, GEN 3.5, 4.4.1

⁹ AIP, GEN 3.4 3.2-3.3 and GEN 3.5, 4.4

3 Certification and Training

3.1 Certification Requirements

- 3.1.1 Individuals who perform aerodrome meteorological observations and reports shall have been trained for and awarded an Aerodrome Weather Observer's Certificate.
- 3.1.2 In order to gain an Aerodrome Weather Observer's Certificate, either Class A or B, each applicant must successfully complete a recognised course of training on the preparation of aerodrome meteorological observations and reports and must demonstrate basic competence in compiling such observations.
- 3.1.3 In addition, Civil Aviation Regulations 1988, regulation 120 (CAR120), specifies that weather reports are not to be used if not made with authority.

Civil Aviation Regulations 1988, regulation 120¹⁰

120 Weather reports not to be used if not made with authority

(1) The operator or pilot in command of an aircraft must not use weather reports of actual or forecasted meteorological conditions in the planning, conduct and control of a flight if the meteorological observations, forecasts or reports were not made with the authority of:

- (a) the Director of Meteorology; or*
 - (b) a person approved for the purpose by CASA.*
- Penalty: 5 penalty units.*

(2) An offence against subregulation (1) is an offence of strict liability.

Note For strict liability, see section 6.1 of the Criminal Code. Authorisations under CAR120 for the provision of manual meteorological observations and reports for aviation are granted by CASA.

- 3.1.4 Where the Bureau does not provide observations, organisations or individuals that are authorised by CASA under CAR120 to provide aerodrome meteorological observations and reports are responsible for arranging the provision of these observations and reports at the site for which the authorisation applies.
- 3.1.5 The organisation may also be responsible for the provision and maintenance of instrumentation to measure meteorological parameters required for aviation weather observations. This instrumentation shall conform to specifications in type, reporting, maintenance and site locations and, if not supplied, installed, maintained and monitored by the Bureau, be authorised under CAR120.

¹⁰ Civil Aviation Safety Authority, Civil Aviation Regulations 1988, regulation 120 (CAR120) Volume 3, Part 10 - Air Traffic Services and other services, Division 2 - Meteorological services, Regulation 120

3.2 Competency Requirements

- 3.2.1 Aerodrome Weather Observer's Certificates will be awarded to persons who have successfully completed training and an approved competency assessment in the provision of either Aerodrome Weather Reports and/or Take-off and Landing Reports.
- 3.2.2 The current Bureau training and assessment process for certification comprises two parts; theory and practical.
- 3.2.3 The theory component comprises two modules:
- i. Module 1 – Basic Meteorology; and
 - ii. Module 2 – Principles of Aerodrome Meteorological Observations and Reports.
- 3.2.4 The successful completion of Module 1 is a pre-requisite for Module 2.
- 3.2.5 Recognition of prior learning for Module 1 includes a pass in any of the following:
- i. CASA Commercial Pilot Licence Meteorology Theory exam (CMET);
 - ii. ADF Basic Flying Training School (BFTS) Meteorology theory exam;
 - iii. ICAO 010 Meteorology exam from the Airservices Learning Academy;
 - iv. WMO BIP-M (Basic Instruction Package – Meteorologist) or BIP-MT (Basic Instruction Package – Meteorological Technician)¹¹.
- 3.2.6 The recommended study guide for Module 1 is the Manual of Aviation Meteorology. Contact the Bureau for details on approved courses.
- 3.2.7 Modules 1 and 2 provide the necessary background information on all elements of aerodrome weather observing and trainees are examined to ensure that the concepts have been fully understood.
- 3.2.8 The practical component comprises one module:
- i. Module 3 – Aerodrome Meteorological Observations and Reports Practical.
- 3.2.9 The practical component (Module 3) puts the trainee Aerodrome Weather Observer in the company of an experienced Accredited Aerodrome Weather Observer in order to enable observing techniques to be practised and allows the new observer's basic competence to be assessed. Module 3 requires the trainee to perform sixty (60) observations under the supervision of an experienced, competent, Accredited Aerodrome Weather Observer approved to do so by the Bureau.
- 3.2.10 The practical component of the course must be completed as soon as practicable after completion of the theory component, but at least within twelve (12) months.

¹¹ WMO, (WMO, 2012) Paragraphs 1.3.2 – 1.3.4

Should the practical component not be completed within 12 months of the theory component, individuals will be required to re-sit the assessment for Module 2 of the theory component.

- 3.2.11 Persons accredited to provide aerodrome meteorological observations and reports are issued a certificate on a perpetual basis. However, to exercise the privileges of the certificate an ongoing competency assessment is required as outlined in Section 4.
- 3.2.12 Examples of training and continuing competency documentation for Aerodrome Weather Observers is available at <https://bmtc.moodle.com.au/course/view.php?id=137>

3.3 Maintenance of Certification

- 3.3.1 All individual Accredited Aerodrome Weather Observers and all organisations employing Accredited Aerodrome Weather Observers must ensure that observing competence is maintained. Responsibility for maintaining currency of observing skills rests with both the authorised service provider and the Aerodrome Weather Observer. The process of continuing accreditation shall be documented and these documents made available for audit purposes. Section 4 details the requirements of the competency assessment.

3.4 Records

- 3.4.1 Each organisation or individual is required to record and maintain documentation of aerodrome meteorological observations and reports. This record will be required for audit purposes and is to be provided to the Bureau or auditors upon request.
- 3.4.2 Copies of the meteorological information that may have been used by an aircraft or air traffic service involved in an accident or incident are to be kept in a secure location for possible use by any subsequent investigation.
- 3.4.3 Records of Take-off and Landing Reports shall be kept for at least thirty (30) days. Records of all Aerodrome Weather Reports (METAR/SPECI) shall be kept for indefinitely.
- 3.4.4 An example of a document to record information relating to Aerodrome Meteorological Observations is shown in Appendix 3.

4 Requirements to exercise the privileges of the certificate

4.1 Competency Assessment

- 4.1.1 Competency assessments shall be required of all individuals performing aerodrome meteorological observations and reports. Appendix 1 lists the required competencies and Appendix 2 provides a competency checklist.
- 4.1.2 It is the responsibility of all persons holding an Aerodrome Weather Observer (AWO) certificate, Class A or B, and performing aerodrome meteorological observations and reports to successfully complete a competency assessment according to the requirements specified in 4.2.

4.2 Requirements for persons performing Aerodrome Meteorological Observations and Reports

- 4.2.1 Holders of an AWO certificate, Class A or B, who perform aerodrome meteorological observations on a daily basis as part of their normal operational duties, are required to undertake a competency assessment at least every 36 months.
- 4.2.2 Holders of an AWO certificate, Class A or B, who do not perform aerodrome meteorological observations during an operational shift within 6 months of their last observation, are required to successfully complete a competency assessment prior to resuming observing duties.
- 4.2.3 Holders of an AWO certificate, Class A or B who do not successfully complete a competency assessment as per the requirements of 4.2.1 or 4.2.2 shall not perform aerodrome meteorological observations and reports.
- 4.2.4 Holders of an AWO Certificate, Class A or B, shall not perform an aerodrome meteorological observation and report unless they are:
 - a) employed by the Bureau; or
 - b) employed by an organisation holding a current CAR120 authorisation; or
 - c) the holder of a current CAR120 authorisation.
- 4.2.5 Organisations that have a check and training department and employ persons performing aerodrome meteorological observations and reports shall ensure that the successful completion of a competency assessment in accordance with Section 4 forms part of their check and training process.
- 4.2.6 Persons who perform observations under an arrangement other than with an organisation which has a check and training department are individually responsible for meeting the competency assessment requirements.
- 4.2.7 Following any changes to observing practices or aeronautical codes,
 - a) the individual Aerodrome Weather Observer certificate holder or,

b) the Aviation Meteorological Reporting Service Provider shall ensure that all certificate holders are aware of the changes, organise additional training if required and ensure that the changes are implemented and documented accordingly.

4.2.8 For information on refresher training courses and details of the competency assessment, please contact the Bureau of Meteorology using the contact information in Section 6.

5 Exemptions

- 5.1 Exemptions only apply to Bureau of Meteorology personnel who are directly involved in the training of Aerodrome Weather Observers and creation of relevant training handbooks and material. These personnel shall hold an AWO certificate and are exempt from the requirements outlined in Section 4, as long as they continue in any of the duties for which they are certified.
- 5.2 Bureau of Meteorology personnel who are directly involved in the training of Aerodrome Weather Observers and creation of relevant training handbooks and material returning from extended leave (in excess of 90 days), would be considered as not continuing their duties and will need to meet the requirements of Section 4 prior to recommencing their training duties.

6 Contact details

Policy enquiries

Meteorological Authority Office
Strategy, Parliamentary, International & Communication Branch
Bureau of Meteorology
GPO Box 1289 MELBOURNE VIC 3001
Phone: 03 9669 4000
Email: MA-Authorisation@bom.gov.au

Training enquiries

Composite Operations Training
Bureau of Meteorology Training Centre
Bureau of Meteorology
GPO Box 1289 MELBOURNE VIC 3001
Phone: 03 9355 3224
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- World Meteorological Organization (WMO, 2011), *Commission for Aeronautical Meteorology (CAeM), Implementation Guidance of Aeronautical Meteorological Observer Competency Standards*; WMO, Geneva, Switzerland available on line from 10 April 2014, http://www.caem.wmo.int/moodle/file.php?file=%2F7%2FImplementation_Guidance_of_AMO_Competyency_Standards_V1_2_.pdf

Appendix 1: Competency criteria

Aeronautical Meteorological Observer¹²

Taking into account the following conditions:

- a) for the area and airspace of responsibility,
- b) in consideration of the impact of meteorological phenomena and parameters on aviation operations, and
- c) in compliance with aviation user requirements, international regulations, local procedures and priorities,

an Aeronautical Meteorological Observer shall be able to meet competency descriptions and performance criteria for the following measures:

1. Monitor continuously the weather situation

Competency description

Weather parameters are appraised to identify the significant and evolving weather phenomena that are affecting or will likely affect the area of responsibility throughout the watch period.

Performance criteria

Analyse and describe the existing local weather conditions

2. Observe and record aeronautical meteorological phenomena and parameters

Competency description

Observations of weather parameters and phenomena, and their significant changes, are made according to documented thresholds and regulations.

Performance criteria

1. Perform and record routine and non-routine observations of the following:
 - surface wind direction and speed, including spatial and temporal variations,
 - visibility for aeronautical purposes, including spatial and temporal variations,
 - RVR, including spatial and temporal variations,
 - significant weather phenomena (as defined in ICAO Annex 3),
 - cloud amount, height of base, and type, including spatial and temporal variations,
 - temperature and humidity,
 - atmospheric pressure; determining QFE and QNH,
 - supplementary information, wind shear and special weather phenomena.
2. Interpret automatic observed parameters to ensure that observations remain representative of local conditions when differences occur between automatic sensor technologies and manual observing techniques.

¹² World Meteorological Organization (WMO, 2011), Commission for Aeronautical Meteorology (CAeM) Implementation Guidance of Aeronautical Meteorological Observer Competency Standards.

3. Ensure that observations are prepared and issued in accordance with ICAO Annex 3, WMO-No.49, regional and national formats, codes and technical regulations on content, representativeness and timeliness.

3. Ensure the quality of the performance of systems and of meteorological information

Competency description

The quality of meteorological observations is maintained at the required level by the application of documented quality management processes.

Performance criteria

1. Apply the organization's quality management system and procedures.
2. Check and confirm the quality of meteorological observations before issuance, including relevance of content, time of validity and location of phenomena.
3. In accordance with prescribed procedures:
 - identify errors and omissions in meteorological observations,
 - correct and report errors and omissions,
 - make and disseminate corrections in a timely manner.

4. Communicate meteorological information to internal and external users.

Competency description

All meteorological data and information are concise, complete and communicated in a manner that will be clearly understood by the users.

Performance criteria

1. Ensure that all observations are disseminated through the authorized communication means and channels to designated user groups.
2. Present aeronautical meteorological data and information in a clear and concise manner using suitable terminology.
3. Alert forecasters to observed or imminent significant changes in the weather within the local area.

Note: Reference may be made to ICAO Annex 1 English language proficiency requirements when English is required to be used as a medium of communication.

Appendix 2: Example competency checklist

Element of competency	Competent	Not Yet Competent
	Tick as applicable	
Record automated observations of date, time, current wind direction, wind speed and gusts, temperature, dew point temperature, rainfall and QNH.		
Determine horizontal visibility including sector reductions if applicable.		
Identify aviation present weather phenomena as per ICAO Annex 3, Appendix 3.		
Determine cloud amounts to the prescribed ICAO standards.		
Identify cloud types (as applicable), including CB & TCU.		
Estimate or determine the height of cloud bases above aerodrome.		
Identify CAVOK conditions as applicable.		
Report if required – runway visual range, wind shear.		
Record and transmit according to Australian Registered Differences, a completed Aerodrome Weather Report or ATIS Report (or equivalent) within 5 minutes of the nominal time of observation.		
Identify record and transmit within five minutes an Aerodrome Weather Report at the onset of SPECI conditions (if applicable).		
Record and transmit to Australian standards, night-time Aerodrome Weather Observations (if applicable).		
Identify record and transmit as appropriate weather conditions hazardous to aircraft.		
Verify data quality by manual estimation, cross checking of instruments or other suitable means, report errors and make corrections.		
Maintain a meteorological watch over the aerodrome.		
Apply the organisations quality management system and procedures.		
Ensure that all observations are disseminated through the authorised secure communication means and channels to designated user groups.		

Appendix 4: AWO Requirements

