CIVIL AVIATION SAFETY AUTHORITY OF PAPUA NEW GUINEA

PNG

Civil Aviation Rule

Part 174

Aviation Meteorological Service Organisation – Certification and Operation

Applicable 04 November 2024

DESCRIPTION

Part 174 prescribes the regulatory requirements for persons or organisations providing meteorological services in support of the PNG civil aviation air navigation system. The rule also provides for the organisations to provide support to enable PNG's obligations under the ICAO Regional Air Navigation Plans to be discharged.

BULLETIN

This part first came into force on 1 January 2004 and now incorporates the following amendments:

Amendment	Effective Date
Amendment 1	01 May 2016
Amendment 2	13 November 2018
Amendment 3	04 December 2019
Amendment 4	03 April 2023
Amendment 5	04 November 2024

Summary of amendments:

Amendment 5:
(Docket24/14/CAR174/45)

Amendment 5 aligns Part 174 with ICAO Annex 3, Amendment 81

Rule 174.3 - Adjustment to paragraph (a) to include new definition as indicated below to define 'Information Service' used in the new standard as per amendment 81 to Annex 3. "Information Service - An information service provides information consumers access to one or more applications or systems by means of the SWIM core services. It encapsulates a distinct set of operations logic within a well-defined functional boundary". (adapted from the definition in ICAO Doc 10039 SWIM Manual)

Rule 174.53 – Adjustment to paragraph (a)(2) of the existing rue to include "along the touchdown and take-off zone of the runway" for consistency with Annex 3 requirements.

Rule 174.61 – The rule is adjusted to include "conventional instruments" for clarity with current practice required by Annex 3.

Rule 174.79 – Inclusion of a new paragraph as paragraph (b)(3)(iii) of rule 174.79 to capture and transpose the new standard in the latest amendment (amendment 81) of Annex 3 to align Part 174 with the requirements of Annex 3.

Rule 174.101 – Adjust paragraph (5) of rule 174.101 to include deletion of one letter 'A' in the form reference number CAA 174/01for correct form reference number. The correct form reference number should be CA 174/01.

Rule 174.211- Adjust the rule title to include deletion of "Report" and replacing it with "Information" as well as in the rule paragraph. Include the words TAF, SIGMET and Forecasts for consistency with the requirements of Annex 3.

Schedule of Rules

Subpart A — General

174.1 Purpose

This Part prescribes—

(1) rules governing the certification and operation of organisations providing meteorological services for aviation and

(2) requirements governing the provision of basic weather reports for aviation.

174.3 Definitions

(a) In this Part:

Aerodrome climatological summary means a concise summary of specified meteorological elements at an aerodrome, based on statistical data.

Aerodrome climatological table means a table providing statistical data on the observed occurrence of one or more meteorological elements at an aerodrome.

Aerodrome meteorological office means an office designated to provide meteorological service for aerodromes serving international air navigation.

Aeronautical meteorological station means a station designated to make observations and meteorological reports for use in international air navigation.

Aircraft observation means the evaluation of one or more meteorological elements made from an aircraft in flight.

AIRMET information means information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en-route weather phenomena which may affect the safety of low-level aircraft operations and which was not already included in the forecast issued for low-level flights in the flight information region concerned or sub-area thereof.

Air-report means a report from an aircraft in flight prepared in conformity with requirements for position, and operational and/or meteorological reporting.

Basic weather report means a verbal comment describing any of the following current weather conditions observed at a particular place or airspace:

(1) measure of actual wind direction and speed:

(2) atmospheric pressure:

(3) air temperature:

(4) weather conditions and cloud cover:

Briefing means oral commentary on existing and/or expected meteorological conditions.

Certificate holder means the holder of a meteorological service certificate issued under this Part:

Cloud of operational significance means a **c**loud with the height of cloud base below 1 500 m (5000 ft) or below the highest minimum sector altitude, whichever is greater, or a cumulonimbus cloud or a towering cumulus cloud at any height.

Consultation means discussion with a meteorologist or another qualified person of existing and/or expected meteorological conditions relating to flight operations; a discussion includes answers to questions.

Erroneous meteorological information means any meteorological information that is or has the potential to be significantly outside the allowable accuracy or tolerance for that

information:

Facility means any system or equipment, which provides an automatic function that supports a meteorological office or provides meteorological information, and includes any system or equipment for the following:

(1) electronic data analysis and forecast production:

(2) remote weather sensing:

(3) electronic or automatic meteorological information delivery.

Flight documentation mean written or printed documents, including charts or forms, containing meteorological information for a flight.

Forecast means a statement of expected meteorological conditions for a specified time or period, and for a specified area or portion of airspace.

ICAO meteorological information exchange model (IWXXM) means a data model for representing aeronautical meteorological information.

Information Service- means an information service provides information consumers access to one or more applications or systems by means of the SWIM core services. It encapsulates a distinct set of operations logic within a well-defined functional boundary.

Meteorological Authority means the Civil Aviation Safety Authority arranging for the provision of meteorological service for national and international air navigation on behalf of a Papua New Guinea.

Meteorological bulletin means a text comprising meteorological information preceded by an appropriate heading.

Meteorological satellite means an artificial Earth satellite making meteorological observations and transmitting these observations to Earth.

Meteorological office means an office designated to provide meteorological. service for international air navigation or an office

Meteorological watch office (MWO) means an office designated to provide information concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations within its specified area of responsibility.

Observation (meteorological) means the evaluation of one or more meteorological elements.

Prevailing visibility means the greatest visibility value, observed in accordance with the definition of "visibility", which is reached within at least half the horizon circle or within at least half of the surface of the aerodrome. These areas could comprise contiguous or non-contiguous sectors.

Prognostic chart means a forecast of a specified meteorological element(s) for a specified time or period and a specified surface or portion of airspace, depicted graphically on a chart.

Promulgated information incident means an incident that involves significantly incorrect, inadequate, or misleading information promulgated in any information publication, map, or chart.

Regional air navigation agreement means ***a***greement approved by the Council of ICAO normally on the advice of a regional air navigation meeting.

Space weather center (SWXC) means a center designated to monitor and provide advisory information on spaceweather phenomena expected to affect high-frequency radio communications, communications via satellite, GNSS-based navigation and surveillance

systems and/or pose a radiation risk to aircraft occupants.

Standard isobaric surface means an isobaric surface used on a worldwide basis for representing and analysing the conditions in the atmosphere.

State volcano observatory means a volcano observatory, designated by regional air navigation agreement, to monitor active or potentially active volcanoes within a State and to provide information on volcanic activity to its associated area control centre/flight information centre, meteorological watch office and volcanic ash advisory centre.

Tropical cyclone means generic term for a non-frontal synoptic-scale cyclone originating over tropical or sub-tropical waters with organized convection and definite cyclonic surface wind circulation.

Tropical cyclone advisory centre (TCAC) means a meteorological centre designated by regional air navigation agreement to provide advisory information to meteorological watch offices, world area forecast centres and international OPMET databanks regarding the position, forecast direction and speed of movement, central pressure and maximum surface wind of tropical cyclones.

Upper-air chart means a meteorological chart relating to a specified upper-air surface or layer of the atmosphere.

VOLMET means meteorological information for aircraft in flight.

Data link-VOLMET (D-VOLMET) means the provision of current aerodrome routine meteorological reports (METAR) and aerodrome special meteorological reports (SPECI), aerodrome forecasts (TAF), SIGMET, special air-reports not covered by a SIGMET and, where available, AIRMET via data link.

Volcanic ash advisory centre (VAAC*)* means a meteorological centre designated by regional air navigation agreement to provide advisory information to meteorological watch offices, area control centres, flight information centres, world area forecast centres and international OPMET databanks regarding the lateral and vertical extent and forecast movement of volcanic ash in the atmosphere following volcanic eruptions.

World area forecast system (WAFS) means a worldwide system by which world area forecast centres provide aeronautical meteorological en-route forecasts in uniform standardized formats.

World area forecast centre (WAFC) means a meteorological centre designated to prepare and issue significant weather forecasts and upper-air forecasts in digital form on a global basis direct to States using the aeronautical fixed service Internet based services.

(b) For the purpose of this Part, the following terms are used with a limited or specific meaning as indicated below:

(1) to avoid confusion in respect of the term "service" between the meteorological service considered as an administrative entity and the service which is provided, "meteorological authority" is used for the former and "service" for the latter;

(2) "provide" is used solely in connection with the provision of service;

(3) "issue" is used solely in connection with cases where the obligation specifically extends to sending out the information to a user;

(4) "make available" is used solely in connection with cases where the obligation ends with making the information accessible to a user; and

(5) "supply" is used solely in connection with cases where either (iii) or (iv) applies.

174.5 Requirement for certificate

(a) **Except as provided in 174.6 no person shall provide a meteorological service except under** the authority of, and in accordance with the provisions of, a meteorological service certificate issued under this Part.

(b) The Director may grant a certificate authorising the provision of meteorological services varying from a single meteorological service to a range of meteorological services supported by a network of meteorological offices intended for the Papua New Guinea air navigation system.

174.6 Basic weather reporting

(a) Notwithstanding 174.5, a person may provide a basic weather report without being a certificate holder providing that person—

(1) utilises equipment that is suitable for the observations being made; and

(2) employs a system for checking that equipment; and

(3) is trained to provide accurate basic weather reports.

(b) The equipment, system of checking and training required under paragraph (a) must be acceptable to the Director.

174.7 Application for certificate

An applicant for the grant of a meteorological service certificate shall complete form CA 174/01 and submit to the Director with—

(1) the exposition required by rule 174.87; and

(2) a payment of the appropriate application fee prescribed by regulations made under the Act.

174.9 Issue of certificate

An applicant is entitled to a meteorological service certificate if the Director is satisfied that—

(1) the applicant meets the requirements of Subpart B; and

(2) the applicant, and the applicant's senior person or persons required by 174.51(a)(1) and (2) are fit and proper persons; and

(3) the granting of the certificate is not contrary to the interests of aviation safety.

174.11 Privileges of certificate holder

(a) A meteorological service certificate specifies the types of facilities that the certificate holder is authorised to operate.

(b) Subject to 174.105, the holder of a meteorological service certificate may provide the meteorological services listed on the holder's certificate provided that each meteorological service, and the meteorological information supplied for each meteorological service, and

(c) the location and airspace covered by each meteorological service is listed in the certificate holder's exposition.

174.13 Duration of certificate

(a) A meteorological service certificate may be granted or renewed for a period of up to 5 years.

(b) A meteorological service certificate remains in force until it expires or is suspended or revoked.

(c) The holder of a meteorological service certificate that expires or is revoked shall forthwith surrender the certificate to the Director.

(d) The holder of a meteorological service certificate that is suspended, shall forthwith produce the certificate to the Director for appropriate endorsement.

174.15 Notification of termination of service

The holder of an aviation meteorological service certificate that terminates its service shall notify the Director of termination in writing not less than 30 days prior to the date of termination.

174.17 Renewal of certificate

(a) An application for the renewal of a meteorological service certificate shall be made on form CA 174/01.

(b) The application prescribed in paragraph (a) shall be submitted to the Director prior to the application renewal date specified in the certificate or, if no such date is specified, and, in any case, not less than 60 days before the certificate expires.

Subpart B — Certification Requirements

174.51 Personnel requirements

An applicant for the grant of a meteorological service certificate shall engage, employ or contract:

(1) A senior person identified as the Chief Executive who has the authority within the applicant's organisation to ensure that each meteorological service listed in their exposition can be financed and carried out to meet the operational requirements, and in accordance with the requirements prescribed by this Part: and

(2) A senior person or group of senior persons who are responsible for ensuring that the applicant's organisation complies with the requirements of this Part. Such nominated person or persons shall be ultimately responsible to the Chief Executive.

(3) Sufficient personnel to plan, operate, supervise, inspect, and certify the meteorological offices and facilities and provide the meteorological services listed in the applicant's exposition.

174.52 Personnel Qualification and Competency, Education and Training Requirements

(a) An applicant for the grant of meteorological service certificate shall establish procedures to ensure those personnel authorised to provide service for national and international air navigation by the applicant meets the qualifications, competencies, education and training of meteorological personnel in accordance with the requirements of the World Meteorological Organization.

(b) An applicant for the grant of meteorological service certificate shall establish procedures to ensure that:

(1) each person assigned as meteorological personnel is competent and holds the appropriate qualifications to perform the duties, that person is assigned:

(2) programmes for training and assessment have been developed and implemented for meteorological personnel:

(3) each person assigned as meteorological personnel has been:

(i) appropriately trained; and

(ii) assessed as competent by qualified personnel through a formal process that meets the requirements of the particular meteorological office; and

(iii) issued with a certificate or permit.

(c) An applicant for the grant of meteorological service certificate must develop a periodic and recurrent training program to ensure that each person assigned duties as meteorological personnel maintains the appropriate level of qualification.

(d) An applicant for the grant of meteorological service certificate must ensure training records of its meteorological and technical staff including competency assessment and authorisation are appropriately maintained.

174.53 Site Requirements and Meteorological Office requirements

(a) An applicant for the grant of a meteorological service certificate shall establish procedures to ensure that—

(1) each of the meteorological offices and facilities listed in their exposition is—

(i) sited and configured in accordance with security measures designed to prevent unlawful or accidental interference; and

(ii) provided with suitable power supplies and means to ensure appropriate continuity of service; and

(2) each of the remote weather sensing facilities listed in their exposition is installed and maintained in a technically appropriate position along the take-off and touchdown zone of the runway to ensure that the facility provides an accurate representation of the local meteorological conditions.

(b) An applicant for the grant of a meteorological service certificate shall establish procedures to ensure that each meteorological offices and facilities listed in the exposition is located at, or associated with an aerodrome and/or an air traffic services units to carry out some or all of the following tasks as required to meet the requirements of flight operations at the aerodrome:

(1) prepare and/or obtain forecasts and other relevant information for flights with which it is concerned; the extent of its responsibilities to prepare forecasts shall be related to the local availability and use of en-route and aerodrome forecast material received from other offices;

(2) prepare and/or obtain forecasts of local meteorological conditions;

(3) maintain a continuous watch of meteorological conditions over the aerodromes for which it prepares forecasts;

(4) provide briefing, consultation and flight documentation to airline operators and flight crew personnel;

(5) supply other meteorological information to aeronautical users;

(6) display the available meteorological information;

(7) exchange meteorological information with other meteorological offices; and

(8) supply information received on pre-eruption volcanic activity, a volcanic eruption or volcanic ash cloud, to its associated air traffic services unit, aeronautical information services unit and meteorological watch offices (MWO) in accordance with this Part; and

(c) An applicant for a meteorological service certificate shall establish procedures to ensure that each meteorological watch office (MWO) listed in the exposition:

(1) maintain continuous watch over meteorological conditions affecting flight operations within the its area of responsibility;

(2) prepare SIGMET and other information related to its area of responsibility;

(3) supply SIGMET information and, as required, other meteorological information to associated air traffic services units;

(4) disseminate SIGMET information;

(5) when required and in accordance with this Part:

(i) prepare AIRMET information related to its area of responsibility;

(ii) supply AIRMET information to associated ATS units;

(iii) disseminate AIRMET information;

(6) supply information received on pre-eruption volcanic activity, a volcanic eruption and volcanic ash cloud, for which a SIGMET has not already been issued, to its associated area control centre, in accordance with this Part, and to its associated Volcanic Ash Advisory Centre(VAAC) as determined by regional air navigation agreement; and

(7) supply information received concerning the accidental release of radioactive materials into the atmosphere, in the area for which it maintains watch or adjacent areas, to its associated ATS centers, as agreed between the meteorological and ATS authorities concerned and to AIS units as per letters of agreement; and

(8) supply information received regarding space weather advisory in the area for its responsibility or in adjacent areas to its associated ATS center; and

(9) is associated with an ATS, FIC and ACC for the provision of meteorological information; and

(10) specifies that the boundaries of the area over which meteorological watch is to be maintained by the MWO is coincident with the boundaries of an FIR, or a CTA, or a combination of FIRs and CTAs.

(d) For an aerodrome without meteorological office located at the aerodrome, the Director may designate:

(1) one or more aerodrome meteorological office(s) to supply meteorological information as required; and

(2) a competent authority or airline operator to supply and establish means by which such information can be supplied for the aerodrome concerned.

(e) An applicant for the grant of meteorological service certificate must arrange for its aeronautical meteorological stations to be inspected at sufficiently frequent intervals to ensure that:

(1) a high standard of observation is maintained; and

(2) instruments and all their indicators are functioning correctly; and

(3) the exposure of the instruments has not changed significantly.

174.55 Communication requirements

(a) An applicant for the grant of a meteorological service certificate shall establish communication systems and procedures to ensure that each meteorological offices listed in the applicant's exposition can effectively supply the required meteorological information to:

(1) air traffic services units including aerodrome control towers, approach control units and aeronautical telecommunications stations serving these aerodromes;

(2) air traffic services and search and rescue services units in respect of the flight information regions, control areas and search and rescue regions and flight information centres, area control centres and rescue coordination centres and aeronautical telecommunications stations;

(3) permit world area forecast centres to supply the required world area forecast system products for the applicant to use;

(4) permit designated space weather centres to supply the required space weather advisory information for the applicant to use;

(5) permit communications by direct speech and printed communication between aerodrome meteorological offices and aerodrome control towers or approach control units, the speed with which the communications can be established being such that the required points may normally be contacted within approximately 15 seconds;

(6) permit aerodrome meteorological offices to exchange operational meteorological information with aeronautical meteorological offices and meteorological watch office.

(b) An applicant for the grant of a meteorological service certificate shall ensure that meteorological bulletins containing operational meteorological information that is transmitted via the aeronautical fixed service or the public Internet must be originated by the appropriate meteorological office or aeronautical meteorological station.

(c) An applicant for the grant of a meteorological service certificate must ensure that the content and format of meteorological information transmitted to aircraft and by aircraft via the aeronautical mobile service is consistent with the provisions of this Part.

(d) The communication systems and procedures must be able to handle the volume and nature of the meteorological information being communicated so that no meteorological information is delayed to the extent that the information becomes out-of-date.

174.57 Input requirements

(a) An applicant for the grant of a meteorological service certificate shall establish procedures to obtain input meteorological information appropriate for the meteorological services being provided.

(b) The procedures shall ensure that—

(1) each meteorological office and facility listed in the applicant's exposition that provides a forecast service has continuing access to appropriate historical, real- time, and other meteorological information for the applicant's forecast areas; and

(2) each meteorological office and facility listed in the applicant's exposition that provides a meteorological briefing service in person or by any other interactive visual means, has adequate display and briefing resources available for the briefings; and

(3) each meteorological office and facility listed in the applicant's exposition that provides a meteorological reporting service has adequate observing systems to supply adequate, accurate and timely meteorological reports; and

(4) each meteorological office listed in the applicant's exposition that provides a meteorological watch service has adequate meteorological information to supply an adequate, accurate and timely meteorological watch service; and

(5) each meteorological office and facility listed in the applicant's exposition that provides a climatology service has adequate meteorological information for the preparation of climatological information.

174.59 Output Requirements

(a) An applicant for the grant of a meteorological service certificate shall—

(1) identify the output meteorological information provided by each meteorological service listed in their exposition; and

(2) determine the standards and formats for that output meteorological information.

(b) The applicant shall establish procedures to ensure that the meteorological information supplied by each meteorological office and facility listed in their exposition complies with the standards and formats determined under paragraph (a)(2).

174.61 Facility Requirements

An applicant for the grant of a meteorological service certificate shall establish procedures to ensure that all electronic data processing facilities and conventional instruments used in the acquisition, compilation, computing, access or dissemination of meteorological information are of a nature, configuration and capability to ensure the adequacy, accuracy and timeliness of that meteorological and related information.

174.63 Documentation

(a) An applicant for the grant of a meteorological service certificate shall hold copies of meteorological office manuals, facility manuals, technical standards and practices, procedures manuals, training manual and any other documentation that is necessary for the provision of the meteorological services listed in their exposition.

(b) The applicant shall establish a procedure to control the documentation required by paragraph to ensure that—

(1) the documentation is reviewed and authorised by appropriate personnel before issue; and

(2) current issues of relevant documentation are available to personnel at all locations where they need access to such documentation for the provision of the meteorological services listed in the applicant's exposition; and

(3) obsolete documentation is promptly removed from all points of issue or use; and

(4) changes to documentation are reviewed and approved by appropriate personnel; and

(5) the current version of each item of documentation can be identified to preclude the use of out-of-date editions.

174.65 Verification periodic inspection, testing and calibration

(a) An applicant for the grant of a meteorological service certificate shall establish procedures for—

(1) the routine verification of meteorological information obtained and provided by the applicant; and

(2) the periodic inspection of each meteorological office listed in the applicant's exposition; and

(3) the periodic inspection, testing and calibration of each facility listed in the applicant's exposition.

(b) The procedures shall ensure that—

(1) the systems required for the routine verification of meteorological information have the capability and integrity necessary for verifying the meteorological information; and

(2) appropriate inspection equipment and systems are available to personnel for the inspection of each meteorological office; and

(3) appropriate inspection, measuring and test equipment and systems are available to personnel for the inspection, testing and calibration of each facility; and

(4) the inspection, measuring and test equipment and systems have the precision and accuracy necessary for the inspections, measurements and tests being carried out; and

(5) all meteorological sensing facilities are calibrated and configured so that the environmental sensors fitted or incorporated produce, as far as possible, reliable, accurate and representative meteorological information.

174.67 Release of meteorological information

(a) An applicant for the grant of a meteorological service certificate shall establish procedures for—

(1) the release of meteorological information from each meteorological office listed in their exposition; and

(2) supply, or arrange for the supply of, up-to-date meteorological information as necessary to the air traffic services unit for the conduct of their functions; and

(3) supply as rapidly as possible meteorological information in connection with an aircraft in emergency when requested by an air traffic services unit; and

(4) supply search and rescue services units with the meteorological information in a form established by mutual agreement; and

(5) supply up-to-date meteorological information to relevant aeronautical information services units, as necessary, for the conduct of their functions;

(6) and the placing of facilities listed in their exposition into operational service.

(b) The procedures prescribed in paragraph (a) shall ensure that persons authorised to supervise the production and release of meteorological information and persons authorised to place meteorological facilities into operational service have been assessed as competent under the procedures required by rule 174.52(b)(3).

174.69 Notification of meteorological office and facility status

(a) An applicant for the grant of a meteorological service certificate shall establish procedures to notify users of the applicant's meteorological services of relevant operational information and of any changes in the operational status of each meteorological office or facility listed in the applicant's exposition.

(b) The procedures shall ensure that—

(1) the operational information for each of the applicant's meteorological services that support the Papua New Guinea air navigation system or an air traffic service is forwarded to the Aeronautical Information Service for publication in the Papua New Guinea Aeronautical Information Publication; and

(2) the users of a meteorological office or facility are notified without delay of any change in the operational status of the meteorological office or facility if the change may affect the safety of air navigation. For those meteorological offices and facilities published in the Papua New Guinea Aeronautical Information Publication, the information concerning any change to their operational status shall be forwarded to the Aeronautical Information Service for the issue of a NOTAM.

174.71 Meteorological information check after accident or incident

(a) An applicant for the grant of a meteorological service certificate shall establish procedures for checking the adequacy, accuracy and timeliness of any of their meteorological information that may have been used by an aircraft or an air traffic service involved in an accident or incident.

(b) The procedures shall ensure that—

(1) the checks are carried out as soon as practicable after notification to the applicant's organisation of such an accident or incident; and

(2) copies of the meteorological information are kept in a secure place for possible use by any subsequent investigation

174.73 Malfunction and erroneous information

(a) An applicant for the grant of a meteorological service certificate shall establish procedures to identify, record, notify, investigate, rectify, and report any—

(1) report of erroneous meteorological information; and

(2) detected malfunction in the facilities and meteorological services listed in their exposition that may result in the supply of erroneous meteorological information.

(b) The procedures shall ensure that—

(1) the erroneous information is corrected by the most appropriate means relative to the operational significance of that information; and

(2) all users that have received the erroneous meteorological information are notified without delay; and

(3) the source of the erroneous information or the malfunction is identified and, where possible, eliminated; and

(4) the Director is notified within 12 hours of a promulgated information incident in

accordance with Part 12, and within 72 hours of those malfunction that cannot be remedied.

174.75 Records

(a) An applicant for the grant of a meteorological service certificate shall establish procedures to identify, collect, index, store, maintain and dispose of the records that are necessary for the supply of the meteorological services listed in their exposition.

(b) The procedures shall ensure that—

(1) there is a record of training of its meteorological and technical staff including competency assessment and authorisation required by 174.52; and

(2) there is a record of the input meteorological information obtained under the procedures required by 174.57; and

(3) there is a record of all output meteorological information identified under 174.59; and

(4) the records specified in paragraph (b)(1) and (2) are retained for a period of at least

(5) 60 days or for such longer period as may be required by the Director; and

(6) there is a record for each meteorological office and facility listed in the applicant's exposition, in order to document the performance of each meteorological office and facility and to provide a traceable history of its maintenance, service and product quality, its periodic inspections, and the persons responsible for each of these activities; and

(7) there is a record of the equipment and systems used for verification, inspection, testing and calibration under the procedures required by 174.65. The record shall provide a traceable history of the location, maintenance, and calibration checks for the equipment and systems; and

(8) there is a record of each occurrence of erroneous meteorological information and of each malfunction detected under the procedures required by 174.73. The record shall detail the nature of the erroneous meteorological information or malfunction and the findings of the investigation and the follow-up corrective actions; and

(9) there is a record of each safety management system review of the applicant's organisation carried out under the procedures required by 174.77. The record shall detail the part or activity of the organisation that was reviewed, the findings of the review and any necessary follow-up corrective actions; and

(10) there is a record of each quality management system review of the applicant's organisation carried out under the procedures required by 174.79. The record shall detail the part or activity of the organisation that was reviewed, the findings of the review and any necessary follow-up corrective actions; and

(11) there is a record for each person who is authorised by the applicant to supervise the production and release of meteorological information and for each person who is authorised by the applicant to place facilities into operational service. The record shall include details of their experience, qualifications, training and current authorisations; and

(12) all records are legible, and of a permanent nature; and

(13) all records other than those required by paragraph (b)(1) and (2) are retained for at least one year, or for such longer period as may be required by the Director, in order to establish a history of the performance of the meteorological services.

174.77 Safety Management System

An applicant for the grant of an aviation meteorological service organisation certificate shall establish and implement a safety management system which meets the requirements of CAR Part 100.

174.79 Quality Management System

(a) An applicant for the grant of an aviation meteorological service organisation certificate shall establish and implement a Quality Management System (QMS), which meets the requirements of CAR Part 100.

(b) The quality management system required by paragraph (a) must also include and address the following:

(1) the specific value of any of the elements given in a report is to be understood by the recipient as the best approximation to the actual conditions at the time of observation;

(2) the specific value of any of the elements given in a forecast:

(i) is to be understood by the recipient as the most probable value the element is likely to assume during the period of the forecast; and

(ii) when a time of occurrence or change of an element is given, the time or change will be understood to be the most probable time or change; and

(3) the supply of meteorological information is:

(i) consistent with human factors principles; and

(ii) in a form which requires minimum interpretation by users; and

(iii) provided to the operators, flight crew members, air traffic services units, search and rescue services units, airport managements, and others concern through information services; and

(4) verification and validation procedures; and

(5) resources for monitoring adherence to the prescribed transmission schedules for individual messages required to be exchanged; and

(6) filing of transmission times of the messages prescribed in paragraph (b)(5).

174.81 Routine Observations and Reports

(a) A holder of a meteorological service certificate shall establish procedures to ensure that the routine observations are carried out at aerodromes at the following intervals –

(1) throughout the 24 hours each day, unless otherwise agreed between the meteorological service provider, the ATS service provider and the operator concerned; and

(2) one hour or as determined by regional air navigation agreement, at intervals of one half-hour; and

(3) at other aeronautical meteorological stations, as determined by the certificate holder taking into account the requirements of air traffic services units and aircraft operations.

(b) A holder of a meteorological service certificate shall ensure that reports of routine

observations are issued as:

(1) local routine reports, only for dissemination at the aerodrome of origin that is intended for arriving and departing aircraft; and

(2) METAR for dissemination beyond the aerodrome of origin that is mainly intended for flight planning, and D-VOLMET; and

(3) at aerodromes that are not operational throughout 24 hours in accordance with (a), METAR must be issued prior to the aerodrome resuming operations in accordance with regional air navigation agreement.

174.83 Coordination Requirement

(a) Each applicant for the grant of a meteorological service certificate shall establish systems and procedures to ensure, where applicable, co-ordination between the following agencies—

(1) a holder of an air traffic service organisation certificate issued under Part 172; and

(2) a holder of an aeronautical information service organisation certificate issued under Part 175; and

(3) a holder of an aerodrome operations certificate issued under Part 139; and

(4) search and rescue authorities; and

(5) aircraft operators: and

(6) the Papua New Guinea Defence Force; and

(7) Any other authorities and organisations that is necessary for the provision of meteorological information for air navigation;

(b) The applicant shall establish procedures to ensure each MET letter of agreement—

(1) details such matters as are necessary for effective coordination between the organisations party to the agreement; and

(2) is kept current; and

(3) is signed by senior representatives of the participating organisations; and

(4) is part of the applicant's operations manual.

(c) The coordination agreement required by paragraph (a)(1) should be established to cover, amongst other things:

(1) the provision in air traffic services units of displays related to integrated automatic observing systems;

(2) the calibration and maintenance of these displays/instruments;

(3) the use to be made of these displays/instruments by air traffic services personnel;

(4) as and where necessary, supplementary visual observations (for example, of meteorological phenomena of operational significance in the climb-out and approach areas) if and when made by air traffic services personnel to update or supplement the information supplied by the meteorological station; and

(5) meteorological information obtained from aircraft taking off, landing and inflight by ATS must be relayed to the meteorological service provider or aerodrome

meteorological forecast office.

174.85 Service for Operators and flight crewmembers

(a) An applicant for the grant of meteorological service certificate shall establish procedures to supply meteorological information to operators and flight crewmembers for pre-flight planning, inflight re-planning and aircraft in flight in accordance with the requirements of Appendix A.

174.87 Organisation exposition

(a) An applicant for the grant of a meteorological service certificate shall provide the Director with an exposition that contains—

(1) a statement signed by the Chief Executive on behalf of the applicant's organisation confirming that the exposition and any included manuals—

(i) define the organisation and demonstrate its means and methods for ensuring ongoing compliance with this Part; and

(ii) will be complied with at all times; and

(2) the titles and names of the senior person or persons required by 174.51(a)(1) and (2); and

(3) the duties and responsibilities of the senior person or persons specified in paragraph (a)(2) including matters for which they deal directly with the Director or the Authority on behalf of the organisation; and

(4) an organisation chart showing lines of responsibility of the senior persons specified in paragraph (a)(2); and

(5) a summary of the applicant's staffing structure at each meteorological office listed under paragraph (a)(7)(i); and

(6) a list of the meteorological services to be covered by the certificate; and

(7) a list providing—

(i) the location of each meteorological office operated by the applicant; and

(ii) the location of each facility operated by the applicant that provides meteorological information directly to the users; and

(iii) the meteorological services provided by each of those meteorological offices and facilities; and

(iv) the locations and airspace covered by such meteorological services; and

(8) details of the applicant's procedures and systems required by rule—

(i) 174.52(b) regarding competence of personnel; and

(ii) 174.53 regarding site and meteorological office requirements; and

(iii) 174.55 regarding communication requirements; and

(iv) 174.57 regarding meteorological service input requirements; and

(v) 174.59 (a) (1) regarding meteorological information for output

requirements; and

(vi) 174.59(a)(2) regarding standards and formats for that information; and

(vii) 174.61 regarding facility requirements; and

(viii) 174.63 (b) regarding control of documentation; and

(ix) 174.65 regarding verifications, inspections, tests and calibrations; and

(x) 174.67 regarding release of meteorological information and the placing of facilities into operational service; and

(xi) 174.69 regarding notification of meteorological office and facility status; and

(xii) 174.71 regarding meteorological information checks after notification of an accident or incident; and

(xiii) 174.73 regarding malfunctions and erroneous information; and

(xiv) 174.75 regarding identification, collection, indexing, storage, maintenance and disposal of records; and

(xv) 174.77 regarding safety management system of the organisation; and

(xvi) 174.79 regarding quality management system of the organisation; and

(xvii) 174.81 regarding routine observations and reports; and

(xviii) 174.83 regarding coordination requirements; and

(xix) 174.85regarding service for operators and flight crew members; and

(9) procedures to control, amend anddistribute the exposition.

(b) The applicant's exposition must be acceptable to the Director.

Subpart C — Operating Requirements

174.101 Continued compliance

The certificate holder shall—

(1) hold at least one complete and current copy of their exposition at each meteorological office specified in their exposition; and

(2) comply with all procedures and systems detailed in their exposition; and

(3) make each applicable part of their exposition available to personnel who require those parts to carry out their duties; and

(4) continue to meet the standards and comply with the requirements of Subpart B prescribed for certification under this Part; and

(5) notify the Director of any change of address for service, telephone number, or facsimile number required by form CA 174/01 within 28 days of the change.

174.103 Operations manual

(a) The certificate holder shall provide an operations manual for each meteorological office listed in its exposition.

(b) The operations manual required by paragraph (a) shall establish the objective, determination and the provision of meteorological services required by this Part including the following:

(1) the objective of the meteorological service to be provided and how it is to be achieved; and

(2) the determination of meteorological service to —

(i) meet the needs of domestic and international air navigation; and

(ii) be provided over international waters and other areas which lie outside Port Moresby FIR; and

(3) the procedures for the operation and maintenance of the meteorological office, associated facilities, and shall include a list of—

(i) the meteorological information and meteorological services provided; and

(ii) the minimum acceptable operating parameters and standards for facilities; and

(iii) the minimum meteorological inputs required; and

(iv) the minimum performance and quality levels for output meteorological information and meteorological services provided; and

(v) the test equipment and systems required for the measurement of the minimum levels listed under subparagraph (iv); and

(vi) any mandatory check procedures for releasing meteorological information.

174.104 Safety Assessments

(a) The certificate holder must submit a safety assessment report or safety case study to the Director for;

(1) any proposed changes to its meteorological office and operations; and

(2) relocation of services or facilities, instruments and equipment including new installations; and

(3) implementation of new communication and satellite systems including those providing new functionality or capabilities.

(b) The certificate holder must ensure that users of the meteorological services are consulted and informed when carrying out the safety assessment as required under paragraph (a).

174.105 Limitations on certificate holder

The certificate holder shall not—

(1) provide meteorological information where the meteorological input information required to provide that meteorological information is not available; or

(2) provide meteorological information where the operational performance of the meteorological office or facility producing that meteorological information does not meet the applicable requirements; or

(3) provide meteorological information where any integrity monitoring system associated

with that meteorological information is not fully functional; or

(4) provide meteorological information where any required verification, inspection, test or calibration relating to that meteorological information has not been completed; or

(5) provide meteorological information where there is any cause whatsoever to suspect the integrityof that meteorological information.

174.107 Changes to certificate holder's organisation

(a) The certificate holder shall ensure that their exposition is amended so as to remain a current description of the holder's organisation and meteorological services provided.

(b) The certificate holder shall ensure that any amendments made to the holder's exposition meet the applicable requirements of this Part and comply with the amendment procedures contained in the holder's exposition.

(c) The certificate holder shall provide the Director with a copy of each amendment to their exposition as soon as practicable after its incorporation into the exposition.

(d) Where a certificate holder proposes to make a change to any of the following, prior notification to and acceptance by the Director is required:

(1) the Chief Executive:

(2) the listed senior persons:

(3) the meteorological services the holderprovides:

(4) the locations and airspace covered by each of the meteorological services the holder provides.

(e) The Director may prescribe conditions under which a certificate holder may operate during or following any of the changes specified in paragraph (d).

(f) A certificate holder shall comply with any conditions prescribed under paragraph (e).

(g) Where any of the changes referred to in this rule require an amendment to the certificate, the certificate holder shall forward the certificate to the Director as soon as practicable.

(h) The certificate holder shall make such amendments to the holder's exposition, as the Director may consider necessary in the interests of aviation safety.

Subpart D — Meteorological Observations, Reports and Forecast

174.201 General

For the purposes of this Subpart —

(i) an aeronautical meteorological station certified under this Part may be combined with a meteorological office with the same functions listed in the exposition;

(j) the holder of a certificate issued under this Part must establish at national aerodromes, or as agreed between an aerodrome operator under Part 139 and the holder of a certificate issued under this Part, such aeronautical meteorological stations as it determines necessary;

(k) an aeronautical meteorological station may be a separate station or may be combined with a synoptic station.

174.203 Aeronautical Meteorological Stations and Observations

(a) A holder of a meteorological service certificate shall ensure that each meteorological office and facilities listed in their exposition make routine observations at fixed intervals.

(b) The aeronautical meteorological stations must make routine observations at fixed intervals. At aerodromes, the routine observations must be supplemented by special observations whenever specified changes occur in respect of surface wind, visibility, runway visual range, present weather, clouds and/or air temperature.

(c) The observations must form the basis for the preparation of reports to be disseminated at the aerodrome of origin and of reports to be disseminated beyond the aerodrome of origin.

(d) Specific value of any of the elements given in a report must be understood by the recipient to be the best approximation to the actual conditions at the time of observation due to variability of meteorological elements in space and time, to limitations of observing techniques.

174.205 Special Observations and Reports

A holder of a meteorological service certificate shall

(a) establish a list of criteria for special observations in consultation with the ATS service provider, operators and others concerned; and

(b) ensure reports of special observations are issued as:

(1) local special reports, only for dissemination at the aerodrome of origin and (intended for arriving and departing aircraft); and

(2) SPECI for dissemination beyond the aerodrome of origin (intended mainly for flight planning and D-VOLMET,) unless METAR are issued at half-hourly intervals: and

(c) at aerodromes that are not operational throughout the 24-hour daily period, reports of special observations are issued following the resumption of the issuance of METAR and SPECI, as necessary.

174.207 Contents of Reports

A holder of meteorological service certificate must ensure that the contents of local routine reports, local special reports, METAR and SPECI are in accordance with the elements listed in Appendix B.

174.209 Observing and Reporting Meteorological Elements

A holder of a meteorological service certificate shall —

(a) establish systems to observe, measure, and report on the following-

(1) the mean direction and speed of the surface wind, including significant variations of the wind direction and speed, and reported in degrees true and metres per second or kilometers; and

(2) aerodrome visibility and reported in meters or kilometers; and

(3) runway visual range assessment on all runways intended for use during period of reduced visibility, including precision approach runways intended for Category I, instrument approach and landing operations; and

(4) the runway visual range, assessed in accordance with (3), must be reported in meters throughout periods when either the visibility or the runway visual range is less than

1500 m; and

(5) runway visual range assessments are representative of the touchdown zone of the runway intended for non-precision or Category I instrument approach and landing operations; and

(6) present weather phenomena occurring at an aerodrome or in its vicinity, such as rain, drizzle, haze, mist, fog and thunderstorms; and

(7) cloud amount, cloud type and height of cloud base as necessary to describe the clouds of operational significance, and when the sky is obscured the vertical visibility must be measured and reported, in lieu of cloud amount, cloud type and cloud base; and

(8) height of cloud base and vertical visibility in metres or feet; and

(9) air temperature and dew-point temperature in degrees Celsius; and

(10) atmospheric pressure, and QNH and QFE values in hectopascals; and

(11) supplementary information concerning significant meteorological conditions.

(b) ensure meteorological elements observed and reported in paragraphs (a)(1) to (a)(8) for local, routine and special reports, and METAR and SPECI, are representative of the conditions at the aerodrome and touchdown and take-off zone of the runway.

174.211 Dissemination of Meteorological Information

A holder of a meteorological service certificate shall establish procedures to ensure that dissemination of meteorological information (METAR/SPECI, TAF, SIGMET and Forecasts) are transmitted in IWXXM GML form, in addition to the supplementary information in abbreviated plain language.

174.213. Reporting Meteorological Information from Automatic Observing Systems

A holder of a meteorological service certificate shall ensure:

(a) that METAR and SPECI from automatic observing systems are used, to the maximum extent practicable, during operational and non-operational hours of an aerodrome as determined by the certificate holder in consultation with users.

(b) that –

(1) METAR and SPECI from automatic observing systems must be identified with the word ―AUTO.

(2) the METAR and SPECI derived from an automatic weather observing systems is approved by the Director.

(c) where an integrated semi-automatic system is used for the dissemination or display of meteorological information, it is capable of accepting manual insertion of data covering the meteorological elements which cannot be observed by automatic means;

(d) where an automatic observing system is used for Category 1 aerodromes, for approach, landing and take-off operations, it is an integrated automatic system for acquisition, processing, dissemination and display of meteorological parameters;

(e) the design of the automatic observing system in paragraph (d) must

(1) observe human factors principles; and

(2) include backup procedures.

174.215 Forecasts

A holder of a meteorological service certificate, and a meteorological service provider under paragraph (b), shall ensure—

(a) the issue of a new forecast such as a routine aerodrome forecast, automatically cancels any forecast of the same type previously issued for the same place and for the same validity period or part of that period;

(b) an aerodrome forecast issued by a meteorological service provider or a meteorological service certificate holder, is prepared:

(1) in accordance with regional air navigation agreements; and

(2) by the aerodrome meteorological office designated by the Director; and

(3) listed in the relevant facilities and services implementation document (FASID) for the aerodromes for which aerodrome forecasts are to be issued and the period of validity of these forecasts.

174.217 Aerodrome Forecasts

(a) A holder of a meteorological service certificate shall ensure that aerodrome forecast are issued at a specified time not earlier than one hour prior to the beginning of its validity period and consist of a concise statement of the expected meteorological conditions at an aerodrome for a specified period.

(b) A holder of a meteorological service certificate shall ensure that an aerodrome forecasts and amendments are prepared and issued as TAF in accordance with this Part and must follow the order in Appendix B.2

(c) A holder of a meteorological service certificate must establish a system and procedures to ensure that TAF are continuously being reviewed and, when necessary, issue amendments promptly with the changes to the forecast kept to a minimum, and cancelling TAF that cannot be kept under continuous review.

(d) A holder of a meteorological service certificate must establish procedures to ensure that not more than one TAF is valid at an aerodrome at any given time.

174.219 Landing Forecasts

(a) A holder of a meteorological service certificate shall ensure that landing forecast are prepared as determined by regional air navigation agreement which are intended to meet the requirements of local users and of aircraft within about one hour’s flying time from the aerodrome.

(b) The preparation of a landing forecast -

(1) shall be in the form of a trend forecast; and

(2) a trend forecast must consist of a concise statement of the expected significant changes in the meteorological conditions at that aerodrome to be appended to a local routine or local special report, or METAR or SPECI, and the period of validity of a trend forecast must be 2 hours from the time of the report which forms part of the landing forecast.

174.221 Forecasts for Takeoff

A holder of a meteorological service certificate shall ensure that a takeoff forecast is prepared in accordance with an agreement between the meteorological service provider and the operators concern.

174.223 Area Forecasts for Low-Level Flights

(a) A holder of a meteorological service certificate shall ensure that area forecast are prepared and issued for the following-

(1) when the density of traffic operating below A100 (or up to A150 in mountainous areas, or higher, where necessary) warrants the routine issue and dissemination of area forecasts for such operations, with the frequency of issue, the form and period of validity of those forecasts and the criteria for amendments to it being determined by the certificate holder in consultation with the users; and

(2) when the density of traffic operating below A100 warrants the issuance of AIRMET information in accordance with 174.303.

(b) A holder of a meteorological service certificate shall ensure that when abbreviated plain language is used, the forecast must be prepared as an area forecast to ensure the following are met

(1) employing approved ICAO abbreviations and numerical values;

(2) when chart form is used, the forecast must be prepared as a combination of forecasts of upper wind and upper-air temperature, and

(3) SIGWX phenomena.

(c) A holder of a meteorological service certificate shall ensure that the area forecasts are issued to -

(1) cover the layer between the ground and A100 (or up to A150 in mountainous areas, or higher, where necessary); and

(2) must contain information on en-route weather phenomena hazardous to low-level flights, in support of the issuance of AIRMET information, and

(3) additional information required by low-level flights/

(d) A holder of a meteorological service certificate shall ensure that the area forecasts for low-level flights prepared in support of the issuance of AIRMET information are issued every 6 hours for a period of validity of 6 hours and transmitted to meteorological watch offices and/or aerodrome meteorological offices concerned not later than one hour prior to the beginning of their validity period.

Subpart E— SIGMET, AIRMET and Space Weather information, aerodrome warnings and wind shear warnings and alerts

174.301 SIGMET Information

(a) A holder of a meteorological service certificate shall ensure that SIGMET information that are issued give a concise description in abbreviated plain language concerning the occurrence and/or expected occurrence of specified en-route weather phenomena, which may affect the safety of aircraft operations, and of the development of those phenomena in time and space.

(b) The procedures shall ensure that –

(1) SIGMET information are cancelled when the phenomena are no longer occurring or are no longer expected to occur in the area;

(2) period of validity of a SIGMET message must be not more than 4 hours except that in special case of SIGMET messages for volcanic ash cloud and tropical cyclones, the period of validity shall be extended up to 6 hours;

(3) SIGMET messages concerning volcanic ash cloud and tropical cyclones must be based on advisory information provided by VAACs and TCACs, respectively;

(4) close coordination is maintained between meteorological watch office and the associated area control center/flight information center to ensure that information on volcanic ash included in SIGMET and NOTAM messages is consistent;

(5) SIGMET messages must be issued not more than 4 hours before the commencement of the period of validity, except that in special case of SIGMET messages for volcanic ash cloud and tropical cyclones, these messages must be issued as soon as practicable but not more than 12 hours before the commencement of the period of validity; and

(6) SIGMET messages for volcanic ash and tropical cyclones must be updated at least every 6 hours.

174.303 AIRMET Information

(a) A holder of a meteorological service certificate shall ensure that ARMET information are issued in accordance with regional air navigation agreement, taking into account the density of air traffic operating below A100.

(b) The AIRMET information issued by the meteorological service provider must give a concise description in abbreviated plain language concerning the following -

(1) occurrence and/or expected occurrence of specified en-route weather phenomena, which have not been included in area forecast for low-level flights issued in accordance with 174.233; and

(2) which may affect the safety of low-level flights, and of the development of those phenomena in time and space.

(c) A holder of a meteorological service certificate shall ensure that -

(1) AIRMET information are cancelled when the phenomena are no longer occurring or are no longer expected to occur in the area; and

(2) the period of validity of an AIRMET message is not more than 4 hours.

174.305 Space Weather Information

(a) A holder of a meteorological service certificate shall ensure that Space Weather information must be issued by meteorological watch office and must give a concise description in abbreviated plain language concerning the occurrence and/or expected occurrence of space weather phenomena, which may affect the safety of aircraft operations;

(b) A holder of a meteorological service certificate shall ensure that –

(1) Space Weather information must be cancelled when the phenomena are no longer occurring or are no longer expected to occur in the area;

(2) period of validity of a Space Weather message must be not more than 6 hours or as specified by Space Weather Advisory Center (SWAC); and

(3) Space Weather message must be based on advisory information provided by SWAC.

174.307 Aerodrome Warnings

A holder of a meteorological service certificate shall ensure that aerodrome warnings –

(a) are issued by the aerodrome meteorological office; and

(b) give concise information of meteorological conditions that may adversely affect aircraft on the ground, including parked aircraft, and aerodrome facilities and services; and

(c) are cancelled by the holder of the meteorological service certificate when the conditions are no longer occurring or no longer expected to occur at the aerodrome.

174.309 Wind Shear Warnings and Alerts

A holder of a meteorological service certificate shall ensure wind shear warnings—–

(a) are prepared by the aerodrome meteorological office:

(1) for aerodromes where wind shear is considered a factor; and

(2) in accordance with local arrangements with the ATS unit and operators concerned; and

(b) give concise information on the observed or expected existence of wind shear which may adversely affect aircraft on:

(1) the approach path; or

(2) the takeoff path; or

(3) during circling approach;

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

(5) aircraft on the runway during the landing roll or takeoff run; and

(c) where local topography has been shown to produce significant wind shears at heights in excess of 500 m (1600 ft) above runway level, then 500 m (1600 ft) is not be considered restrictive.; and

(d) for arriving aircraft and departing aircraft are cancelled using specified cancellation criteria when the conditions are no longer occurring or no longer expected to occur at the aerodrome concerned.

Subpart F — Aeronautical Climatological Information

174.401 General

A holder of a meteorological service certificate shall ensure that—

(a) aeronautical climatological information required for the planning of flight operations are:

(1) prepared in the form of aerodrome climatological tables and aerodrome climatological summaries; and

(2) supplied to aeronautical users as agreed between the certificate holder and the user concerned; and

(b) aeronautical climatological information supplied:

(1) is based on observations made over a period of at least five years or more; and

(2) the period prescribed in paragraph (b)(1) is indicated in the information supplied; and

(c) aerodrome climatological summaries and aerodrome climatological tables are:

(1) supplied in accordance with the procedures prescribed by the World Meteorological Organisation for generating climatological summaries; and

(2) made available to aeronautical users on request.

174.403 Meteorological Observational Data

A holder of a meteorological service certificate shall ensure that on request and to the extent practicable, make available to operators and to others concerned with the application of meteorology for air navigation, meteorological observational data required for research, investigation or operational analysis.

Appendix A – Meteorological Information to operations and flight crew members

A.1 Meteorological information in respect of time, altitude and geographical extent

A.1.1 The meteorological information supplied to operators and flight crewmembers must cover the flight in respect of time, altitude and geographical extent. Accordingly, the information must relate to appropriate fixed times, or periods of time, and must extend to the aerodrome of intended landing, also covering the meteorological conditions expected between the aerodrome of intended landing and alternate aerodromes designated by the operator;

A.1.2 The meteorological information supplied to operators and flight crewmembers must be up to date and include the following information, as agreed between the meteorological service provider and the operator concerned:

(a) forecasts of:

(i) upper wind and upper-air temperature;

(ii) upper-air humidity;

(iii) geopotential altitude of flight levels;

(iv) flight level and temperature of tropopause;

(v) direction, speed and flight level of maximum wind;

(vi) SIGWX phenomena; and

(vii) Cumulonimbus clouds, icing and turbulence;

(b) METAR or SPECI (including trend forecasts as issued in accordance with regional air navigation agreement) for the aerodromes of departure and intended landing, and for takeoff, en-route and destination alternate aerodromes;

(c) TAF or amended TAF for the aerodromes of departure and intended landing, and for takeoff, en-route and destination alternate aerodromes;

(d) forecasts for takeoff;

(e) SIGMET information and appropriate special air-reports relevant to the whole route;

(f) volcanic ash and tropical cyclone advisory information relevant to the whole route;

(g) area forecast and/or area forecasts for low-level flights in chart form prepared in support of the issuance of AIRMET information, and AIRMET information for low- level flights relevant to the whole route;

(h) aerodrome warnings for the local aerodrome;

(i) meteorological satellite images;

(j) ground-based weather radar information; and

(k) space weather advisory information relevant to the whole route;

A.1.3 The forecasts listed under paragraph A.1.2 (a) must be generated from the digital forecasts provided by the WAFCs whenever these forecasts cover the intended flight path in respect of time, altitude and geographical extent, unless otherwise agreed between the authorised meteorological service provider and the operator concerned;

A.1.4 When forecasts are identified as being originated by the WAFCs, no modifications must be made to their meteorological content;

A.1.5 Charts generated from the digital forecasts provided by the WAFCs must be made available, as required by operators, for fixed areas of coverage as shown in Appendix 8 of Annex 3;

A.1.6 When forecasts of upper wind and upper-air temperature listed under paragraph A.1.2(a) are supplied in chart form, they must be fixed time prognostic charts for flight levels as specified in Appendix 2 of Annex 3. When forecasts of SIGWX phenomena listed under paragraph A.1.2(a) are supplied in chart form, they must be fixed time prognostic charts for an atmospheric layer limited by flight levels as specified in Appendix 2 of Annex 3;

A.1.7 The forecasts of upper wind and upper-air temperature and of SIGWX phenomena above flight level 100 requested for pre-flight planning and in-flight re-planning by the operator must be supplied as soon as they become available, but not later than 3 hours before departure. Other meteorological information requested for preflight planning and in-flight re-planning by the operator must be supplied as soon as is practicable;

A.1.8 When necessary, the meteorological service provider must initiate coordinating action with the meteorological authorities of other States with a view to obtaining from them the reports and/or forecasts required for the operators and flight crewmembers; and

A.1.9 That meteorological information must be supplied to operators and flight crewmembers at the location to be determined by the meteorological service provider after consultation with the operators and at the time to be agreed upon between the aerodrome meteorological office and the operator concerned. The service for pre-flight planning must be confined to flights originating within the Port Moresby Flight Information Region. At an aerodrome without an aerodrome meteorological office, arrangements for the supply of meteorological information must be as agreed upon between the authorised meteorological service provider and the operator concerned.

A.2 Briefing and Consultation

A.2.1 Ensure that briefing and/or consultation must be provided, on request, to flight crewmembers and/or other flight operations personnel. The purpose for briefing and or consultation must be to supply the latest available information on existing and expected meteorological conditions along the route to be flown, at the aerodrome of intended landing and alternate aerodromes.

A.2.2 Meteorological information used for briefing, consultation and display must include any or all of the information listed under paragraphA.1.2.

A.2.3 If the aerodrome meteorological office expresses an opinion on the development of the meteorological conditions at an aerodrome, which differs considerably from the aerodrome forecast included in the flight documentation, the attention of flight crewmembers must be drawn to the divergence. The portion of the briefing dealing with the divergence must be recorded at the time of briefing and this record must be made available to the operator.

A.2.4 The required briefing, consultation, display and/or flight documentation must be provided bythe aerodrome meteorological office associated with the aerodrome of departure. At an aerodrome where these services are not available, arrangements to meet the requirements of flight crewmembers must be as agreed upon between the meteorological service provider and the operator concerned. In exceptional circumstances, such as an undue delay, the aerodrome meteorological office associated with the aerodrome must provide or, if that is not practicable, arrange for the provision of a new briefing, consultation and/or flight documentation as necessary.

A.3 Flight Documentation

A.3.1 Ensure that flight documentation to be made available must comprise information listed under paragraph A.1.2. However, when agreed between the meteorological service provider and operator concerned, flight documentation for flights of two hours' duration or less, after a short stop or turnaround, must be limited to the information operationally needed, but in all cases the flight documentation must at least comprise information in paragraph A.1.2.

A.3.2 Whenever it becomes apparent that the meteorological information to be included in the flight documentation will differ materially from that made available for pre-flight planning and in-flight re- planning, the operator must be advised immediately and, if practicable, be supplied with the revised information as agreed between the operator and the aerodrome meteorological office concerned;

A.3.3 Where the meteorological service provider uses automated pre-flight information systems to supply and display meteorological information to operators and flight crewmembers for self-briefing, flight planning and flight documentation purposes; and

A.3.4 Where automated pre-flight information systems are used to provide for a harmonized, common point of access to meteorological information and aeronautical information services information by operators, flight crew members and other aeronautical personnel concerned, the meteorological service provider must remain responsible for the quality control and quality management of meteorological information provided by means of such systems.

A.4 Meteorological information for use by aircraft in flight.

A.4.1 Ensure that meteorological information to be used by aircraft in flight must be supplied by an aerodrome meteorological office or meteorological watch office to its associated air traffic services unit and through D-VOLMET as determined by regional air navigation agreement. Meteorological information for planning by the operator for aircraft in flight must be supplied on request, as agreed between the authorised meteorological service provider and the operator concerned.

A.4.2 Meteorological information for use by aircraft in flight must be supplied to air traffic services units in accordance with the requirements of rule 174.67; and

A.4.3 Meteorological information must be supplied through D-VOLMET in accordance with the requirements of rule 174.55.

Appendix B – Contents of Meteorological Reports and Forecasts

B.1 Contents of Meteorological Reports

B.1.1 Local routine reports, local special reports, METAR and SPECI shall contain the following elements in the order indicated:

(1) identification of the type of report;

(2) location indicator;

(3) time of the observation;

(4) identification of an automated or missing report, when applicable;

(5) surface wind direction and speed;

(6) visibility;

(7) runway visual range, when applicable;

(8) present weather;

(9) cloud amount, cloud type (only for cumulonimbus and towering cumulus clouds) and height of cloud base or, where measured, vertical visibility;

(10) air temperature and dew-point temperature; and

(11) QNH and, when applicable, QFE (QFE included only in local routine and special reports).

B.1.2 Optional elements included under supplementary information must be included in METAR and SPECI in accordance with regional air navigation agreement

B.2 Contents of Aerodrome Forecasts

B.2.1 Aerodrome forecasts and amendments to it shall be issued as TAF and include the following information in the order indicated:

(i) identification of the type of forecast;

(ii) location indicator;

(iii) time of issue of forecast;

(iv) identification of a missing forecast, when applicable;

(v) date and period of validity of forecast;

(vi) identification of a cancelled forecast, when applicable;

(vii) surface wind;

(viii) visibility;

(ix) weather;

(x) cloud; and

(xi) Expected significant changes to one or more of these elements during the period of validity. Optional elements must be included in TAF in accordance with regional air navigation agreement.