

**NATIONAL METEOROLOGICAL SERVICE ACT**  
(Cap. 65:08)

**NATIONAL METEOROLOGICAL SERVICE REGULATIONS, 2018**  
(Published on 30th April, 2018)

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**SCHEDULE**

IN EXERCISE of the powers conferred on the Minister of Environment, Natural Resources Conservation and Tourism by section 18 of the National Meteorological Service Act, the following Regulations are hereby made —

Citation	1. These Regulations may be cited as the National Meteorological Service Regulations, 2018.
Interpretation	<p>2. In these Regulations, unless the context otherwise requires —</p> <p>“aerodrome” means a defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft;</p> <p>“aerodrome climatological summary” means a concise summary of specified meteorological elements at an aerodrome, based on statistical data;</p> <p>“aerodrome meteorological office” means an office, located at an aerodrome, designated to provide meteorological service for air navigation;</p> <p>“aeronautical meteorological station” means a station designated to make observations and meteorological reports for use in air navigation;</p> <p>“aircraft observations” means evaluation of one or more meteorological elements made from an aircraft in flight;</p> <p>“Air Traffic Services unit” means air traffic control unit, flight information centre or air traffic services reporting office;</p> <p>“air report” means a report from an aircraft in-flight prepared in conformity with requirements for position and operational or meteorological reporting;</p> <p>“alternate aerodrome” means an aerodrome to which an aircraft may proceed when it becomes either impossible or inadvisable to proceed to or to land at the aerodrome of intended landing where —</p> <p style="margin-left: 20px;">(i) necessary services and facilities are available, or</p> <p style="margin-left: 20px;">(ii) aircraft performance requirements can be met;</p> <p>“area control centre (ACC)” means a unit established to provide air traffic control service to controlled flights in control areas under its jurisdiction;</p> <p>“Contracting State” means a state, a national office or an intergovernmental organisation which is a signatory to the Chicago Convention;</p> <p>“control area” means a controlled airspace extending upwards from a specified limit above the earth;</p> <p>“Convention” means the Convention on International Civil Aviation signed in Chicago on December 7, 1944, also known as the Chicago Convention;</p> <p>“flight crew member” means a licensed crew member charged with duties essential to the operation of an aircraft during a flight duty period;</p> <p>“flight documentation” means written or printed documents, including charts or forms, containing meteorological information for a flight;</p> <p>“Flight Information Centre (FIC)” means a unit established by the Civil Aviation Authority of Botswana established under the Civil Aviation Act to provide flight information service and alerting service;</p> <p>“Flight Information Region (FIR)” means airspace of defined dimensions within which flight information service and alerting service are provided;</p> <p>“flight level” means a surface of constant atmospheric pressure which is related to a specified pressure datum, 1 013.2 hectopascals (hPa) which is separated from other such surfaces by specified pressure intervals;</p> <p>“human factors principles” means principles which apply to aeronautical design, certification, training operations and maintenance and which seek safe interface between the human and other system components by proper consideration to human performance;</p> <p>“International Airways Volcano Watch” means international arrangements for monitoring and providing warnings to aircraft of volcanic ash in the atmosphere;</p> <p>“level” means a generic term relating to the vertical position of an aircraft in-flight and it includes height, altitude or flight level;</p> <p>“METAR” means aerodrome routine weather report issued at hourly intervals and it is a description of the meteorological elements observed at an airport at a specific time;</p> <p>“Meteorological Authority” means the National Meteorological Service as the authority providing meteorological service for international air navigation on behalf of Botswana;</p> <p>“meteorological report” means a statement of observed meteorological conditions related to a specified time and location;</p> <p>“meteorological watch office” 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;</p>
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“operator” means a person, organisation or enterprise engaged in or offering to engage in aircraft operations;

“operational control” means the exercise of authority over the initiation, continuation, diversion or termination of a flight in the interest of the safety, regularity or efficiency of the aircraft;

“OPMET” means Operational Information for Meteorology;

“prognostic chart” means a forecast of a specified meteorological element for a specified time or period and a specified surface or portion of airspace depicted graphically on a chart;

“QFE” means atmospheric pressure at aerodrome elevation and with its sub-scale set to the aerodrome QFE, its altimeter indicates height above that airfield;

“QNH” means barometric pressure adjusted to sea level pressure setting to be used by pilots and air traffic control for their operations as an altitude above mean sea level based on local station pressure;

“quality assurance” means part of quality management focused on providing confidence that quality requirements will be fulfilled as per the International Organisation for Standardisation 9000 (ISO 9000);

“quality management” means coordinated activities to direct and control an organisation with regard to quality;

“Quality Management System (QMS)” means the organisational structure, procedures, processes and resources needed to implement quality management which conforms to the International Organisation for Standardisation 9001:2008 standard;

“Quality Manual” means a document that captures the Quality Management System of the Department, which should be in conformity with the International Organisation for Standardization standards requirement;

“Runway Visual Range (RVR)” means the range over which the pilot of an aircraft on the centre line of a runway can see the runway surface markings or the lights delineating the runway or identifying its centre line;

“search and rescue services unit” means a rescue coordination centre, rescue sub-centre or alerting post;

“SIGMET information” means information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere which may affect the safety of aircraft operations;

“SIGWX” means significant weather chart issued by the meteorological office presenting the most important meteorological phenomena relevant especially for air traffic transport;

“SPECI” means an aviation special report issued when there is significant deterioration or improvement in airport weather conditions such as significant changes of surface winds, visibility, cloud base height, temperature and occurrence of severe weather;

“Standards and Recommended Practices (SARPs)” means —

- (i) in the case of standards, any specification for physical characteristics, configuration, material, performance, personnel or procedure, the uniform application of which is recognised as necessary for the safety or regularity of international air navigation and to which contracting states will conform in accordance with the Chicago Convention; and in the event of impossibility of compliance, states are required to notify the Council under Article 38 of the Chicago Convention, and
- (ii) in the case of recommended practice any specification for physical characteristics, configuration, material, performance, personnel or procedure, the uniform application of which is recognised as desirable in the interest of safety, regularity or efficiency of international air navigation, and to which contracting states should endeavour to conform in accordance with the Chicago Convention;

“synoptic station” means a facility on land with instruments and equipment for measuring atmospheric conditions at synoptic time 00h00, 06h00, 12h00, 18h00 (UCT) and at intermediate synoptic hours 03h00, 09h00, 15h00 and 21h00 (UCT);

“TAF” means a terminal aerodrome forecast prepared and issued by the meteorological watch office;

“TCAC” means a Tropical Cyclone Advisory Centre designated by a 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;

“UCT” means the Universal Common Time standard across the world;

“visibility” means —

(i) the greatest distance at which a black object of suitable dimensions, situated near the ground, can be seen and recognised when observed against a bright background, or

(ii) the greatest distance at which lights in the vicinity of 1 000 candelas can be seen and identified against an unlit background;

“VAAC” means the Volcanic Ash Advisory Centre as designed by the Regional Air navigation Agreement to provide advisory information to the meteorological watch office, area control centre, flight information centres, world area focus centres and international OPMET data banks regarding the lateral, vertical extent and forecast movement of volcanic ash in the atmosphere following volcanic eruptions;

“World Area Forecast Centre (W AFC)” 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 and internet based services; and

“World Area Forecast System (WAFS)” means a worldwide system by which world area forecast centres provide aeronautical meteorological en-route forecasts in uniform standardised formats.

Exclusive provision of meteorological service to air navigation

3. (1) The National Meteorological Service (hereinafter referred to as “the Service”) shall have exclusive rights to provide meteorological services to the civil aviation industry.

(2) The objective of providing meteorological services for international air navigation shall be to contribute towards the safety, regularity and efficiency of international air navigation.

(3) The provision of these services to the aviation industry as provided for in subregulation (1) shall be done in conformity with requirements of the following —

(a) the International Civil Aviation Organisation’s Annex 3 to the Convention on International Civil Aviation;

(b) the World Meteorological Organisation Technical Regulations Number 49 Volume II-Meteorological Services for International Air Navigation;

(c) procedures contained in Annexes 3, 11, 12, 15 and 19 to the Convention on International Civil Aviation, Regional Supplementary Procedures on Meteorology (Doc.7070) and relevant provisions contained in the Air Navigation Plan of the Africa Indian Ocean Region (AFI); and

(d) the Quality Manual for the Aeronautical Meteorological Services (AMS);

(4) The Service shall provide the following services in support of international air navigation —

(a) make routine meteorological observations at fixed intervals;

(b) make special weather observations whenever specified changes occur in respect of surface wind, visibility, runway visual range, present weather, and cloud and air temperature;

(c) prepare and obtain significant weather forecasts information and maintain contact with Regional Specialised Meteorological Centres (RSMCs) for the notification and exchange of information on volcanic ash and tropical cyclone activity;

(d) display and provide briefing, consultation and flight documentation to flight crew members and other flight operations personnel, the latest information on existing and expected meteorological conditions along the route to be flown, at the aerodrome of intended landing, alternate aerodromes and other aerodromes as established under the Civil Aviation Act in consultation with the Service;

(e) perform weather watch and monitoring, including the ability to detect and forecast hazards relevant to the aviation industry;

- (f) derive forecast and warning products as agreed by the Service, air traffic services and air operators;
  - (g) maintain a record of aeronautical climatological information for supplying to pilots, air traffic services, air operators and any other persons on request;
  - (h) exchange aeronautical meteorological information with other aeronautical meteorological offices; and
  - (i) supply information received concerning the accidental release of radioactive materials into the atmosphere within its area of responsibility to the air traffic services, aeronautical information service providers and appropriate civil aviation authorities concerned for dissemination.
- (5) The Service shall have exclusive rights to provide weather warnings, watches and advisories for severe weather events to any interested party or to a person likely to be affected by any impending weather-related disaster.
- (6) The weather warnings and advisories under subregulation (5) shall be issued through communication methods that ensure that the warning reaches the person warned in the shortest possible time.
- (7) A person issued with the warning under this regulation shall —
- (a) as soon as received, and without any modification, pass the information to a user;
  - (b) have a system in place to alert the user on when a warning was sent by the Service;
  - (c) report to the Service the time the warning was issued to the user; and
  - (d) acknowledge that the Service has provided the warning.
4. (1) The Service shall establish one or more aerodrome meteorological offices which are adequate for the provision of the meteorological services required to satisfy the needs of international air navigation.
- (2) The aerodrome meteorological offices established in subregulation (1) shall carry out the following functions as necessary to meet the needs of flight operations at aerodromes —
- (a) prepare or obtain forecasts and other relevant information for flights with which it is concerned and the extent of its responsibilities to prepare forecasts shall be related to local availability and use of en-route and aerodrome forecast material received from other offices;
  - (b) prepare or obtain forecasts of local meteorological conditions;
  - (c) maintain a continuous survey of meteorological conditions over the aerodromes for which it is designated to prepare forecasts;
  - (d) provide briefing, consultation and flight documentation to pilots or flight crew members and other flight operations personnel;
  - (e) supply other meteorological information to aeronautical users;
  - (f) display the available meteorological information;
  - (g) exchange meteorological information with other meteorological offices;
  - (h) supply information on pre-eruption volcanic activity, a volcanic eruption or volcanic ash cloud, to its associated air traffic services unit, aeronautical information service units and meteorological watch office as agreed between the meteorological, aeronautical information services unit and the Air Traffic Service unit concerned;
  - (i) shall issue aerodrome warnings and shall give concise information of meteorological conditions which could adversely affect aircraft on the ground, including parked aircraft, aerodrome facilities and services; and
  - (j) prepare wind shear warnings for aerodromes where wind shear is considered a factor, in accordance with the local arrangements with the appropriate Air Traffic Services unit and the air operators concerned.
- (3) The meteorological information in subregulation (2) shall be provided to the following users for the performance of their respective functions —
- (a) operators;
  - (b) flight crew members;
  - (c) air traffic services units;
  - (d) search and rescue service units; and
  - (e) airport management and others concerned with the conduct or development of air navigation.

Establishment  
of aerodrome  
meteorological  
office

Meteorological observations and reports

5. (1) The Service shall establish, at aerodromes in its flight information region, such aeronautical meteorological stations as it determines necessary.

(2) An aeronautical meteorological station may be a separate station or may be combined with a synoptic station.

(3) An aeronautical meteorological station shall make routine observations at fixed intervals.

(4) The observations referred to in subregulation (3) shall be made as determined by the Service taking into account the requirements of air traffic services units and aircraft operations.

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

(6) The Service shall issue routine observations as —

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

(b) METAR for dissemination beyond the aerodrome of origin which is mainly intended for flight planning.

(7) The routine observations shall be supplemented by special observations made at fixed intervals at aerodromes, whenever specified changes occur in respect of surface wind, visibility, runway visual range, present weather, clouds or air temperature.

(8) The Service, in consultation with Air Traffic Services, operators and any other relevant stakeholders shall establish a list of criteria for special observations.

(9) A report of special observations shall be issued as —

(i) a local special report, only for dissemination at the aerodrome of origin which is intended for arriving and departing aircraft; or

(ii) SPECI for dissemination beyond the aerodrome of origin which is mainly intended for flight planning unless METAR are issued at half-hourly intervals.

(10) A report from an automatic observing system in METAR and SPECI shall —

(a) be used by states in a position to do so during non-operational hours of the aerodrome, and during operational hours of the aerodrome as determined by the Service in consultation with users based on the availability and efficient use of personnel;

(b) observe human factors principles and include back-up procedures; and

(c) be used in accordance with the ICAO's Manual on Automatic Meteorological Observing Systems at Aerodrome (Doc. 9837).

6. (1) The pilot in command of an aircraft shall make routine, special and other non-routine observations during flight in accordance with the requirements determined by the Service.

(2) For the relay of air reports by Air Traffic Services unit, the Service shall make arrangements with the appropriate air traffic services unit to ensure that, on receipt by the Air Traffic Services unit of —

(a) special air-reports by voice communications, the Air Traffic Services unit relays them without delay to its associated meteorological watch office; and

(b) routine and special air reports by data link communications, the Air Traffic Services unit relays them without delay to its associated meteorological watch office.

Aircraft observations reporting

7. (1) The Service shall provide forms for reporting any required information or data from privately run meteorological stations.

Submission of data from privately run meteorological services

(2) A person operating an observing meteorological station or service shall submit the following data —

- (a) daily rainfall;
- (b) monthly climatology; and
- (c) other parameters,

in a manner determined by the Service.

8. (1) A person who wishes to operate a meteorological observing station or provide a meteorological service shall apply for a licence from the Service in Form A set out in the Schedule, at a non-refundable fee of P200, which fee shall be paid in advance.

Application to operate a meteorological observing station

(2) A person licensed to operate a meteorological observing station shall be required to produce to the Service, a valid certificate of calibration of the said instrument or sensor from an International Organization for Standardization (ISO) 17025 accredited institution prior to use.

(3) An operator of a meteorological observing station shall maintain the frequency of the calibration of the instrument in accordance with the World Meteorological Organization recommendations contained in the "Guide to Meteorological Instruments and Methods of Observations".

9. A licence issued by the Committee under these Regulations shall be valid for a period of three years.

Validity of licence

10. (1) The Committee shall impose the following conditions on any licence granted by it —

Conditions on licences

- (a) a licence issued under the Act shall not be transferrable;
- (b) the licence shall become invalid upon the death or bankruptcy of the licensee;
- (c) the licence shall be renewable upon payment of a non-refundable fee of P50 upon its expiry and the application for renewal shall be made 30 days before the date of expiry in Form B as set out in the Schedule;
- (d) a licensee shall undertake only the activities specified in the licence;
- (e) the licensee shall permit or ensure that permission is granted to an inspector upon production of proof of identity to enter any building, premises, compound or any other place to enable the said inspector to inspect, examine or test equipment that is in the station or carry out any other task deemed necessary by the Service;
- (f) the licensee shall archive and submit data to the Service upon request; and
- (g) where the licensee ceases to operate the station or where the licence ceases to be valid, the licensee shall immediately return the licence to the Service for cancellation.

(2) The Service may vary, modify, suspend or cancel any of the terms of the licence in writing, stating the reasons for the decision and giving the concerned licensee an opportunity to make representations.

11. (1) The Service reserves the right to approve a proposed meteorological location after —

Installation of meteorological instrument or sensor

- (a) an inspection by the Service in Form C set out in the Schedule; or
- (b) a site survey in Form D set out in the Schedule.

(2) A person issued with a licence to operate a meteorological station or service, whether manual or automatic, shall be required to install meteorological instruments or sensors in accordance with the national, regional, ICAO and World Meteorological Organization standards.

(3) A person issued with a licence provided for in subregulation (2) shall, once the station is established and is operational, apply to the Service for permission to effect any changes.

(4) A person who tampers with or vandalizes the equipment of the Service commits an offence and is liable to a fine not exceeding P20 000, or to imprisonment for a term not exceeding two years, or to both.

(5) A person who wishes to publicly display or share meteorological data shall ensure the instrument used to measure the parameter in question is calibrated and installed according to the service standards.

(6) A person who contravenes the provisions of this regulation commits an offence and is liable to a fine not exceeding P20 000 or to imprisonment for a term not exceeding one year, or to both.

Licensing requirements for a privately run meteorological service

12. A private meteorological service operator shall meet licensing requirements of the Committee and these include —

- (a) expressing in writing, at the time of applying, interest and purpose of the service he or she is to provide;
- (b) a valid operating licence as provided for under section 8 (3) of the Act and in Form E set out in the Schedule;
- (c) complying with standards approved by the Committee, including national, World Meteorological Organization and ICAO where data obtained from the station is used for meteorological purposes or is shared with the public; and
- (d) undergoing inspections and audits of the offices, instruments, facilities, documents and records where the Director deems it necessary or is in the interest of public safety and security.

Contents of METAR and SPECI reports

13. (1) Local routine, special reports, METAR and SPECI shall contain in Form F as set out in the Schedule, the following elements in the order indicated —

- (a) identification of the type of report;
- (b) location indicator and their significations as published in Location Indicators (Doc. 7910);
- (c) time of the observation;
- (d) identification of an automated or missing report, when applicable;
- (e) surface wind direction and speed;
- (f) visibility;
- (g) runway visual range, when applicable;
- (h) present weather;
- (i) cloud amount;
- (j) cloud type (only for cumulonimbus and towering cumulus clouds);
- (k) height of cloud base or, where measured;
- (l) vertical visibility;
- (m) air temperature and dew-point temperature;
- (n) QNH; and
- (o) where applicable QFE shall be included only in local routine and special reports.

(2) The specific value of any of the elements given in a report shall be deemed to be the best approximation to the actual conditions at the time of observation owing to —

- (a) the variability of meteorological elements in space and time;
- (b) limitations of observing techniques; and
- (c) limitations caused by the definitions of some of the elements.

**14.** (1) The Service shall ensure that the occurrence of pre-eruption volcanic activity, volcanic eruptions and volcanic ash cloud is reported without delay to the associated Air Traffic Services unit, aeronautical information services unit and meteorological watch office.

Observations and reports of volcanic activity

(2) The report under subregulation (1) shall be in the form of a volcanic activity report comprising the following information in the order indicated —

- (a) the type of message,
- (b) a volcanic activity report;
- (c) station identifier, location indicator or name of station;
- (d) date and time of message;
- (e) location of volcano and name if known;
- (f) concise description of the event including, as appropriate —
  - (i) level of intensity of volcanic activity,
  - (ii) occurrence of an eruption, its date and time, and
  - (iii) the existence of a volcanic ash cloud in the area, direction of ash cloud movement and height; and
- (g) available supplementary information concerning —
  - (i) significant meteorological conditions, particularly those in the approach and climb-out areas, and
  - (ii) identification of the location of the meteorological condition.

**15.** The Service shall ensure that the meteorological information supplied to users referred to in regulation 4 (2) is consistent with human factors principles and is in a form which requires minimum interpretation by the users.

Human factors principles in the provision of meteorological services  
Quality Management System for the provision of meteorological services

**16.** (1) The Service shall establish and implement a quality system comprising procedures, processes and resources necessary to provide for the quality management of the meteorological information to be supplied to users.

- (2) The quality system established —
- (a) shall be in conformity with the International Organization for Standardization (ISO) 9000 series of quality assurance standards;
  - (b) shall be certified by an approved organisation; and
  - (c) shall be in conformity with the guidelines given in the ICAO's Manual on the Quality Management for the Provision of Meteorological Service for International Air Navigation (Doc. 9873).
- (3) The quality system under subregulation (1) shall ensure that —
- (a) the meteorological information supplied complies with the stated requirements in terms of the geographical and spatial coverage, format and content, time and frequency of issuance and period of validity; and
  - (b) the accuracy of measurements, observations and forecasts.
- (4) The quality system under subregulation (1) shall —
- (a) include verification and validation procedures and resources for monitoring adherence to the prescribed transmission schedules for individual messages and bulletins required to be exchanged, and;
  - (b) make provision for recording the times of filing and transmission of messages and bulletins; and
  - (c) be capable of detecting excessive transit times of messages and bulletins received.
- (5) The Service shall —
- (a) demonstrate compliance of the quality system established and implemented through audits, and

- (b) where the system does not conform to the quality system, determine and correct the cause; and
  - (c) document all audit observations.
- Liaison with users of Meteorological information**
- 17.** (1) The Service shall liaise with the users of meteorological information on all matters which affect the provision of meteorological service for air navigation.
- (2) The liaison provided for in subregulation (1) may be established through user-consultation methods including —
- (a) surveys or questionnaires;
  - (b) meetings of —
    - (i) ICAO, and
    - (ii) airport operations;
  - (c) coordination between an Air Traffic Service unit and the Service;
  - (d) workshops or focal groups;
  - (e) correspondence; and
  - (f) face to face with individual users.
- Notification affecting the provision of meteorological information**
- 18.** (1) The operator of an aircraft requiring meteorological service shall notify the Service when —
- (a) new routes or new types of operations are planned;
  - (b) changes of a lasting character are to be made in scheduled operations; or
  - (c) other changes affecting the provision of meteorological service are planned.
- (2) The notification referred to in subregulation (1) shall contain all details necessary for the planning of appropriate arrangements by the Service.
- (3) The aerodrome meteorological office shall be notified by the operator or flight crew member of —
- (a) flight schedules;
  - (b) when non-scheduled flights are to be operated; and
  - (c) when flights are delayed, advanced or cancelled.
- Services for operators and flight crew members**
- 19.** (1) The Service shall supply meteorological information to operators and flight crew members for —
- (a) pre-flight planning by operators;
  - (b) in-flight planning by operators using centralised operational control of flight operations;
  - (c) use by flight crew members before departure; and
  - (d) aircraft in-flight.
- (2) The meteorological information supplied to operators and flight crew members shall —
- (a) cover the flight in respect of time, altitude and geographical extent;
  - (b) relate to approximate fixed times or period of time; and
  - (c) extend to the aerodrome of landing, also covering the meteorological conditions expected between the aerodrome of intended landing and alternate aerodromes designated by the operator.
- (3) Meteorological information supplied to operators and flight crew members shall be up to date and include —
- (a) forecasts of —
    - (i) upper wind and upper-air temperature,
    - (ii) flight level and temperature tropopause,
    - (iii) upper-air humidity,
    - (iv) cumulonimbus clouds, icing and turbulence,
    - (v) geopotential altitude of flight levels,
    - (vi) direction, speed and flight level of maximum wind, or
    - (vii) SIGWX phenomena, and

- (b) METAR or SPECI for the aerodromes of departure and intended landing, and for take off, en-route and destination alternate aerodromes;
- (c) Terminal aerodrome forecast or amended terminal forecast air forecast for the aerodromes of departure and intended landing and for take-off, en-route and destination alternate aerodromes;
- (d) forecasts for take-off;
- (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) aerodrome warnings for the local aerodrome;
- (h) meteorological satellites images; and
- (i) ground based weather radar information.

(4) The forecasts listed under subregulation (3) (a) shall be generated from the digital forecasts provided by the World Area Forecast Centres whenever these forecasts cover the intended flight path in respect of time, altitude and geographical extent.

(5) The forecasts of upper wind and upper-air temperature referred to in subregulation (3) (a) (i) supplied in chart form shall be fixed time prognostic charts for flight levels as specified.

(6) The forecasts of SIGWX phenomena listed under subregulation (3) (a) (v) supplied in chart form, shall be fixed time prognostic charts for an atmospheric layer limited by flight levels or as specified.

(7) The charts generated from the digital forecasts provided by the World Area Forecast Centres shall be made available, to operators at their request, for fixed area of coverage.

(8) The forecasts of upper wind and of SIGWX phenomena above flight level 100 requested for pre-flight planning and in-flight re-planning by the operators shall be supplied as soon as they become available, but not later than three hours before departure.

(9) Meteorological information requested for pre-flight planning and in-flight planning by the operator shall be supplied as soon as practicable.

(10) Where necessary, the Service shall initiate coordinating action with the meteorological authority of other States with a view to obtaining from them the reports or forecasts required.

**20.** (1) The Service shall provide briefing or consultation on request, to flight crew members and other flight operations personnel.

**Briefing,  
consultation  
and display**

(2) The purpose of the briefing or consultation shall be to supply the latest information on existing and expected meteorological conditions along the route flown, at the aerodrome of intended landing, alternative aerodromes and other relevant aerodromes, either to explain and amplify the information contained in the flight documentation or, if so agreed between the meteorological authority and the operator, in lieu of flight documentation.

(3) Meteorological information used for briefing, consultation and display shall include any or all of the information listed under regulation 19 (3).

(4) The briefing, consultation, display or flight documentation under this regulation shall be provided by the meteorological office associated with the aerodrome of departure.

(5) Arrangements to meet the requirements of the crew members shall be agreed upon between the Meteorological Authority and the operator concerned at an aerodrome where these services are not available.

Flight  
documentation

21. (1) Flight documentation to be made available shall comprise information listed under regulation 19 (3) (a) (i) and (vi):

Provided that where it has been agreed between the Service and the operator, flight documentation for flights of two hours' duration or less, after a short stop or turnaround, shall be limited to the information operationally needed, but in all cases the flight documentation shall at least comprise information at regulation 19 (3) (b), (c), (e) and (f).

(2) Where 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 inflight re-planning, the operator shall be advised immediately and if, practicable, be supplied with the revised information as agreed between the operator and the meteorological office concerned.

(3) The Service shall retain information supplied to crew members as printed copies, for a period of at least 30 days from the date of issue.

(4) The information referred to in subregulation (3) shall be made available, on request, for inquiries or investigations and, for these purposes, shall be retained until the inquiry or investigation is completed.

Information for  
aircraft  
in-flight

22. Meteorological information for planning by an operator for an aircraft in flight shall be supplied on request, as agreed between the Service and the operator concerned.

Meteorological  
watch office

23. (1) The Service shall establish one or more meteorological watch offices to be associated with an Air Traffic Services unit.

(2) The meteorological watch office shall —

- (a) maintain continuous watch over meteorological conditions affecting flight operations within its area of responsibility;
- (b) prepare SIGMET and other information relating to its area of responsibility;
- (c) supply SIGMET information and as required, other meteorological information to associated air traffic services units; and
- (d) disseminate SIGMET information.

Information for  
air traffic services,  
search and rescue  
services and  
aeronautical  
information  
services

24. (1) The Service shall designate a meteorological office to be associated with each air traffic services unit.

(2) The meteorological office shall, after coordination with the Air Traffic Services unit, supply up-to-date meteorological information to the unit as necessary for the conduct of its functions.

(3) The meteorological office shall supply search and rescue services units with the meteorological information they require in a form established by mutual agreement and shall maintain liaison with the search and rescue services unit throughout the search and rescue operation.

(4) The Service in coordination with the Civil Aviation Authority of Botswana shall arrange to supply updated meteorological information to relevant aeronautical information services units, as necessary, for the conduct of their functions.

(5) The Service shall ensure that any information requested by an Air Traffic Services unit in connection with an aircraft emergency shall be supplied as rapidly as possible.

Agreement  
between Air  
Traffic Services  
units and  
meteorological  
authorities

25. (1) The Service and the Air Traffic Services units shall establish agreements to cover —

- (a) the provision of air traffic services of displays related to integrated automatic systems;

- (b) the calibration and maintenance of a display or instrument;
- (c) the use of the display or instrument by air traffic services personnel;
- (d) where necessary, supplementary visual observations;
- (e) meteorological information obtained from aircraft taking-off or landing; and
- (f) if available, meteorological information obtained from ground radar.

(2) The coordination between the National Meteorological Service and the Air Traffic Services unit shall be guided by the ICAO Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services (Doc. 9377).

26. The specific value of any of the elements given in a forecast shall be understood by the recipient to be the most probable value which the element is likely to assume during the period of the forecast.

Interpretation and use of forecasts

27. The Meteorological Authority shall —

Issuance of aerodrome forecasts

- (a) prepare and issue aerodrome forecasts at a specified time, which shall consist of a concise statement of the expected meteorological conditions at an aerodrome;
- (b) ensure that meteorological offices preparing TAF shall keep the forecasts under continuous review and, when necessary, shall issue amendments promptly;
- (c) ensure the length of the forecast messages and the number of changes indicated in the forecast are kept to a minimum;
- (d) cancel TAF that cannot be kept under continuous review; and
- (e) ensure that not more than one TAF is valid at an aerodrome at any given time.

28. The Service shall —

Landing forecasts

- (a) prepare landing forecasts in the form of a trend forecast;
- (b) ensure that the landing forecast prepared in paragraph (a) consists of a concise statement of the expected significant changes in meteorological conditions at the aerodrome to be appended to a local routine or local special report, or a METAR or SPECI; and
- (c) ensure the period of validity of a trend forecast issued in paragraph (a) is two hours from the time of the report which forms part of the landing forecast.

29. (1) The meteorological authority, shall set up a meteorological office to prepare a forecast for take-off.

Forecasts for take-off

(2) A forecast for take-off shall refer to a specified period of time including information on expected conditions over a runway complex with regard to —

- (a) surface wind direction;
- (b) speed and any variation thereof;
- (c) temperature;
- (d) QNH; and
- (e) any other element as agreed between the Meteorological Authority and operators.

(3) A forecast for take-off shall be supplied to aircraft operators and flight crew members on request at least three hours before the expected time of departure.

30. Aeronautical climatological information required for the planning of flight operations shall —

Aeronautical climatological information

Requirements  
for use of  
telecommunications

- (a) be prepared in the form of aerodrome climatological tables and aerodrome climatological summaries; and
  - (b) be supplied to aeronautical users in the manner, interval and medium agreed between the meteorological authority and the users.
31. (1) The Service shall make available suitable telecommunications facilities to permit —
- (a) aerodrome meteorological offices and, as necessary, aeronautical meteorological stations to supply the required meteorological information to —
    - (i) Air Traffic Services units on the aerodromes for which those offices and stations are responsible,
    - (ii) aerodrome control towers,
    - (iii) approach control offices, and
    - (iv) the aeronautical telecommunications stations serving aerodromes;
  - (b) meteorological watch offices to supply the required meteorological information to —
    - (i) air traffic services,
    - (ii) search and rescue services units in respect of the flight information regions, control areas, and
    - (iii) search and rescue regions for which those offices are responsible, and
    - (iv) flight information centres,
    - (v) area control centres, and
    - (vi) rescue coordination centres, and
    - (vii) associated aeronautical telecommunications stations;
  - (c) World Area Forecast Centres to supply the required world area forecast system products to meteorological offices, meteorological authorities and other users;
  - (d) communications by direct speech between meteorological offices, aeronautical meteorological stations and aerodrome control towers or approach control offices;
  - (e) the speed with which the communications can be established such that the required points may be contacted within approximately 15 seconds;
  - (f) telecommunications facilities between meteorological offices, flight information centres, area control centres, rescue coordination centres and aeronautical telecommunications stations;
  - (g) aircraft operators to establish suitable telecommunications facilities for obtaining meteorological information from aerodrome meteorological offices or other appropriate sources as agreed between the Civil Aviation Authority of Botswana and aircraft operators; or
  - (h) meteorological offices to exchange operational meteorological information.
- (2) The exchange of operational meteorological information shall be per the aeronautical meteorological message handling system.
- (3) The use of aeronautical meteorological message handling system meteorological bulletins shall be in alphanumeric format.
- (4) Meteorological bulletins containing operational meteorological information to be transmitted via the aeronautical fixed service shall be originated by the appropriate meteorological office or aeronautical meteorological station.
- (5) The use of aeronautical meteorological message handling system and the World Area Forecast System products in digital form shall be transmitted using binary data communications techniques.

(6) The method and channels used for the dissemination of the products shall be as determined by the Regional Air Navigation Agreement.

**32.** (1) The Service shall —

- (a) comply with the requirements of the World Meteorological Organization in respect of qualification and training of meteorological personnel providing service for international air navigation;
- (b) establish procedure to assess the competency of personnel providing service for international air navigation; and
- (c) maintain the competence and training records of the meteorological personnel providing service for international air navigation.

Personnel  
qualification  
and training

(2) The training of meteorological personnel in aeronautical meteorology shall be in accordance with —

- (a) the World Meteorological Organization's Technical Regulations WMO (Publication No. 49) Volume 1 – General Meteorological Standards and Recommended Practices – Chapter B4;
- (b) the World Meteorological Organization's – No. 1083 – Manual on the Implementation of Education and Training Standards in Meteorology and Hydrology – Volume 1 – Meteorology;
- (c) World Meteorological Organization No. 258 – Guidelines for the Education and Training of Personnel in Meteorology and Hydrology – (Supplement No. 1) – Training and Qualifications Requirement for Aeronautical Meteorological Personnel.

**33.** (1) SIGMET information shall be issued by the Gaborone meteorological watch office.

Issuance of  
SIGMET  
information

(2) The SIGMET information issued in subregulation (1) shall give a concise description in abbreviated plain language concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere which may affect the safety of aircraft operations, and of development of those phenomena in time and space.

(3) SIGMET information shall be cancelled when the phenomena are no longer occurring or are no longer expected to occur in the area.

(4) The period of validity of a SIGMET message shall not exceed four hours.

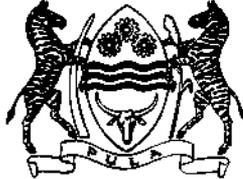
(5) In the special case of SIGMET message for volcanic ash cloud and tropical cyclone, the period of validity shall not exceed six hours.

(6) SIGMET messages concerning volcanic ash cloud and tropical cyclone shall be based on advisory information provided by VAAC – Toulouse and TCAC – La Reunion respectively as designed through the regional air navigation agreement.

SCHEDULE  
Form A

APPLICATION FOR A LICENCE  
(regulation 8 (1))

REPUBLIC OF BOTSWANA



NATIONAL METEOROLOGICAL SERVICE ACT, 2014

The Director,  
Department of Meteorological Services,  
P.O. Box 10100,  
Gaborone

*(All information supplied on this form will be treated as confidential)*

1(a) Please provide the name under which the operator of Meteorological Services to be licensed will operate:

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1(b) Please indicate the status or class of the operator:

- A. Sole Proprietor/Individual: YES ..... NO.....
- B. Partnerships: YES ..... NO.....
- C. Corporation/Institution/Organisation: YES ..... NO.....
- D. Other: YES.../NO... If YES, Specify

.....





8. Is the licence required for:

- (a) Existing operations: YES ..... NO .....
- (b) New operations: YES ..... NO .....

9. If seeking a licence that includes new operations, please provide supporting details with regard to own initiative, including proposals in regards to site, scope of entity, style of operations, etc.

(use a separate sheet)

10. Please indicate, with supporting details, that you have good prospects of acquiring qualified or trained staff and personnel, appropriate location and calibrated equipment required to provide the services associated with the entity.

(use a separate sheet)

11. Please indicate in what format you intend to keep, archive and safeguard the data the Station will produce:

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12. Please indicate how you plan to pay for the licensing application fees:

- (a) Cash: YES ..... NO .....
- (b) Cheque: YES ..... NO .....
- (c) Electronic Transfer: YES ..... NO .....

13. I/We,..... the applicant, hereby acknowledge and declare that:

- I/We have paid an application fee of P .....
- I/We have read and understood Part IV of the National Meteorological Service Act pertaining to the Licensing and Registration of Private Operator of Meteorological Services; and
- the foregoing information contained in this application is complete, true and correct to the best of my/our knowledge and belief and that failure to provide complete or accurate information may delay the licensing process or cause my application to be rejected.

Applicant Name(s): ..... (print)

Signature(s): .....

Date: .....

14. Please send this completed form with attached additional sheets (for parts 9 and 10) and Application Fee to:

The Director,  
Department of Meteorological Services,  
P.O. Box 10100, Gaborone

Form B

APPLICATION FOR THE RENEWAL OF OPERATING LICENCE  
(regulation 10 (1) (c))

REPUBLIC OF BOTSWANA



NATIONAL METEOROLOGICAL SERVICE ACT, 2014

The Director,  
Department of Meteorological Services,  
P.O. Box 10100,  
Gaborone

I/We.....hereby apply for the renewal of my/our operating licence a copy of which is attached and the particulars of which are as follows:

1. Licence number:.....
2. Date of issue:.....
3. No. and date of last renewal:.....(N/A if it is the first renewal)
4. Date of expiry:.....
5. My/our present address is:  
.....  
.....
6. If the copy of licence is not attached, give reasons why it is not available?  
.....  
.....
7. If the licence was not renewed within thirty days of the date of expiry, give reasons for the delay.  
.....  
.....

8. The renewal of licence has not been refused by the Committee.

I/We have not been disqualified for obtaining an operating licence.

I/We have paid the fee of P.....

I/We hereby declare that to the best of my/our knowledge and belief the particulars given above are true.

Date:.....

Name(s) of Applicant(s): .....  
.....  
.....

Signature(s) of Applicant(s): .....  
.....

Form C

APPLICATION FOR INSPECTION  
*(regulation 11 (1) (a))*

REPUBLIC OF BOTSWANA



NATIONAL METEOROLOGICAL SERVICE ACT, 2014

The Director,

Department of Meteorological Services,

P.O. Box 10100,

Gaborone

1. Date: .....

2. Name of individual or facility requiring inspection:

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3. Location of facility requiring inspection:

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4. Name, telephone details, postal and email addresses of person requesting inspection:

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**5. Name, telephone details, postal and email addresses for person(s) to contact with regard to the inspection:**

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**6. Proposed date(s) and time(s) suitable for inspection:**

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**7. Reason(s) for inspection:**

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**8. List of instruments/sensors to be inspected (if any):**

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**9. Last inspection date:**

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Form D

APPLICATION FOR SITE SURVEY  
*(regulation 11 (1) (b))*

REPUBLIC OF BOTSWANA



NATIONAL METEOROLOGICAL SERVICE ACT, 2014

The Director,

Department of Meteorological Services,

P.O. Box 10100,

Gaborone

1. Date: .....

2. Name of individual or facility requiring site survey:

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3. Location of site to be surveyed:

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.....

4. Approximate site area to be surveyed:

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5. Name, telephone details, postal and email addresses for person(s) requesting site survey:

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**6. Name, telephone details, postal and email addresses for person(s) to contact for site survey:**

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**7. Proposed date(s) and time(s) suitable for site survey:**

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**8. Reason(s) for site survey:**

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**9. Visible landmarks around the site to be surveyed e.g. hills, building, etc:**

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**10. Terrain at site to be inspected (surveyed) e.g. flat, slope, etc:**

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**11. Instruments intended for use at the site:**

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**12. Type of station to be installed e.g. Automatic Weather Station (AWS) or Manual Observing Station :**

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**13. Planned developments at or near the site:**

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Form E

METEOROLOGICAL SERVICES OPERATING LICENCE  
(regulation 12 (b))

REPUBLIC OF BOTSWANA



NATIONAL METEOROLOGICAL SERVICE ACT, 2014

The Director,

Department of Meteorological Services,

P.O. Box 10100,

Gaborone

1. In terms of section 8 (3) of the NATIONAL METEOROLOGICAL SERVICE ACT, 2014, a licence is hereby granted to: (name and address of the operator)  
.....  
for the purpose of operating a privately-run meteorological services station at  
.....(location of station) in the category of  
.....
2. This licence is valid from 1st January, ..... to 31st December, .....
3. The licence number is..... and is issued for the year:.....
4. This licence is issued subject to the following conditions:
  - (a) In accordance with and subject to the Act and the Regulations and shall remain valid for the duration of the licence unless cancelled prior thereto by the National Meteorological Services in accordance with the Act or Regulation or the conditions herein.
  - (b) The licensee hereby represents and warrants that the information or documents supplied for the purposes of applying for this licence is true.
  - (c) The licensee and all the persons operating the stations which the licensee is authorised by this licence to establish, install and operate, shall observe and comply with the Act, the Regulations and the conditions of the licence.
  - (d) The licensee shall not permit or cause any unauthorised person to operate the station or have access to the station and equipment therein.
  - (e) The licensee shall ensure that persons authorised to operate the station observe the conditions of this licence at all times.
  - (f) The licensee shall ensure that equipment and instruments in the station shall at all times be installed, calibrated and operated to comply with all applicable national and World Meteorological Organization standards and technical regulations or requirements specified by the Service from time to time.

**3. This licence was issued:**

**Place of Issue:** .....

**Signature:**.....

**Date of issue:**.....

**Expiry Date:**.....

**Director of Service:**

Form F

REPORTING DATA FROM PRIVATE METEOROLOGICAL STATION  
(regulation 13 (I))

REPUBLIC OF BOTSWANA



NATIONAL METEOROLOGICAL SERVICE ACT, 2014

The Director,

Department of Meteorological Services,

P.O. Box 10100,

Gaborone

1. Name of Enterprise/Organisation:

.....

Phone number: ..... Fax: .....

Email address: .....

Contact person:

.....

.....

.....

Report prepared by:

.....

2. Format in which data is reported: (tick appropriate box)

(i) Printed list/Report:

(ii) Electronic list/Report:

(iii) Data supplied with this form:

**NOTE:** If reported data is printed list/report, attach it to this form and write "see attachment" at part 2 above and if it is electronic list/report, email to the address that will be provided.

3. Type of data and frequency of reporting: (tick appropriate box)

TYPE OF DATA	FREQUENCY OF REPORTING	
	DAILY	MONTHLY
1. RAINFALL <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. CLIMATOLOGICAL DATA <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. OTHER (specify) <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Date information was observed:

.....

5. Date(s) information is reported:

.....

6. Anything special or specific about the data that is worth noting or needs attention:

.....  
 .....  
 .....

7. Has your organisation reported the same type of data before?

YES ..... NO.....

8. If YES, approximately when was the last time?..... and in what format?

.....



**MADE this 12th day of April, 2018.**

**TSHEKEDI KHAMA,**  
*Minister of Environment, Natural Resources  
Conservation and Tourism.*