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## NIGERIA CIVIL AVIATION REGULATIONS

### PART 14 — AIR NAVIGATION SERVICES

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## NIGERIA CIVIL AVIATION REGULATIONS

### PART 14 — AIR NAVIGATION SERVICES

#### SUB-PART 6 — AERONAUTICAL METEOROLOGICAL SERVICES (AMS)

**14.6.0.**—(a) No aeronautical meteorological information service shall be provided at aerodromes or portion of airspace in Nigeria, except as specified under these Regulations.

General  
Provision  
of AMS.

(b) An aeronautical meteorological services provider shall prepare and submit to the Authority for approval, its Manual of Operations detailing :

1. policy and procedures for determining the capacity of the aeronautical meteorological services to be provided, the number of personnel required and their responsibilities to ensure the provision of adequate services ;
2. the types of services to be provided ;
3. type and the location from which the services shall be provided ;
4. the hours during which each aeronautical meteorological service is proposed to be available ;
5. training and checking of staff and how that information is tracked ;
6. quality management system ;
7. safety management system ;
8. contingency plans developed for part or total system failure for which the organisation provides a service ;
9. security measures ;
10. facilities and equipment and how those facilities are maintained ;
11. fault and defect reporting ;
12. maintenance of documents and records ;
13. procedures for reporting of facilities and equipment inadequacies to the Authority ;
14. procedures for decommissioning of equipment or facilities ;
15. procedures for carrying out factory acceptance and site acceptance tests for new equipment or facility ;
16. procedures for regular safety reviews of its operations and systems by its appropriately designated personnel ;
17. procedures for release of meteorological information to aeronautical search and rescue unit ; and
18. any other information requested by the Authority

(c) The aeronautical meteorological services provider's Manual of Operations shall carry a written statement (compliance statement) describing General Request for the Provision of Aeronautical Meteorological Services. the arrangements the provider has made to comply with the requirements of these Regulations.

(d) The Aeronautical meteorological services provider shall prepare the Local Standards Operation Procedures (LSOP) applicable to the services that are provided at each location of the aeronautical meteorological service provider.

(e) Aeronautical meteorological services provider shall make available at least one complete and current copy of its Manual of Operations and Local Standards Operation Procedures (LSOP) at each aeronautical meteorological service station specified in its Manual of Operations.

(f) Aeronautical meteorological services provider shall comply with all procedures detailed in its Manual of Operations.

(g) Aeronautical meteorological services provider shall comply with relevant safety directives issued by the Authority.

(h) Aeronautical meteorological services provider shall make each applicable part of the Manual of Operations available to the personnel who require those parts to carry out their duties.

(i) Aeronautical meteorological services provider shall continue to comply with the provisions in these Regulations.

(j) The Aeronautical Meteorological Services Provider may deviate from the standards in time of an emergency, or other circumstances that may make the deviation necessary in the interest of safety.

(k) The provider shall report, the deviation to the Authority immediately stating how long the deviation is expected to last.

(l) A provider of aeronautical meteorological services shall permit the Authority to carry out such safety audit and inspection as may be necessary to determine compliance with the appropriate requirements prescribed in this Part and for post-implementation monitoring to verify that the defined level of safety continues to be met.

General  
Request for  
the  
Provision of  
Aeronautical  
Meteorological  
Services.

**14.6.1.1.**— (a) The Authority shall grant an AMSP certificate/approval for the provision of meteorological service that meet the needs of international air navigation over international waters and other areas In accordance with the provisions of Part 14.6 and where applicable, with due regard to regional air navigation agreement.

(b) The requirements of the certificate shall be as prescribed in these Regulations.

(c) The details of the Aeronautical Meteorological Services Provider shall be published in the AIP, AIP SUP, NOTAM and AIRAC as appropriate.

(d) A holder of an aeronautical meteorological service provider certificate shall ensure that the meteorological information and data necessary for the safe, regular and efficient operation of air navigation are accurate, timely and coded correctly in the form suitable for the operational requirements of operators, flight crew members, air traffic services units, search and rescue services units, airport managements and others concerned with the conduct or development of international air navigation.

(e) The AMSP shall comply with the requirements of the World Meteorological Organization (WMO) in respect of qualifications and training of meteorological personnel providing service for international air navigation.

*Note.*—Requirements concerning the qualifications, competencies, education and training of meteorological personnel in aeronautical meteorology are given in the Technical Regulations (WMO-No. 49), Volume I - General Meteorological Standards and Recommended Practices, Part V - Qualifications and Competencies of Personnel Involved in the Provision of Meteorological (Weather and Climate) and Hydrological Services, Part VI - Education and Training of Meteorological Personnel, and Appendix A - Basic Instruction Packages.

**14.6.1.2.**—(a) The objective of meteorological service for international air navigation shall be to contribute towards the safety, regularity and efficiency of international air navigation.

Objective, determination and provision of meteorological service.

(b) The objective shall be achieved by supplying the following users: operators, flight crew members, air traffic services units, search and rescue services units, airport managements and others concerned with the conduct or development of international air navigation, with the meteorological information necessary for the performance of their respective functions.

(c) Meteorological service shall be provided to meet the needs of international air navigation in accordance with the provisions of Nig. CARs Part 14.6 and regional air navigation agreements; it shall include the determination of the meteorological service to be provided for international air navigation over international waters and other areas which lie outside the territory of Nigeria.

(d) The Nigerian Meteorological Agency is designated as the aeronautical meteorological service provider (AMSP) to provide or to arrange for the provision of meteorological service for international air navigation in Nigeria. Details of the Nigerian Meteorological Agency are included in the Nigeria Aeronautical Information Publication (AIP), in accordance with Annex 15, Chapter 5.

*Note.*—Detailed specifications concerning presentation and contents of the aeronautical information publication is provided in the Procedures for Air Navigation Services - Aeronautical Information Management (PANS-AIM, Doc 10066), Appendix 2.

(e) The AMSP shall comply with the requirements of the World Meteorological Organization (WMO) in respect of qualifications, competencies, education and training of meteorological personnel providing service for international air navigation.

*Note.*—Requirements concerning the qualifications, competencies, education and training of meteorological personnel in aeronautical meteorology are given in the Technical Regulations (WMO-No. 49), Volume I - General Meteorological Standards and Recommended Practices, Part V - Qualifications and Competencies

of Personnel Involved in the Provision of Meteorological (Weather and Climate) and Hydrological Services, Part VI - Education and Training of Meteorological Personnel, and Appendix A - Basic Instruction Packages.

Supply, use, quality management and interpretation of meteorological information.

**14.6.1.3.—(a)** The AMSP shall maintained a close liaison with those concerned with the use of meteorological information on matters which affects the provision of meteorological service for international air navigation.

**(b)** The AMSP shall establish and implement a properly organized quality system comprising procedures, processes and resources necessary to provide for the quality management of the meteorological information to be supplied to the users listed in 14.6.1.2(b).

**(c)** The quality system established in accordance with 14.6.1.3(b) by the AMSP shall be in conformity with the International Organization for Standardization (ISO) 9000 series of quality assurance standards and shall be certified by an approved organization.

*Note.*—The ISO 9000 series of quality assurance standards provide a basic framework for the development of a quality assurance programme. The details of a successful programme are to be formulated by Nigeria and in most cases are unique to the Nigerian Civil Aviation Authority. Guidance on the establishment and implementation of a quality management system is given in Guide to the implementation of Quality Management Systems National Meteorological and Hydrological Services and other Relevant Service Providers (WMO-No.1100).

**(d)** The AMSP quality system shall provide the users with assurance that 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, as well as the accuracy of measurements, observations and forecasts. When the quality system indicates that meteorological information to be supplied to the users does not comply with the stated requirements, and automatic error correction procedures are not appropriate, such information shall not be supplied to the users unless it is validated with the originator.

*Note.*—Requirements concerning the geographical and spatial coverage, format and content, time and frequency of issuance and period of validity of meteorological information to be supplied to aeronautical users are given in Chapters 3, 4, 6, 7, 8, 9 and 10 and Appendices 2, 3, 5, 6, 7, 8 and 9 of Annex 3 and the relevant regional air navigation plans. Guidance concerning the accuracy of measurement and observation, and accuracy of forecasts is given in Attachments A and B, respectively, to Annex 3.

**(e)** In regard to the exchange of meteorological information for operational purposes, the AMSP quality system shall include verification and validation procedures and resources for monitoring adherence to the prescribed transmission schedules for individual messages and/or bulletins required to be exchanged, and the times of their filing for transmission. The quality system shall be capable of detecting excessive transit times of messages and bulletins received.

*Note.*—Requirements concerning the exchange of operational meteorological information are given in Chapter 11 and Appendix 10 of Annex 3.

(f) Demonstration of compliance of the quality system applied by the AMSP shall be by audit. If nonconformity of the system is identified, the AMSP shall initiate action to determine and correct the cause. All audit observations shall be evidenced and properly documented.

(g) The AMSP shall implement a Quality Management System (QMS) in line with ISO 9001 series of quality assurance standards. The implementation shall be in accordance with the guidance on the establishment and implementation of a quality management systems as given in the Manual on the Quality Management System for the Provision of Meteorological Service for International Air Navigation (ICAO-Doc 9873) and Guide to the Implementation of Quality Management Systems for National Meteorological and Hydrological Services and Other Relevant Service Providers (WMO-No. 1100).

(h) The AMSP quality management system shall be certified by an approved organization in order to provide the user with assurance that 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, the accuracy of measurement, observation and forecasts.

(i) The QMS documentation requirements shall include :

- (1) documented statements of policy and objectives ;
- (2) relevant procedures, processes and resources necessary to provide for the quality management of the meteorological information to be supplied to users ;
- (3) verification and validation procedures and resources for monitoring adherence to standards ;
- (4) documents and records as needed to ensure effective planning, operation and control of processes.

(j) The AMSP shall determine, collect and analyze appropriate data to demonstrate the suitability and effectiveness of its QMS.

(k) The AMSP shall keep under review its QMS and take such corrective action as it is necessary to ensure continuous improvement in the effectiveness of the QMS.

(l) The compliance of the quality system applied by the AMSP shall be demonstrated by internal and external audit including that of the Authority.

(m) If nonconformity of the system is identified, action shall be initiated by the AMSP to determine and correct the cause.

(n) Audit observations shall be evidenced and properly documented by the AMSP.

*Note.*— Guidance on the establishment and implementation of quality management systems is given in the Guide to the Implementation of Quality Management Systems for National Meteorological and Hydrological Services and Other Relevant Service Providers (WMO-No. 1100).

(o) Owing to the variability of meteorological elements in space and time, to limitations of observing techniques and to limitations caused by the definitions of some of the elements, the specific value of any of the elements given by the AMSP in a report shall be understood by the recipient to be the best approximation of the actual conditions at the time of observation as given in the guidance on the operationally desirable accuracy of measurement or observation in Attachment A to Annex 3.

*Note.*—Guidance on the operationally desirable accuracy of measurement or observation is given in Attachment A.

(p) Owing to the variability of meteorological elements in space and time, to limitations of forecasting techniques and to limitations caused by the definitions of some of the elements, the specific value of any of the elements given by the AMSP 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. Similarly, when the time of occurrence or change of an element is given by the AMSP in a forecast, this time shall be understood as the most probable time as prescribed in ICAO-Attachment B.

*Note.*—Guidance on the operationally desirable accuracy of forecasts is given in Attachment B.

(q) The meteorological information supplied to the users listed in 14.6.1.2(b) shall be consistent with Human Factor principles and shall be in forms which require a minimum of interpretation by these users, as prescribed in the Human Factors Training Manual (Doc. 9683).

*Note.*—Guidance material on the application of Human Factors principles can be found in the Human Factors Training Manual (Doc 9683).

(r) The quality management system shall be adequate enough to ensure proper maintenance and timely calibration of equipment and facilities, efficient and accurate provision of meteorological services, forecast verification system, staff suggestion and stake holders feed back.

(s) The AMSP shall ensure that the meteorological information supplied to the users listed in 4.6.1.2(b) is provided through information services.

*Note 1.*— In the context of system-wide information management (SWIM), the notion of information service addresses machine-to-machine interaction in a service-oriented architecture.

*Note 2.*— Procedures on information services are contained in the Procedures for Air Navigation Services ; Information Management (PANS-IM, Doc 10199).

*Note 3.*— Guidance material on information services can be found in the Manual on System-wide Information Management Implementation (Doc 10203) Grant of Certificate to Aeronautical Meteorological Services Provider (AMSP) and supply of meteorological information.

**14.6.1.4**—(a) The Authority shall grant an Aeronautical Meteorological Service Provider certificate for the supply of the following services in support of international air navigation :

1. routine meteorological observations at fixed intervals ;
2. special weather observations whenever specified changes occur in respect of surface wind, visibility, runway visual range, present weather, cloud and air temperature ;
3. weather forecasts and other relevant information for Aerodromes, Flight Information Regions, routes and flights with which it is concerned ;
4. flight crew briefing, consultation and flight documentation to flight crew members and other flight operations personnel ;
5. continuous survey of meteorological conditions over the Aerodromes, Flight Information Regions, routes and flights with which it is designated to prepare forecasts ;
6. weather watch and monitoring, including the ability to detect and forecast hazards relevant to the aviation community ;
7. forecast and warning products to the standards required by the user community ;
8. record of aeronautical climatological information in the form of aerodrome climatological tables and summaries required for the planning of flight operations, investigation or operational analysis for supply, on request, to aeronautical users ;
9. exchange of meteorological information with other meteorological offices ;
10. tailor meteorological products and services to civil aviation operations, in accordance with these Regulations ;
11. supply information received concerning the accidental release of radioactive materials into the atmosphere within the Nigerian airspace to the ATS providers, AIS Provider and other meteorological watch offices for dissemination ;
12. issue SIGMET information phenomena which may affect the safety of aircraft operations, and the development of those phenomena in time and space within its airspace to the ATS providers, AIS Provider and other meteorological watch offices.
13. issue SIGMET messages concerning volcanic ash cloud, tropical cyclones and space weather information which shall be based on advisory information provided by Volcanic Ash Advisory Centers, Tropical Cyclone Advisory Centers, and Space Weather Centers respectively, designated by regional air navigation agreement ;

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14. issue wind shear warnings for aerodromes where wind shear is considered a factor ;

15. at aerodromes where wind shear is detected by automated ground based, wind shear remote-sensing or detection equipment :

(i) wind shear alerts generated by these systems shall be issued.

(ii) the wind shear alerts shall give concise, up-to-date information related to the observed existence of wind shear involving a headwind/tailwind change of 7.5m/s (15kt) or more which could adversely affect aircraft on the final approach path or initial take-off path and aircraft on the runway during the landing roll or take-off run.

(iii) Wind sensors for local meteorological reports shall be appropriately sited to give the best practicable indication of conditions along the runway/touchdown zone.

(iv) the provision in air traffic services units of wind displays shall be related to the same integrated automatic systems as that of the aeronautical meteorological service provider ;

(v) the calibration and maintenance programme of these wind displays/instruments both in the met office and control tower shall be complied with by the AMSP ;

(vi) the use to be made of these wind displays/instruments by air traffic services personnel shall be agreed upon between the AMSP and ATS unit ;

(v) the provision of supplementary visual observations for meteorological phenomena of operational significance in the climb-out and approach areas made by air traffic services personnel shall be used to update or supplement the information supplied by the meteorological observer.

(vi) action shall be taken in respect of meteorological information obtained from aircraft taking off or landing.

(vii) consideration shall be given to the implementation of the required criteria/procedures regarding meteorological information/data for the establishment of aerodrome operating minima.

16. issue aerodrome warnings and any other hazardous weather events on meteorological conditions which could adversely affect aircraft on the ground, including parked aircraft, and the aerodrome facilities and services ;

17. supply runway visual range on all runways intended for Category II and III instrument approach and landing operations ;

18. supply AIRMET information when taking into account the density of air traffic operating below flight level 100 ;

19. supply up-to-date meteorological information to relevant Aeronautical Information Services (AIS) units, as necessary for the conduct of their functions ;

20. ensure that when forecasts are identified as being originated by the WAFCs, no modifications shall be made to their meteorological content ;

21. keep the records of all regular internal inspections for a period of at least one year from the date of each inspection ;

(b) The AMSP shall provide meteorological service that meet the needs of international air navigation over international waters and other areas which lie outside Nigeria airspace in accordance with the provisions of this Part and where applicable, with due regard to regional air navigation agreement.

(c) The AMSP shall ensure that the meteorological information and data necessary for the safe, regular and efficient operation of air navigation are accurate, timely and coded correctly in the form suitable for the operational requirements of operators, flight crew members, air traffic services units, search and rescue services units, airport managements and others concerned with the conduct or development of international air navigation as specified in ICAO Annex 3, Part II - Appendices and Attachments.

(d) The details of the AMSP shall be published in The AIP, AIPSUP, NOTAM and AIRAC as appropriate.

**14.6.1.5.—(a)** An AMSP certificate holder shall establish procedures to enable operator requiring meteorological service or changes in existing meteorological service to notify, sufficiently in advance, the aerodrome meteorological office concerned. The operator requiring meteorological service or changes in existing meteorological service shall notify, sufficiently in advance, the aerodrome meteorological office. The minimum amount of advance notice required shall be as agreed between the aerodrome meteorological office and the operator concerned.

Notifications  
Required  
from  
Operators.

(b) The aerodrome meteorological office shall be notified by the operator requiring service when :

1. New routes or new types of operations are planned ;
2. Changes of a lasting character are to be made in scheduled operations ; and
3. Other changes, affecting the provision of meteorological service, are planned.

(c) The information in (b) shall contain all details necessary for the planning of appropriate arrangements by the AMSP.

(d) The operator or a flight crew member shall ensure that, where required, the aerodrome meteorological office in consultation with users, is notified :

1. of flight schedules ;
2. when non-scheduled flights are to be operated ;
3. when flights are delayed, advanced or cancelled.

(e) The notification to the aerodrome meteorological office of individual flights shall contain the following information except that, in the case of scheduled flights, the requirement for some or all of this information may be waived by agreement between aerodrome meteorological office and the operator concerned :

1. aerodrome of departure and estimated time of departure ;

2. destination and estimated time of arrival ;
3. route to be flown and estimated times of arrival at, and departure from, any intermediate aerodrome(s) ;
4. alternate aerodromes needed to complete the operational flight plan and taken from the relevant list contained in the regional air navigation plan ;
5. cruising level ;
6. type of flight, whether under visual or instrument flight rules ;
7. type of meteorological information requested for a flight crew member, whether flight documentation and/or briefing or consultation ; and
8. time(s) at which briefing, consultation and/or flight documentation are required.

**14.6.2. METEOROLOGICAL OFFICES**

Aerodrome  
Meteorological  
Offices.

**14.6.2.1.**—(a) The AMSP certificate holder shall establish one or more aerodrome and/or other meteorological offices which shall be adequate for the provision of the meteorological service required to satisfy the needs of international air navigation.

(b) For an aerodrome without an aerodrome meteorological office located at the aerodrome, the AMSP certificate holder shall designate one or more of its aerodrome meteorological office(s) to supply meteorological information as required.

(c) An AMSP shall establish means by which such information can be supplied to the aerodromes concerned.

(d) An aerodrome meteorological office shall carry out all or some of the following functions as necessary to meet the needs 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 survey of meteorological conditions over the aerodromes for which it is designated to prepare forecasts ;
- (4) provide briefing, consultation and flight documentation to flight crew members and/or other flight operations personnel ;
- (5) supply other meteorological information to aeronautical users ;
- (6) display the available meteorological information ;
- (7) exchange meteorological information with other aerodrome 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 service unit and meteorological watch offices (MWO) as agreed between the AMSP and ATS Provider.

(e) The aerodromes for which landing forecasts are required shall be determined by regional air navigation agreement.

**14.6.2.2.—(a)** In accordance with regional air navigation agreement, a MWO is established in Kano for providing air traffic services within the flight information region (FIR) of Nigeria.

Meteorological  
Watch  
Offices  
(MWO).

*Note.*—Guidance on the bilateral or multilateral arrangements between Contracting States for the provision of MWO services, including for cooperation and delegation, can be found in the Manual of Aeronautical Meteorological Practice (Doc 8896).

(b) The MWO shall :

- (1) Maintain continuous watch over meteorological conditions affecting flight operations within its area of responsibility ;
- (2) prepare SIGMET and other information relating 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 by regional air navigation agreement, in accordance with —
  - (i) prepare AIRMET information relating to its area of responsibility ;
  - (ii) supply AIRMET information to associated air traffic services units ; and
  - (iii) disseminate AIRMET information ;

(c) 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 (ACC)/flight information centre (FIC), as agreed between the meteorological and ATS authorities concerned, and to its associated VAAC as determined by regional air navigation agreement.

(d) supply information received concerning the release of radioactive materials into the atmosphere, in the area for which it maintains watch or adjacent areas, to its associated ACC/FIC, as agreed between the AMSP and ATS Provider and to aeronautical information service units, as agreed between the AMSP and the Authority. The information shall comprise location, date and time of the release, and forecast trajectories of the radioactive materials.

*Note.*—The information is provided by RSMCs for the provision of transport model products for radiological environmental emergency response, at the request of the delegated authority of the State in which the radioactive material was released into the atmosphere, or the International Atomic Energy Agency (IAEA). The information is sent by the RSMC to a single contact point of the AMSP. This contact point has the responsibility of redistributing the RSMC products within the State concerned. Furthermore, the information is provided by IAEA to RSMC co-located with VAAC London (designated as the focal point) which in turn notifies the ACCs/FICs concerned about the release.

(e) The boundaries of the area over which meteorological watch is to be maintained by the MWO is coincident with the boundaries of Kano FIR.

(f) The AMSP shall coordinate SIGMET with neighbouring MWO(s), especially when the en- route weather phenomenon extends or is expected to extend beyond the MWO's specified area of responsibility, in order to ensure the provision of harmonized SIGMET.

*Note.*—Guidance on the bilateral or multilateral coordination between MWOs of Contracting States for the provision of SIGMET can be found in the Manual of Aeronautical Meteorological Practice (Doc 8896).

**14.6.3. AERONAUTICAL METEOROLOGICAL OBSERVATIONS AND REPORTS**

**14.6.3.1.**— *Note.*—Technical specifications and detailed criteria related to this chapter are given in, Appendix 3 of Annex 3.

(a) The AMSP shall establish such aeronautical meteorological stations as it determines to be necessary at Nigeria aerodromes. The aeronautical meteorological station may be a separate station or may be combined with a synoptic station.

*Note.*—Aeronautical meteorological stations may include sensors installed outside the aerodrome, where considered justified, by the AMSP to ensure the compliance of meteorological service for international air navigation with the provisions of this Part 14.6.

(b) The AMSP shall establish, or arrange for the establishment of, aeronautical meteorological stations on offshore structures or at other points of significance in support of helicopter operations to offshore structures, if required by regional air navigation agreement.

(c) Aeronautical meteorological stations shall make routine observations at fixed intervals. At aerodromes, the routine observations shall 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.

(d) The aeronautical meteorological stations shall be inspected by the Authority at sufficiently frequent intervals to ensure that a high standard of observation is maintained, that instruments and all their indicators are functioning correctly, and that the exposure of the instruments has not changed significantly.

*Note.*—Guidance on the inspection of aeronautical meteorological stations including the frequency of inspections is given in the Manual on Automatic Meteorological Observing Systems at Aerodromes (Doc 9837).

(e) At aerodromes with runways intended for Category II and III instrument approach and landing operations, automated equipment for measuring or assessing, as appropriate, and for monitoring and remote indicating of surface wind, visibility, runway visual range, height of cloud base, air and dew-point temperatures and atmospheric pressure shall be installed by the AMSP to support

approach, landing and take-off operations. These devices shall be integrated automatic systems for acquisition, processing, dissemination and display in real time of the meteorological parameters affecting landing and take-off operations. The design of integrated automatic systems shall observe Human Factors principles and include back-up procedures.

*Note 1.*—Categories of precision approach and landing operations are defined in Annex 6, Part 1.

*Note 2.*—Guidance material on the application of Human Factors principles can be found in the Human Factors Training Manual (Doc 9683).

(f) At aerodromes with runways intended for Category I instrument approach and landing operations, automated equipment for measuring or assessing, as appropriate, and for monitoring and remote indicating of surface wind, visibility, runway visual range, height of cloud base, air and dew-point temperatures and atmospheric pressure shall be installed by the AMSP to support approach and landing and take-off operations. These devices shall be integrated automatic systems for acquisition, processing, dissemination and display in real time of the meteorological parameters affecting landing and take-off operations. The design of integrated automatic systems shall observe Human Factors principles and include back-up procedures.

(g) Where an integrated semi-automatic system is used for the dissemination/display of meteorological information, it shall be capable of accepting the manual insertion of data covering those meteorological elements which cannot be observed by automatic means.

(h) The observations shall 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.

**14.6.3.2.**—(a) An agreement between the AMSP and ATS Provider shall be established to cover, among other things :

1. the provision in air traffic services units of displays related to integrated automatic 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 ;
5. meteorological information obtained from aircraft taking off or landing (for example, on wind shear) ; and
6. if available, meteorological information obtained from ground weather radar.

Agreement  
between  
AMSP and  
ATS  
Provider.

*Note.*—Guidance on the subject of coordination between ATS and aeronautical meteorological services is contained in the Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services (Doc 9377).

Routine  
Observations  
and Reports.

**14.6.3.3.**—(a) At aerodromes, routine observations shall be made throughout the 24 hours each day, unless otherwise agreed between the AMSP and ATS Provider, and the operator concerned. Such observations shall be made at intervals of one hour or, if so determined by regional air navigation agreement, at intervals of half - hour. At other aeronautical meteorological stations, such observations shall be made as determined by the AMSP taking into account the requirements of air traffic services units and aircraft operations.

(b) Reports of routine observations shall be issued as :

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

(ii) METAR for dissemination beyond the aerodrome of origin (mainly intended for flight planning, VOLMET broadcasts and D-VOLMET).

*Note.*—Meteorological information used in ATIS (voice-ATIS and D- ATIS) is to be extracted from the local routine report, in accordance with Annex 11, 4.3.6.1(g).

(c) At aerodromes that are not operational throughout 24 hours, METAR shall be issued prior to the aerodrome resuming operations in accordance with regional air navigation agreements.

Special  
Observations  
and Reports.

**14.6.3.4.**—(a) A list of criteria for special observations shall be established by the AMSP in consultation with the ATS Provider, operators and others concerned.

(b) Reports of special observations shall be issued as :

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

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

*Note.*—Meteorological information used in ATIS (voice-ATIS and D- ATIS) is to be extracted from the local special report, in accordance with Annex 11, 4.3.6.1(g).

(c) At aerodromes that are not operational throughout 24 hours, METAR shall be issued prior to the aerodrome resuming operation in accordance with regional air navigation agreement.

(d) SPECI shall be issued as necessary.

**14.6.3.5.—(a)** Local routine reports, local special reports, METAR and SPECI shall contain the following elements in the order indicated :

Contents of  
Meteorological  
Reports.

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).

*Note.*—The location indicators referred to under 14.6.3.5(a)(2) and their significations are published in Location Indicators (Doc 7910).

(i) In addition to elements listed under 14.6.3.5 (a) (1 - 11), local routine reports, local special reports, METAR and SPECI shall contain supplementary information to be placed after element 11).

(ii) Optional elements included under supplementary information shall be included in METAR and SPECI in accordance with regional air navigation agreement.

**14.6.3.6.—(a) Surface wind**

Observing  
and  
Reporting  
Meteorological  
Elements.

(1) The mean direction and the mean speed of the surface wind shall be measured, as well as significant variations of the wind direction and speed, and reported in degrees true and metres per second (or knots), respectively.

(2) When local routine and special reports are used for departing aircraft, the surface wind observations for these reports shall be representative of conditions along the runway ; when local routine and special reports are used for arriving aircraft, the surface wind observations for these reports shall be representative of the touchdown zone.

(3) For METAR and SPECI, the surface wind observations shall be representative of conditions above the whole runway where there is only one runway and the whole runway complex where there is more than one runway.

(4) When Surface wind displays relating to each sensor shall be located in the meteorological station with corresponding displays in the appropriate air traffic services units. The displays in the meteorological station and in the air traffic services units shall relate to the same sensors, and where separate sensors are required, the displays shall be clearly marked to identify the runway and section of runway monitored by each sensor.

(b) *Visibility*

(1) The visibility as defined in 14.6.0 (82) shall be measured or observed by human observers and or automated observing equipment with provision for the manual insertion whenever conditions warrant it and shall be reported in metres or kilometres.

*Note.*—Guidance on the conversion of instrument readings into visibility is given in Attachment D.

(2) When local routine and special reports are used for departing aircraft, the visibility observations for these reports shall be representative of conditions along the runway ; when local routine and special reports are used for arriving aircraft, the visibility observations for these reports shall be representative of the touchdown zone of the runway.

(3) For METAR and SPECI, the visibility observations shall be representative of the aerodrome.

(c) *Runway visual range*

*Note.*—Guidance on the subject of runway visual range is contained in the Manual of Runway Visual Range Observing and Reporting Practices (Doc 9328).

(1) Runway visual range as defined in 14.6.0 (71) shall be assessed on all runways intended for Category II and III instrument approach and landing operations by human observer and/or automated equipment whenever condition warrant it.

(2) Runway visual range as defined in 14.6.0 (71) shall be assessed on all runways intended for use during periods of reduced visibility, including :

- (i) precision approach runways intended for Category I instrument approach and landing operations ; and
- (ii) runways used for take-off and having high-intensity edge lights and/ or centre line lights.

*Note.*—Precision approach runways are defined in Annex 14, Volume I, Chapter 1, under “Instrument runway”.

(3) Runway visual range shall be reported in metres throughout periods when either the visibility or the runway visual range is less than 1500m.

(4) Runway visual range assessments shall be representative of :

- (i) the touchdown zone of the runway intended for non-precision or Category I instrument approach and landing operations ;
- (ii) the touchdown zone and the mid-point of the runway intended for Category II instrument approach and landing operations ; and
- (iii) the touchdown zone the mid-point and stop-end of the runway intended for Category III instrument approach and landing operations.

(5) The units providing air traffic service and aeronautical information service for an aerodrome shall be kept informed without delay of changes in the serviceability status of the automated equipment used for assessing runway visual range.

*(d) Present weather*

1. The present weather occurring at the aerodrome shall be observed and reported as necessary. The following present weather phenomena shall be identified, as a minimum : rain, drizzle, snow and freezing precipitation (including intensity thereof), haze, mist, fog, freezing fog and thunderstorms (including thunderstorms in the vicinity).

2. For local routine and special reports, the present weather information shall be representative of conditions at the aerodrome.

3. For METAR and SPECI, the present weather information shall be representative of conditions at the aerodrome and, for certain specified present weather phenomena, in its vicinity.

*(e) Clouds*

1. Cloud amount, cloud type and height of cloud base shall be observed and reported as necessary to describe the clouds of operational significance. When the sky is obscured, vertical visibility shall be observed and reported, where measured, in lieu of cloud amount, cloud type and height of cloud base. The height of cloud base and vertical visibility shall be reported in metres (or feet).

2. Cloud observations for local routine and special reports shall be representative of the runway threshold(s) in use.

3. Cloud observations for METAR and SPECI shall be representative of the aerodrome and its vicinity

*(f) Air temperature and dew-point temperature*

1. The air temperature and the dew-point temperature shall be measured and reported in degree Celsius.

2. Observations of air temperature and dew-point temperature for local routine reports, and local special reports, METAR and SPECI shall be representative of the whole runway complex.

*(g) Atmospheric pressure*

The atmospheric pressure shall be measured, and QNH and QFE values shall be computed and reported in hectoPascals.

*(h) Supplementary information*

Observations made at aerodromes shall include the available supplementary information concerning significant meteorological conditions, particularly those in the approach and climb-out areas. Where practicable, the information shall identify the location of the meteorological condition.

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Reporting  
Meteorological  
Information  
from  
Automatic  
Observing  
Systems.

**14.6.3.7.**—(a) METAR and SPECI from automatic observing systems shall be used by AMSP during non-operational hours of the aerodrome, and during operational hours of the aerodrome in consultation with users based on the availability and efficient use of personnel.

*Note.*—Guidance on the use of automatic meteorological observing systems is given in Doc 9837.

(b) Local routine and special reports from automatic observing systems shall be used by AMSP during operational hours of the aerodrome in consultation with users based on the availability and efficient use of personnel.

(c) Local routine reports, local special reports, METAR and SPECI from automatic observing systems shall be identified with the word “AUTO”.

Observations  
and Reports  
of Volcanic  
Activity.

**14.6.3.8.**—(a) The occurrence of pre-eruption volcanic activity, volcanic eruptions and volcanic ash cloud shall be reported without delay to the associated air traffic services unit, aeronautical information services unit and meteorological watch office. The report shall be made in the form of a volcanic activity report comprising the following information in the order indicated :

1. message type, volcanic activity report ;
2. station identifier, location indicator or name of station ;
3. date/time of message ;
4. location of volcano and name if known ; and
5. concise description of event including, as appropriate, level of intensity of volcanic activity, occurrence of an eruption and its date and time, and the existence of a volcanic ash cloud in the area together with direction of ash cloud movement and height.

*Note.*—Pre-eruption volcanic activity in this context means unusual and/or increasing volcanic activity which could presage a volcanic eruption.

### **14.6.4. AIRCRAFT OBSERVATIONS AND REPORTS**

*Note.*—Technical specifications and detailed criteria related to this chapter are given in Appendix 4.

Obligations  
of States.

**14.6.4.1.** The AMSP shall arrange, according to the provisions of this regulation, for observations to be made by aircraft of Nigeria registry operating on international air routes and for the recording and reporting of these observations.

Types of  
Aircraft  
Observations.

**14.6.4.2.**—(a) The following aircraft observations shall be made :

1. routine aircraft observations during en-route and climb-out phases of the flight ; and
2. special and other non-routine aircraft observations during any phase of the flight.

**14.6.4.3.**—(a) When air-ground data link is used and automatic dependent surveillance - (ADS-C) or secondary surveillance radar (SSR) Mode S is being applied, automated routine observations shall be made every 15 minutes during the en-route phase and every 30 seconds during the climb-out phase for the first 10 minutes of the flight.

Routine  
Aircraft  
Observations  
–Designation.

(b) For helicopter operations to and from aerodromes on offshore structures, routine Observations shall be made from helicopters at points and times as agreed between the AMSP and the helicopter operators concerned.

(c) In the case of air routes with high-density air traffic (e.g. organized tracks), an aircraft from among the aircraft operating at each flight level shall be designated, at approximately hourly intervals, to make routine observations in accordance with 14.6.4.3(a). The designation procedures shall be in accordance with regional air navigation agreement.

(d) In the case of the requirement to report during the climb-out phase, an aircraft shall be designated, at approximately hourly intervals, at each aerodrome to make routine observations in accordance with 14.6.4.3 (a).

**14.6.4.4.**—Aircraft not equipped with air-ground data link shall be exempted from making routine aircraft observations.

Routine  
Aircraft  
Observations  
–Exemptions.

**14.6.4.5.**—(a) Special observations shall be made by all aircraft whenever the following conditions are encountered or observed :

Special  
Aircraft  
Observations.

1. moderate or severe turbulence, or
2. moderate or severe icing ; or
3. severe mountain wave ; or
4. thunderstorms, without hail, that are obscured, embedded, widespread or in squall lines ; or
5. thunderstorms, with hail, that are obscured, embedded, widespread or in squall lines ; or
6. heavy duststorm or heavy sandstorm ; or
7. volcanic ash cloud ; or
8. pre-eruption volcanic activity or a volcanic eruption.

*Note.*—Pre-eruption volcanic activity in this context means unusual and/or increasing volcanic activity which could presage a volcanic eruption.

**14.6.4.6.**—When other meteorological conditions not listed under 14.6.4.5, e.g. wind shear, are encountered and which, in the opinion of the pilot-in-command, may affect the safety or markedly affect the efficiency of other aircraft operations, the pilot-in-command shall advise the appropriate air traffic services unit as soon as practicable.

Other Non-  
Routine  
Aircraft  
Observations.

*Note.*—Icing, turbulence and, to a large extent, wind shear are elements which, for the time being, cannot be satisfactorily observed from the ground and for which in most cases aircraft observations represent the only available evidence.

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Reporting of Aircraft Observations During Flight.

**14.6.4.7.**—(a) Aircraft observations shall be reported by air-ground data link. Where air-ground data link is not available or appropriate, special and other non-routine aircraft observations during flight shall be reported by voice communications.

(b) Aircraft observations shall be reported during flight at the time the observation is made or as soon thereafter as is practicable.

(c) Aircraft observations shall be reported as air-reports.

Relay of Air-Reports by ATS Units.

**14.6.4.8.**—(a) The AMSP shall make arrangements with the ATS Provider to ensure that, on receipt by the ATS units of :

1. special air-reports by voice communications, the ATS units relay them without delay to their associated meteorological watch office ; and
2. routine and special air-reports by data link communications, the ATS units relay them without delay to their associated meteorological watch office, and the WAFCs and the centres designated by regional air navigation agreement for the operation of aeronautical fixed service Internet-based services.

Recordings and Post-Flight Reporting of Aircraft Observations of Volcanic Activity.

**14.6.4.9.** Special aircraft observations of pre-eruption volcanic activity, a volcanic eruption or volcanic ash cloud shall be recorded on the special air-report of volcanic activity form. A copy of the form shall be included with the flight documentation provided to flights operating on routes which, in the opinion of the AMSP, could be affected by volcanic ash clouds.

**14.6.5. AEROMET FORECASTS**

*Note.*—Technical specifications and detailed criteria related to this chapter are given in Appendix 5.

Use of Forecasts.

**14.6.5.1.** The issue of a new forecast by an aerodrome meteorological office, such as a routine aerodrome forecast, shall be understood to cancel automatically any forecast of the same type previously issued for the same place and for the same period of validity or part thereof.

Aerodrome Forecasts.

**14.6.5.2.**—(a) An aerodrome forecast shall be prepared, in accordance with regional air navigation agreement, by the aerodrome meteorological office designated by the AMSP.

*Note.*—The aerodromes for which aerodrome forecasts are to be prepared and the period of validity of these forecasts are listed in the relevant facilities and services implementation document (FASID).

(b) An aerodrome forecast shall be 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.

(c) Aerodrome forecasts and amendments thereto shall be issued as TAF and include the following information in the order indicated :

1. identification of the type of forecast ;
2. location indicator ;
3. time of issue of forecast ;
4. identification of a missing forecast, when applicable ;
5. date and period of validity of forecast ;
6. identification of a cancelled forecast, when applicable
7. surface wind ;
8. visibility ;
9. weather ;
10. cloud ; and
11. expected significant changes to one or more of these elements during the period of validity.

Optional elements shall be included in TAF in accordance with regional air navigation agreement.

*Note.*—The visibility included in TAF refers to the forecast prevailing visibility.

(d) Aerodrome meteorological offices preparing TAF shall keep the forecasts under continuous review and, when necessary, shall issue amendments promptly. The length of the forecast messages and the number of changes indicated in the forecast shall be kept to a minimum.

*Note.*—Guidance on methods to keep TAF under continuous review is given in Chapter 3 of the Manual of Aeronautical Meteorological Practice (Doc 8896).

(e) TAF that cannot be kept under continuous review shall be cancelled.

1. The period of validity of a routine TAF shall be not less than 6 hours nor more than 30 hours ; the period of validity shall be determined by regional air navigation agreement. Routine TAF valid for less than 12 hours shall be issued every 3 hours and those valid for 12 to 30 hours shall be issued every 6 hours.

2. When issuing TAF, aerodrome meteorological offices shall ensure that not more than one TAF is valid at an aerodrome at any given time.

**14.6.5.3.**—(a) A landing forecast shall be prepared by the aerodrome meteorological office designated by the AMSP as determined by regional air navigation agreement ; such forecasts are intended to meet the requirements of local users and of aircraft within about one hour's flying time from the aerodrome.

Landing  
Forecasts.

(b) Landing forecasts shall be prepared in the form of a trend forecast.

(c) A trend forecast shall consist of a concise statement of the expected significant changes in the meteorological conditions at that aerodrome to be appended to a local routine report or local special report, METAR or SPECI. The

period of validity of a trend forecast shall be 2 hours from the time of the report which forms part of the landing forecast.

Forecasts for  
Take-Off

**14.6.5.4.—(a)** A forecast for take-off shall be prepared by the aerodrome meteorological office designated by the AMSP as agreed with the operators concerned.

*(b)* A forecast for take-off shall refer to a specified period of time and shall contain information on expected conditions over the runway complex in regard to surface wind direction and speed and any variations thereof, temperature, pressure (QNH), and any other elements as agreed locally.

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

*(d)* Aerodrome meteorological offices preparing forecasts for take-off shall keep the forecasts under continuous review and, when necessary, shall issue amendments promptly.

Area  
Forecasts for  
Low-Level  
Flights.

**14.6.5.5.—(a)** When the density of traffic operating below flight level 100 (or up to flight level 150 in mountainous areas, or higher, where necessary) warrants the routine issue and dissemination of area forecasts for such operations, the frequency of issue, the form and the fixed time or period of validity of those forecasts and the criteria for amendments thereto shall be determined by the AMSP in consultation with the users.

*(b)* When the density of traffic operating below flight level 100 warrants the issuance of AIRMET information in accordance with 14.6.6.2, area forecasts for such operations shall be prepared in a format as agreed between the Authority and the AMSP. When abbreviated plain language is used, the forecast shall be prepared as a GAMET area forecast, employing approved ICAO abbreviations and numerical values ; when chart form is used, the forecast shall be prepared as a combination of forecasts of upper wind and upper-air temperature, and of SIGWX phenomena. The area forecasts shall be issued to cover the layer between the ground and flight level 100 (or up to flight level 150 in mountainous area, or higher, where necessary) and shall contain information on en-route weather phenomena hazardous to low-level flights, in support of the issuance of AIRMET information, and additional information required by low-level flights.

*(c)* Area forecasts for low-level flights prepared in support of the issuance of AIRMET information shall be 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.

**14.6.6. SIGMET AND AIRMET INFORMATION, AERODROME WARNINGS AND WIND SHEAR WARNINGS AND ALERTS**

*Note.*—Technical specifications and detailed criteria related to this chapter are given in Appendix 6.

**14.6.6.1.**—(a) SIGMET information shall be issued by a meteorological watch office and shall give a concise description in abbreviated plain language concerning the occurrence or expected occurrence of specified en-route weather and other phenomena, that may affect the safety of aircraft operations, and of the development of those phenomena in time and space.

SIGMET  
Information.

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

(c) The period of validity of a SIGMET message shall be not more than 4 hours. In the special case of SIGMET messages for volcanic ash cloud and tropical cyclones, the period of validity shall be extended up to 6 hours.

(d) SIGMET messages concerning volcanic ash cloud and tropical cyclones shall be based on advisory information provided by VAACs and TCACs, respectively, designated by regional air navigation agreement.

(e) Close coordination shall be maintained between the meteorological watch office and the associated area control centre/flight information centre to ensure that information on volcanic ash included in SIGMET and NOTAM messages is consistent.

(f) SIGMET messages shall be issued not more than 4 hours before the commencement of the period of validity. In the special case of SIGMET messages for volcanic ash cloud and tropical cyclones, these messages shall be issued as soon as practicable but not more than 12 hours before the commencement of the period of validity. SIGMET messages for volcanic ash and tropical cyclones shall be updated at least every 6 hours.

**14.6.6.2.**—(a) AIRMET information shall be issued by a meteorological watch office in accordance with regional air navigation agreement, taking into account the density of air traffic operating below flight level 100. AIRMET information shall give a concise description in abbreviated plain language concerning the occurrence and/or expected occurrence of specified en-route weather phenomena, which have not been included in Section I of the area forecast for low-level flights issued in accordance with Chapter 6, 6.5 and which may affect the safety of low-level flights, and of the development of those phenomena in time and space.

SIGMET  
Information.

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

(c) The period of validity of an AIRMET message shall be not more than 4 hours.

Aerodrome Warnings.

**14.6.6.3.**—(a) Aerodrome warnings shall be issued by the aerodrome meteorological office designated by the AMSP and shall give concise information of meteorological conditions which could adversely affect aircraft on the ground, including parked aircraft, and the aerodrome facilities and services.

(b) Aerodrome warnings shall be cancelled when the conditions are no longer occurring and/or no longer expected to occur at the aerodrome.

Wind Shear Warnings and Alerts.

**14.6.6.4.**—*Note.*—Guidance on the subject is contained in the Manual on Low-level Wind Shear (Doc 9817). Wind shear alerts are expected to complement wind shear warnings and together are intended to enhance situational awareness of wind shear.

(a) Wind shear warnings shall be prepared by the aerodrome meteorological office designated by the AMSP for aerodromes where wind shear is considered a factor, in accordance with local arrangements with the appropriate ATS unit and operators concerned. Wind shear warnings shall give concise information on the observed or expected existence of wind shear which could adversely affect aircraft on the approach path or take-off path or during circling approach between runway level and 500m (1600ft) above that level and aircraft on the runway during the landing roll or take-off run. Where local topography has been shown to produce significant wind shears at heights in excess of 500m (1600 ft) above runway level, then 500m (1600ft) shall not be considered restrictive.

(b) Wind shear warnings for arriving aircraft and/or departing aircraft shall be cancelled when aircraft reports indicate that wind shear no longer exists or, alternatively, after an agreed elapsed time. The criteria for the cancellation of a wind shear warning shall be defined locally for each aerodrome, as agreed between the AMSP, the ATS Provider and the operators concerned.

(c) At aerodromes where wind shear is detected by automated, ground-based, wind shear remote-sensing or detection equipment, wind shear alerts generated by these systems shall be issued.

(d) Wind shear alerts shall give concise, up-to-date information related to the observed existence of wind shear involving a headwind/tailwind change of 7.5 m/s (15 kt) or more which could adversely affect aircraft on the final approach path or initial take-off path and aircraft on the runway during the landing roll or take-off run.

(e) Wind shear alerts shall be updated at least every minute. The wind shear alert shall be cancelled as soon as the headwind/tailwind change falls below 7.5 m/s (15 kt).

**14.6.7. AERONAUTICAL CLIMATOLOGICAL INFORMATION**

*Note.*—Technical specifications and detailed criteria related to this chapter are given in Appendix 7

**14.6.7.1.**—*Note.*—In cases where it is impracticable to meet the requirements for aeronautical climatological information on a national basis, the collection, processing and storage of observational data may be effected through computer facilities available for international use, and the responsibility for the preparation of the required aeronautical climatological information may be delegated by the meteorological authorities concerned.

General  
Provisions.

(a) Aeronautical climatological information required for the planning of flight operations shall be prepared in the form of aerodrome climatological tables and aerodrome climatological summaries. Such information shall be supplied to aeronautical users as agreed by the AMSP and the users concerned.

*Note.*—Climatological data required for aerodrome planning purposes are set out in Annex 14, Volume I, 3.1.4 and Attachment A.

(b) Aeronautical climatological information shall normally be based on observations made over a period of at least five years and the period shall be indicated in the information supplied.

(c) Climatological data related to sites for new aerodromes and to additional runways at existing aerodromes shall be collected starting as early as possible before the commissioning of those aerodromes or runways.

**14.6.7.2.**—(a) The AMSP shall make arrangements for collecting and retaining the necessary observational data and have the capability :

Aerodrome  
Climatological  
Tables.

1. to prepare aerodrome climatological tables for each regular and alternate international aerodrome within its territory ; and
2. to make available such climatological tables to an aeronautical user within a time period as agreed between the AMSP and the user concerned.

**14.6.7.3.**—Aerodrome climatological summaries shall follow the procedures prescribed by the World Meteorological Organisation (WMO). Where computer facilities are available to store, process and retrieve the information, the summaries shall be published or otherwise made available to aeronautical users on request. Where such computer facilities are not available, the summaries shall be prepared using the models specified by the World Meteorological Organisation and shall be published and kept up to date as necessary.

Aerodrome  
Climatological  
Summaries.

**14.6.7.4.**—The AMSP, on request and to the extent practicable, shall make available to any other meteorological authority, to operators and to others concerned with the application of meteorology to international air navigation, meteorological observational data required for research, investigation or operational analysis.

Copies of  
Meteorological  
Observational  
Data.

#### **14.6.8. SERVICE FOR OPERATORS AND FLIGHT CREW MEMBERS**

*Note.*—Technical specifications and detailed criteria related to this chapter are given in, Appendix 8.

**14.6.8.1.**—(a) Meteorological information shall be supplied to operators and flight crew members for :

1. pre-flight planning by operators ;
2. in-flight re-planning by operators using centralized operational control of flight operations ;
3. use by flight crew members before departure ; and
4. aircraft in flight.

(b) Meteorological information supplied to operators and flight crew members shall cover the flight in respect of time, altitude and geographical extent. Accordingly, the information shall relate to appropriate fixed times, or periods of time, and shall extend to the aerodrome of intended landing, also covering the meteorological conditions expected between the aerodrome of intended landing and the alternate aerodromes designated by the operator.

(c) Meteorological information supplied to operators and flight crew members shall be up to date and include the following information, as agreed between the AMSP and the operators concerned :

1. 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 ; and
  - (vi) SIGWX phenomena ;
  - (vii) cumulonimbus clouds, icing and turbulence ;

*Note.*—Forecasts of upper-air humidity and geopotential altitude of flight levels are used only in automatic flight planning and need not be displayed.

*Note 2.*—Forecasts of cumulonimbus clouds, icing and turbulence are intended to be processed and, if necessary, visualized according to the specific thresholds relevant to user operations

2. 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 take-off, en-route and destination alternate aerodromes ;
3. TAF or amended TAF for the aerodromes of departure and intended landing, and for take-off, en-route and destination alternate aerodromes ;
4. forecasts for take-off ;
5. SIGMET information and appropriate special air-reports relevant to the whole route ;

*Note.*—Appropriate special air-reports will be those not already used in the preparation of SIGMET.

6. volcanic ash and tropical cyclone advisory information relevant to the whole route ;

7. as determined by the regional air navigation agreement, GAMET 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 ;
8. aerodrome warnings for the local aerodrome ;
9. meteorological satellite images ;
10. ground-based weather radar information.

(d) Forecasts listed under 14.6.8.1(c) (1) shall 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 AMSP and the operator concerned.

(e) When forecasts are identified as being originated by the WAFCs, no modifications shall be made to their meteorological content.

(f) Charts generated from the digital forecasts provided by the WAFCs shall be made available, as required by operators, for fixed areas of coverage as shown in Appendix 8, Figures A8-1, A8-2 and A8-3 of Annex 3.

(g) When forecasts of upper wind and upper-air temperature listed under 14.6.8.1(c)(1)(i) are supplied in chart form, they shall be fixed time prognostic charts for flight levels as specified in Appendix 2, 1.2.2.(a) of Annex 3. When forecasts of SIGWX phenomena listed under 14.6.8.1(c)(1)(vi) are supplied in chart form, they shall be fixed time prognostic charts for an atmospheric layer limited by flight levels as specified in Appendix 2, 1.3.2 and Appendix 5,4.3.2 of Annex 3.

(h) 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 shall be supplied as soon as they become available, but not later than 3 hours before departure. Other meteorological information requested for pre-flight planning and in-flight re-planning by the operator shall be supplied as soon as is practicable.

(i) When necessary, the AMSP shall initiate coordinating action with the meteorological authorities of other States with a view to obtaining from them the reports and/or forecasts required.

(j) Meteorological information shall be supplied to operators and flight crew members at the location to be determined by the Authority and the AMSP, after consultation with the operators concerned and at the time agreed between the aerodrome meteorological office and the operator concerned. The service for pre-flight planning shall be confined to flights originating within the territory of the Federal Republic of Nigeria. At an aerodrome without meteorological office at the aerodrome, arrangements for the supply of meteorological information shall be agreed by the the Authority and the AMSP and the operator concerned.

**14.6.8.2.—Note.**—The requirements for the use of automated pre-flight information systems in providing briefing, consultation and display are given in 14.6.8.4.

(a) Briefing and/or consultation shall be provided, on request, to flight crew members and/or other flight operations personnel at a flight crew briefing room suitably located with appropriate and adequate signage. Its purpose shall 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, alternate aerodromes and other aerodromes as relevant, either to explain and amplify the information contained in the flight documentation, or as agreed between the AMSP and the operator concerned, in lieu of flight documentation.

(b) Meteorological information used for briefing, consultation and display shall include any or all of the information listed in 14.6.8.1 (1) (c)-(j).

(c) If the aerodrome meteorological office expresses an opinion on the development of the meteorological conditions at an aerodrome which differs appreciably from the aerodrome forecast included in the flight documentation, the attention of flight crew members shall be drawn to the divergence. The portion of the briefing dealing with the divergence shall be recorded at the time of briefing and this record shall be made available to the operator.

(d) The required briefing, consultation, display and/or flight documentation shall normally be provided by the 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 crew members shall be as agreed between the AMSP and the operator concerned. In exceptional circumstances such as an undue delay, the aerodrome meteorological office associated with the aerodrome shall provide or, if that is not practicable, arrange for the provision of a new briefing, consultation and/or flight documentation as necessary.

(e) The flight crew member and/or other flight operations personnel for whom briefing, consultation and/or flight documentation has been requested shall visit the aerodrome meteorological office at the time agreed upon between the aerodrome meteorological office and the operator concerned. Where local circumstances at an aerodrome make personal briefing or consultation impracticable, the aerodrome meteorological office shall provide those services by telephone or other suitable telecommunications facilities.

(f) The flight crew briefing room shall be adequately equipped with adequate documentations including Manual of Operations, all required working tools in a conducive working environment.

**14.6.8.3.—Note.**—The requirements for the use of automated pre-flight information systems in providing flight documentation are given in 14.6.8.4.

(a) Flight documentation to be made available shall comprise information listed under 14.6.8.1(c)-(g) and, if appropriate, (h). However, 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 on 14.6.8.1. (b), (c), (e), (f) and, if appropriate, (g).

(b) 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 preplanning, the operator shall be advised immediately and, if practicable, be supplied with the revised information as agreed between the operator and the Aerodrome meteorological office concerned.

(c) In cases where a need for amendment arises after the flight documentation has been supplied, and before take-off of the aircraft, the aerodrome meteorological office shall, as agreed locally, issue the necessary amendment or updated information to the operator or to the local air traffic services unit, for transmission to the aircraft.

(d) The AMSP shall retain information supplied to flight crew members, either as printed copies or in computer files, for a period of at least 30 days from the date of issue. This information shall be made available, on request, for inquiries or investigations and, for these purposes, shall be retained until the inquiry or investigation is completed.

**14.6.8.4.—(a)** Where the AMSP uses automated pre-flight information systems to supply and display meteorological information to operators and flight crew members for self-briefing, flight planning and flight documentation purposes, the information supplied and displayed shall comply with the relevant provisions in 14.6.8.1 to 14.6.8.3 inclusive.

(b) Automated pre-flight information systems providing 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 shall be as agreed between the AMSP and the Authority in accordance with Annex 15, 2.1.1(c).

*Note.*—The meteorological and aeronautical information services information concerned is specified in 14.6.8.1(a)-(c) and Appendix 8 and in the Procedures for Air Navigation Services-Aeronautical Information Management (PANS-AIM, Doc 10066), 5.5, respectively.

(c) 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 AMSP shall remain responsible for the quality control and quality management of meteorological information provided by means of such systems in accordance with 14.6.1.3.

Automated  
Pre-Flight  
Information  
Systems for  
Briefing,  
Consultation,  
Flight  
Planning and  
Flight  
Documenta-  
tion.

*Note.*—The responsibilities relating to aeronautical information services information and the quality assurance of the information are given in Annex 15, Chapter 1, 2 and 3.

Information for Aircraft in Flight.

**14.6.8.5.**—(a) Meteorological information for use by aircraft in flight shall be supplied by an aerodrome meteorological office or meteorological watch offices to its associated air traffic services unit and through D-VOLMET or VOLMET broadcasts as determined by regional air navigation agreement. Meteorological information for planning by the operator for aircraft in flight shall be supplied on request, as agreed between the AMSP, the Authority and the operator concerned.

(b) Meteorological information for use by aircraft in flight shall be supplied to air traffic services units in accordance with the specifications of 14.6.9.1.

(c) Meteorological information shall be supplied through D-VOLMET or VOLMET broadcasts in accordance with the specifications of 14.6.10.5, 14.6.10.6.

**14.6.9. INFORMATION FOR AIR TRAFFIC SERVICES, SEARCH AND RESCUE SERVICES AND AERONAUTICAL INFORMATION SERVICES**

*Note.*—Technical specifications and detailed criteria related to this chapter are given in Appendix 9.

Information for Air Traffic Services Units.

**14.6.9.1.**—(a) The AMSP shall designate an aerodrome meteorological office or meteorological watch office to be associated with each air traffic services unit. The associated aerodrome meteorological office or meteorological watch offices shall, after coordination with the air traffic services unit, supply, or arrange for the supply of, up-to- date meteorological information to the unit as necessary for the conduct of its functions.

(b) An aerodrome meteorological office shall be associated with an aerodrome control tower or approach control unit for the provision of meteorological information.

(c) A meteorological watch office shall be associated with a flight information centre or an area control centre for the provision of meteorological information.

(d) Where, owing to local circumstances, it is convenient for the duties of an associated aerodrome meteorological office or meteorological watch office to be shared between two or more aerodrome meteorological offices or meteorological watch offices, the division of responsibility shall be determined by the AMSP in consultation with the ATS Provider.

(e) Any meteorological information requested by an air traffic services unit in connection with an aircraft emergency shall be supplied as rapidly as possible.

Information for Search and Rescue Services Units.

**14.6.9.2.** —Aerodrome meteorological offices or meteorological watch offices designated by the AMSP in accordance with regional air navigation agreement shall supply search and rescue services units with the meteorological information they require in a form established by mutual agreement. For that

purpose, the designated aerodrome meteorological office or meteorological watch office shall maintain liaison with the search and rescue services unit throughout a search and rescue operation.

**14.6.9.3.**—The AMSP, in coordination with the Authority, shall arrange for the supply of up-to-date meteorological information to relevant aeronautical information services units, as necessary, for the conduct of their functions.

Information  
for  
Aeronauti-  
cal Informa-  
tion Services  
Units.

#### **14.6.10.** REQUIREMENTS FOR AND USE OF COMMUNICATIONS

*Note 1.*—Technical specifications and detailed criteria related to this chapter are given in Appendix 10.

*Note 2.*—It is recognized that it is for the Nigeria Civil Aviation Authority to decide upon its own internal organization and responsibility for implementing the telecommunications facilities referred to in this chapter.

**14.6.10.1.**—(a) Suitable telecommunications facilities shall be made available to permit aerodrome meteorological offices and, as necessary, aeronautical meteorological stations to supply the required meteorological information to air traffic services units on the aerodromes for which those offices and stations are responsible, and in particular to aerodrome control towers, approach control units and the aeronautical telecommunications stations serving these aerodromes.

Requirements  
for  
Communica-  
tions.

(b) Suitable telecommunications facilities shall be made available to permit meteorological watch offices to supply the required meteorological information to air traffic services and search and rescue services units in respect of the flight information regions, control areas and search and rescue regions for which those offices are responsible, and in particular to flight information centres, area control centres and rescue coordination centres and the associated aeronautical telecommunications stations.

(c) Suitable telecommunications facilities shall be made available to permit world area forecast centres to supply the required world area forecast system products to the AMSP and other users.

(d) Telecommunications facilities between aerodrome meteorological offices and, as necessary, aeronautical meteorological stations and aerodrome control towers or approach control units shall permit communications by direct speech, the speed with which the communications can be established being such that the required points may normally be contacted within approximately 15 seconds.

(e) Telecommunications facilities between aerodrome meteorological offices or meteorological watch offices and flight information centres, area control centres, rescue coordination centres and aeronautical telecommunications stations shall permit :

(i) communications by direct speech, the speed with which the communications can be established being such that the required points may normally be contacted within approximately 15 seconds ; and

(ii) printed communications, when a record is required by the recipients; the message transit time shall not exceed 5 minutes.

*Note.*—In 14.6.10.1(d)(e), “approximately 15 seconds” refers to telephony communications involving switchboard operation and “5 minutes” refers to printed communications involving retransmission.

(f) The telecommunications facilities required in accordance with 14.6.10.1 (d)(e), shall be supplemented, as and where necessary, by other forms of visual or audio communications, for example, closed-circuit television or separate information processing systems.

(g) As agreed between the AMSP and operators concerned, provision shall be made to enable operators to establish suitable telecommunications facilities for obtaining meteorological information from aerodrome meteorological offices or other appropriate sources.

(h) Suitable telecommunications facilities shall be made available to permit meteorological offices to exchange operational meteorological information with other meteorological offices.

(i) The telecommunications facilities used for the exchange of operational meteorological information shall be the aeronautical fixed service or, for the exchange of non-time critical operational meteorological information, the public Internet, subject to availability, satisfactory operation and bilateral/multilateral and/or regional air navigation agreements.

*Note 1.*—aeronautical fixed service internet based services, operated by the world area forecast centres, providing for global coverage are used to support the global exchanges of operational meteorological information.

*Note 2.*—Guidance material on non-time-critical operational meteorological information and relevant aspects of the public Internet is provided in the Guidelines on the Use of the Public Internet for Aeronautical Applications (Doc 9855).

Use of  
Aeronautical  
Fixed Service  
Communica-  
tions and the  
Public  
Internet—  
Meteorologi-  
cal Bulletins.

**14.6.10.2.** Meteorological bulletins containing operational meteorological information to be transmitted via the aeronautical fixed service or the public Internet shall be originated by the appropriate meteorological office or aeronautical meteorological station.

*Note.*—Meteorological bulletins containing operational meteorological information authorized for transmission via the aeronautical fixed service are listed in Annex 10, volume II, Chapter 4, together with the relevant priorities and priority indicators.

**14.6.10.3.**— World area forecast system products in digital form should be transmitted using binary data communications techniques. The method and channels used for the dissemination of the products shall be as determined by regional air navigation agreement.

Use of Aeronautical Fixed Service Communications — World Area Forecast System Products.

**14.6.10.4.** The content and format of meteorological information transmitted to aircraft and by aircraft shall be consistent with the provisions of this Part 14.6.

Use of Aeronautical Mobile Service Communications.

**14.6.10.5.** D-VOLMET shall contain current METAR and SPECI, together with trend forecasts where available, TAF and SIGMET, special air-reports not covered by a SIGMET and, where available, AIRMET.

Use of Aeronautical Data Link Service – Contents of D-VOLMET.

*Note.*—The requirement to provide METAR and SPECI may be met by the data link-flight information service (D-FIS) application entitled “Data link-aerodrome routine meteorological report (D-METAR) service” ; the requirement to provide TAF may be met by the D-FIS application entitled “Data link-aerodrome forecast (D-TAF) service” ; and the requirement to service”. The details of these data link services are specified in the Manual of Air Traffic Services Data Link Applications (Doc 9694).

**14.6.10.6.**—(a) Continuous VOLMET broadcasts, normally on very high frequencies (VHF), shall contain current METAR and SPECI, together with trend forecasts where available.

Use of Aeronautical Broadcasting Service – Contents of VOLMET Broadcasts.

(b) Scheduled VOLMET broadcasts, normally on high frequencies (HF), shall contain current METAR and SPECI, together with trend forecasts where available and, where so determined by regional air navigation agreement, TAF and SIGMET.

**14.6.11.**—(a) The holder of an Aeronautical Meteorological Services Provider certificate/approval shall maintain close co-ordination between the Meteorological Watch Office and the associated Area Control Center/Flight Information Center to ensure that meteorological information for SIGMET and others are consistent to the extent that :

Coordination of AMSP with Meteorological Watch Offices and Associated Area Control Center or Flight Information Center.

(1) SIGMET information shall be issued by a meteorological watch office and shall 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 ;

(2) SIGMET messages shall be disseminated to other meteorological watch offices, WAFCs and to other meteorological offices in accordance with regional air navigation agreement ;

(3) SIGMET messages for volcanic ash shall also be disseminated to VAACs;

(4) SIGMET messages shall be disseminated to international OPMET databanks and the centres designated by regional air navigation agreement for the operation of aeronautical fixed service satellite distribution systems in accordance with regional air navigation agreement ;

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

(6) Standards regarding the period of validity of a SIGMET message, period of validity of special case of SIGMET messages for volcanic ash cloud and tropical cyclones, and period within which SIGMET messages shall be issued before the commencement of the period of validity and period of updating SIGMET shall be complied with.

*Note.*—Guidance on the bilateral or multilateral coordination between MWOs of Contracting States for the provision of SIGMET can be found in the Manual of Aeronautical Meteorological Practice (Doc 8896).

#### 14.6.12. EQUIPMENT

Equipment  
Requirements.

**14.6.12.1.**—(a) The holder of an Aeronautical Meteorological Services Provider Certificate/Approval shall comply with the Requirements of this Part 14.6 and :

(1) replace or upgrade obsolete installations ;

(2) provide and implement appropriate equipment calibration and maintenance programme in accordance with the manufacturers' specifications ;

(3) install only meteorological instruments that are approved by the World Meteorological Organization's as suitable for aeronautical meteorological services ;

(4) provide at aerodromes with runways intended for Cat II and Cat III instrument approach and landing operations ; automated equipment for measuring or assessing, as appropriate, and for monitoring and remote indicating of surface wind, visibility, runway visual range, height of cloud base, air and dew-point temperatures and atmospheric pressure to support approach and landing and take-off operations.

(b) The automated devices shall be integrated automatic systems for acquisition, processing, dissemination and display in real time of the meteorological parameters affecting landing and takeoff operations.

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

(d) Ensure that the units providing air traffic service and aeronautical information service for an aerodrome is kept informed without delay of changes in the serviceability status of the automated equipment.

**14.6.12.2.**—(a) No installation of aeronautical meteorological equipment/facility shall be carried-out at an aerodrome in Nigeria without the approval of the Authority.

(b) The process of installation of aeronautical meteorological equipment/facility shall include the acceptance or approval by the Authority :

- (1) the intention to procure an aeronautical meteorological equipment for use at an aerodrome in Nigeria ;
- (2) the report of feasibility studies for appropriate siting of sensors outside the aerodrome boundaries ;
- (3) the plan for the conduct of factory acceptance test ;
- (4) the plan for the conduct of site acceptance test ; and
- (5) the maintenance plan for the equipment/facility
- (6) request and grant of aviation height clearance by the Authority.

(c) An Aeronautical Meteorological Service Provider shall make available to its personnel, a properly maintained and calibrated equipment and facilities required for the aeronautical meteorological services covered by its certificate.

(d) The aeronautical meteorological services provider's equipment and facilities shall meet the requirements for measuring and detecting the meteorological elements specified in this Regulations.

(e) The maintenance of aeronautical meteorological services equipment shall comply with the specifications in the manufacturer's maintenance manual.

(f) The holder of an Aeronautical Meteorological Services Provider certificate/approval shall ensure that the maintenance personnel are properly trained to carry out maintenance and calibration works on the equipment.

(g) The Aeronautical Meteorological Service Provider's equipment and facilities shall be calibrated, if applicable, to the required operational standards specified in the manufacturer's maintenance manual.

(h) The list of equipment that require calibration shall be documented in the Manual of Operations.

(i) The calibration shall be carried out at the defined intervals of time and the results recorded and filed.

**14.6.12.3.**—(a) The holder of an Aeronautical Meteorological Services Provider certificate/approval shall, for each location for which a service is being provided, make available as the minimum, the following facilities and equipment :

1. Dedicated Met Office
2. Wall clocks displaying UTC and local time

Installation,  
Maintenance  
and  
Calibration  
of  
Equipment  
and  
Facilities.

Minimum  
Equipment  
for  
Aeronautical  
Meteorological  
Services.

3. Automatic Weather Observing System (AWOS)
4. Secure Aviation Data Information Service (SADIS) work station
5. METEO-station
6. Visibility targets ;
7. Back-up power ;
8. Telecommunication equipment capable of transmitting/receiving meteorological information to/from other Agencies and MET Offices ;
9. Office furniture
10. Refrigerator
11. Television ; and
12. Other utilities for convenience.

Fault and Defect Reporting of Equipment.

**14.6.12.4.**—(a) An Aeronautical Meteorological Services Provider shall maintain a system for tracking and rectifying faults within the aeronautical meteorological service system.

(b) The procedures for tracking, reporting and resolution of faults and defects shall be documented in the AMSP approved Manual of Operations and implemented, accordingly.

(c) The procedures for decommissioning of equipment/facility shall be documented in the AMSP approved Manual of Operations and implemented, accordingly.

Protection of Aeronautical Meteorological Equipment and Facilities.

**14.6.12.5.**—(a) The holder of an Aeronautical Meteorological Services Provider certificate/approval shall ensure the protection of its equipment, facilities and infrastructure by providing adequate security measures, both physical and procedural.

#### **14.6.13. PERSONNEL**

Personnel Requirements.

**14.6.13.1.**—(a) An Aeronautical Meteorological Service provider shall maintain an appropriate organization with a sound and effective management structure to enable it provide, in accordance with the standards set out in the Regulations, the aviation meteorological services covered by its approval.

(b) The holder of an Aeronautical Meteorological Services Provider certificate shall have suitably qualified and trained personnel in sufficient number to enable it provide, in accordance with the standards set out in the Regulations, the aviation meteorological services covered by its approval.

(c) The holder of an Aeronautical Meteorological Services Provider Certificate/ Approval shall set up and maintain, in accordance with its Manual of Operations :

1. current unit organizational chart and written delegated responsibilities and position descriptions ;
2. staffing-levels for operational positions ;

3. staffing numbers and qualifications of personnel at each office or station ;
4. continuing assessment of its personnel competency for the purposes of ensuring that they continue to satisfy the competency requirements in relation to observation, forecasting and instrumentation ; and
5. process of retraining of any of its personnel who at any time do not satisfy the competency requirement.

(d) The Aeronautical Meteorological Service provider shall ensure that its personnel are in sufficient numbers, possess the necessary experience and have been given the appropriate authority to be able to discharge their allocated responsibilities.

(e) An Aeronautical Meteorological Service provider shall arrange the work flow schedule of aviation meteorological personnel to provide sufficient rest time.

(f) A sample of the Aviation Meteorological service providers roster shall be included in the Manual of Operations.

(g) The Aeronautical Meteorological Service provider shall engage, employ or contract at each Aeronautical Meteorological Office :

1. enough personnel to plan, provide and supervise the services listed in its approval as a service provider, in a safe and efficient manner.

2. a senior person to whom authority has been granted to ensure that all activities undertaken by the unit are carried out in accordance with the applicable requirements prescribed in this section, and who shall in addition be vested with the following powers and duties in respect of the compliance with such :

- (i) unrestricted access to work performed or activities undertaken by all other persons as employees of, and other persons rendering service within the unit ;

- (ii) full rights of consultation with any such person(s) in respect of such compliance by him or her ;

- (iii) powers to order cessation of any activity where such compliance is not affected ;

- (iv) a duty to establish liaison mechanisms with the Authority with a view to ascertain correct manners of compliance with the said requirements, and interpretations of such requirements by the Authority, and to facilitate liaison between the Authority and the unit concerned ;

- (v) powers to report directly to the management of the organization, on investigations and consultations generally, and in cases contemplated in subparagraph (iii), and with regard to the results of the liaison contemplated in sub-paragraph (iv).

3. a person who is responsible for :

- (i) quality control, and who shall have direct access to the person referred to in paragraph 14.6.13.1(g)(2) on matters affecting Aeronautical Meteorology ; and

(ii) preparation of proficiency reports on personnel within the stations for onward transmission to the management of the aviation meteorological service provider ;

**14.6.13.2.**—(a) The holder of an Aeronautical Meteorological Services Provider certificate/approval shall comply with the requirements for qualifications, competencies, education and training of its personnel in compliance with the details set out in the Guidelines for the Education and Training of Personnel in Meteorology and Hydrology ; Supplement No. 1 - WMO - No. 258 (Training and Qualification Requirements for Aeronautical Meteorological Personnel).

(b) The holder of an Aeronautical Meteorological Services Provider certificate/approval shall establish and maintain proficiency standards in service provision.

(c) The Aeronautical Meteorological Service provider shall establish a procedure for initially assessing, the personnel required to operate and maintain the unit concerned.

(d) The Aeronautical Meteorological Service provider shall establish a procedure for assessing the competence of the personnel engaged to operate and maintain the unit concerned.

(e) The competency assessment shall be in accordance with the guidelines prescribed in the Technical Regulations (WMO-No. 49), Volume I - General Meteorological Standards and Recommended Practices, Part V - Qualifications and Competencies of Personnel Involved in the Provision of Meteorological (Weather and Climate) and Hydrological Services, Part VI - Education and Training of Meteorological Personnel, and Appendix A - Basic Instruction Packages.

(f) The procedures for paragraphs (c) and (d) shall include the design of appropriate assessment forms to measure competencies of the personnel.

(g) The Authority will monitor the competency assessment of the AMSP to ascertain the effectiveness of the procedures in paragraph (d).

(h) On receipt of competency assessment monitoring reports from the Authority, the AMSP shall undertake thorough evaluation with a view to correcting the deficiencies revealed by the report.

(i) The holder of an Aeronautical Meteorological Services Provider certificate/approval shall establish a training program for its technical staff.

(j) The holder of an Aeronautical Meteorological Services Provider certificate/approval shall establish an appropriate and detailed training program consisting of initial, specialized, On the Job, Recurrent and developmental training for its technical staff.

(k) The holder of an Aeronautical Meteorological Services Provider certificate shall submit the established training program in paragraph (j) to the Authority for documentation and monitoring of implementation performance.

(l) The holder of an Aeronautical Meteorological Services Provider certificate/approval shall, at the beginning of the current year, submit to the Authority, the training plan approved by its management for the technical staff.

(m) The Authority will monitor the training plan to determine the implementation status and the effects on competencies of the personnel.

(n) The holder of an Aeronautical Meteorological Services Provider certificate/approval shall maintain proper accounts of the training undertaken by each staff member.

(o) An Aeronautical Meteorological Service provider shall ensure that a training carried out by him or her or on his or her by the AMSP or on its behalf complies with its approved operations manual.

**14.6.14.—(a)** An AMSP shall make available the following operational documentation at each location of its service :

Maintenance  
of  
Documents  
and Records.

1. Manual of Operations ;
2. Directives and Instructions File ;
3. Operational Logbooks ;
4. Equipment/Facility Maintenance and Calibration Logbooks ;
5. Equipment Manuals ;
6. Local Standard Operating Procedures ;
7. Personnel Training Records ; and
8. Other applicable and relevant Documents.

(b) An AMSP shall ensure that :

1. the documentations are reviewed and authorized for use by appropriate personnel ;
2. current issues of relevant documentation are available to personnel ;
3. obsolete documentation is removed from all points of issue or use ;
4. changes to documentation are reviewed and approved by appropriate personnel ; and
5. the current version of each document can be identified to preclude the use of obsolete editions.

(c) The holder of an Aeronautical Meteorological Services Provider certificate/approval shall put in place a system to record and retain operational data.

(d) Records shall be maintained on the following :

1. operational information
2. equipment installation, maintenance and calibration
3. survey, inspection and test report
4. feedback reports from end users ;
5. aircraft incident or emergency report
6. training files ;
7. duty rosters, and
8. other relevant records.

(e) AN AMSP shall retain information supplied to flight crew members, either as printed copies or in computer files, for a period of at least 30 days from the date of issue. Except that if the information is required for enquiries or investigations, it shall be retained until the enquiry or investigation is concluded.

Responsibilities of AMSP to Search and Rescue (SAR) Unit.

**14.6.15.**—(a) An AMSP shall :

1. Provide such assistance as requested by the Agency responsible for conducting SAR. ;
2. develop appropriate procedures in its manual of operation for the release of meteorological information to aeronautical search and rescue unit ;
3. supply as rapidly as possible, any meteorological information requested by an air traffic services unit in connection with an aircraft emergency ;
4. retain information supplied to flight crew members, either as printed copies or in computer files, for a period of at least 30 days from the date of issue. Except that if the information is required for enquiries or investigations, it shall be retained until the enquiry or investigation is concluded.

Contingency Plan.

**14.6.16.**—(a) The holder of an Aeronautical Meteorological Services provider certificate/approval shall develop and maintain Contingency Plans for implementation in the event of disruption, or potential disruption, of aeronautical meteorological services. The disruption may be caused intentionally (sabotage) or unintentionally (equipment failure or industrial action).

(b) The plan shall include :

- (1) the actions to be taken by the provider's personnel responsible for providing the service ; and
- (2) possible alternative arrangements for providing the service ; and
- (3) the arrangements for resuming normal operations for the service.

(c) These plans shall be submitted as part of the Manual of Operation.

Approval of External Source (Contract) for Aeronautical Meteorological Service Provider.

**14.6.17.**—(a) A holder of an Aeronautical Meteorological Services Provider certificate/approval may contract a function to an external source.

(b) The Authority will approve the external source to perform the function(s).

(c) The Authority will be informed 60 days before the termination of such agreement.

(d) To enable the approval of an external source, the holder of an Aeronautical Meteorological Services Provider certificate/approval shall make available to the Authority, the following information :

- (1) The function(s) to be contracted to the external source ;
- (2) The Agreement between the Aeronautical Meteorological Services Provider and contractor detailing how the contractor shall carry out the function(s) in accordance with the Aeronautical Meteorological Service Provider Manual of Operation ;

(3) The cost recovery method ; and the organizational chart, nominal roll and qualifications of personnel of the contractor ;

(e) The holder of an Aeronautical Meteorological Services Provider Certificate/Approval shall verify, by test and/or inspection and maintain records that the function(s) has been performed satisfactorily by the contractor.

(f) The holder of an Aeronautical Meteorological Services Provider certificate/approval shall take the responsibility for the function(s) performed by the contractor.

