

Aviation Meteorological Service Organisations

XX XXXX 202X

General

Civil Aviation Authority (CAA) Advisory Circulars (ACs) contain information about standards, practices, and procedures that the Director has found to be an **acceptable means of compliance** with the associated rule.

Consideration will be given to other methods of compliance that may be presented to the Director. When new standards, practices, or procedures are found to be acceptable they will be added to the appropriate AC.

Purpose

This AC describes an acceptable means of compliance with the requirements of Civil Aviation Rule Part 174 relating to the provision of meteorological services for aviation in New Zealand.

Related Rules

This AC relates specifically to Part 174 *Certification – Aviation Meteorological Service Organisations*.

Change Notice

Revision 4 updates information on certification requirements to align with CAA's Certification and Licensing policy.

It also deletes advice relating to rules that have been revoked, i.e. the former rules 174.17 and 174.19, other out-dated information and updates document references and advice on Safety Management Systems (SMS) requirements.

We have also added a note about Drug and Alcohol Management Plans (DAMPs), which were introduced when the Civil Aviation Act 2023 (CA Act) came into force in April 2025.

Lastly, we have updated the format to align with current AC style and added a Version History.

Version History

History Log

Revision No.	Effective Date	Summary of Changes
AC174-1, Rev 0	1 Feb 1994	Initial issue
AC174-1, Rev 1	15 Aug 2013	Updated the following: <ul style="list-style-type: none">• Reference documents• Basic weather reporting explanations• References to local and international products and systems• Added table of relevant international documents.
AC174-1, Rev 2	15 Dec 2014	Updated the examples of meteorological reports in section 174.3(6)(i) Changed the structure as part of an update to standardise the formatting of all ACs.
AC174-1, Rev 3	10 Nov 2017	Incorporated Safety Management System (SMS) requirement Amended paragraph 174.6 by adding a note on the intention of any mean sea level air pressure as part of a basic weather report Made minor editorial changes.
AC174-1, Rev 4	XX XXXX 202X	Updates information on certification requirements to align with CAA's Certification and Licensing policy. Deletes advice relating to rules that have been revoked, i.e. the former rules 174.17 and 174.19. Deletes other out-dated information. Adds a note about DAMPs, which were introduced when the CA Act 2023 came into force in April 2025. Updates document references. Updates advice on SMS requirements. Updates the format to align with current AC style. Adds a Version History.

Published by
Civil Aviation Authority
PO Box 3555
Wellington 6140

Authorised by
General Manager, Strategy, Policy and International Engagement

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Subpart A — General

Rule 174.1 Applicability

1. Part 174 sets rules for organisations that are wholly or partly devoted to the supply of meteorological information for aviation. Any organisation that wishes to supply meteorological information to aviation operators in New Zealand territory can only do so with a Part 174 certificate. The more specific requirements to hold a certificate are contained within rule 174.5 and those activities that do not require a certificate are contained in rule 174.6. Further information is contained in the section on rule 174.5.

Rule 174.3 Definitions

2. This contains only those definitions that have a specified meaning relevant to Part 174. Other generally used definitions will be found in Part 1, Definitions and Abbreviations.

Basic weather report

3. The word 'verbal' is used in its primary sense — of, or concerned with, words. This is distinct from the situation with meteorological reports that comprise a mix of official meteorological code and, occasionally, words.
4. The secondary meaning of the word 'verbal' is of less significance — oral, not written. It is expected that most basic weather reports will be passed immediately to second parties directly or through radio or other electronic communication media.
5. It is also expected that basic weather reports will generally be provided on a one-to-one basis (ground to air, air to air, air to ground), generally 'in-house', and occasionally promulgated by paper or electronic means.
6. The elements allowable in 'basic weather reports' have been purposely restricted. This is because basic weather reports must not be considered an alternative to 'meteorological reports' that are required for the normal planning and conduct of flights.

Note: Annex 3 Meteorological Services for International Air Navigation contains the ICAO standards and recommended practices (SARPs), while Procedures for Air Navigation Services - Meteorology (PANS-MET, Doc 10157), contains the information about means of compliance. Any reference to Annex 3 should be read as including PANS-MET.

7. Examples of basic weather reports:
 - (i) an aircraft operator's ground staff passing a landing report to their incoming aircraft at an aerodrome not attended by Air Traffic Services (ATS)
 - (ii) an individual, normally working outside aviation, conveying current information about local weather to an aircraft operator or aircrew
 - (iii) a pilot advising another pilot about weather conditions observed or experienced.
8. Information on the requirements for the preparation of basic weather reports is contained in the section on rule paragraph 174.6.

Erroneous meteorological information

9. Forecasting is not an exact science therefore some meteorological information will be inaccurate to some degree. A forecast that has simply proven inaccurate is not seen as erroneous. However, a lengthy series of particular forecasts or reports that are, and may continue to be, completely inaccurate, or contain important omissions, is erroneous information. Human error may also result in erroneous meteorological information, where incorrect information is provided.

Facility

10. The correct operation of a facility is the responsibility of the certificated meteorological supplier (i.e. a Part 174 certificate holder) that uses the facility to provide meteorological services. Should a facility deliver meteorological services to an aviation customer of the certificated meteorological supplier, the responsibility of the supplier ends at the point and time of delivery of the meteorological information.
11. If a meteorological service provider's aviation customer has a system for the distribution of meteorological information, for example, a website with a link to MetService or an integrated MetService dashboard for internal use, they are not required to be-certified under Part 174. However, if they use the data to improve their product or disseminate the information to external organisations, they must be certified. See paragraph 19 for more explanation on what constitutes a dissemination service.
12. Examples of a facility include:
- (i) an automatic weather observing station
 - (ii) a weather surveillance radar
 - (iii) a meteorological information communication system
 - (iv) a computer system running meteorological analysis and prediction software.

Meteorological information

13. This definition is that provided in Part 1.

Meteorological office

14. Based on the ICAO Annex 3 definition, this term is intended to cover all physical premises from which meteorological services are undertaken.

Meteorological report

15. This definition is that used by ICAO in Annex 3.

Meteorological reports are not regarded as 'basic weather reports'.

Examples of meteorological reports:

- METAR, METAR AUTO, SPECI, , landing and take-off reports provided by an ATS unit either by voice or via ATIS

Meteorological service

16. ICAO Annex 3 has been used as the basis for defining 'meteorological service'. As shown in the rule, there are six different types of meteorological service. The section on rule-174.9 in this AC explains each of these meteorological services.

Rule 174.5 Meteorological services certificate required

Rule 174.5(a)

17. It is necessary to hold a meteorological service certificate to provide meteorological services in New Zealand for aviation purposes. The Director may grant a certificate to cover a range of services, varying from a single meteorological service to an integrated meteorological service supported by a network of meteorological offices and facilities.
18. All meteorological service providers will need certification under Part 174 if they wish to provide aviation customers with New Zealand meteorological information.

Note: Under some New Zealand civil aviation rules, aircraft operators must ensure that they operate with meteorology from a certificated or approved supplier.

19. If an organisation has a website with a direct link to a Part 174-certificated meteorological service's data, such as an embedded website, they can provide this without requiring their own certification. However, if an organisation is taking the data from a meteorological service provider and re-presenting it, this would be classed as providing a 'dissemination service', which would require certification.
20. Organisations that are unsure whether the service they provide or intend to provide to customers is a meteorological service under one of the categories listed in rule 174.3 are encouraged to contact CAA.

Rule 174.5(b)

21. Some meteorological service organisations or individuals will want to subcontract elements of their business to other individuals or organisations. They could, for example, contract an individual or organisation to prepare meteorological reports, or forecasts, or to manage or provide particular facilities. In such circumstances, a contractor to a certificate holder is not required to be certificated under Part 174 (providing the certificate holder is certificated appropriately). It is, however, the responsibility of the Part 174 certificate holder to ensure that the contractor conforms to the requirements set out in the certificate holder's exposition.

Rule 174.6 Basic weather reporting

22. Certification is not required where verbal comment on actual weather conditions at a particular aerodrome or place is provided in the form of a basic weather report. Such basic weather reporting activity is intended to include only:
 - (1) verbal provision of basic weather reports to incoming aircraft at aerodromes
 - (2) verbal comment on present weather conditions passed between aircraft and other aeronautically associated parties
23. The following reports are not considered to be basic weather reports:

METAR, METAR AUTO, SPECI, or landing and take-off reports provided by an ATS unit either by voice or via ATIS.
24. **Note:** Refer to the definition information in the section on rule 174.3 before moving on to the remainder of this section.
25. People providing a basic weather report using equipment to measure meteorological parameters (wind speed and direction, air pressure, and air temperature)

are required to ensure such equipment is properly checked, calibrated and maintained. Frequent checking of equipment against other equipment known to be accurate is considered adequate. Maintenance and checking of equipment should follow the manufacturer's guidelines.

Note: Any mean sea level air pressure provided as part of a basic weather report is intended as contextual information only. It is not provided for adjusting the barometric setting on aircraft altimeters. Any such adjustment must be made using the appropriate QNH.

26. The person providing a basic weather report is required to have been trained to provide such reports. Anyone providing basic weather reports need not be trained to the broad requirements expected of people providing meteorological reports. However, because basic weather reports still need to be accurate, some training is required. The holder of any pilot's licence, or a person who is qualified and competent as outlined in the section on rule 174.51(b) is considered adequately trained to provide basic weather reports.
27. Other persons would need to receive training from a suitably qualified person such as the holder of a licence to act as pilot-in-command, or from a person who is qualified and competent as outlined in the section on rule 174.51(b). All such training should pay particular attention to the place and surroundings for which the basic weather reports may be provided.

Rule 174.7 Application for certificate

28. This rule sets out the conditions under which a certificate will be granted. An application should be made on the appropriate form, available from the CAA website, find the 'Forms' tab, then filter by Part 174.
29. Applicants should plan their certification programme in advance. Early consultation with CAA will ensure all issues are dealt with well before the planned start date.
30. CAA will only start their assessment once the submitted application is complete.
31. An applicant is charged a standard rate per hour for the time CAA needs to assess an application. The time depends on the type of aviation safety risks generated by the operation and the quality of the information provided in an application.
32. CAA's fees and standard hourly charges are listed on CAA's website here:
<https://www.aviation.govt.nz/about-us/what-we-do/how-we-are-funded/fees-levies-and-charges/>
33. See also the section on rule 174.51(a)(2), for advice on Fit and Proper Person (FPP) requirements for senior persons.

Rule 174.9 Issue of certificate

34. An applicant for a certificate is required under rule 174.79 to list meteorological services, locations and airspace for which the certificate is sought. The types of meteorological service authorised will be shown on the certificate.
35. **Definitions** of the types of 'meteorological service' are set out below:

- (1) **Climatology service** — Defined in Part 1 as a service for the development and supply of climatological information for a specific place or airspace.

Also defined as the production of aeronautical climatological information for the planning of flight operations. Such a service specifically prepares ~~historical~~ meteorological information for aviation purposes.

Climatological information that is published for a general audience is not regarded as a climatological service under Part 174.

- (2) **Forecast service** — the production and supply of forecast meteorological information, for a specified area or portion of airspace, as required for aircraft operations. Provision of forecast services may be manual or electronic and production may incorporate electronic data analysis. Any individual or organisation that prepares, edits or updates any type of forecast targeted at any aviation organisation must be certificated under Part 174.
- (3) **Information dissemination service** — the collection and dissemination of meteorological information to meet aviation requirements. The delivery portion is analogous to a 'post office' system but with the specialty of providing transmission facilities that is designed to cope especially with meteorological information. Such a service may be internal or external to a meteorological service operation.
- (4) **Meteorological briefing service** — a service for the supply of written, oral, and graphical meteorological information on existing and expected meteorological conditions.
- (5) **Meteorological reporting service** — the supply of routine meteorological reports. The provision of formal meteorological information on actual meteorological conditions at a particular place such as meteorological aerodrome reports (METAR, METAR AUTO, SPECI)

Reports may be compiled and supplied manually, automatically or electronically.

- (6) **Meteorological watch service** — the maintenance of a watch over current meteorological conditions affecting aircraft operations in a particular area. Such a service would be providing meteorological information relating to that area to the aircraft operators, ATS operations, and meteorological watch services serving adjacent areas, flight information regions, or control areas.

Rule 174.11 Privileges of certificate holder

36. An organisation may provide the service covered by the certificate.

Rule 174.13 Duration of certificate

37. CAA usually issues a certificate for five years. To manage workflows, e.g. to prevent delays caused by applications being due just before holiday periods, CAA may grant a certificate for less than five years to ensure CAA assessors can progress applications efficiently.

Rule 174.15 Renewal of Certificate

38. Certificates expire every five years, but operators need to lodge renewal applications well before then. Renewals allow CAA to gain assurance that an operator is currently, and will continue to be, operating safely and securely, and managing their aviation safety risks.
39. Applicants must submit renewals before the renewal date or at least 30 days before a certificate expires. CAA strongly recommends that applicants send in applications earlier than this, if applications are likely to be complex or if the exposition has changed significantly, so CAA can ensure they are assessed before the certificate expires.
40. The time taken to assess a renewal application varies by organisation. CAA's assessment focuses on aviation risk, so assessors consider:
- the nature and scope of the aviation activity
 - the type of aviation risks being managed
 - how much the operator and their operation has changed
 - the operator's previous performance, and
 - their attitude towards safety and security
 - ability to meet ongoing compliance requirements.

Subpart B — Certification Requirements

Rule 174.51(a)(1) Personnel requirements — Chief Executive (CE)

41. The applicant is required to nominate a person to be identified as the CE. This is the person with whom the authority of the meteorological service certificate is vested. This person must have the ultimate responsibility, including financial authority, to ensure that all the necessary resources are available to provide the meteorological service under Part 174 and the organisation's exposition.
42. In organisations where only some of the total operational resource is deployed in the supply of meteorological services, the CE for the purposes of Part 174 is expected to be responsible for the part of the organisation which supplies the aeronautical meteorological information.

Rule 174.51(a)(2) Personnel requirements — senior persons

43. The senior person or persons nominated in the exposition must be part of the management structure of the applicant's organisation. They must also be suitably qualified for the position held and must be responsible for the provision, operation, and maintenance of all the meteorological offices, facilities and meteorological services covered by the certificate.

44. The titles and responsibilities of the nominated persons will vary, depending upon the size of the applicant's organisation, and may be subdivided under individual persons or combined in any number of ways. Irrespective of the titles or the number of persons nominated, the following areas of responsibility are expected to be addressed where they are applicable to the activities of the applicant's organisation:
- All nominated senior persons, including the CE, need to meet FPP requirements. The persons nominated must be identified on the application form and a completed FPP form submitted for each person. The person's biographical details or *curriculum vitae* should accompany these forms.
 - The senior person/s responsible for meteorological offices or facilities has the ultimate responsibility for the operation of meteorological office(s) or facilities to ensure that they continue to operate to the required performance standards and that the output follows the requirements of Part 174 and the organisation's procedures.
 - The senior person/s responsible for SMS has the ultimate responsibility for the organisation's SMS to ensure compliance with the organisation's exposition and with Part 174. This includes ensuring the adequacy of the organisation's exposition and associated procedures in meeting the requirements of Parts 100 and 174, in reflecting the scope of the service provided, and ensuring that corrective actions in respect of any deficiencies are fully implemented.

Note: There is more information on running an SMS in the section on rule 174.77.

45. The organisation may choose to appoint managers for all or any combination of the above areas of responsibility. However, it must be clear to whom the responsibilities devolve. As well, these managers need to report to, and be responsible to, the CE.

46. As noted above, the persons so nominated are to be identified on the appropriate form and credentials supplied with the application. To be accepted, such nominated persons should have adequate knowledge and satisfactory experience relative to their position and responsibility.

47. When a certificate holder applies to renew their certificate, they need to include FPP forms for each of their senior persons.

48. The declaration for an FPP assessment (CAA 24FPPDEC) may be used by senior persons who have met FPP requirements previously, and can attest that there are no changes to their FPP status, i.e:

- their health status and criminal conviction/ transport offence history is unchanged, and
- they are doing the same role for which they were granted FPP status.

49. Senior persons whose health status or criminal conviction/ transport offence history has changed, or who have taken on a new role with different scope and responsibilities, need to fill in an application for an FPP assessment (24FPP).

Rule 174.51(a)(3) Personnel requirements — meteorological office

50. The number and location of suitably qualified and trained personnel required will depend on:
- (1) the scope of the meteorological service and meteorological office activities
 - (2) the location of the meteorological offices and facilities
 - (3) the role of the meteorological offices and facilities in the air navigation system.

Rule 174.51(b) Personnel requirements — competency assessment

51. An organisation needs to have procedures for assessing and maintaining the competency of personnel, particularly those authorised to compile or derive meteorological information, and to release such information to customers. The procedures should include the levels of training, qualification, and experience necessary to ensure that quality systems work and quality output from the meteorological office or facility concerned.
52. CAA expects that personnel will have a basic recognised qualification for performing their particular functions. The organisation's initial training programme should cover the procedures for the particular functions for which the person is employed.
53. Meteorological office personnel are expected to be qualified and have shown competence in the relevant components of the following guidelines or equivalent:
- (1) WMO Publication 49 Technical Regulations, **Basic Documents No.2**, Volume I – *General Meteorological Standards and Recommended Practices*
54. WMO Publication 306 Manual on Codes – International Codes
- (2) WMO Publication 782 *Aerodrome Reports and Forecasts: A Users' Handbook to the Codes*
 - (3) WMO Publication 1083 **Guide to the Implementation of Education and Training Standards in Meteorology and Hydrology: Volume I - Meteorology**
55. The overall training of all personnel is expected to meet all relevant parts of any ICAO or WMO Annexes, publications or documents listed in this AC.
56. To be acceptable, personnel should be given specialised training on the types of service being provided followed by an on-the-job (OJT) evaluation related to the particular meteorological service, meteorological office or facility and their location. The specialised training should include an examination to assess the person's knowledge of the production methodologies. The OJT must establish that the person complies with the procedures relating to the meteorological service, meteorological office or facility and fully understands:
- (1) the role of the organisation within the air navigation system, and
 - (2) the functions, limitations and use of any built-in **syntax check**, verification or self-check system or procedure.

57. A competency check on meteorological office personnel must establish that each personnel can satisfactorily meet all of the necessary requirements of the particular meteorological role office they carry out. Meteorological personnel are expected to meet the relevant competency standards prescribed in WMO Publication 49, *Technical Regulations, Basic Documents No.2, Volume I – General Meteorological Standards and Recommended Practices*.
58. It is expected that OJT checks would be carried out at regular intervals with appropriate continuation training to maintain the competence levels of the authorised personnel. Continuation training should also cover any changes in relevant technology, or the organisation's procedures, and any changes to the meteorological office or facility procedures involved.
59. Personnel competency checks and continuation training must be carried out by checking and training personnel:
- qualified in the respective meteorological areas to at least the level being checked, or depth of continuation training being given.
 - who have appropriate education in the management and application of such procedures and of training requirements.
60. It is recommended that job descriptions be formulated for all positions within the organisation's structure. The job descriptions for all personnel who manage, verify or do work on which can affect quality and safety of the meteorological service's SMS or quality systems provided should define their responsibilities, authority and their interrelationships. Job descriptions are particularly important for personnel who need the organisational freedom and authority to:
- (1) initiate action to prevent unsafe situations or issues with quality developing
 - (2) identify and record problems which may affect safety and quality
 - (3) initiate, recommend or provide solutions
 - (4) verify the implementation of solutions, and
 - (5) set up controls and further processes following the detection of unsafe situations until deficiencies have been corrected.

Rule 174.53 Site requirements

61. Security of all systems interacting with aviation is essential imperative to safety. Procedures for ensuring such security should encompass:
- (1) the physical and electronic integrity of a meteorological office or facility
 - (2) the access rights and movement of people to or within a meteorological office or in or near a facility.
62. Organisations must comply with the relevant security requirements of Civil Aviation Rule Part 139 *Aerodromes – Certification, Operation and Use*, for those meteorological offices or facilities sited on aerodromes.

Rule 174.53(1)(i)

63. Organisations should establish appropriate agreements with site owners and adjacent site owners or operators to ensure that no incidents occur that will affect performance of the meteorological office or facility.

Rule 174.53(1)(ii)

64. Meteorological offices and facilities must have suitable power supplies and means to ensure a reliable and sufficient supply for their continuity appropriate to the nature of the meteorological service provided. This requirement applies particularly to electronic remote weather sensing equipment and meteorological offices that are reliant on computer-based production and electronic communication systems.

Rule 174.53(2)

65. The siting of remote weather sensing facilities (such as automatic weather observing stations) should follow closely the requirements for manual visual observations and instrument exposure. The minimum acceptable technical siting requirements are contained in:
- (1) ICAO Annex 3 *Meteorological Service for International Air Navigation*
 - (2) ICAO Document 9328 *Manual of Runway Visual Range*
 - (3) ICAO Document 9837 *Manual on Automatic Meteorological Observing Systems at Aerodromes*
 - (4) WMO Publication 8 *Guide to Instruments and Methods of Observation*
 - (6) WMO Publication 488 *Guide on Global Observing System*
 - (7) WMO Publication 544 *Manual on Global Observing System*
66. In situations where constraints, such as terrain or communications logistics, make the ideal siting of a facility impracticable, In such situations less than ideal siting can be acceptable providing the information gathered by the facility remains representative of the area concerned.
67. The Director may accept other technical siting criteria for the installation and maintenance of remote weather sensing facilities.

Rule 174.55 Communication requirements

68. **The reliability and timeliness** of meteorological information is based on the ability of the communication systems used. Meteorological service organisations should ensure that the equipment and software used are adequate for the volume and type of information being communicated.
69. Organisations may use third party communication providers, however, it is the organisation's responsibility to ensure that the contracted communication provider meets the communication requirements specified. That specification must be stated in their exposition and conform to Part 174.
70. Each organisation should decide upon the best communication system for its operations. However, it is expected that organisations, apart from those providing a

climatological service, will have a capability to, directly or indirectly, link their communication system to the aeronautical fixed telecommunications network.

71. The communication protocols to be used by organisations are expected to be those found within:

- (1) ICAO Annex 3 *Meteorological Service for International Air Navigation*
- (2) ICAO Annex 10 *Aeronautical Telecommunications*
- (3) ICAO Annex 15 *Aeronautical Information Services*

72. Deviation from the above protocols for the purposes of serving particular customers will be considered if they are fully described and supported by justifications in the organisation's exposition. However, the organisation is expected to be able to switch to the standard protocols should a safety situation demand such a change.

Rule 174.57 **Input requirements**

73. Good meteorological forecast information depends on timely responses to changes in the dynamics of the present and expected meteorological conditions in any particular airspace. Such responses may take the form of new reports of actual meteorological conditions or the creation or amendment of forecast meteorological conditions. The ability of an organisation to produce such information is predicated on that organisation's ability to access and pass on meteorological information quickly and accurately.

Rule 174.57(b)(2)

74. The organisation must have procedures in place to ensure all relevant material is provided to aircrew or other recipients for face-to-face briefings or automated pre-flight information systems providing self-briefing facilities. It is expected that the organisation will follow the requirements or guidelines stated in the documents below (or such guidelines, developed by the organisation, which are acceptable to the Director):

- (1) ICAO Annex 3 *Meteorological Service for International Air Navigation*
- (2) ICAO Annex 15 *Aeronautical Information Services*
- (3) WMO Publication 306 *Manual on Codes*.

and in:

- (4) ICAO Document 8896 *Manual of Aeronautical Meteorological Practice*
- (5) WMO Publication 731 *Meteorological Observing and Information Distribution Systems at Aerodromes*
- (6) WMO Publication 732 *Guide to Practices for Meteorological Offices serving Aviation*.

Note: *This is not an exhaustive list.*

Rule 174.57(b)(3) & (4)

75. Adequate observing systems for provision of meteorological reports or provision of a meteorological watch service are the demonstrated adherence to, and use of, the following weather observing procedures and methodologies, reporting procedures, and instrumentation systems within an organisation's exposition:

- (1) ICAO Annex 3 *Meteorological Service for International Air Navigation*
- (2) ICAO Annex 15 *Aeronautical Information Services*
- (3) WMO Publication 306 *Manual on Codes*

and in:

- (4) ICAO Document 8896 *Manual of Aeronautical Meteorological Practice*
- (5) WMO Publication 386 *Manual on Global Telecommunications Systems*
- (6) WMO Publication 488 *Guide to the Global Observing System*
- (7) WMO Publication 544 *Manual on the Global Observing System*
- (8) WMO Publication 732 *Guide to Practices for Meteorological Offices Serving Aviation*

Note: *This is not an exhaustive list.*

76. Applicants may deviate from the above documents if they fully describe and support the deviation in their exposition and the deviation is acceptable to the Director. However, the organisation is expected to be able to operate with the criteria outlined in the above documents should an operational situation dictate.

Rule 174.57(b)(5)

77. Adequate historical meteorological data and resources necessary to provide aeronautical climatological information are described in Chapter 8 of ICAO Annex 3 - *Meteorological Service for International Air Navigation*.

Rule 174.59 Output requirements

78. It is expected that the organisation will define the meteorological service output requirements in terms of form, adequacy, accuracy, timeliness and productivity in their exposition (refer also rule 174.79 (a)(8)).
79. The Director will try to hold all information relating to customer specific products confidential unless such information comes within the public domain.
80. It is also expected that the organisation's products meet acceptable international standards.
81. The Director may accept standards that are the same as, equivalent to, or better than those of ICAO or WMO if the organisation can prove them.
82. If the equivalent or better information product, accepted by the Director, differs significantly from that described within the ICAO Annexes, the Director will decide whether to file a deviation with ICAO.

Note: *PANS-MET, Doc 10157* provides the most significant requirements for the operationally desirable accuracy of meteorological forecasts.

Rule 174.61 Facility requirements

83. The Director does not require any organisation to use any particular electronic or automatic systems, brands or configurations in particular facilities. Different systems performing similar functions effectively may be acceptable to the Director.
84. The routine operation of the facility is expected to yield adequate, accurate and timely input or output for the meteorological offices it supports or meteorological service it provides.
85. Minimum requirements of any electronic data processing system used by the organisation, are set out in WMO Publication 485 *the Integrated Processing and Prediction System*.

Rule 174.63 Documentation

86. An organisation is required to hold, and make available to personnel:
- (1) copies of its exposition
 - (2) all applicable meteorological office manuals
 - (3) facility and procedures manuals
 - (4) technical standards and practices, and
 - (5) equipment manuals

that are necessary for the provision of the relevant meteorological service.

87. Procedures for the amendment of documents should ensure that all pertinent background information and reasons for the change are adequately documented and retained for possible audit purposes. Changes to documents must be reviewed and approved by the same personnel or functional positions that did the original review and approval unless specifically designated otherwise. Access to the background information is an important part of this review and approval process. Where practical, the nature of any change should be identified in the document in which the change has been made or in appropriate attachments to that document.
88. Incorporation of procedures manuals in a larger set of documents is acceptable as long as such procedures manuals are readily accessible for operational and audit purposes.
89. Having a discrete set of documents relating to certification under Part 174 is the ideal situation. However, a master cross reference matrix against which procedures manual contents are listed is acceptable.

Rule 174.65 **Verification, periodic inspection, testing and calibration**

90. The organisation is required to establish documented procedures to ensure that each meteorological office and facility is subjected to periodic internal inspections, verifications and tests to confirm that the office or facility is meeting the applicable performance standards.
91. Such procedures and the periodicity of inspections and tests must show that the meteorological office and facility not only meets the applicable operational requirements and performance standards, but **that it will** continue to meet those requirements and standards.
92. The periodic inspection of each meteorological office and facility should be carried out regularly. Aspects to be assessed during the inspection should include:
- (1) **For** meteorological offices, **continuing**:
- (i) access to approved and appropriate real-time meteorological information
 - (ii) adherence to approved production procedures and methodologies
 - (iii) access to approved computing and communication facilities
 - (iv) attainment of defined product quality parameters
 - (v) upkeep of production equipment, site and site services
 - (vi) adequacy of production records and documentation
 - (vii) the security of the site

Unless otherwise proven by reliability data it is considered that the maximum period between meteorological office inspections should be one month.

- (2) **For** facilities:
- (i) security of the facility and site
 - (ii) adherence to the approved maintenance programme
 - (iii) upkeep of the equipment, site and site services
 - (iv) adequacy of facility records and documentation
 - (v) continuing attainment of required quality in the output parameters.

The maximum period between tests (MPBT) of facilities should be based on:

- (1) **any manufacturer's requirements**
- (2) the proven reliable performance of the facility
- (3) the proven performance of any other similar facility
- (4) the stability of the facility's operating environment.

Facilities may be categorised but not limited to the following examples (stated MPBT are examples only):

- (1) weather surveillance radar (WSR), MPBT 6 (six) months
- (2) automatic weather observing equipment, MPBT 12 months

Note: Many service providers have moved to an operating model where their computing, communication and electronic delivery is hosted by specialist third party providers and managed through the certificate holder's SMS. If, after a period of operation, the organisation can show that the stability of a meteorological office or facility in the operational environment is such that a longer period between tests is justifiable, the Director may consider an increase in the maximum time between tests from that stated in the initial exposition.

93. The organisation is required to establish documented procedures to ensure that all verification, inspection, measuring, test equipment and systems that are required for the measurement or evaluation of critical equipment, and meteorological information have the precision and accuracy necessary for such measurements. The equipment and systems required for such measurements must be identified, controlled, and calibrated to a known reference standard.
94. Where facilities include sensors and transducers for the gathering of meteorological information, the organisation is expected to calibrate such systems against recognised international standards (the International System of Units). The conformity of such standards to the national standards is expected to be detailed within the organisation's exposition as are the calibration procedures.
95. The units of measurement for meteorology are set out in ICAO Annex 5 Units of Measurement to be used in Air and Ground Services Operations.
96. The operations (and maintenance) manual for a meteorological office is required to identify the critical meteorological service and equipment parameters with the nature of the measurements to be made, and the measurement accuracy required.
97. In meeting the requirement of this rule, the organisation should:
 - (1) Identify all verification, inspection, evaluation, measuring, and test equipment and systems required for the measurement or evaluation of critical equipment and output parameters for each meteorological office and facility.
 - (2) Ensure that such systems and equipment are checked and calibrated before use or at prescribed intervals against certified equipment having a known valid relationship to recognised standards.
 - (3) Where no standards exist, document the basis for calibration.
 - (4) Identify all such critical inspection, measuring, and test equipment and systems with a suitable indicator or identification record to show its calibration status.
 - (5) Establish, document and comply with calibration procedures for critical equipment. This includes details of equipment type, identification number, location, frequency of checks, check methods, acceptance criteria and action to be taken when the results are unsatisfactory.
 - (6) Maintain calibration records for this critical inspection, measuring, and test equipment.

- (7) Assess and document the validity of previous verification and inspection results when any item of critical verification, inspection, measuring, and test equipment is found out of calibration or producing plainly anomalous outputs or readings.
- (8) Ensure that the environmental conditions are suitable for the calibrations, inspections, and measurements being carried out.
- (9) Ensure that the handling, preservation, and storage of critical inspection, measuring, and test equipment and systems are such that their accuracy and fitness for use is maintained.
- (10) Safeguard any critical inspection, measuring, and test equipment and systems including software from adjustments which would invalidate such systems or equipment.

Rule 174.67 Release of meteorological information

98. This requirement is aimed at ensuring that, when meteorological information is released, all the necessary checks and measurements have been carried out by a competent person. This is to assure the user of an adequate, accurate and timely meteorological service from that meteorological office or facility.

Rule 174.69 **Notification of meteorological office and facility status**

99. It is the responsibility of the organisation supplying meteorological services to ensure that the status and operational information concerning its meteorological offices and facilities are published in the Aeronautical Information Publication (AIP). Refer to Chapter 10.3 of Annex 3 -*Meteorological Service for International Air Navigation*.
100. The users of meteorological information from a particular meteorological office or facility **must be given adequate notification** whenever there is a change to **the facility's** status, which may affect the safety of aeronautical operations.
101. **A NOTAM would be the** appropriate notification for a meteorological office or facility that has details published in the AIP aeronautical information. The changes in the status of a meteorological office or facility, that may require the issue of a NOTAM, include, but are not limited to:
- (1) failure **of service**
 - (2) withdrawal from operational service for logistic or maintenance purposes
 - (3) operation of an associated facility without normal monitoring functions
 - (4) return to operational service
 - (5) changes to the published information.
102. The organisation supplying meteorological services is responsible for supplying the appropriate information for the issue of the NOTAM. Where possible an estimate of any outage or inability to supply service or information should be included.
103. Airways Corporation of New Zealand Limited (Airways) publishes the AIP and operates the NOTAM service. The meteorological service organisation should consult with Airways when establishing their procedures to ensure compliance with this requirement to notify users.

Rule 174.71 **Meteorological information check after accident or incident**

104. Each certificated organisation is required to establish and comply with a procedure for the investigation of any meteorological information supplied that may have been used by an aircraft, or ATS unit, involved in an accident or incident.
105. It is essential that the investigation be carried out without delay. This ensures that any important evidence is not lost, and prevents any repetition of the circumstances, that may have led to the accident or incident. The procedures should establish who is responsible for coordinating the investigation and what actions are required to check the status and performance of the meteorological offices or facility concerned.

106. All evidence relating to the nature and status of the meteorological information concerned at the time of the occurrence, and the history of performance before the occurrence is to be preserved. This information may be required by the Director or the Transport Accident Investigation Commission (TAIC).
107. The personnel carrying out the investigation should not include anyone who was involved with the distribution of any meteorological information from any meteorological office concerned with the incident.
108. Part 12, *Accidents, Incidents and Statistics*, and the associated ACs, sets out the requirements, responsibilities, and procedures for the notification and reporting of aircraft accidents or incidents. CAA is responsible for notifying relevant certificate holders of accidents or incidents that may require information or action by the certificate holder.
109. The requirement for the Director or TAIC to investigate the accident or incident should not prevent the organisation from conducting their own investigation in relation to the meteorological services provided.

Rule 174.73 Malfunctions and erroneous information

110. Malfunction or error reporting is an important component of aviation safety and, to be effective, requires both prompt action and the cooperation of all parties involved. Each certificated organisation is required to establish and comply with a procedure to notify, record, investigate, and rectify any reported malfunction that may result in erroneous meteorological information being disseminated from a meteorological office or facility.
111. The Director must be notified of those malfunctions that cannot be remedied within 72 hours, and must be subsequently provided with malfunction status reports until such time as the malfunction has been rectified. The Director will determine the frequency of such status reports.
112. Malfunction and erroneous information procedures must ensure that there is a rapid investigation of the problem in each affected area so that immediate action can be taken. This is intended to ensure the continued safe operation of aircraft that may use the relevant meteorological information. The procedures should also include any necessary follow up actions to ensure that appropriate personnel or technical solutions are found for any problems discovered during the investigation. This may include at looking at similar past incidents, in order to identify potential systemic issues.

Rule 174.75 Records

113. Records are to be of a legible permanent nature and must be identifiable to the meteorological offices involved.
114. Records may be kept in any format on any type of readily accessible permanent archive, regardless of nature, and should be controlled by a responsible senior person. Access to the record system should be controlled to ensure that the integrity of the records is maintained.

115. Accurate records are an important element in the quality, safe operation and maintenance of a meteorological office. Records must show achievement of the required level of performance of the meteorological service, office or facility. The record must also show that the prescribed operational, ~~and~~ quality assurance and maintenance procedures have been followed.
116. The Director may require records to be produced as evidence in the event of an aircraft accident or incident investigation. These records should provide a complete history of events in chronological order. Each entry must be clearly distinguishable.

Note: AC00-6, Electronic Signatures, Electronic Record-keeping and Electronic Manuals, or FAA AC120-78A, Electronic Signatures, Electronic Recordkeeping, and Electronic Manuals, contain more information on electronic record keeping systems.

Staff records

117. Each certificated organisation is required to keep records of all its personnel who are authorised to release meteorological information and place meteorological offices or facilities into operational service. The following minimum information should be kept for each person:
- (1) Name
 - (2) Date of birth
 - (3) Position held within the organisation
 - (4) Relevant qualifications
 - (5) Experience
 - (6) Specialised training
 - (7) Operational aspects covered by any authorisation
 - (8) Details of competency checks
 - (9) Date when any changes are made.
118. Written authorisation documentation should be provided to each person authorised to release meteorological information or place meteorological offices or facilities into operational service. The authorisation should be in a style that makes it clear to the holder the types of meteorological service, the meteorological offices and the locations or geographic areas that the authorisation covers.

Rule 174.77 Safety Management

119. To comply with the certification requirements of Part 174, Subpart B, organisations seeking certification will have an SMS inclusive of internal quality assurance (IQA). This will assure confidence in the accuracy of a meteorological service and the performance and reliability of the organisation's offices and facilities.
120. Requirements for an SMS are set out in Part 100.

121. Organisations seeking certification must develop, document, implement, and maintain an SMS. This system should include internal audits and regular reviews of the SMS and how it is working.
122. AC100-1, Safety Management, provides comprehensive guidance material to help operators implementing an SMS. Developing and implementing an SMS will not only give a structured set of tools but will also provide significant business benefits.
123. IQA procedures can contribute to an effective and robust SMS. They assure confidence in the accuracy of a meteorological service and the performance and reliability of its offices and facilities.
124. Quality assurance is defined in NZS 9000 (ISO 9000) as: 'all those planned and systematic actions necessary to provide adequate confidence that a product or service will satisfy given requirements for quality'.
125. To be effective, IQA requires the ongoing review of the organisation's documentation, its procedures, and the performance of meteorological offices and facilities. These reviews should check that all relevant requirements, standards, and procedures are adequately defined and documented, continue to be appropriate for the meteorological office or facility and are being complied with.
126. Reviews should include the analysis of the performance of meteorological services, meteorological offices and facilities, records, service reports and complaint procedures. IQA procedures must include the investigation of the cause of any non-compliance with the procedures and standards. This is to ensure any factors which may contribute to the potentially incorrect performance of a meteorological service, meteorological office or facility are eliminated.
127. IQA procedures should show:
- (1) when reviews are due
 - (2) who is to carry out the review
 - (3) what items are to be checked
 - (4) how it is to be documented
 - (5) when it is completed
 - (6) to whom the report is to be made.
128. It is acceptable for organisations to contract specialist consultants for this.
129. AC00-3 provides information on IQA internal quality assurance procedures. In addition, the following documents provide guidance on the establishment and implementation of quality systems:
- (1) WMO Publication 1001 *Guide on the Quality Management System for the Provision of Meteorological Service for International Air Navigation*
 - (2) ICAO Document 9873 *Manual on the Quality Management System for the Provision of Meteorological Service to International Air Navigation*

Rule 174.79 Organisation exposition

130. The purpose of the organisation's exposition is to set forth the procedures, means and methods of the organisation.
131. Conformance with its contents will ensure compliance with Part 174, which is a prerequisite for obtaining and retaining meteorological service certification.
132. The organisation's exposition is **how** the organisation defines its operation. It shows, to both its **personnel** and the Director, how the organisation will conduct its day-to-day business relating to meteorological services for aviation. It is intended to be a tool to help management in the operation of the business. It should commence with the corporate commitment by the **CE**.
133. Rules 174.79 (a)(1) to (7) provide the management part of the exposition and should normally be contained within one document. The remaining parts of the exposition may be produced as any number of separate manuals that must be cross-referenced in the management part of the organisation exposition.
134. Managers should hold copies of those parts or manuals that affect their areas of responsibility, and staff should be familiar with the parts of the exposition that affect their area of activity.

Rule 174.79(a)(1)

135. **E**ach certificated organisation must have the responsibility to ensure that its operation is planned, organised, carried out, developed, maintained and documented according to applicable civil aviation requirements, standards and operating specifications.
136. **E**ach organisation will also have to establish goals and objectives for its operation, including SMS standards, at least equal to the level prescribed by the Director.
137. The statement by the **CE** required by 174.79(a)(1) is viewed by the Director as a corporate commitment by the organisation. Such a statement should clearly address the goals and objectives of the organisation in respect of the safety requirements prescribed by Part 174. **I**t may also contain the organisation's goals and objectives in respect of its commercial activities. Ideally, the exposition should be a tool of management by which the organisation's operation is presented to its **personnel**, its customers and the Director.

Rule 174.79(a)(2) and (a)(3)

138. Comments are provided **in the sections on rules** 174.51(a)(1) and (2).

Rule 174.79(a)(4)

139. **T**he organisation must show the lines of responsibility and communication between the **CE**, its personnel and customers.

Rule 174.79(a)(5)

140. The summary of staff employed and their location, provides the Director with an indication of the size of the organisation for assessing the application and establishing an audit programme.

Rule 174.79(a)(5A)

141. The exposition must explain how safety issues will be managed, how the SMS will run effectively, and who will be responsible for ensuring that this is done on an ongoing basis.

Rule 174.79(a)(6) and (a)(7)

142. The organisation is to specify the types of meteorological service that the application is to cover and the meteorological office and facilities supporting that service.

This includes-for each meteorological office and significant facility:

- (1) the location, geographic scope, meteorological service and outputs provided by each meteorological office
- (2) the location, geographic scope, and outputs, provided by any facility, accessible directly or indirectly by customers.

143. The location of remote weather sensing facilities should be identified by latitude and longitude to the nearest second. The location of meteorological offices and other facilities should be identified by address or location name.

Rule 174.79(a)(8)

144. The organisation is to specify the nature of the output meteorological information that will be a part of each of its meteorological services.

145. Each component of output meteorological information must be specified including, as appropriate, a full description of the component:

- (1) type (TAF, METAR, aerodrome climatology and so on)
- (2) applicability (airspace, aerodrome or place)
- (3) validity period(s)
- (4) issue frequency or times.

146. The specifications must also include a full description of the standards and formats applying to each component of meteorological information, in particular:

- (1) operational review frequency or review criteria
- (2) input dependency standards
- (3) accuracy standards
- (4) timeliness standards
- (5) formats made available
- (6) criteria for change in format.

Rule 174.79(a)(9)

147. The procedures listed in this section provide the working documents for the organisation's activities. Applicants should cover subjects in the sub-headings to the extent that they apply to the particular scope of intended activity.

Rule 174.79(a)(10)

148. These procedures must show how the applicant plans to control, amend and distribute their exposition. The procedures should be similar to those required under rule 174.63 for controlling, amending and distributing the applicant's documentation.

Rule 174.79(b)

149. The acceptance of the organisation's exposition by the Director is the final step in the authorisation process for the provision of a meteorological service. Such acceptance will be followed by the issue of a meteorological service certificate.

Note: The CA Act 2023 came into effect on 5 April 2025. It introduces the requirement for operators, who hold a certificate(s) listed in rule 99.5, who is a DAMP operator, and who conduct safety-sensitive activities, to develop a drug and alcohol management plan (DAMP). There will be a two-year transition period from 5 April 2025 to 4 April 2027, during which time operators must submit their DAMP to CAA for approval by one of two deadlines set out in rule 99.9, Deadline for current DAMP operators to submit a DAMP for approval. DAMPs must be implemented, and form part of an operator's exposition, from 5 April 2027.

More information on DAMP and the requirements can be found on the CAA website, including the Part 99 rules, AC 99-1 and the transport instrument (CATI 99.19).

Subpart C — Operating Requirements

Rule 174.101 Continued compliance

150. After obtaining a certificate under Part 174, it is the responsibility of the certificate holder to ensure that it continues to meet the requirements for certification. The means of meeting these requirements are contained in the certificate holder's exposition. Therefore, a copy of the exposition, or at least each applicable part of the exposition, must be available to all personnel who need access to the information to carry out their work. A complete copy of the exposition needs to be held at each meteorological office covered by the exposition.

Rule 174.103 Operations manual

151. The organisation needs to provide an operations manual to each meteorological office that the organisation operates. A copy of the manual should be available at each site for ready use by personnel working in the meteorological office.
152. The manual is to include a list of minimum performance levels and critical operating parameters for the meteorological office and associated facilities. Maintenance procedures may include a reference to other documentation.
153. The manual should include:
- (1) the meteorological information and the meteorological services provided:
 - (i) the name of the meteorological office
 - (ii) any relevant identification or communication codes
 - (iii) the hours of operation of the meteorological office
 - (iv) the function of the meteorological office
 - (v) the meteorological services being provided
 - (vi) the particular meteorological information being provided
 - (2) the minimum acceptable operating parameters and standards for facilities:
 - (i) the location of associated facilities
 - (ii) instructions on the physical security of the facilities
 - (iii) procedures for the operational management of facilities
 - (iv) procedures and standards to be applied during maintenance and routine inspection, test and calibration of facilities including:
 - the frequency of servicing
 - limitations on the scope of maintenance work permitted where performance checks are limited to the capabilities of an executive monitor system

- detailed performance check procedures to be carried out before any facility is returned to service where the scope of maintenance work has exceeded the limitations above
 - (v) procedures to identify, and set tolerances for the critical equipment parameters which can directly affect the accurate output of meteorological information from a facility
 - (vi) lists of specialised and calibrated test equipment required for the measurement of critical equipment parameters

Note: *This is to include details of accuracy, certification, and recalibration requirements.*
 - (vii) procedures to be followed to obtain the release of the facility from operational service for maintenance or other required shutdown

Note: *This is to include, where applicable, the coordination of the release with air traffic services and the issuing of an appropriate NOTAM.*
 - (viii) procedures to be followed for the initialisation or restart of associated facilities
 - (ix) a description of any critical parts of the associated facility that may not be changed or adjusted without an approved certification check to confirm that performance meets operational requirements
- (3) the minimum meteorological inputs required:
- (i) details, including schedules, of all meteorological information required for the provision of output meteorological information and meteorological services
 - (ii) procedures to be followed to:
 - decide the minimum level of input meteorological information required
 - ensure at least the minimum level of meteorological information is available
 - verify input meteorological information
- (4) the minimum performance and quality levels for output meteorological information and meteorological services **including:**
- (i) instructions on the physical security of the meteorological office
 - (ii) details of any licensing requirements for the meteorological office operations, maintenance and personnel
 - (iii) the names, addresses, and telephone numbers of persons to be notified in an emergency
 - (iv) instructions on the keeping of the meteorological office records and other technical records
 - (v) detailed production procedures for the meteorological office including at least:
 - the nature of production

- limitations on the scope of work required
- identification and scheduling of the output meteorological information to be produced
- methodologies and product compilation or creation procedures to be used in the production process
- procedures for the quality assessment of relevant information during the production phases
- verification procedures required to assess output information

Note: *The production procedures must identify, and set tolerances, for all aspects of the production system that may directly affect the quality of the output of the meteorological office.*

- (vi) Procedures **to be followed:**
- for the operational monitoring of the meteorological office to ensure that it continues to meet the minimum performance levels
 - for the preservation of evidence in the event of an aircraft accident or incident investigation
 - to obtain the release of the meteorological office from operational service for maintenance or other required shutdown
- (vii) where applicable, the coordination of the release with air traffic services and the issuing of an appropriate NOTAM
- (viii) a description of any critical parts of the meteorological office that may not be changed or adjusted without an approved certification check to confirm that performance meets operational requirements
- (5) the test equipment and systems required for the measurement of the minimum levels listed under rule 174.103(4):
- (i) identification of all verification, inspection, evaluation, measuring and test equipment and systems required for the evaluation of critical performance and quality levels
 - (ii) procedures for ensuring all such test equipment and systems are checked and calibrated at prescribed intervals
 - (iii) methods used to show the status of test equipment and systems
 - (iv) procedures for keeping records of test equipment and systems
 - (v) procedures for the safe keeping of test equipment and systems
- (6) any mandatory check procedures for releasing meteorological information:
- (i) the names and positions of the personnel with the authority to release meteorological information
 - (ii) procedures and criteria for verifying and checking meteorological information before release

- (iii) procedures for submitting unacceptable output meteorological information for rework.

Rule 174.107 Limitations on a certificated organisation

154. The **intent** of this rule **is** to ensure that meteorological services, meteorological offices or facilities that do not comply with the requirements of Part 174 do not provide meteorological information for the air navigation system.
155. For an integrated meteorological supplier, any requirement under rule 174.107 to suspend one meteorological information product or service does not mean that the remainder of their operations should be suspended (unless the suspended portion is critical to the remaining portion).

Rule 174.109 Changes to a certificated organisation

156. This rule allows the organisation to make changes to its exposition to reflect changes to its operating practices and procedures, standards, and operational facilities.
157. Rules 174.109(a), (b), and (c) place on the organisation the responsibility for ensuring that the exposition is always an accurate statement of its service, practices, and procedures and that the Director is kept informed of any changes by an amendment procedure.
158. Where changes are made to the organisation's procedures or standards which may affect the information accuracy or the accurate and safe operation of a meteorological office or facility, the organisation should ensure that appropriate background information and reasons for the change are documented and retained for possible audit-trail purposes.
159. Rule 174.109(d) describes the changes to the exposition that require the prior approval of the Director. It allows the Director to prescribe conditions that may apply because of any change in these specific items. These may be transitional conditions to allow the organisation to continue to operate while negotiations take place with the Director with respect to permanent changes.

Appendix 1 - Reference List

World Meteorological Organization Documents

WMO #	Title
8	Guide to Meteorological Instruments and Methods of Observation
49	<ul style="list-style-type: none"> • Technical Regulations, Volume I – General Meteorological Standards and Recommended Practices • Technical Regulations, Volume II – Meteorological Service for International Air Navigation <p>Note: Parts I & II of Volume II, which is similar to ICAO Annex 3, was discontinued in December 2023. Parts III & IV of Volume II, which concern aeronautical climatology and the format and preparation of flight documentation respectively, are expected to be discontinued in November 2027, with material of continuing relevance incorporated into Amendment 1 to ICAO PANS-MET (Doc 10157).</p>
182	International Meteorological Vocabulary
305	Guide on the WMO Integrated Processing and Prediction System
306	Manual on Codes – International Codes: <ul style="list-style-type: none"> • Volume I.1, Part A – Alphanumeric Codes • Volume I.2, Part B – Binary Codes; Part C - Common Features to Binary and Alphanumeric Codes • Volume II – Regional Codes and National Coding Practices
386	Manual on the Global Telecommunications System
407	International Cloud Atlas: <ul style="list-style-type: none"> • Volume I – Manual on the Observation of Clouds and other Meteors
485	Manual on the Integrated Processing and Prediction
488	Guide to the Global Observing System
625	Use of radar in meteorology
641	Meteorological Observations using navaid methods
706	Meteorology in the service of aviation
731	Guide on Meteorological Observing and Information Distribution Systems for Aviation Weather Services
732	Guide to Services for Aviation
782	Aerodrome Reports and Forecasts: A Users' Handbook to the Codes
842	Guide to the provision of meteorological service for international helicopter

	operations
872	The Global Observing System of the World Weather Watch
1001	Guide on the Quality Management System for the Provision of Meteorological Service for International Air Navigation
1083	Manual on the Implementation of Education and Training Standards in Meteorology and Hydrology: <ul style="list-style-type: none"> • Volume I - Meteorology

Note: To access these and other WMO publications, go to the WMO E-Library webpage: [WMO e-library](#), navigate to search, and enter by publication number or title.

International Civil Aviation Organization Annexes

Annex	Title
2	Rules of the Air
3	Meteorological Service for International Air Navigation
5	Units of Measurement to be Used in Air and Ground Operations
6	Operation of Aircraft
10	Aeronautical Communications
11	Air Traffic Services
12	Search and Rescue
15	Aeronautical Information Services

International Civil Aviation Organization Documents

Doc #	Title
4444	Air Traffic Management (PANS)
7030	Regional Supplementary Procedures
7300	Convention on International Civil Aviation
7488	Manual of the ICAO Standard Atmosphere
7910	Location Indicators
8126	Aeronautical Information Services Manual
8400	ICAO Abbreviations and Codes
8896	Manual of Aeronautical Meteorological Practice
9328	Manual of Runway Visual Range Observing and Reporting Practices
9365	Manual of All-Weather Operations

9377	Manual of Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services
9673	Air Navigation Plan – Asia and Pacific Regions
9691	Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds
9713	International Civil Aviation Vocabulary
9750	Global Air Navigation Plan for CNS/ATM Systems
9766	Handbook on the International Airways Volcano Watch (IAVW) Operational Procedures
9817	Manual on Low-level Wind Shear
9837	Manual on Automatic Meteorological Observing Systems at Aerodromes
9855	Guidelines on the Use of the Public Internet for Aeronautical Applications
9873	Manual on the Quality Management System for the Provision of Meteorological Service to International Air Navigation
9896	Manual on the Aeronautical Telecommunications Network (ATN) using Internet Protocol Suite (IPS) Standards and Protocols
9974	Flight Safety and Volcanic Ash
10157	Procedures for Air Navigation Services – Meteorology (PANS-MET) Note: Applicable from November 2025.

International Civil Aviation Organization Asia and Pacific Region Documents

Title
<ul style="list-style-type: none"> ASIA/PAC, Air Navigation Plan Volumes I, II, III.
<ul style="list-style-type: none"> ROBEX Handbook
<ul style="list-style-type: none"> Asia/Pacific Regional SIGMET Guide