ANNEX IV

Draft Annex IV to draft Commission Implementing Regulation (EU) …/… amending Commission Implementing Regulation (EU) 2017/373 as regards reporting requirements and reporting channels between organisations, and requirements for meteorological services

ANNEX V (Part-MET) to Commission Implementing Regulation (EU) 2017/373 is amended as follows:

1. point MET.OR.115 is replaced by the following:

   'The meteorological service provider responsible for the area concerned shall provide meteorological bulletins to the relevant users.';

2. point MET.OR.120 is replaced by the following:

   'The meteorological service provider using WAFS SIGWX forecasts shall notify the WAFC concerned immediately if significant discrepancies are detected or reported in respect of WAFS SIGWX forecasts concerning:

   (a) icing, turbulence, cumulonimbus clouds that are obscured, frequent, embedded, or occurring at a squall line, and sandstorms or dust storms;

   (b) volcanic eruptions or a release of radioactive materials into the atmosphere of significance to aircraft operations.';

3. in point MET.OR.200, point (a) is replaced by the following:

   '(a) An aeronautical meteorological station shall issue and disseminate:

      (1) local routine reports at fixed intervals, only for dissemination at the aerodrome of origin;

      (2) local special reports, only for dissemination at the aerodrome of origin;

      (3) METAR at half-hourly intervals at aerodromes serving scheduled international commercial air transport operations for dissemination beyond the aerodrome of origin;

      (4) SPECI for dissemination beyond the aerodrome of origin:

         (i) unless METAR are issued at half-hourly intervals;

         (ii) at aerodromes that are not operational throughout 24 hours, unless otherwise agreed between the meteorological service provider, the appropriate ATS unit and the operator concerned, following the resumption of the issuance of METAR, SPECI shall be issued, as agreed.';

4. point MET.OR.220 is replaced by the following:

   '(a) An aerodrome meteorological office shall issue and disseminate aerodrome forecasts as a TAF at a specified time.

   (b) When issuing TAFs, the aerodrome meteorological office shall ensure that not more than one TAF is valid at an aerodrome at any given time.';

5. point MET.OR.240 is replaced by the following:

‘An aerodrome meteorological office shall provide operators and flight crew members with up-to-date:

(a) forecasts, originating from the WAFS, of the elements listed in points (1) and (2) of point MET.OR.275(a);

(b) METAR or SPECI, including TREND, TAF or amended TAF for the aerodromes of departure and intended landing, and for take-off, en-route and destination alternate aerodromes;

(c) aerodrome forecasts for take-off;

(d) SIGMET and special air-reports relevant to the whole route;

(e) volcanic ash, tropical cyclone and space weather advisory information relevant to the whole route;

(f) area forecasts for low-level flights and AIRMET relevant to the whole route;

(g) aerodrome warnings for the local aerodrome;

(h) meteorological satellite images;

(i) ground-based weather radar information.’;

6. point MET.OR.242 is amended as follows:

(a) point MET.OR.242(a)(1) is replaced by the following:

‘(1) local routine reports, local special reports, METAR, SPECI, TAF and TREND and amendments thereto;’;

(b) point MET.OR.242(b)(1) is replaced by the following:

‘(1) local routine reports, local special reports, METAR, SPECI, TAF and TREND and amendments thereto;’;

7. point MET.OR.245(f)(1) is replaced by the following:

‘(1) METAR and SPECI, including current pressure data for aerodromes and other locations, TAF, TREND and amendments thereto;’;

8. point MET.OR.250(a) is replaced by the following:

‘(a) issue and disseminate SIGMET;’;

9. point MET.OR.255(a) is replaced by the following:

‘(a) issue and disseminate AIRMET when the competent authority has determined that the density of traffic operating below flight level 100, or up to flight level 150 in mountainous areas, or higher, where necessary, warrants the issue and dissemination of AIRMET in combination with area forecasts for low-level flights’;

10. point MET.OR.260 is replaced by the following:

‘A meteorological watch office shall ensure that:

(a) in the case of AIRMET being issued and disseminated in combination with area forecasts for low-level flights in accordance with point MET.OR.255(a), area forecasts for low-level flights are issued every 6 hours for a period of validity of 6 hours and transmitted to the meteorological watch offices concerned not later than 1 hour prior to the beginning of their validity period;

(b) in the case where the competent authority has determined that 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 low-level flights not in combination with AIRMET, the frequency of issue, the form, and the fixed time or period of validity of the area forecast for low-level flights and the criteria for amendments thereto, are as determined by the competent authority.’;

11. the title of Chapter 4 is replaced by the following:

‘Chapter 4 — Requirements for volcanic ash advisory centres (VAACs)’;

12. in point MET.OR.265, point (a) is replaced by the following:

‘(a) when a volcano has erupted, or is expected to erupt, or volcanic ash is reported, issue and disseminate advisory information regarding the extent and forecast movement of the volcanic ash cloud.’;

13. the title of Chapter 5 is replaced by the following:

‘Chapter 5 — Requirements for tropical cyclone advisory centres (TCACs)’;

14. in point MET.OR.270, the introductory sentence and point (a) are replaced by the following:

‘In its area of responsibility, the TCAC shall issue and disseminate:

(a) advisory information concerning the position of the cyclone centre, changes in intensity at the time of observation, its direction and speed of movement, central pressure and maximum surface wind near the centre;’;

15. the title of Chapter 6 is replaced by the following:

‘Chapter 6 — Requirements for world area forecast centres (WAFCs)’;

16. in point MET.OR.275, point (a) is amended as follows:

‘The WAFC shall issue and disseminate:’;

17. point MET.TR.115 is replaced by the following:

‘(a) Meteorological bulletins shall be disseminated using specified data types and code forms appropriate to the information being provided.

(b) Meteorological bulletins containing operational meteorological information shall be disseminated via communication systems appropriate to the information being provided and the users for which it is intended.';

18. point MET.TR.200 is replaced by the following:

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

(1) identification of the type of report;

(2) location indicator;

(3) time of the observation;

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

(5) surface wind direction and speed;

(6) visibility;

(7) runway visual range, when the reporting criteria are met;

(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;

(11) QNH and, when applicable, in local routine and local special reports, QFE;

(12) supplementary information, when applicable.

(b) In local routine reports and local special reports:

(1) if the surface wind is observed from more than one location along the runway, the locations for which these values are representative shall be indicated;

(2) when there is more than one runway in use and the surface wind related to these runways is observed, the available wind values for each runway shall be given, and the runways to which the values refer shall be reported;

(3) when variations from the mean wind direction are reported in accordance with point MET.TR.205(a)(3)(ii)(B), the two extreme directions between which the surface wind has varied shall be reported;

(4) when variations from the mean wind speed (gusts) are reported in accordance with point MET.TR.205(a)(3)(iii), they shall be reported as the maximum and minimum values of the wind speed attained.

(c) METAR and SPECI

(1) METAR and SPECI shall be issued in accordance with the template shown in Appendix 1.

(2) METAR shall be filed for transmission not later than 5 minutes after the actual time of observation.

(d) Information on visibility, runway visual range, present weather and cloud amount, cloud type and height of cloud base shall be replaced in all meteorological reports by the term 'CAVOK' when the following conditions occur simultaneously at the time of observation:

(1) visibility, 10 km or more, and the lowest visibility is not reported;

(2) no cloud of operational significance;

(3) no weather of significance to aviation.

(e) The list of criteria to provide local special reports shall include:

(1) those values which most closely correspond to the operating minima of the operators using the aerodrome;

(2) those values which satisfy other local requirements of the ATS units and of the operators;

(3) an increase in air temperature of 2 °C or more from that given in the latest local report, or an alternative threshold value as agreed between the meteorological service providers, the appropriate ATS unit and the operators concerned;

(4) the available supplementary information concerning the occurrence of significant meteorological conditions in the approach and climb-out areas;

(5) when noise-abatement procedures are applied and the variation from the mean surface wind speed has changed by 5 kt or more from that at the time of the latest local report, the mean speed before and/or after the change being 15 kt or more;

(6) those values which constitute criteria for SPECI.

(f) Where required in accordance with point MET.OR.200(a)(4), SPECI shall be issued whenever changes in accordance with the following criteria occur:

(1) when the mean surface wind direction has changed by 60° or more from that given in the latest report, the mean speed before and/or after the change being 10 kt or more;

(2) when the mean surface wind speed has changed by 10 kt or more from that given in the latest local report;

(3) when the variation from the mean surface wind speed (gusts) has changed by 10 kt or more from that at the time of the latest local report, the mean speed before and/or after the change being 15 kt or more;

(4) when the onset, cessation or change in intensity of any of the following weather phenomena occurs:

(i) freezing precipitation;

(ii) moderate or heavy precipitation, including showers thereof; and

(iii) thunderstorm, with precipitation;

(5) when the onset or cessation of any of the following weather phenomena occurs:

(i) freezing fog;

(ii) thunderstorm, without precipitation;

(6) when the amount of a cloud layer below 1 500 ft changes:

(i) from scattered (SCT) or less to broken (BKN) or overcast (OVC); or

(ii) from BKN or OVC to SCT or less.

(g) When so agreed between the meteorological service provider and the competent authority, SPECI shall be issued whenever the following changes occur:

(1) when the wind changes through values of operational significance; the threshold values shall be established by the meteorological service provider in consultation with the appropriate ATS unit and operators concerned, taking into account changes in the wind which would:

(i) require a change in runway(s) in use;

(ii) indicate that the runway tailwind and crosswind components have changed through values representing the main operating limits for typical aircraft operating at the aerodrome;

(2) when the visibility is improving and changes to or passes through one or more of the following values, or when the visibility is deteriorating and passes through one or more of the following values:

(i) 800, 1 500 or 3 000 m;

(ii) 5 000 m, in cases where a significant number of flights are operated in accordance with the visual flight rules;

(3) when the runway visual range is improving and changes to or passes through one or more of the following values, or when the runway visual range is deteriorating and passes through one or more of the following values: 50, 175, 300, 550 or 800 m;

(4) when the onset, cessation or change in intensity of any of the following weather phenomena occurs:

(i) dust storm;

(ii) sandstorm;

(iii) funnel cloud (tornado or waterspout);

(5) when the onset or cessation of any of the following weather phenomena occurs:

(i) low drifting dust, sand or snow;

(ii) blowing dust, sand or snow;

(iii) squall;

(6) when the height of base of the lowest cloud layer of BKN or OVC extent is lifting and changes to or passes through one or more of the following values, or when the height of

base of the lowest cloud layer of BKN or OVC extent is lowering and passes through one or more of the following values:

(i) 100, 200, 500 or 1 000 ft;

(ii) 1 500 ft, in cases where significant numbers of flights are operated in accordance with the visual flight rules;

(7) when the sky is obscured and the vertical visibility is improving and changes to or passes through one or more of the following values, or when the vertical visibility is deteriorating and passes through one or more of the following values: 100, 200, 500 or 1 000 ft;

(8) any other criteria based on local aerodrome operating minima, as agreed between the meteorological service providers and the operators.

(h) When a deterioration of one weather element is accompanied by an improvement in another element, a single SPECI shall be issued; it shall then be treated as a deterioration report.';

19. point MET.TR.205 is amended as follows:

(a) point MET.TR.205(a)(1) is replaced by the following:

'(1) In local routine reports, local special reports, METAR and SPECI, the surface wind direction and speed shall be reported in steps of 10 degrees true and 1 kt respectively.';

(b) point MET.TR.205(a)(3) is replaced by the following:

'(3) In local routine reports, local special reports, METAR and SPECI:

(i) the units of measurement used for the wind speed shall be indicated;

(ii) variations from the mean wind direction during the past 10 minutes shall be reported as follows, if the total variation is 60° or more, alternatively:

(A) when the total variation is 60° or more and less than 180° and the wind speed is 3 kt or more, such directional variations shall be reported as the two extreme directions between which the surface wind has varied;

(B) when the total variation is 60° or more and less than 180° and the wind speed is less than 3 kt, the wind direction shall be reported as variable with no mean wind direction;

(C) when the total variation is 180° or more, the wind direction shall be reported as variable with no mean wind direction;

(iii) variations from the mean wind speed (gusts), during the past 10 minutes shall be reported when the maximum wind speed exceeds the mean speed by, alternatively:

(A) 5 kt or more in local routine report and local special report when noise abatement procedures are applied;

(B) 10 kt or more otherwise;

(iv) when a wind speed of less than 1 kt is reported, it shall be indicated as calm;

(v) when a wind speed of 100 kt or more is reported, it shall be indicated to be more than 99 kt;

(vi) when variations from the mean wind speed (gusts) are reported in accordance with point MET.TR.205(a), the maximum value of the wind speed attained shall be reported;

(vii) when the 10-minute period includes a marked discontinuity in the wind direction and/or speed, only variations from the mean wind direction and mean wind speed occurring since the discontinuity shall be reported.';

(c) point MET.TR.205(b)(1) is replaced by the following:

'(1) In local routine reports, local special reports, METAR and SPECI, the visibility shall be reported in steps of 50 m when the visibility is less than 800 m; in steps of 100 m when it is 800 m or more, but less than 5 km; in kilometre steps when the visibility is 5 km or more, but less than 10 km; and it shall be given as 10 km when the visibility is 10 km or more, except when the conditions for the use of CAVOK apply.';

(d) point MET.TR.205(c)(1) is replaced by the following:

'(1) In local routine reports, local special reports, METAR and SPECI, the RVR shall be:

(i) reported throughout periods when either the visibility or the runway visual range is less than 1 500 m;

(ii) reported in steps of 25 m when it is less than 400 m, in steps of 50 m when it is between 400 and 800 m, and in steps of 100 m when it is more than 800 m.';

(e) point MET.TR.205(c)(3) is replaced by the following:

'(3) In local routine reports, local special reports, METAR and SPECI:

(i) when the RVR is above the maximum value that can be determined by the system in use, it shall be reported using the abbreviation 'ABV' in local routine report and local special report, and the abbreviation 'P' in METAR followed by the maximum value that can be determined by the system;

(ii) when the RVR is below the minimum value that can be determined by the system in use, it shall be reported using the abbreviation 'BLW' in local routine report and local special report, and the abbreviation 'M' in METAR, followed by the minimum value that can be determined by the system.';

(f) points MET.TR.205(d)(2), (3) and (4) are replaced by the following:

'(2) In METAR and SPECI, observed present weather phenomena shall be reported in terms of type and characteristics and qualified with respect to intensity or proximity to the aerodrome, as appropriate.

(3) In local routine reports, local special reports, METAR and SPECI, the following characteristics of present weather phenomena, as necessary, shall be reported using their respective abbreviations and relevant criteria, as appropriate:

(i) Thunderstorm (TS)

Used to report a thunderstorm with precipitation. When thunder is heard or lightning is detected at the aerodrome during the 10-minute period preceding the time of observation but no precipitation is observed at the aerodrome, the abbreviation 'TS' shall be used without qualification.

(ii) Freezing (FZ)

Supercooled water droplets or precipitation, used with types of present weather phenomena in accordance with Appendix 1.

(4) In local routine reports, local special reports, METAR and SPECI:

(i) one or more, up to a maximum of three, of the present weather abbreviations shall be used, as necessary, together with an indication, where appropriate, of the characteristics and intensity or proximity to the aerodrome, so as to convey a complete description of the present weather of significance to flight operations;

(ii) the indication of intensity or proximity, as appropriate, shall be reported first followed respectively by the characteristics and the type of weather phenomena;

(iii) where two different types of weather are observed, they shall be reported in two separate groups, where the intensity or proximity indicator refers to the weather phenomenon which follows the indicator. However, different types of precipitation occurring at the time of observation shall be reported as one single group with the dominant type of precipitation reported first and preceded by only one intensity qualifier which refers to the intensity of the total precipitation.';

(g) point MET.TR.205(e)(1) is replaced by the following:

'(1) In local routine reports, local special reports, METAR and SPECI, the height of cloud base shall be reported in steps of 100 ft up to 10 000 ft and in steps of 1 000 ft above 10 000 ft.';

(h) point MET.TR.205(f)(1) is replaced by the following:

'(1) In local routine reports, local special reports, METAR and SPECI, the air temperature and the dew-point temperature shall be reported in steps of whole degrees Celsius.';

(i) point MET.TR.205(f)(3) is replaced by the following:

'(3) In local routine reports, local special reports, METAR and SPECI, a temperature below 0 °C shall be identified.';

(j) point MET.TR.205(g)(1) is replaced by the following:

'(1) In local routine reports, local special reports, METAR and SPECI, the QNH and QFE shall be computed in tenths of hectopascals and reported therein in steps of whole hectopascals, using four digits.';

(k) point MET.TR.205(g)(4) is replaced by the following:

'(4) In METAR and SPECI, only QNH values shall be included.';

20. point MET.TR.210 is amended as follows:

(a) point MET.TR.210(a)(2) is replaced by the following:

‘(2) Display

Surface wind displays relating to each sensor shall be located in the aeronautical meteorological station. The displays in the aeronautical 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) point MET.TR.210(a)(3)(ii) is replaced by the following:

‘(ii) 10 minutes for METAR and SPECI, except that when the 10-minute period includes a marked discontinuity in the wind direction and/or speed; only data occurring after the discontinuity shall be used for obtaining mean values; hence, the time interval in these circumstances shall be correspondingly reduced.’;

(c) point MET.TR.210(b)(3) is replaced by the following:

‘(3) Displays

When instrumented systems are used for the measurement of visibility, visibility displays relating to each sensor shall be located in the aeronautical meteorological station. The displays in the aeronautical 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 area monitored by each sensor.’;

(d) point MET.TR.210 (c) is replaced by the following:

‘(c) Runway visual range (RVR)

(1) The RVR shall be reported in metres.

(2) Siting

The meteorological instrument used to assess the RVR shall be situated in such a way as to provide data which is representative of the area for which the observations are required.

(3) Instrumented systems

Instrumented systems based on transmissometers or forward-scatter meters shall be used to assess RVR on runways intended for Category II and III instrument approach and landing operations, and for Category I instrument approach and landing operations as determined by the competent authority.

(4) Display

Where the RVR is determined by instrumented systems, one display or more, if required, shall be located in the aeronautical meteorological station. The displays in the aeronautical meteorological station and in the air traffic services (ATS) 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 the runway monitored by each sensor.

(5) Averaging

(i) Where instrumented systems are used for the assessment of the RVR, their output shall be updated at least every 60 seconds to permit the provision of current, representative values.

(ii) The averaging period for RVR values shall be:

(A) 1 minute for local routine reports and local special reports and for RVR displays in ATS units;

(B) 10 minutes for METAR and SPECI, except that when the 10-minute period immediately preceding the observation includes a marked discontinuity in RVR values; then only those values occurring after the discontinuity shall be used for obtaining mean values.';

(e) point MET.TR.210(e)(3) is replaced by the following:

'(3) Display

When automated equipment is used for the measurement of the height of cloud base, at least one display shall be located in the aeronautical meteorological station. The displays in the aeronautical 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 area monitored by each sensor.';

(f) point MET.TR.210(f)(2) is replaced by the following:

'(2) When automated equipment is used for the measurement of air temperature and dew-point temperature, the displays shall be located in the aeronautical meteorological station. The displays in the aeronautical meteorological station and in the air traffic services units shall relate to the same sensors.';

(g) point MET.TR.210(g)(2(i) is replaced by the following:

'(i) When automated equipment is used for the measurement of atmospheric pressure, QNH and, if required in accordance with point MET.TR.205(g)(3)(ii), QFE displays relating to the barometer shall be located in the aeronautical meteorological station with corresponding displays in the appropriate air traffic services units.';

21. point MET.TR.215 is amended as follows:

(a) the title of point MET.TR.215 is replaced by the following:

'Forecasts and other information';

(b) point (e)(6) is replaced by the following:

'(6) volcanic ash, tropical cyclone and space weather advisory information relevant to the whole route.';

22. point MET.TR.220 is amended as follows:

(a) points (b), (c) and (d) are replaced by the following:

‘(b) TAF shall be issued in accordance with the template shown in Appendix 3.

(c) The period of validity of a routine TAF shall be either 9 or 24 or 30 hours, unless otherwise prescribed by the competent authority taking into account the traffic requirements for aerodromes which operate for less than 9 hours.

(d) TAF shall be filed for transmission not earlier than 1 hour before the commencement of their period of validity.’;

(b) points (3)(1)(iii), (iv) and (v) are replaced by the following:

‘(iii) When the wind is forecasted to be less than 1 kt, the forecasted wind speed shall be indicated as calm.

(iv) When the forecast maximum speed exceeds the forecasted mean wind speed by 10 kt or more, the forecasted maximum wind speed shall be indicated.

(v) When a wind speed of 100 kt or more is forecasted, it shall be indicated to be more than 99 kt.’;

23. point MET.TR.225 is amended as follows:

(a) in point MET.TR.225(c)(1), points (i) and (ii) are replaced by the following:

‘(i) a change in the mean wind direction of 60° or more, the mean speed before and/or after the change being 10 kt or more;

(ii) a change in mean wind speed of 10 kt or more;’;

(b) point MET.TR.225(c)(2)(i) is replaced by the following:

‘(i) When the visibility is expected to improve and change to or pass through one or more of the following values, or when the visibility is expected to deteriorate and pass through one or more of the following values: 150, 350, 600, 800, 1 500 or 3 000 m, the TREND forecast shall indicate the change.’;

(c) point MET.TR.225(c)(2)(iii) is replaced by the following:

‘(iii) In TREND forecasts appended to METAR and SPECI, visibility shall refer to the forecast prevailing visibility.’;

24. point MET.TR.235(c) is replaced by the following:

‘(c) Wind shear alerts shall give concise, up-to-date information related to the observed existence of wind shear involving a headwind/tailwind change of 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.’;

25. point MET.TR.250 is amended as follows:

(a) point (a) is replaced by the following:

‘(a) SIGMET shall be issued in accordance with the template shown in Appendix 5.’;

(b) point (d) is replaced by the following:

‘(c) Only one of the phenomena listed in Appendix 5 shall be included in a SIGMET, using the appropriate abbreviations and the following threshold value of surface wind speed of 34 kt or more for tropical cyclones.’;

(c) point (f) is deleted;

26. point MET.TR.255 is amended as follows:

(a) point (a) is replaced by the following:

‘(a) AIRMET shall be issued in accordance with the template shown in Appendix 5.’;

(b) point (c)(1) is replaced by the following:

‘(1) widespread surface wind speed above 30 kt with relevant direction and units;’;

(c) point (c)(5) is replaced by the following:

‘(5) Vertical visibility

When the sky is expected to remain or become obscured and vertical visibility observations are available at the aerodrome, and the vertical visibility is forecast to improve and change to or pass through one or more of the following values, or when the vertical visibility is forecast to deteriorate and pass through one or more of the following values: 100, 200, 500 or 1 000 ft, the TREND forecast shall indicate the change.’;

(d) point (e) is deleted;

27. point MET.TR.260 is amended as follows:

(a) points (b)(1) and (2) are replaced by the following:

‘(1) the following phenomena warranting the issuance of a SIGMET: moderate/severe icing, moderate/severe turbulence, cumulonimbus clouds that are obscured, frequent, embedded or occurring at a squall line, sandstorms/dust storms and volcanic eruptions or a release of radioactive materials into the atmosphere, and which are expected to affect low-level flights;

(2) the following elements in area forecasts for low-level flights: surface wind, surface visibility, significant weather phenomena, mountain obscuration, cloud, moderate/severe icing, moderate/severe turbulence, mountain wave and height of zero-degree isotherm.’;

(b) point (c) is replaced by the following:

‘(c) When the competent authority has determined that the density of traffic operating below flight level 100, or up to flight level 150 in mountainous areas, or higher, where necessary, warrants the issuance of an AIRMET in combination with area forecasts for low-level flights, 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 areas, or higher, where

necessary, and shall contain information on en-route weather phenomena hazardous to low-level flights.';

28. the title of Chapter 4 is replaced by the following:

'Chapter 4 — Technical requirements for volcanic ash advisory centres (VAACs)';

29. point MET.TR.265(a) is replaced by the following:

'The advisory information on volcanic ash shall be issued in accordance with the template shown in Appendix 6. When no abbreviations are available, English plain language text, to be kept to a minimum, shall be used.';

30. the title of Chapter 5 is replaced by the following:

'Chapter 5 — Technical requirements for tropical cyclone advisory centres (TCACs)';

31. point MET.TR.275 is amended as follows:

(a) point (a) is replaced by the following:

'(a) WAFCs shall use processed meteorological data in the form of grid point values for the supply of gridded global forecasts and forecasts of significant weather phenomena.';

(b) point (b)(1)(viii) is replaced by the following:

'(viii) turbulence;';

(c) point (b)(2) is replaced by the following:

'(2) issue forecasts referred to in point (1) and complete their dissemination as soon as technically feasible, but not later than 5 hours after standard time of observation;';

(d) point (b)(3) is replaced by the following:

'(3) provide grid point forecasts in a regular grid comprising:

(i) wind data for flight levels 50 (850 hPa), 80 (750 hPa), 100 (700 hPa), 140 (600 hPa), 180 (500 hPa), 210 (450 hPa), 240 (400 hPa), 270 (350 hPa), 300 (300 hPa), 320 (275 hPa), 340 (250 hPa), 360 (225 hPa), 390 (200 hPa), 410 (175 hPa), 450 (150 hPa), 480 (125 hPa) and 530 (100 hPa) with a horizontal resolution of 1,25° of latitude and longitude;

(ii) temperature data for flight levels 50 (850 hPa), 80 (750 hPa), 100 (700 hPa), 140 (600 hPa), 180 (500 hPa), 210 (450 hPa), 240 (400 hPa), 270 (350 hPa), 300 (300 hPa), 320 (275 hPa), 340 (250 hPa), 360 (225 hPa), 390 (200 hPa), 410 (175 hPa), 450 (150 hPa) 480 (125 hPa) and 530 (100 hPa) with a horizontal resolution of 1,25° of latitude and longitude;

(iii) humidity data for flight levels 50 (850 hPa), 80 (750 hPa), 100 (700 hPa), 140 (600 hPa) and 180 (500 hPa) with a horizontal resolution of 1,25° of latitude and longitude;

(iv) geopotential altitude data for flight levels 50 (850 hPa), 80 (750 hPa), 100 (700 hPa), 140 (600 hPa), 180 (500 hPa), 210 (450 hPa), 240 (400 hPa), 270 (350 hPa), 300 (300 hPa), 320 (275 hPa), 340 (250 hPa), 360 (225 hPa), 390 (200 hPa), 410 (175 hPa), 450 (150 hPa) 480 (125 hPa) and 530 (100 hPa) with a horizontal resolution of 1,25° of latitude and longitude;

(v) direction, speed and flight level of maximum wind with a horizontal resolution of 1,25° of latitude and longitude;

(vi) flight level and temperature of tropopause with a horizontal resolution of 1,25° of latitude and longitude;

(vii) icing for layers centred at flight levels 60 (800 hPa), 100 (700 hPa), 140 (600 hPa), 180 (500 hPa), 240 (400 hPa) and 300 (300 hPa) with a horizontal resolution of 0,25° of latitude and longitude;

(viii) turbulence for layers centred at flight levels 100 (700 hPa), 140 (600 hPa), 180 (500 hPa), 240 (400 hPa), 270 (350 hPa), 300 (300 hPa), 340 (250 hPa), 390 (200 hPa) and 450 (150 hPa) with a horizontal resolution of 0,25° of latitude and longitude;

(ix) horizontal extent and flight levels of base and top of cumulonimbus clouds with a horizontal resolution of 0,25° of latitude and longitude.';

(e) point (c)(1) is replaced by following:

'(1) prepare SIGWX forecasts four times a day and shall be valid for fixed valid times at 24 hours after the time (00.00, 06.00, 12.00 and 18.00 UTC) of the synoptic data on which the forecasts were based. The dissemination of each forecast shall be completed as soon as technically feasible, but not later than 7 hours after standard time of observation under normal operations and not later than 9 hours after standard time of observation during backup operations;';

(f) point (c)(3)(i) is replaced by the following:

'(i) tropical cyclone provided that the maximum of the 10-minute mean surface wind speed is expected to reach or exceed 34 kt;';

(g) point (d) is replaced by the following:

'(d) Medium-level SIGWX forecasts for flight levels between 100 and 450 for limited geographical areas shall be issued.';

32. Appendix 1 is replaced by the following:

‘*Appendix 1*

Template for METAR and SPECI

Key:

M = inclusion mandatory;

C = inclusion conditional, dependent on meteorological conditions or method of observation;

O = inclusion optional.

Note 1: The ranges and resolutions for the numerical elements included in METAR and SPECI are provided in a separate table below this template.

Note 2: The explanations for the abbreviations can be found in ICAO Document 8400 *Procedures for Air Navigation Services — Abbreviations and Codes (PANS-ABC).*

<table>
<tr><th>Element</th><th>Detailed content</th><th colspan="3">Template(s)</th></tr>
<tr><td>Identification of the type of report (M)</td><td>Type of report (M)</td><td colspan="3">METAR, METAR COR, SPECI or SPECI COR</td></tr>
<tr><td>Location indicator (M)</td><td>ICAO location indicator (M)</td><td colspan="3">nnnn</td></tr>
<tr><td>Time of the observation (M)</td><td>Day and actual time of the observation in UTC (M)</td><td colspan="3">nnnnnnZ</td></tr>
<tr><td>Identification of an automated or missing report (C)</td><td>Automated or missing report identifier (C)</td><td colspan="3">AUTO or NIL</td></tr>
<tr><td colspan="5">END OF METAR IF THE REPORT IS MISSING.</td></tr>
<tr><td rowspan="5">Surface wind (M)</td><td>Wind direction (M)</td><td>nnn or /// (1)</td><td colspan="2">VRB</td></tr>
<tr><td>Wind speed (M)</td><td colspan="3">[P]nn[n] or // (1)</td></tr>
<tr><td>Significant speed variations (C)</td><td colspan="3">G[P]nn[n]</td></tr>
<tr><td>Units of measurement (M)</td><td colspan="3">KT</td></tr>
<tr><td>Significant directional variations (C)</td><td>nnnVnnn</td><td colspan="2">—</td></tr>
<tr><td rowspan="2">Visibility (M)</td><td>Prevailing or minimum visibility (M)</td><td colspan="2">nnnn or //// (1)</td><td rowspan="3">C
A
V
O
K</td></tr>
<tr><td>Minimum visibility and direction of the minimum visibility (C)</td><td colspan="2">nnnn[N] or nnnn[NE] or nnnn[E] or nnnn[SE] or nnnn[S] or nnnn[SW] or nnnn[W] or nnnn[NW]</td></tr>
<tr><td>Runway visual range (C) (2)</td><td>Name of the element (M)</td><td colspan="2">R</td></tr>
</table>

	Runway (M)	nn[L]/*or* nn[C]/*or* nn[R]/			
	Runway visual range (M)	[P *or* M]nnnn *or* //// ([1])			
	Runway visual range past tendency (C)	U, D *or* N			
Present weather (C)	Intensity *or* proximity of present weather (C)	– *or* +	—	VC	
	Characteristics and type of present weather (M)	DZ *or* RA *or* SN *or* SG *or* PL *or* DS *or* SS *or* FZDZ *or* FZRA *or* FZUP ([1]) *or* FC ([3]) *or* SHGR *or* SHGS *or* SHRA *or* SHSN *or* SHUP ([1]) *or* TSGR *or* TSGS *or* TSRA *or* TSSN *or* TSUP ([1]) *or* UP ([1])	FG *or* BR *or* SA *or* DU *or* HZ *or* FU *or* VA *or* SQ *or* PO *or* TS *or* BCFG *or* BLDU *or* BLSA *or* BLSN *or* DRDU *or* DRSA *or* DRSN *or* FZFG *or* MIFG *or* PRFG *or* // ([1])	FG *or* PO *or* FC *or* DS *or* SS *or* TS *or* SH *or* BLSN *or* BLSA *or* BLDU *or* VA	

Cloud (M)	Cloud amount and height of cloud base *or* vertical visibility (M)	FEWnnn *or* SCTnnn *or* BKNnnn *or* OVCnnn *or* FEW/// ([1]) *or* SCT/// ([1]) *or* BKN/// ([1]) *or* OVC/// ([1]) *or* ///nnn ([1]) *or* ////// ([1])	VVnnn *or* VV/// ([1])	NSC *or* NCD ([4])
	Cloud type (C)	CB *or* TCU *or* /// ([1]),([5])	—	
Air and dew-point temperature (M)	Air and dew-point temperature (M)	[M]nn/[M]nn or ///[M]nn ([1]) or [M]nn/// ([1]) or ///// ([1])		
Pressure values (M)	Name of the element (M)	Q		
	QNH (M)	nnnn *or* //// ([1])		
Supplementary information (C)	Recent weather (C)	RERASN *or* REFZDZ *or* REFZRA *or* REDZ *or* RE[SH]RA *or* RE[SH]SN *or* RESG *or* RESHGR *or* RESHGS *or* REBLSN *or* RESS *or* REDS *or* RETSRA *or* RETSSN *or* RETSGR *or* RETSGS *or* RETS *or* REFC *or* REVA *or* REPL *or* REUP ([1]) *or* REFZUP ([1]) *or* RETSUP ([1]) *or* RESHUP ([1]) *or* RE// ([1])		
	Wind shear (C)	WS Rnn[L] *or* WS Rnn[C] *or* WS Rnn[R] *or* WS ALL RWY		
	Sea-surface temperature and state of the sea or significant wave height (C)	W[M]nn/Sn or W///Sn ([1]) or W[M]nn/S/ ([1]) or W[M]nn/Hn[n][n] or W///Hn[n][n] ([1]) or W[M]nn/H/// ([1])		
Trend forecast (O)	Change indicator (M)	NOSIG	BECMG *or* TEMPO	
	Period of change (C)		FMnnnn *and/or* TLnnnn *or* ATnnnn	

	Wind (C)		nnn[P]nn[G[P]nn]KT			
	Prevailing visibility (C)		nnnn			C A V O K
	Weather phenomenon: intensity (C)		– *or* +	—	N S W	
	Weather phenomenon: characteristics and type (C)		DZ *or* RA *or* SN *or* SG *or* PL *or* DS *or* SS *or* FZDZ *or* FZRA *or* SHGR *or* SHGS *or* SHRA *or* SHSN *or* TSGR *or* TSGS *or* TSRA *or* TSSN	FG *or* BR *or* SA *or* DU *or* HZ *or* FU *or* VA *or* SQ *or* PO *or* FC *or* TS *or* BCFG *or* BLDU *or* BLSA *or* BLSN *or* DRDU *or* DRSA *or* DRSN *or* FZFG *or* MIFG *or* PRFG		
	Cloud amount and height of cloud base *or* vertical visibility (C)		FEWnnn *or* SCTnnn *or* BKNnnn *or* OVCnnn	VVnnn *or* VV///	N S C	
	Cloud type (C)		CB *or* TCU	—		

([1]) When a meteorological element is temporarily missing, or its value is considered temporarily as incorrect, it is replaced by a solidus ('/') for each digit of the abbreviation of the text message and indicated as missing to ensure reliable translation into other code forms.

([2]) To be included if the visibility or the runway visual range is < 1 500 m for up to a maximum of four runways.

([3]) 'Heavy' is used to indicate 'tornado' or 'waterspout'; 'moderate' (no qualifier) to indicate 'funnel cloud not reaching the ground'.

([4]) For automated reports only.

([5]) In the case of automated reports, a solidus ('/') may replace the relevant cloud type, as appropriate, dependent on the capability of the automatic observing system. Furthermore, solidi may replace cloud amount and/or cloud height of reported CB or TCU layer.

Ranges and resolutions for the numerical elements included in METAR and SPECI

Elements		*Range*	*Resolution*
Runway:	(no units)	01–36	1
Wind direction:	° true	000–360	10
Wind speed:	KT	00–99 P99	1 N/A (100 or greater)
Visibility:	M M M M	0000–0750 0800–4 900 5 000–9 000 10 000 or greater	50 100 1 000 0 (fixed value: 9 999)
Runway visual range:	M M M	0000–0375 0400–0750 0800–2 000	25 50 100
Vertical visibility:	100's FT	000–020	1
Clouds: height of cloud base:	100's FT	000–099 100-200	1 10
Air temperature: Dew-point temperature:	°C	–80 – +60	1
QNH:	hPa	0850–1 100	1
Sea-surface temperature:	°C	–10 – +40	1
State of the sea:	(no units)	0–9	1
Significant wave height:	M	0–999	0,1'

33. Appendix 3 is replaced by the following:

‘*Appendix 3*

Template for TAF

Key:

M = inclusion mandatory;

C = inclusion conditional, dependent on meteorological conditions or method of observation;

O = inclusion optional.

Note 1: The ranges and resolutions for the numerical elements included in TAF are provided in a separate table below this template.

Note 2: The explanations for the abbreviations can be found in ICAO Doc 8400 *Procedures for Air Navigation Services — ICAO Abbreviations and Codes (PANS-ABC)*.

Element	*Detailed content*	*Template(s)*
Identification of the type of forecast (M)	Type of forecast (M)	TAF *or* TAF AMD *or* TAF COR
Location indicator (M)	ICAO location indicator (M)	nnnn
Time of issue of the forecast (M)	Day and time of issue of the forecast in UTC (M)	nnnnnnZ
Identification of a missing forecast (C)	Missing forecast identifier (C)	NIL
END OF TAF IF THE FORECAST IS MISSING.		
Days and period of validity of the forecast (M)	Days and period of validity of the forecast in UTC (M)	nnnn/nnnn
Identification of a cancelled forecast (C)	Cancelled forecast identifier (C)	CNL
END OF TAF IF THE FORECAST IS CANCELLED.		
Surface wind (M)	Wind direction (M)	nnn *or* VRB
	Wind speed (M)	[P]nn[n]
	Significant speed variations (C)	G[P]nn[n]

	Units of measurement (M)	KT			
Visibility (M)	Prevailing visibility (M)	nnnn			C A V O K
Weather (C)	Intensity of weather phenomena (C) ([1])	*– or +*		—	
	Characteristics and type of weather phenomena (C)	DZ *or* RA *or* SN *or* SG *or* PL *or* DS *or* SS *or* FZDZ *or* FZRA *or* SHGR *or* SHGS *or* SHRA *or* SHSN *or* TSGR *or* TSGS *or* TSRA *or* TSSN		FG *or* BR *or* SA *or* DU *or* HZ *or* FU *or* VA *or* SQ *or* PO *or* FC *or* TS *or* BCFG *or* BLDU *or* BLSA *or* BLSN *or* DRDU *or* DRSA *or* DRSN *or* FZFG *or* MIFG *or* PRFG	
Cloud (M) ([2])	Cloud amount and height of base or vertical visibility (M)	FEWnnn *or* SCTnnn *or* BKNnnn *or* OVCnnn	VVnnn *or* VV///	N S C	
	Cloud type (C)	CB *or* TCU	—		
Temperature (O) ([3])	Name of the element (M)	TX			
	Maximum temperature (M)	[M]nn/			
	Day and time of occurrence of the	nnnnZ			

	maximum temperature (M)				
	Name of the element (M)	TN			
	Minimum temperature (M)	[M]nn/			
	Day and time of occurrence of the minimum temperature (M)	nnnnZ			
Expected significant changes to one or more of the above elements during the period of validity (C)	Change or probability indicator (M)	PROB30 [TEMPO] *or* PROB40 [TEMPO] *or* BECMG *or* TEMPO *or* FM			
	Period of occurrence or change (M)	nnnn/nnnn *or* nnnnnn			
	Wind (C)	nnn[P]nn[G[P]nn]KT *or* VRBnnKT			
	Prevailing visibility (C)	nnnn			C A V O K
	Weather phenomenon: intensity (C)	– or +	—	N S W	
	Weather phenomenon: characteristics and type (C)	DZ *or* RA *or* SN *or* SG *or* PL *or* DS *or* SS *or* FZDZ *or* FZRA *or* SHGR *or* SHGS *or* SHRA *or* SHSN *or* TSGR *or* TSGS *or*	FG *or* BR *or* SA *or* DU *or* HZ *or* FU *or* VA *or* SQ *or* PO *or* FC *or* TS *or* BCFG *or* BLDU *or* BLSA *or* BLSN *or*		

		TSRA *or* TSSN	DRDU *or* DRSA *or* DRSN *or* FZFG *or* MIFG *or* PRFG		
	Cloud amount and height of base or vertical visibility (C)	FEWnnn *or* SCTnnn *or* BKNnnn *or* OVCnnn	VVnnn *or* VV///	N S C	
	Cloud type (C)	CB *or* TCU	—		

([1]) To be included whenever applicable. No qualifier for moderate intensity.

([2]) Up to four cloud layers.

([3]) Consisting of up to a maximum of four temperatures (two maximum temperatures and two minimum temperatures).

Ranges and resolutions for the numerical elements included in TAF

Elements		*Range*	*Resolution*
Wind direction:	° true	000–360	10
Wind speed:	KT	00–99	1
Visibility:	M	0000–0750	50
	M	0800–4 900	100
	M	5 000–9 000	1 000
	M	10 000 or greater	0 (fixed value: 9 999)
Vertical visibility:	100’s FT	000–020	1
Cloud: height of cloud base:	100’s FT	000–099	1
		100–200	10
Air temperature (maximum and minimum):	°C	–80 – +60	1’

34. Appendix 4 is replaced by the following:

‘*Appendix 4*

Template for wind shear warnings

Key:

M = inclusion mandatory;

C = inclusion conditional, whenever applicable.

Note 1: The ranges and resolutions for the numerical elements included in wind shear warnings are shown in Appendix 8.

Note 2: The explanations for the abbreviations can be found in ICAO Doc 8400 *Procedures for Air Navigation Services — ICAO Abbreviations and Codes (PANS-ABC)*.

Element	*Detailed content*	*Template(s)*
Location indicator of the aerodrome (M)	Location indicator of the aerodrome	nnnn
Identification of the type of message (M)	Type of message and sequence number	WS WRNG [n]n
Time of origin and validity period (M)	Day and time of issue and, where applicable, validity period in UTC	nnnnnn [VALID TL nnnnnn] *or* [VALID nnnnnn/nnnnnn]
IF THE WIND SHEAR WARNING IS TO BE CANCELLED, SEE DETAILS AT THE END OF THE TEMPLATE.		
Phenomenon (M)	Identification of the phenomenon and its location	[MOD] *or* [SEV] WS IN APCH *or* [MOD] *or* [SEV] WS [APCH] RWYnnn *or* [MOD] *or* [SEV] WS IN CLIMB-OUT *or* [MOD] *or* [SEV] WS CLIMB-OUT RWYnnn *or* MBST IN APCH *or* MBST [APCH] RWYnnn *or* MBST IN CLIMB-OUT *or* MBST CLIMB-OUT RWYnnn
Observed, reported or forecast phenomenon (M)	Identification whether the phenomenon is observed or reported and expected to continue, or forecast	REP AT nnnn nnnnnnnn *or* OBS [AT nnnn] *or* FCST

Element	*Detailed content*	*Template(s)*
Details of the phenomenon (C)	Description of the phenomenon causing the issuance of the wind shear warning	SFC WIND: nnn/nnKT nnnFT – WIND: nnn/nnKT *or* nnKT LOSS nnNM (*or* nnKM) FNA RWYnn *or* nnKT GAIN nnNM (*or* nnKM) FNA RWYnn

OR

Cancellation of wind shear warning	Cancellation of wind shear warning referring to its identification	CNL WS WRNG [n]n nnnnnn/nnnnnn’

35. Appendix 5 is replaced by the following:

'*Appendix 5*

Template for SIGMET and AIRMET

Key:

M = inclusion mandatory;

C = inclusion conditional, whenever applicable; and

Note 1: The ranges and resolutions for the numerical elements included in SIGMET or AIRMET are shown in Appendix 8.

Note 2: Severe or moderate icing (SEV ICE, MOD ICE) and severe or moderate turbulence (SEV TURB, MOD TURB) associated with thunderstorms, cumulonimbus clouds or tropical cyclones should not be included.

Element	*Detailed content*	*SIGMET template*	*AIRMET template*
Location indicator of FIR/CTA (M)	ICAO location indicator of the ATS unit serving the FIR or CTA to which the SIGMET/AIRMET refers	nnnn	
Identification (M)	SIGMET or AIRMET identification and sequence number	SIGMET [n][n]n	AIRMET [n][n]n
Validity period (M)	Day-time groups indicating the period of validity in UTC	VALID nnnnnn/nnnnnn	
Location indicator of MWO (M)	Location indicator of MWO originating the SIGMET or AIRMET with a separating hyphen	nnnn–	
Name of the FIR/CTA (M)	Location indicator and name of the FIR/CTA for which the SIGMET/AIRMET is issued	nnnn nnnnnnnnnn FIR[/UIR] *or* nnnn nnnnnnnnnn CTA	nnnn nnnnnnnnnn FIR[/n]
IF THE SIGMET OR AIRMET IS TO BE CANCELLED, SEE DETAILS AT THE END OF THE TEMPLATE.			
Status indicator (C) ([1])	Indicator of test or exercise	TEST or EXER	TEST or EXER
Phenomenon (M)	Description of the phenomenon causing the issuance of SIGMET/AIRMET	OBSC TS[GR] EMBD TS[GR] FRQ TS[GR] SQL TS[GR]	SFC WIND nnn/nn[n]KT SFC VIS [n][n]nnM (nn) ISOL TS[GR]

Element	*Detailed content*	*SIGMET template*	*AIRMET template*
		TC nnnnnnnnnn PSN Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] CB *or* TC NN ([2]) PSN Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] CB SEV TURB SEV ICE SEV ICE (FZRA) SEV MTW HVY DS HVY SS [VA ERUPTION] [MT nnnnnnnnnn] [PSN Nnn[nn] *or* Snn[nn] Ennn[nn] *or* Wnnn[nn]] VA CLD RDOACT CLD	OCNL TS[GR] MT OBSC BKN CLD BKN CLD [n]nnn/[ABV][n]nnnnFT *or* BKN CLD SFC/[ABV][n]nnnnFT *or* OVC CLD [n]nnn/[ABV][n]nnnnFT *or* OVC CLD SFC/[ABV][n]nnnnFT ISOL CB OCNL CB FRQ CB ISOL TCU OCNL TCU FRQ TCU MOD TURB MOD ICE MOD MTW
Observed or forecast phenomenon (M) ([3]),([4])	Indication whether the information is observed and expected to continue, *or* forecast	OBS [AT nnnnZ] *or* FCST [AT nnnnZ]	
Location (C) ([3]),([4]),([5])	Location (referring to latitude and longitude (in degrees and minutes))	Nnn[nn] Wnnn[nn] *or* Nnn[nn] Ennn[nn] *or* Snn[nn] Wnnn[nn] *or* Snn[nn] Ennn[nn] *or*	

Element	*Detailed content*	*SIGMET template*	*AIRMET template*
		N OF Nnn[nn] *or* S OF Nnn[nn] *or* N OF Snn[nn] *or* S OF Snn[nn] *or* [AND] W OF Wnnn[nn] *or* E OF Wnnn[nn] *or* W OF Ennn[nn] *or* E OF Ennn[nn] *or* N OF Nnn[nn] *or* N OF Snn[nn] AND S OF Nnn[nn] *or* S OF Snn[nn] *or* W OF Wnnn[nn] *or* W OF Ennn[nn] AND E OF Wnnn[nn] *or* E OF Ennn[nn] *or* N OF LINE *or* NE OF LINE *or* E OF LINE *or* SE OF LINE *or* S OF LINE *or* SW OF LINE *or* W OF LINE *or* NW OF LINE Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] [– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] [– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] [AND N OF LINE *or* NE OF LINE *or* E OF LINE *or* SE OF LINE *or* S OF LINE *or* SW OF LINE *or* W OF LINE *or* NW OF LINE Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] [– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] [– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]]] or WI Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – [Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]][(6)] *or* ENTIRE UIR *or* ENTIRE FIR *or* ENTIRE FIR/UIR *or* ENTIRE CTA *or* WI nnnKM (or nnnNM) OF TC CENTRE ([7]) *or* WI nnKM (or nnNM) OF Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] ([8])	
Level (C)	Flight level or altitude	[SFC/]FLnnn *or* [SFC/][n]nnnnFT *or* FLnnn/nnn *or*	

Element	*Detailed content*	*SIGMET template*	*AIRMET template*
		TOP FLnnn *or* [TOP] ABV FLnnn *or* (or [TOP] ABV [n]nnnnFT) [[n]nnnn/][n]nnnnFT) *or* [n]nnnnFT/]FLnnn *or* TOP [ABV *or* BLW] FLnnn ([7])	
Movement or expected movement (C) ([3]),([9]),([10])	Movement *or* expected movement (direction and speed) with reference to one of the 16 points of compass, *or* stationary	MOV N [nnKMH] *or* MOV NNE [nnKMH] *or* MOV NE [nnKMH] *or* MOV ENE [nnKMH] *or* MOV E [nnKMH] *or* MOV ESE [nnKMH] *or* MOV SE [nnKMH] *or* MOV SSE [nnKMH] *or* MOV S [nnKMH] *or* MOV SSW [nnKMH] *or* MOV SW [nnKMH] *or* MOV WSW [nnKMH] *or* MOV W [nnKMH] *or* MOV WNW [nnKMH] *or* MOV NW [nnKMH] *or* MOV NNW [nnKMH] (*or* MOV N [nnKT] *or* MOV NNE [nnKT] *or* MOV NE [nnKT] *or* MOV ENE [nnKT] *or* MOV E [nnKT] *or* MOV ESE [nnKT] *or* MOV SE [nnKT] *or* MOV SSE [nnKT] *or* MOV S [nnKT] *or* MOV SSW [nnKT] *or* MOV SW [nnKT] *or* MOV WSW [nnKT] *or* MOV W [nnKT] *or* MOV WNW [nnKT] *or* MOV NW [nnKT] *or* MOV NNW [nnKT]) *or* STNR	
Changes in intensity (C) ([3])	Expected changes in intensity	INTSF *or* WKN *or* NC	
Forecast time (C) ([3]),([4]),([9])	Indication of the forecast time of the phenomenon	FCST AT nnnnZ	—
TC forecast position (C) ([7])	Forecast position of the TC centre	TC CENTRE PSN Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] *or* TC CENTRE PSN Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] CB ([11])	—

Element	*Detailed content*	*SIGMET template*	*AIRMET template*
Forecast position (C) ([3]),([4]),([5]),([9])	Forecast position of the phenomenon at the end of the validity period of the SIGMET ([12])	Nnn[nn] Wnnn[nn] *or* Nnn[nn] Ennn[nn] *or* Snn[nn] Wnnn[nn] *or* Snn[nn] Ennn[nn] *or* N OF Nnn[nn] *or* S OF Nnn[nn] *or* N OF Snn[nn] *or* S OF Snn[nn] [AND] W OF Wnnn[nn] *or* E OF Wnnn[nn] *or* W OF Ennn[nn] *or* E OF Ennn[nn] *or* N OF Nnn[nn] *or* N OF Snn[nn] AND S OF Nnn[nn] *or* S OF Snn[nn] *or* W OF Wnnn[nn] *or* W OF Ennn[nn] AND E OF Wnnn[nn] *or* E OF Ennn[nn] *or* N OF LINE *or* NE OF LINE *or* E OF LINE *or* SE OF LINE *or* S OF LINE *or* SW OF LINE *or* W OF LINE *or* NW OF LINE Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] [– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] [AND N OF LINE *or* NE OF LINE *or* E OF LINE *or* SE OF LINE *or* S OF LINE *or* SW OF LINE *or* W OF LINE *or* NW OF LINE Nnn[nn]	—

Element	*Detailed content*	*SIGMET template*	*AIRMET template*
		or Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] [– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]]] *or* WI Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] ([6]) *or* ENTIRE FIR *or* ENTIRE UIR *or* ENTIRE FIR/UIR *or* ENTIRE CTA *or* NO VA EXP ([13]) *or* WI nnKM (or nnNM) OF Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] ([8]) or WI nnnKM (nnnNM) OF TC CENTRE ([7])	
Repetition of elements (C) ([14])	Repetition of elements included in a SIGMET for volcanic ash cloud or tropical cyclone	[AND] ([14])	—
New line if repeating elements			
OR			
Cancellation of SIGMET/AIRMET (C)	Cancellation of SIGMET/AIRMET referring to its identification	CNL SIGMET nnn nnnnnn/nnnnnn *or* CNL SIGMET nnn nnnnnn/nnnnnn [VA MOV TO nnnn FIR][13]	CNL AIRMET [n][n]n nnnnnn/nnnnnn

([1]) Used only when SIGMET/AIRMET is issued to indicate that a test or an exercise is taking place. When the word 'TEST' or the abbreviation 'EXER' is included, the message may contain information that should not be used operationally or will otherwise end immediately after the word 'TEST'.

([2]) Used for unnamed tropical cyclones.

([3]) In the case of volcanic ash cloud covering more than one area within the FIR, these elements can be repeated, as necessary. Each location and forecast position are to be preceded by an observed or forecast time.

([4]) In the case of cumulonimbus clouds associated with a tropical cyclone covering more than one area within the FIR, these elements can be repeated as necessary. Each location and forecast position must be preceded by an observed or forecast time.

([5]) For SIGMET for radioactive cloud, only within (WI) is to be used for the elements 'location' and 'forecast position'.

([6]) The number of coordinates are to be kept to a minimum and should not normally exceed seven.

([7]) Only for SIGMET for tropical cyclones.

([8]) Only for SIGMET for radioactive cloud. A radius of up to 30 kilometres (or 16 nautical miles) from the source and a vertical extent from surface (SFC) to the upper limit of the flight information region/upper flight information region (FIR/UIR) or control area (CTA) is to be applied.

([9]) The elements 'forecast time' and 'forecast position' are not to be used in conjunction with the element 'movement or expected movement'.

([10]) For SIGMET for radioactive cloud, only stationary (STNR) is to be used for the element 'movement or expected movement'.

([11]) The term 'CB' is to be used when the forecast position for the cumulonimbus cloud is included.

([12]) The forecast position for cumulonimbus (CB) cloud occurring in connection with tropical cyclones relates to the forecast time of the tropical cyclone centre position, not to the end of the validity period of the SIGMET.

([13]) Only for SIGMET for volcanic ash.

([14]) To be used for more than one volcanic ash clouds or cumulonimbus clouds associated with a tropical cyclone simultaneously affecting the FIR concerned.'

36. Appendix 5B is deleted;

37. Appendix 6 is replaced by the following:

‘*Appendix 6*

Template for advisory for volcanic ash

Key:

M = inclusion mandatory;

O = inclusion optional;

C = inclusion conditional, included whenever applicable.

Note 1: The ranges and resolutions for the numerical elements included in volcanic ash advisory are shown in Appendix 8.

Note 2: The explanations for the abbreviations can be found in ICAO Doc 8400 *Procedures for Air Navigation Services — ICAO Abbreviations and Codes (PANS-ABC).*

Note 3: The inclusion of a colon (‘:’) after each element heading is mandatory.

Detailed content	*Detailed content*	*Template(s)*	
Identification of the type of message (M)	Type of message	VA ADVISORY	
Status indicator (C) ([1])	Indicator of test or exercise	STATUS:	TEST *or* EXER
Time of origin (M)	Year, month, day, time in UTC	DTG:	nnnnnnnn/nnnnZ
Name of VAAC (M)	Name of VAAC	VAAC:	nnnnnnnnnnnn
Name of volcano (M)	Name and *International Association of Volcanology and Chemistry of the Earth’s Interior* number of volcano	VOLCANO:	nnnnnnnnnnnnnnnnnnnnnn [nnnnnn] *or* UNKNOWN *or* UNNAMED
Location of volcano (M)	Location of volcano in degrees and minutes	PSN:	Nnnnn *or* Snnnn Wnnnnn *or* Ennnnn *Or* UNKNOWN
State *or* region (M)	State, *or* region if ash is not reported over a State	AREA:	nnnnnnnnnnnnnnnn *or* UNKNOWN
Summit elevation (M)	Summit elevation in m (*or* ft)	SUMMIT ELEV:	nnnnM (*or* nnnnnFT) *or* SFC *or* UNKNOWN

Detailed content	*Detailed content*		*Template(s)*
Advisory number (M)	Advisory number: year in full and message number (separate sequence for each volcano)	ADVISORY NR:	nnnn/nnnn
Information source (M)	Information source using free text	INFO SOURCE:	*Free text up to 32 characters*
Colour code (O)	Aviation colour code	AVIATION COLOUR CODE:	RED *or* ORANGE *or* YELLOW *or* GREEN *or* UNKNOWN *or* NOT GIVEN *or* NIL
Eruption details (M) ([2])	Eruption details (including date/time of eruption(s))	ERUPTION DETAILS:	*Free text up to 64 characters* *or* UNKNOWN
Time of observation (*or* estimation) of volcanic ash clouds (M)	Day and time (in UTC) of observation (*or* estimation) of volcanic ash clouds	OBS (*or* EST) VA DTG:	nn/nnnnZ
Observed *or* estimated volcanic ash clouds (M)	Horizontal (in degrees and minutes) and vertical extent at the time of observation of the observed *or* estimated volcanic ash clouds *or*, if the base is unknown, the top of the observed *or* estimated volcanic ash clouds; Movement of the observed *or* estimated volcanic ash clouds	OBS VA CLD *or* EST VA CLD:	TOP FLnnn *or* SFC/FLnnn *or* FLnnn/nnn [nnKM WID LINE BTN (nnNM WID LINE BTN)] Nnn[nn] or Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn][– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] MOV N nnKMH (*or* KT) *or* MOV NE nnKMH (*or* KT) *or* MOV E nnKMH (*or* KT) *or* MOV SE nnKMH (*or* KT) *or* MOV S nnKMH (*or* KT) *or* MOV SW nnKMH (*or* KT) *or* MOV W nnKMH (*or* KT) *or* MOV NW nnKMH (*or* KT) *or* VA NOT IDENTIFIABLE FM SATELLITE DATA WIND FLnnn/nnn nnn/nn[n]KT ([3]) *or* WIND FLnnn/nnn VRBnnKT *or* WIND SFC/FLnnn nnn/nn[n]KT *or* WIND SFC/FLnnn VRBnnKT

Detailed content	*Detailed content*		*Template(s)*
Forecast height and position of the volcanic ash clouds (+6 HR) (M)	Day and time (in UTC) (6 hours from the 'Time of observation (*or* estimation) of volcanic ash clouds' given in Item 12) Forecast height and position (in degrees and minutes) for each volcanic ash cloud mass for that fixed valid time	FCST VA CLD +6 HR:	nn/nnnnZ SFC *or* FLnnn/[FL]nnn [nnKM WID LINE BTN (nnNM WID LINE BTN)]Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn][– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] ([4]),([5]) *or* NO VA EXP *or* NOT AVBL *or* NOT PROVIDED
Forecast height and position of the volcanic ash clouds (+12 HR) (M)	Day and time (in UTC) (12 hours from the 'Time of observation (*or* estimation) of volcanic ash clouds' given in Item 12) Forecast height and position (in degrees and minutes) for each volcanic ash cloud mass for that fixed valid time	FCST VA CLD +12 HR:	nn/nnnnZ SFC *or* FLnnn/[FL]nnn [nnKM WID LINE BTN (nnNM WID LINE BTN)] Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn][– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] ([4]),([5]) *or* NO VA EXP *or* NOT AVBL *or* NOT PROVIDED
Forecast height and position of the volcanic ash clouds (+18 HR) (M)	Day and time (in UTC) (18 hours from the 'Time of observation (*or* estimation) of volcanic ash clouds' given in Item 12) Forecast height and position (in degrees and minutes) for each volcanic ash cloud mass for that fixed valid time	FCST VA CLD +18 HR:	nn/nnnnZ SFC *or* FLnnn/[FL]nnn [nnKM WID LINE BTN (nnNM WID LINE BTN)] Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn][– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] ([4]),([5]) *or* NO VA EXP *or* NOT AVBL *or* NOT PROVIDED
Remarks (M) ([2])	Remarks, as necessary	RMK:	*Free text up to 256 characters* *or* NIL
Next advisory (M)	Year, month, day and time in UTC	NXT ADVISORY:	nnnnnnnn/nnnnZ *or* NO LATER THAN nnnnnnnn/nnnnZ *or* NO FURTHER ADVISORIES *or* WILL BE ISSUED BY nnnnnnnn/nnnnZ

([1]) Used only when the message is issued to indicate that a test or an exercise is taking place. When the word 'TEST' or the abbreviation 'EXER' is included, the message may contain information that should not be used operationally or will otherwise end immediately after the word 'TEST'.

([2]) The term ‘resuspended’ to be used for volcanic ash deposits raised by the wind.

([3]) If a volcanic ash cloud is reported (e.g. AIREP) but not identifiable from the satellite data.

([4]) A straight line between two points drawn on a map in the Mercator projection or a straight line between two points which crosses lines of longitude at a constant angle.

([5]) Up to four selected layers.’

38. Appendix 7 is replaced by the following:

‘*Appendix 7*

Template for advisory for tropical cyclones

Key:

M = inclusion mandatory;

C = inclusion conditional, included whenever applicable;

O = inclusion optional;

= = a double line indicates that the text following it should be placed on the subsequent line.

Note 1: The ranges and resolutions for the numerical elements included in tropical cyclone advisory are shown in Appendix 8.

Note 2: The explanations for the abbreviations can be found in ICAO Doc 8400 *Procedures for Air Navigation Services — ICAO Abbreviations and Codes (PANS-ABC).*

Note 3: The inclusion of a colon (‘:’) after each element heading is mandatory.

Element	*Detailed content*	*Template(s)*	
Identification of the type of message (M)	Type of message	TC ADVISORY	
Status indicator (C) ([1])	Indicator of test or exercise	STATUS:	TEST *or* EXER
Time of origin (M)	Year, month, day and time of issue in UTC	DTG:	nnnnnnnn/nnnnZ
Name of TCAC (M)	Name of TCAC (location indicator *or* full name)	TCAC:	nnnn *or* nnnnnnnnnn
Name of tropical cyclone (M)	Name of tropical cyclone *or* ‘NN’ for unnamed tropical cyclone	TC:	nnnnnnnnnnnn *or* NN

Element	*Detailed content*	*Template(s)*	
Advisory number (M)	Advisory: Year in full and message number (separate sequence for each tropical cyclone)	ADVISORY NR:	nnnn/[n][n][n]n
Observed position of the centre (M)	Day and time (in UTC) and position of the centre of the tropical cyclone (in degrees and minutes)	OBS PSN:	nn/nnnnZ Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]
Observed CB cloud (O) ([2])	Location of CB cloud (referring to the latitude and longitude (in degrees and minutes)) and vertical extent (flight level)	CB:	WI nnnKM (or nnnNM) OF TC CENTRE *or* WI ([3]) Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – [Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]] TOP [ABV or BLW] FLnnn NIL

Element	*Detailed content*	*Template(s)*	
Direction and speed of movement (M)	Direction and speed of movement given in 16 compass points and km/h (*or* kt) respectively *or* stationary (< km/h (1 kt))	MOV:	N nnKMH (*or* KT) *or* NNE nnKMH (*or* KT) *or* NE nnKMH (*or* KT) *or* ENE nnKMH (*or* KT) *or* E nnKMH (*or* KT) *or* ESE nnKMH (*or* KT) *or* SE nnKMH (*or* KT) *or* SSE nnKMH (*or* KT) *or* S nnKMH (*or* KT) *or* SSW nnKMH (*or* KT) *or* SW nnKMH (*or* KT) *or* WSW nnKMH (*or* KT) *or* W nnKMH (*or* KT) *or* WNW nnKMH (*or* KT) *or* NW nnKMH (*or* KT) *or* NNW nnKMH (*or* KT) *or* STNR
Changes in intensity (M)	Changes of maximum surface wind speed at time of observation	INTST CHANGE:	INTSF *or* WKN *or* NC
Central pressure (M)	Central pressure (in hPa)	C:	nnnHPA
Maximum surface wind (M)	Maximum surface wind near the centre (mean surface wind over 10 minutes, in kt)	MAX WIND:	nn[n]KT
Forecast of centre position (+6 HR) (M)	Day and time (in UTC) (6 hours from the DTG given in Item 5); Forecast position (in degrees and minutes) of the centre of the tropical cyclone	FCST PSN +6 HR:	nn/nnnnZ Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]

Element	*Detailed content*	*Template(s)*
Forecast of maximum surface wind (+6 HR) (M)	Forecast of maximum surface wind (6 hours after the DTG given in Item 5)	FCST MAX WIND nn[n]KT +6 HR:
Forecast of centre position (+12 HR) (M)	Day and time (in UTC) (12 hours from the DTG given in Item 5) Forecast position (in degrees and minutes) of the centre of the tropical cyclone	FCST PSN +12 HR: nn/nnnnZ Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]
Forecast of maximum surface wind (+12 HR) (M)	Forecast of maximum surface wind (12 hours after the DTG given in Item 5)	FCST MAX WIND nn[n]KT +12 HR:
Forecast of centre position (+18 HR) (M)	Day and time (in UTC) (18 hours from the DTG given in Item 5) Forecast position (in degrees and minutes) of the centre of the tropical cyclone	FCST PSN +18 HR: nn/nnnnZ Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]
Forecast of maximum surface wind (+18 HR) (M)	Forecast of maximum surface wind (18 hours after the DTG given in Item 5)	FCST MAX WIND nn[n]KT +18 HR:
Forecast of centre position (+24 HR) (M)	Day and time (in UTC) (24 hours from the DTG given in Item 5) Forecast position (in degrees and minutes) of the centre of the tropical cyclone	FCST PSN +24 HR: nn/nnnnZ Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]
Forecast of maximum surface wind (+24 HR) (M)	Forecast of maximum surface wind (24 hours after the DTG given in Item 5)	FCST MAX WIND nn[n]KT +24 HR:
Remarks (M)	Remarks, as necessary	RMK: *Free text up to 256 characters* *or* NIL

Element	*Detailed content*	*Template(s)*
Expected time of issuance of next advisory (M)	Expected year, month, day and time (in UTC) of issuance of next advisory	NXT MSG: [BFR] nnnnnnnn/nnnnZ *or* NO MSG EXP

([1]) Used only when the message is issued to indicate that a test or an exercise is taking place. When the word 'TEST' or the abbreviation 'EXER' is included, the message may contain information that should not be used operationally or will otherwise end immediately after the word 'TEST'.

([2]) In the case of CB clouds associated with a tropical cyclone covering more than one area within the area of responsibility, this element can be repeated, as necessary.

([3]) The number of coordinates should be kept to a minimum and should not normally exceed seven.'

39. Appendix 8 is replaced by the following:

‘*Appendix 8*

Ranges and resolutions for the numerical elements included in volcanic ash advisory, tropical cyclone advisory, SIGMET, AIRMET, aerodrome and wind shear warnings			
Elements		Range	Resolution
Summit elevation:	FT	000–27 000	1
	M	000–8 100	1
Advisory number:	for VA (index) ([1])	000–2 000	1
	for TC (index) ([1])	00–99	1
Maximum surface wind:	KT	00–99	1
Central pressure:	hPa	850–1 050	1
Surface wind speed:	KT	30–99	1
Surface visibility:	M	0000–0750	50
	M	0800–5 000	100
Cloud: height of base:	FT	000–1 000	100
Cloud: height of top:	FT	000–9 900	100
	FT	10 000–60 000	1000
Latitudes:	° (degrees)	00–90	1
	(minutes)	00–60	1
Longitudes:	° (degrees)	000–180	1
	(minutes)	00–60	1
Flight levels:		000–650	10
Movement:	KMH	0–300	10
	KT	0–150	5

([1]) Non-dimensional.’