



Date: 1.6.2020 التاريخ:

الإشارة: 20/418/DDG/ASD/4

Deputy Director General for Kuwait International Airport Affairs,
Directorate General of Civil Aviation,
Kuwait.

Subject: Notice of Proposed Amendment's (NPA) No. 2020-05 to Kuwait Civil Aviation Safety Regulations KCASR 3 (METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION) Rev 2.

Dear Sir,

Purpose:

The purpose of this NPA is to announce to the KCASR users the intention of the Directorate General of Civil Aviation to amend KCASR 3 (METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION) Rev 2 (issue 4) In order to comply with ICAO standers and recommended practices up to amendment (79).

Action Required:

All users of KCASR are required to refer to DGCA/ASD website (<https://kcasr.dgca.gov.kw>) for reviewing the NPA and mail their comments to DGCA by 06/Aug/2020 using the attached NPA Response Sheet Forms No. 1500 or using NPA comments & feedback form on the website. If we do not receive your response by this date, it will be assumed that you do not have any comments on the proposal.

If required, the DGCA/Aviation Safety Department personnel are available to answer your questions on the interpretation and intended implementation of the proposed amendments.

This is for your information and distribution to the concerned parties.

Yours Sincerely,

Deputy Director General for Aviation Safety
& Air Transport.


Eng. Emad F. Al-Jelwi
Deputy Director General For Aviation
Safety, Air Transport, Civil Aviation
Security Department



Cc: President of Civil Aviation.
Director General of Civil Aviation.
Aviation Safety Director.
Air Transport Director.
Inspection & oversight Superintendent.
Head of Standards & Aviation Safety Regulations Division

E.M



NPA RESPONSE FORM
NPA



Please add your comments on the proposal by ticking [✓] the appropriate box below.

Any additional constructive comments, suggested amendments or alternative action will be welcome and may be provided on this response sheet or by separate correspondence.

No comments on the proposal.

Comments on the proposal. (Please provide explanatory comment).

Name:

Organization:

Address/Contact No:

E-Mail:

Signature:

Date:

Notes on the presentation of the Amendment
Notice Of Proposed Amendment
(NPA)

The text of the amendment is arranged to show deleted text in Red Color and with a line through it, new text to be inserted is in Blue color as shown below:

~~Text to be deleted is in Red and shown with a line through it.~~

Text to be deleted

New text to be inserted is in Blue Color.

New text to be inserted

~~Text to be deleted is in Red and shown with a line through it,~~ followed by the replacement text which is in Blue Color.

New text to replace existing text

. . . Indicates that remaining text is unchanged in front or following the reflected amendment.

Text is unchanged

Notice Of Safety Regulation Amendment
(NPA, NSRA and Revisions)

| Side bar indicates that text is changed or added.



الطيران المدني
Civil Aviation
دولة الكويت - State of Kuwait

Kuwait Civil Aviation Safety Regulations

KCASR 3 – METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION



Amendment Record

Amendment No	Date of Issue	Remarks
1	June 2018	Part Rename
2	September 2018	Reg Circular 2018-23 (ICAO Amendment 78) NPA 2018-15
<u>3</u>	<u>June 2020</u>	<u>NPA 2020-05 Updated to ICAO Annex 3 (Amendment 79)</u>



SIGMET information. Information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations.

Space weather centre (SWXC). A centre designated to monitor and provide advisory information on space weather phenomena expected to affect high-frequency radio communications, communications via satellite, GNSS-based navigation and surveillance systems and/or pose a radiation risk to aircraft occupants.

Note. – A space weather centre is designated as global and/or regional.

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

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

Threshold. The beginning of that portion of the runway usable for landing.

Touchdown zone. The portion of a runway, beyond the threshold, where it is intended landing aeroplanes first contact the runway.

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

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

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

Visibility. Visibility for aeronautical purposes is the greater of:

- a) the greatest distance at which a black object of suitable dimensions, situated near the ground, can be seen and recognized when observed against a bright background;
- b) the greatest distance at which lights in the vicinity of 1000 candelas can be seen and identified against an unlit background.

Note:- The two distances have different values in air of a given extinction coefficient, and the latter b) varies with the background illumination. The former a) is represented by the meteorological optical range (MOR).

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

VOLMET. Meteorological information for aircraft in flight.

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authority, to provide or to arrange for the provision of meteorological service for international air navigation on its behalf. Details of the meteorological authority so designated shall be included in the State aeronautical information publication, in accordance with KCASR 15, Chapter 5.

Note. Detailed specifications concerning presentation and contents of the aeronautical information publication is provided in PANS-AIM (Doc 10066), Appendix 2.

- 2.1.5 The Kuwait DGCA shall ensure that the designated meteorological authority complies with the requirements of the World Meteorological Organization (WMO) in respect of competencies, education and qualifications, training of meteorological personnel providing service for international air navigation.

Note:- Requirements concerning qualifications competencies, education and training of meteorological personnel in aeronautical meteorology are given in (WMO Publication No. 49), Technical Regulations, 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.

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

- 2.2.1 Close liaison shall be maintained between those concerned with the supply and those concerned with the use of meteorological information on matters which affect the provision of meteorological service for international air navigation.

- 2.2.2 The Kuwait DGCA shall ensure that the designated meteorological authority referred to in 2.1.4 establishes and implements 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 2.1.2.

- 2.2.3 The quality system established in accordance with 2.2.2 should be in conformity with the International Organization for Standardization (ISO) 9000 series of quality assurance standards and should be certified by an approved organization.

Note.: The International Organization for Standardization (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 each State and in most cases are unique to the State organization. Guidance on the establishment and implementation of a quality [management](#) system is given in the ~~Manual on the Quality Management System for the Provision of Meteorological Service to International Air Navigation (Doc 9873)~~ [Guide to the Implementation of Quality Management Systems for National Meteorological and Hydrological Services and Other Relevant Service Providers \(WMO-No. 1100\)](#).

- 2.2.4 The quality system should 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 should not be supplied to the users unless it is validated with the originator.

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3.4.3 The boundaries of the area over which meteorological watch is to be maintained by a meteorological watch office should be coincident with the boundaries of a flight information region or a control area or a combination of flight information regions and/or control areas.

3.4.4 An MWO should 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 harmonized SIGMET provision.

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).

3.5 Volcanic ash advisory centres

3.5.1 The State of Kuwait when accepted, the responsibility for providing a VAAC within the framework of the international airways volcano watch, shall arrange for that centre to respond to a notification that a volcano has erupted, or is expected to erupt or volcanic ash is reported in its area of responsibility, by arranging for that centre to:

- a) monitor relevant geostationary and polar-orbiting satellite data and, where available, relevant ground-based and airborne data, to detect the existence and extent of volcanic ash in the atmosphere in the area concerned;

Note.— *Relevant ground-based and airborne data includes data derived from Doppler weather radar, ceilometers, lidar and passive infrared sensors.*

- b) activate the volcanic ash numerical trajectory/dispersion model in order to forecast the movement of any ash “cloud” which has been detected or reported;

Note:- *The numerical model may be its own or, by agreement, that of another VAAC.*

- c) issue advisory information regarding the extent and forecast movement of the volcanic ash “cloud” to:

- 1) meteorological watch offices, area control centres and flight information centres serving flight information regions in its area of responsibility which may be affected;
- 2) other VAACs whose areas of responsibility may be affected;
- 3) world area forecast centres, international OPMET databanks, international NOTAM offices, and centres designated by regional air navigation agreement for the operation of aeronautical fixed service Internet-based services; and
- 4) airlines requiring the advisory information through the AFTN address provided specifically for this purpose; and

Note:- *The AFTN address to be used by the VAACs is given in the Handbook on the International Airways Volcano Watch (IAVW) (Doc 9766) which is available on the ICAO IAVWOPSG website.*

- d) issue updated advisory information to the meteorological watch offices, area control centres, flight information centres and VAACs referred to in c), as necessary, but at least every six hours until such time as:

- 1) the volcanic ash “cloud” is no longer identifiable from satellite data and, where available, ground-based and airborne data.

- 2) no further reports of volcanic ash are received from the area; and

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3) no further eruptions of the volcano are reported.

3.5.2 Volcanic ash advisory centres shall maintain a 24-hour watch.

In case of interruption of the operation of a VAAC, its functions shall be carried out by another VAAC or another meteorological centre, as designated by the VAAC Provider State concerned.

Note:- Back-up procedures to be used in case of interruption of the operation of a VAAC are included in the Handbook on the International Airways Volcano Watch (IAVW) (Doc 9766).

3.6 State volcano observatories

Contracting States with active or potentially active volcanoes shall arrange that selected State volcano observatories, monitor these volcanoes and when observing:

- a) significant pre-eruption volcanic activity, or a cessation thereof;
- b) a volcanic eruption, or a cessation thereof; and/or
- c) volcanic ash in the atmosphere shall send this information as quickly as practicable to their associated ACC/FIC, MWO and VAAC.

Note 1.- Pre-eruption volcanic activity in this context means unusual and/or increasing volcanic activity which could presage a volcanic eruption.

Note 2.- Doc 9766 contains guidance material about active or potentially active volcanoes.

3.7 Tropical cyclone advisory centres

The State of Kuwait when accepted, the responsibility for providing a TCAC shall arrange for that centre to:

- a) monitor the development of tropical cyclones in its area of responsibility, using geostationary and polar-orbiting satellite data, radar data and other meteorological information;
- b) issue advisory information concerning the position of the cyclone centre, [changes in intensity at time of observation](#), its direction and speed of movement, central pressure and maximum surface wind near the centre, in abbreviated plain language to:
 - 1) meteorological watch offices in its area of responsibility;
 - 2) other TCACs whose areas of responsibility may be affected; and
 - 3) world area forecast centres, international OPMET databanks, and centres designated by regional air navigation agreement for the operation of aeronautical fixed service Internet-based services; and
- c) issue updated advisory information to meteorological watch offices for each tropical

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APPENDIX 1. FLIGHT DOCUMENTATION - MODEL CHARTS AND FORMS

(See Chapter 9 of this Regulation.)

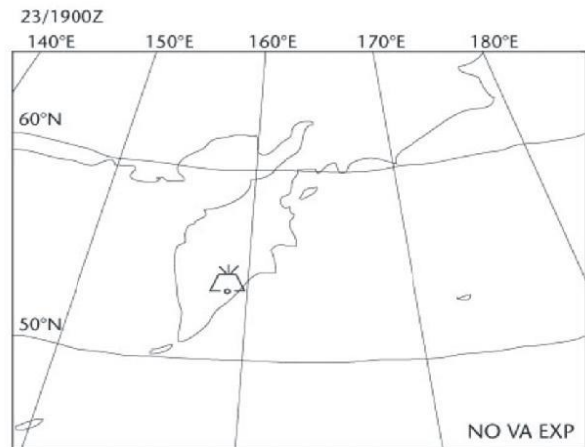
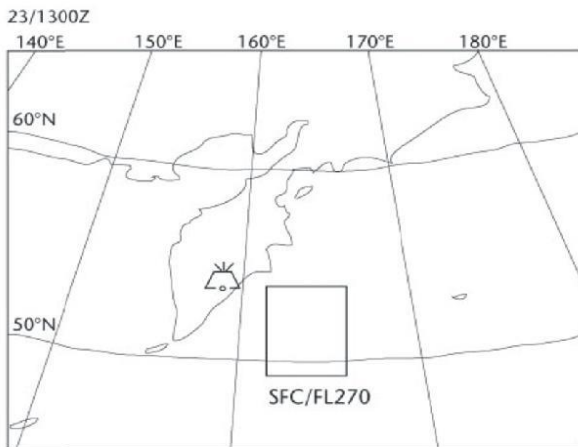
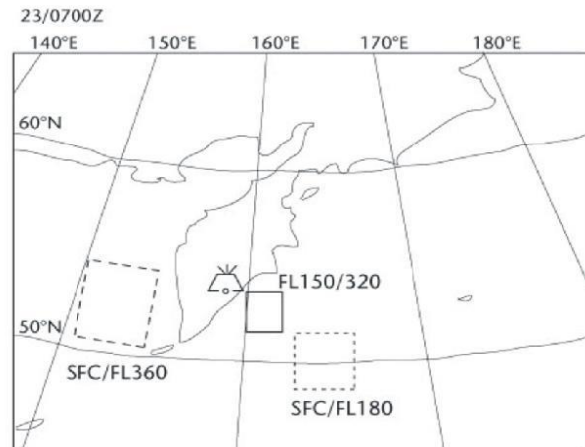
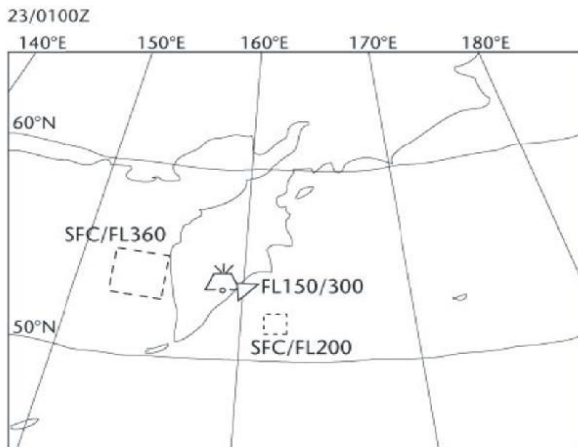
MODEL A	OPMET information
MODEL IS	Upper wind and temperature chart for standard isobaric surface Example 1. Arrows, feathers and pennants (Mercator projection) Example 2. Arrows, feathers and pennants (Polar stereographic projection)
MODEL SWH	Significant weather chart (high level) Example. Polar stereographic projection (showing the jet stream vertical extent)
MODEL SWM	Significant weather chart (medium level)
MODEL SWL	Significant weather chart (low level) Example 1 Example 2
MODEL TCG	Tropical cyclone advisory information in graphical format
MODEL VAG	Volcanic ash advisory information in graphical format Example 1. Mercator projection Example 2. Polar stereographic projection
MODEL STC	SIGMET for tropical cyclone in graphical format
MODEL SVA	SIGMET for volcanic ash in graphical format Example 1. Mercator projection Example 2. Polar stereographic projection
MODEL SGE	SIGMET for phenomena other than tropical cyclone and volcanic ash in graphical format
MODEL SN	Sheet of notations used in flight documentation



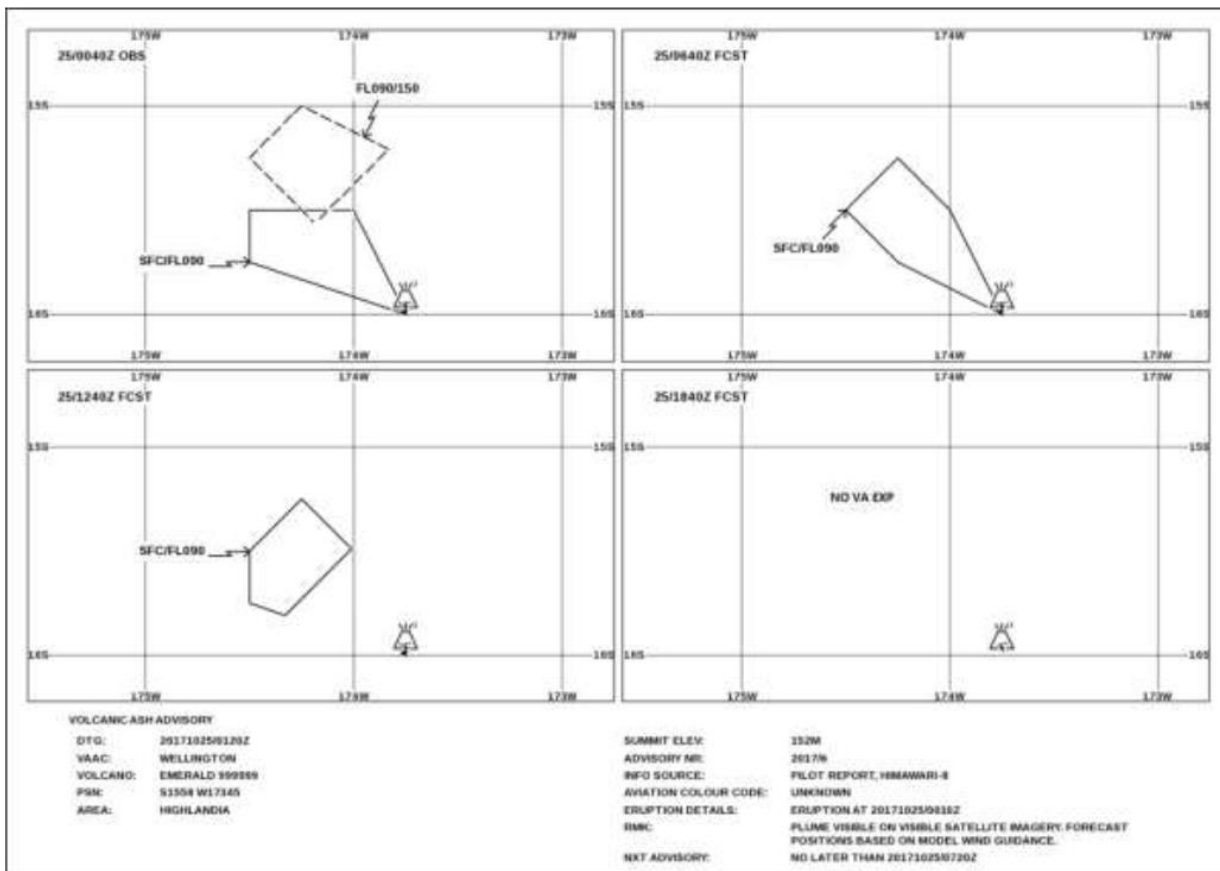
VOLCANIC ASH ADVISORY INFORMATION IN GRAPHICAL FORMAT

Example 1. Mercator projection

MODEL VA G

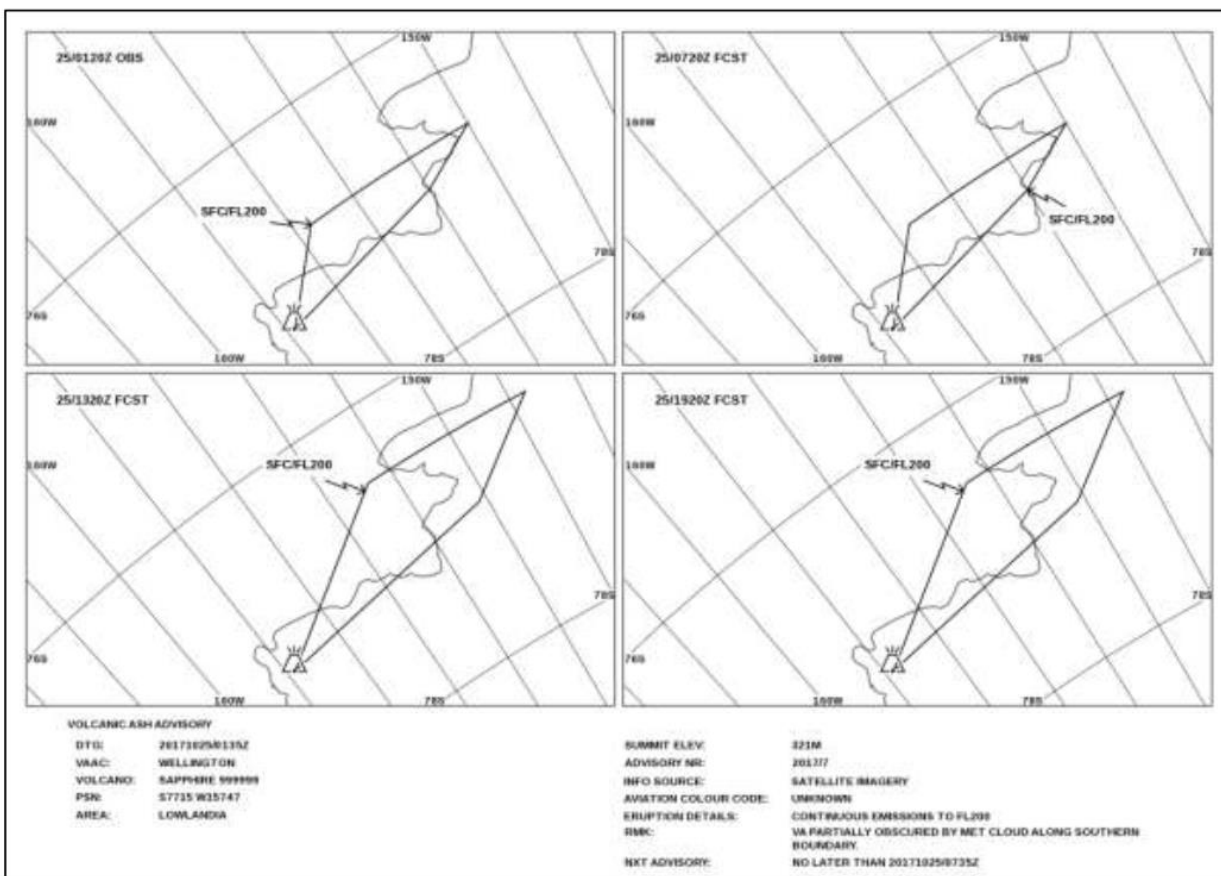


VOLCANIC ASH ADVISORY
 DTG: 20080923/0130Z
 VAAC: TOKYO
 VOLCANO: KARYMSKY 1000-13
 AREA: RUSSIAN FEDERATION
 SUMMIT ELEV: 1536M
 ADVISORY NR: 2008/4
 INFO SOURCE: MTSAT-1R, KVERT KEMSD
 AVIATION COLOUR CODE: RED
 ERUPTION DETAILS: ERUPTED AT 20080923/0000Z FL300 REPORTED
 RMK: LATEST REP FM KVERT (0120Z) INDICATES ERUPTION HAS CEASED
 TWO DISPERSING VA CLD ARE EVIDENT ON SATELLITE IMAGERY
 NXT ADVISORY: 20080923/0730Z



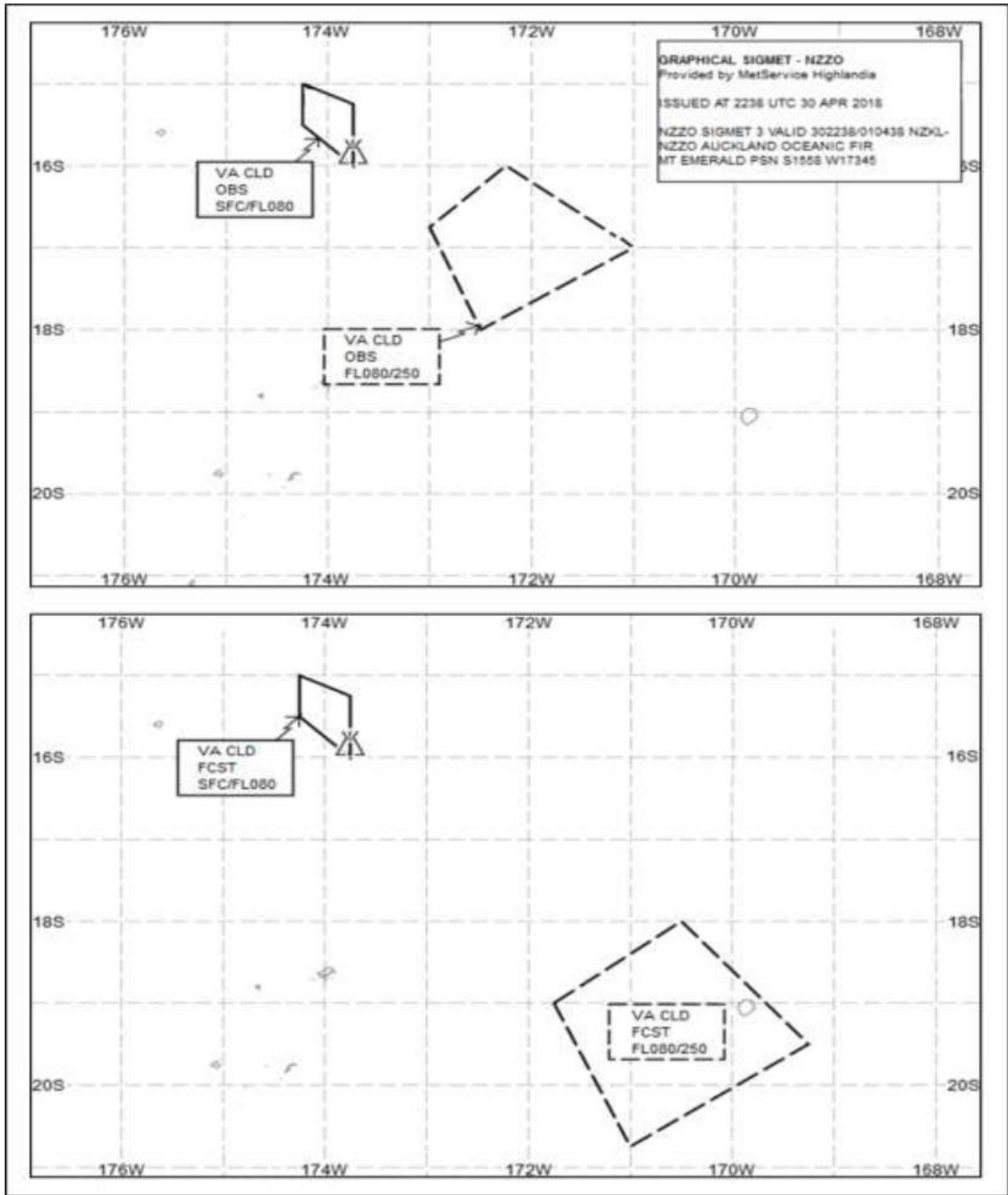


Example 2. Polar stereographic projection



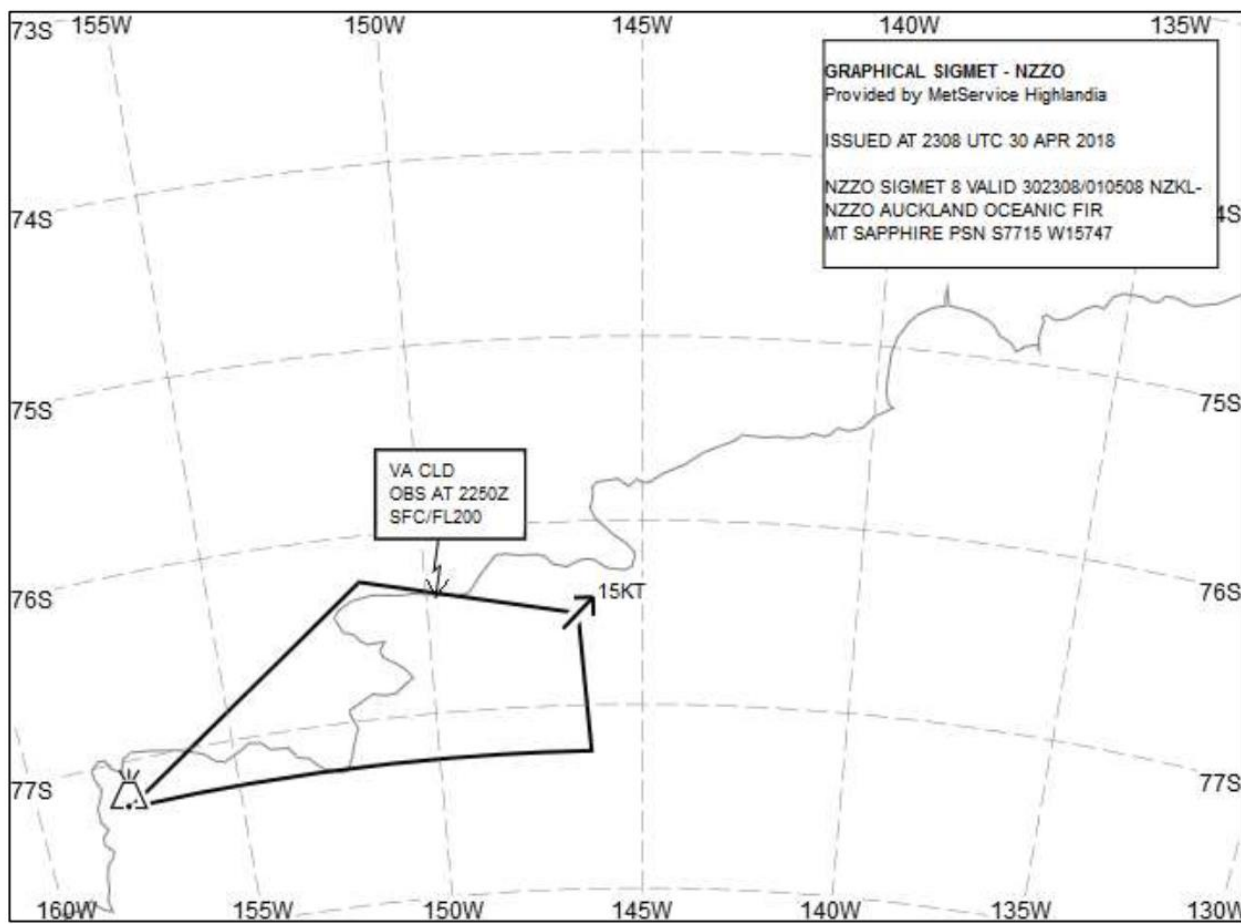


Example 1. Mercator projection





Example2. Polar stereographic projection





APPENDIX 2. TECHNICAL SPECIFICATIONS RELATED TO GLOBAL SYSTEMS, SUPPORTING CENTRES AND METEOROLOGICAL OFFICES

(See Chapter 3 of this Regulation.)

1. WORLD AREA FORECAST SYSTEM

1.1 Formats and codes

WAFCs shall adopt uniform formats and codes for the supply of forecasts.

1.2 Upper-air gridded forecasts

1.2.1 The forecasts of upper wind; upper-air temperature; and humidity; direction, speed and flight level of maximum wind; flight level and temperature of tropopause, areas of cumulonimbus clouds, icing, ~~clear-air and in-cloud turbulence~~, and geopotential altitude of flight levels shall be prepared four times a day by a W AFC and shall be valid for fixed valid times at 6, 9, 12, 15, 18, 21, 24, 27, 30, 33 and 36 hours after the time (0000, 0600, 1200 and 1800 UTC) of the synoptic data on which the forecasts were based. ~~The dissemination of each~~ Each forecast ~~shall be in the above order and shall be completed~~ as soon as technically feasible but not later than 6-5 hours after standard time of observation.

1.2.2 The grid point forecasts prepared by a W AFC shall comprise:

- a) wind and 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);
- b) flight level and temperature of tropopause;
- c) direction, speed and flight level of maximum wind;
- d) humidity data for flight levels 50 (850 hPa), 80 (750 hPa), 100 (700 hPa), 140 (600 hPa) and 180 (500 hPa);
- e) horizontal extent and flight levels of base and top of cumulonimbus clouds;
- f) 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);
~~f) Note. — Layers centred at a flight level referred to in f) have a depth of 100 hPa.~~
~~clear-air 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); and~~
- ~~h) in-cloud turbulence for layers centred at flight levels 100 (700 hPa), 140 (600 hPa), 180 (500 hPa), 240 (400 hPa) and 300 (300 hPa); and~~

~~**Note 1.**— Layers centred at a flight level referred to in f) and h) have a depth of 100 hPa.~~

~~**Note 21.**— Layers centred at a flight level referred to in g) have a depth of 100 hPa for flight levels below 240, then 50 hPa for flight levels 240 and above.~~



Note 2. — Turbulence referred to in g) above encompasses all types of turbulence, including clear-air and in-cloud turbulence

h) 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).

†) Note.— The exact pressure levels (hPa) for a), d), f), g), and h) are provided in the Manual of Aeronautical Meteorological Practice (Doc 8896).

1.2.3 The foregoing grid point forecasts shall be issued by a WAFC in binary code form using the GRIB code form prescribed by WMO.

Note.- The GRIB code form is contained in WMO Publication No. 306, Manual on Codes, Volume I.2, Part B - Binary Codes.

1.2.4 The foregoing grid point forecasts a), b), c), d) and h) shall be prepared by a WAFC in a regular grid with a horizontal resolution of 1.25° of latitude and longitude.

1.2.4 1.2.5 The foregoing grid point forecasts e), f) and g) shall be prepared by a WAFC in a regular grid with a horizontal resolution of 0.25° of latitude and longitude

1.3 Significant weather (SIGWX) forecasts

1.3.1 General provisions

1.3.1.1 Forecasts of significant en-route weather phenomena shall be prepared as SIGWX forecasts four times a day by a WAFC and shall be valid for fixed valid times at 24 hours after the time (0000, 0600, 1200 and 1800 UTC) of the synoptic data on which the forecasts were based. ~~The dissemination of each~~ Each forecast shall be ~~completed~~ disseminated as soon as technically feasible but not later than ~~9-7~~ 9 hours after standard time of observation under normal operations and not later than 9 hours after standard time of observation during backup operations.

1.3.1.2 SIGWX forecasts shall be issued in binary code form using the BUFR code form prescribed by WMO.

Note.- The BUFR code form is contained in WMO Publication No. 306, Manual on Codes, Volume I.2, Part B - Binary Codes.

1.3.1.3 As of 4 November 2021, in addition to 1.3.1.2, SIGWX forecasts should be disseminated in IWXXM GML form.

Note 1.— Guidance on the implementation of IWXXM is provided in the Manual on the ICAO Meteorological Information Exchange Model (IWXXM) (Doc 10003).

Note 2. — Geography markup language (GML) is an encoding standard of the Open Geospatial Consortium (OGC).

1.3.2 Types of SIGWX forecasts

SIGWX forecasts shall be issued as high-level SIGWX forecasts for flight levels between 250 and 630.

Note.- Medium-level SIGWX forecasts for flight levels between 100 and 250 for limited geographical areas will continue to be issued until such time that flight documentation to be generated from the gridded forecasts

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2. AERODROME METEOROLOGICAL OFFICES

2.1 Use of WAFS products

2.1.1 Aerodrome meteorological offices shall use forecasts issued by the WAFCs in the preparation of flight documentation, whenever these forecasts cover the intended flight path in respect of time, altitude and geographical extent, unless otherwise agreed between the meteorological authority and the operator concerned.

2.1.2 In order to ensure uniformity and standardization of flight documentation, the WAFS GRIB and BUFR data received and, as of 4 November 2021, IWXXM data received, shall be decoded into standard WAFS charts in accordance with relevant provisions in this Regulation, and the meteorological content and identification of the originator of the WAFS forecasts shall not be amended.

2.2 Notification of WAFS concerning significant discrepancies

Aerodrome meteorological offices using WAFS BUFR or, as of 4 November 2021, IWXXM data shall notify the WAFS 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/duststorms; and
- b) volcanic eruptions or a release of radioactive materials into the atmosphere, of significance to aircraft operations.

The WAFS receiving the message shall acknowledge its receipt to the originator, together with a brief comment on the report and any action taken, using the same means of communication employed by the originator.

Note:- Guidance on reporting significant discrepancies is provided in the Manual of Aeronautical Meteorological Practice (Doc 8896).

3. VOLCANIC ASH ADVISORY CENTRES (VAAC)

3.1 Volcanic ash advisory information

3.1.1 The advisory information on volcanic ash issued in abbreviated plain language, using approved ICAO abbreviations and numerical values of self-explanatory nature, shall be in accordance with the template shown in Table A2-1. When no approved ICAO abbreviations are available, English plain language text, to be kept to a minimum, shall be used.

3.1.2 As of 5 November 2020, volcanic ash advisory information shall be disseminated in IWXXM GML form in addition to the issuance of this advisory information in accordance with 3.1.1.

Note. The technical specifications for IWXXM are contained in the Manual on Codes (WMO-No. 306), Volume I.3, Part D — Representation Derived from Data Models. Guidance on the implementation of IWXXM is provided in the Manual on the ICAO Meteorological Information Exchange Model (IWXXM) (Doc 10003).

3.1.5 The volcanic ash advisory information listed in Table A2-1, when prepared in graphical format, shall be as specified in Appendix 1 and issued using the portable network graphics (PNG) format.



Table A2-1. Template for advisory message for volcanic ash

Key: M = inclusion mandatory, part of every message;
 O = inclusion optional;
 C = inclusion conditional, included whenever applicable;
 = = 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 advisory messages for volcanic ash are shown in Appendix 6, Table A6-4.

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

Note 3.- Inclusion of a “colon” after each element heading is mandatory.

Note 4.- The numbers 1 to 18 are included only for clarity and they are not part of the advisory message, as shown in the example.

Element	Detailed content	Template(s)	Examples
1	Identification of the type of message (M)	Type of message	VA ADVISORY
2	Status indicator (C) 1	Indicator of test or exercise	STATUS: TEST or EXER
3	Time of origin (M)	Year, month, day, time in UTC	DTG: nnnnnnnn/nnnnZ
4	Name of VAAC (M)	Name of VAAC	VAAC: TOKYO
5	Name of volcano (M)	Name and IAVCEI ¹ number of volcano	VOLCANO: KARYMSKY 4000-13300130 or VOLCANO: UNNAMED UNKNOWN
6	Location of volcano (M)	Location of volcano in degrees and minutes	PSN: Nnnnnn or Snnnn Wnnnnn or Ennnnn or UNKNOWN
7	State or region (M)	State, or region if ash is not reported over a State	AREA: Nnnnnnnnnnnnnnnn Or UNKNOWN
8	Summit elevation (M)	Summit elevation in m (or ft)	SUMMIT ELEV: nnnnM (or nnnnnFT)
9	Advisory number (M)	Advisory number: year in full and message number (separate sequence for each volcano)	ADVISORY NR: nnnn/nnnn
10	Information source (M)	Information source using free text	INFO SOURCE: Free text up to 32 characters
11	Colour code (O)	Aviation colour code	AVIATION COLOUR CODE: RED or ORANGE or YELLOW or GREEN or UNKNOWN or



			NOT GIVEN or NIL	CODE:
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Element	Detailed content	Template(s)	Examples
12	Eruption details (M)	ERUPTION DETAILS: Free text up to 64 characters or UNKNOWN	ERUPTION AT N DETAILS: 20080923/0000 Z FL300 REPORTED <u>NO ERUPTION</u> – <u>RESUSPENDE</u> <u>D VA6</u> <u>UNKNOWN</u>
13	Time of observation (or estimation) of ash (M)	OBS (or EST) VA DTG: nn/nnnnZ	OBS VA DTG: 23/0100Z
14	Observed or estimated ash cloud (M)	OBS VA CLD or EST VA CLD: TOP FLnnn or SFC/FLnnn or FLnnn/nnn [nnKM WID LINE ² 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) ³ or VA NOT IDENTIFIABLE FM SATELLITE DATA WIND FLnnn/nnn	OBS VA CLD: FL250/300 N5 E15930 – 400 N5 E16100 – 400 N5 E15945 300 MOV SE 20KT SFC/FL200 N5 E16130 – 130 N5 E16230 – 130 N5 E16230 – 230 N5 E16130 230 MOV SE 15KT TOP FL240 MOV W 40KMH VA NOT IDENTIFIABLE FM SATELLITE DATA WIND FL050/070 180/12MPS



<i>Element</i>	<i>Detailed content</i>	<i>Template(s)</i>	<i>Examples</i>
441 5 Forecast height and position of the ash clouds (+6 HR) (M)	Day and time (in UTC) (6 hours from the "Time of observation (or estimation) of ash" given in Item 12); Forecast height and position (in degrees and minutes) for each cloud mass for that fixed valid time	FCST VA CLD nn/nnnnZ +6 HR: SFC or FLnnn/[FL]nnn [nnKM WID LINE ² 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]] ³ or NO VA EXP or NOT AVBL or NOT PROVIDED	FCST VA CLD 23/0700Z +6 HR: FL250/350 N5 E16030 – 130 N5 E16230 – 130 N5 E16230 – 330 N5 E16030 330 SFC/FL180 N4 E16330 – 830 N4 E16630 – 830 N5 E16630 – 130 N5 E16330 130 NO VA EXP NOT AVBL NOT PROVIDED
451 6 Forecast height and position of the ash clouds (+12 HR) (M)	Day and time (in UTC) (12 hours from the "Time of observation (or estimation) of ash" given in Item 12); Forecast height and position (in degrees and minutes) for each cloud mass for that fixed valid time	FCST VA CLD nn/nnnnZ +12 HR: SFC or FLnnn/[FL]nnn [nnKM WID LINE ² 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]] ³ or NO VA EXP or NOT AVBL or NOT PROVIDED	FCST VA CLD 23/1300Z SFC/FL270 +12 HR: N4830 E16130 – N4830 E16600 – N5300 E16600 – N5300 E16130 NO VA EXP NOT AVBL NOT PROVIDED



Element	Detailed content	Template(s)	Examples	
161 7	Forecast height and position of the ash clouds (+18 HR) (M)	Day and time (in UTC) (18 hours from the "Time of observation (or estimation) of ash" given in Item 12); Forecast height and position (in degrees and minutes) for each cloud mass for that fixed valid time	FCST VA CLD +18 HR: nn/nnnnZ SFC or FLnnn/[FL]nnn [nnKM WID LINE ² 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]] ³ or NO VA EXP or NOT AVBL or NOT PROVIDED	FCST VA CLD +18 HR: 23/1900Z NO VA EXP NOT AVBL NOT PROVIDED
171 8	Remarks (M)	Remarks, as necessary	RMK: <i>Free text up to 256 characters</i> or NIL	RMK: LATEST REP FM KVERT (0120Z) INDICATES ERUPTION HAS CEASED. TWO DISPERSING VA CLD ARE EVIDENT ON SATELLITE IMAGERY RE- SUSPENDED VA ^{6,7} NIL
181 9	Next advisory (M)	Year, month, day and time in UTC	NXT ADVISORY : or NO LATER THAN nnnnnnnn/nnnnZ or NO FURTHER ADVISORIES or WILL BE ISSUED BY nnnnnnnn/nnnnZ	NXT 20080923/073 0Z ADVISORY: NO LATER THAN nnnnnnnn/nnn nZ NO FURTHER ADVISORIES WILL BE ISSUED BY nnnnnnnn/nnn nZ



Notes.—

1. Used only when the message 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". [Applicable 7 November 2019]
2. International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI).
3. 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.
4. Up to 4 selected layers.
5. If ash reported (e.g. AIREP) but not identifiable from satellite data.
6. -To be included (as free text) only for those situations where volcanic ash has been re-suspended.
7. To be included (as free text) where space in the remarks section allows.

Example A2-1. Advisory message for volcanic ash

FVFE01 RJTD 230130	
VA ADVISORY	
DTG:	20080923/0130Z
VAAC:	TOKYO
VOLCANO:	KARYMSKY 4000-13 <u>300130</u>
PSN:	N5403 E15927
AREA:	RUSSIA
SUMMIT ELEV:	1536M
ADVISORY NR:	2008/4
INFO SOURCE:	<u>HIMAWARI-8</u> MTSAT-1R KVERT KEMSD
AVIATION COLOUR CODE:	RED
ERUPTION DETAILS:	ERUPTION AT 20080923/0000Z FL300 REPORTED
OBS VA DTG:	23/0100Z
OBS VA CLD:	FL250/300 N5400 E15930 – N5400 E16100 – N5300 E15945 MOV SE 20KT SFC/FL200 N5130 E16130 – N5130 E16230 – N5230 E16230 – N5230 E16130 MOV SE 15KT
FCST VA CLD +6 HR:	23/0700Z FL250/350 N5130 E16030 – N5130 E16230 – N5330 E16230 – N5330 E16030 SFC/FL180 N4830 E16330 – N4830 E16630 – N5130 E16630 – N5130 E16330
FCST VA CLD +12 HR:	23/1300Z SFC/FL270 N4830 E16130 – N4830 E16600 – N5300 E16600 – N5300 E16130
FCST VA CLD +18 HR:	23/1900Z NO VA EXP
RMK:	LATEST REP FM KVERT (0120Z) INDICATES ERUPTION HAS CEASED. TWO DISPERSING VA CLD ARE EVIDENT ON SATELLITE IMAGERY
NXT ADVISORY:	20080923/0730Z



Table A2-2. Template for advisory message for tropical cyclones

Key: M = inclusion mandatory, part of every message; =
 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 advisory messages for tropical cyclones are shown in Appendix 6, Table A6-4.

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

Note 3.- Inclusion of a “colon” after each element heading is mandatory.

Note 4.- The numbers 1 to 21 are included only for clarity and they are not part of the advisory message, as shown in the example.

Element	Detailed content	Template(s)	Examples
1	Identification of the type of message (M)	Type of message	TC ADVISORY
2	Status indicator (C)1	Indicator of test or exercise	STATUS: TEST or EXER STATUS: EXER
3	Time of origin (M)	Year, month, day and time in UTC of issue	DTG: nnnnnnnn/nnnnZ DTG: 040925/1600Z
4	Name of TCAC (M)	Name of TCAC (location indicator or full name)	TCAC: nnnn or nnnnnnnnnn TCAC: YUFO ¹
5	Name of tropical Cyclone (M)	Name of tropical cyclone or “NN” for unnamed tropical cyclone	TC: nnnnnnnnnnnn or NN TC: MIAMI GLORIA
6	Advisory number (M)	Advisory number: Year in full and message number separate sequence (for each cyclone)	ADVIS Nnnn(n)(n)nn ARY NR: ADVIS 2004/13 ARYN R:
7	<u>Observed position of the centre (M)</u>	<u>Day and time (in UTC) and position of the centre of the tropical cyclone (in degrees and minutes)</u>	<u>OBS PS</u> <u>Nn/nnnnZ</u> <u>Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]</u> <u>OBS</u> <u>PSN:</u> <u>CB:25/</u> <u>1800z</u> <u>N2706</u> <u>W073</u> <u>06</u>



7	Observed position of the centre (M)	Day and time (in-UTC) and position of the centre of the tropical cyclone (in degrees and minutes)	<p>CB: OBSWI nnnKM (or nnnNM) OF TC CENTRE or WI4 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] – CB: Ennn[nn] – WI nnn[nn] [Nnn[nn] or Snn[nn] Wnnn[nn] or CENTRE: Ennn[nn] – or Nnn[nn] or Snn[nn] Wnnn[nn] or WI4 Nnn[nn] Ennn[nn] Ennn[nn] TOP [ABV or BLW] Nnn[nn] FLnnnNn/nnnnZ Ennn[nn] Nnn[nn] or Snn[nn] Wnnn[nn] or Nnn[nn] Ennn[nn] Ennn[nn] [Nnn[nn] Ennn[nn] Nnn[nn] Ennn[nn] TOP [AE</p>	<p>WI 25/1800z 250N M OF N2706- TC W07306 CENTRE RE TOP FL500 NIL OB S- PSN: WI 250NM OF TC CENTRE TOP FL500</p> <p>CB:</p>
8	Observed CB cloud3 (CO)	Location of CB cloud (referring to latitude and longitude (in degrees and minutes)) and vertical extent (flight level)		
9	Direction and speed of movement (M)	Direction and speed of movement given in sixteen compass points and km/h (or kt), respectively, or moving slowly (< 6 km/h (3 kt)) or stationary (< 2 km/h (1 kt))	<p>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 SLW or STNR</p>	<p>MOV: NW 20KMH</p>

Element	Detailed content	Template(s)	Examples
10 Changes in intensity (M)	Changes of maximum surface wind speed at time of observation	INTST CHANGE: INTSF or WKN or NC	NTST CHANGE: INTSF
40 11 Central pressure (M)	Central pressure (in hPa)	C: nnnHPA	C: 965HPA
44 12 Maximum surface Wind (M)	Maximum surface wind near the centre (mean over 10 minutes, in m/s (or kt))	MAX WIND: nn[n]MPS (or nn[n]KT)	MAX WIND: 22MPS



12 13	Forecast of centre position (+6 HR) (M)	Day and time (in UTC) (6 hours from the "DTG" given in Item 2); 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]	FCST PSN +6 HR: 25/2200Z N2748 W07350
13 14	Forecast of maximum surface wind (+6 HR) (M)	Forecast of maximum surface wind (6 hours after the "DTG" given in Item 2)	FCST MAX WIND +6 HR: nn[n]MPS (or nn[n]KT)	FCST MAX WIND +6 HR: 22MPS
14 15	Forecast of centre position (+12 HR) (M)	Day and time (in UTC) (12 hours from the "DTG" given in Item 2); 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]	FCST PSN +12 HR: 26/0400Z N2830 W07430
15 16	Forecast of maximum surface wind (+12 HR)	Forecast of maximum surface wind (12 hours after the "DTG" given in Item 2)	FCST MAX WIND +12 HR: nn[n]MPS (or nn[n]KT)	FCST MAX WIND +12 HR: 22MPS
16 17	Forecast of centre position (+18 HR) (M)	Day and time (in UTC) (18 hours from the "DTG" given in Item 2); 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]	FCST PSN +18 HR: 26/1000Z N2852 W07500
17 18	Forecast of maximum surface wind (+18 HR) (M)	Forecast of maximum surface wind (18 hours after the "DTG" given in Item 2)	FCST MAX WIND +18 HR: nn[n]MPS (or nn[n]KT)	FCST MAX WIND +18 HR: 21MPS



Element	Detailed content	Template(s)	Examples
18 19 Forecast of centre position (+24 HR) (M)	Day and time (in UTC) (24 hours from the "DTG" given in Item 2); Forecast position (in degrees and minutes) of the centre of the tropical cyclone	FCST PSN nn/nnnnZ +24 HR: Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]	FCST PSN 26/1600Z +24 HR: N2912 W07530
19 20 Forecast of maximum surface wind (+24 HR) (M)	Forecast of maximum surface wind (24 hours after the "DTG" given in Item 2)	FCST MAX nn[n]MPS WIND (or nn[n]KT) +24 HR:	FCST MAX 20MPS WIND +24 HR:
20 21 Remarks (M)	Remarks, as necessary	RMK: <i>Free text up to 256 characters or NIL</i>	RMK: NIL
24 22 Expected time of issuance of next advisory (M)	Expected year, month, day and time (in UTC) of issuance of next advisory	NXT [BFR] MSG: nnnnnnnn/nnnnZ or NO MSG EXP	NXT 20040925/2000Z MSG:

Note.—

1. *Used only when the message 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". [Applicable 7 November 2019]*
2. *Fictitious location.*
3. *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*
4. *The number of coordinates should be kept to a minimum and should not normally exceed seven.*



Example A2-2. Advisory message for tropical cyclones

TC ADVISORY

DTG: 20040925/1900Z
TCAC: YUFO
TC: GLORIA
ADVISARY NR: 2004/13
OBS PSN: 25/1800Z N2706 W07306
CB: WI 25NM OF TC CENTRE
MOV: NW 20KMH
INTST CHANGE: INTSF
C: 965HPA
MAX WIND: ~~22MPS~~25MPS
FCST PSN +6 HR: 25/2200Z N2748 W07350
FCST MAX WIND +6 HR: 22MPS
FCST PSN +12 HR: 26/0400Z N2830 W07430
FCST MAX WIND +12 HR: 22MPS
FCST PSN +18 HR: 26/1000Z N2852 W07500
FCST MAX WIND +18 HR: 21MPS
FCST PSN +24 HR: 26/1600Z N2912 W07530
FCST MAX WIND +24 HR: 20MPS
RMK: NIL
NXT MSG: 20040925/2000Z



Table A2-3. Template for advisory message for space weather information

Key: M = inclusion mandatory, part of every message

C = inclusion conditional, included whenever applicable

Note 1. The explanations for the abbreviations can be found in the Procedures for Air Navigation Services — ICAO Abbreviations and Codes (PANS-ABC, Doc 8400).

Note 2. The spatial resolutions are shown in Attachment E.

Note 3. Inclusion of a «colon» after each element heading is mandatory.

Note 4. The numbers 1 to 14 are included only for clarity and they are not part of the advisory message, as shown in the examples.

Element		Detailed content	Template(s)	Examples
1	Identification of the type of message (M)	Type of message	SWX ADVISORY	SWX ADVISORY
2	Status indicator (C) ¹		STATUS: TEST or EXER	STATUS: TEST STATUS: EXER
3	Time of origin (M)		DTG: nnnnnnnn/nnnnZ	DTG: 20161108/0100Z
4	Name of SWXC (M)		SWXC: Nnnnnnnnnnn	SWXC: DONLON
5	Advisory number (M)		ADVISORY NR: nnnn/[n][n][n]	ADVISORY NR: 2016/1
6	Number of advisory being replaced (C)		NR RPLC: nnnn/[n][n][n]	NR RPLC: 2016/1
7	Space weather effect and intensity (M)	Effect and intensity of the space weather phenomena	HF COM MOD or SEV [AND] ³ or SATCOM MOD or SEV [AND] ³ or GNSS MOD or SEV or HF COM MOD or SEV AND [AND] ³ GNSS MOD or SEV or RADIATIONMOD or SEV	SWX EFFECT: HF COM MOD GNSS SEV SWX EFFECT: GNSS SEV SWX EFFECT: HF COM MOD AND SWX EFFECT: SATCOM MOD AND GNSS MOD RADIATION MOD SWX EFFECT: SATCOM SEV



8	Observed or expected extent of space weather phenomena (M)	Time: day, time in UTC; Observed (or forecast if phenomena have yet to occur); horizontal extent 2 (latitude bands and longitude in degrees) and/or altitude of space weather phenomena	OBS or FCST SWX: DAYLIGHT SIDE or HNH and/or MNH and/or EQN and/or EQS and/or MSH and/or HSH and Wnnn(nn) or Ennn(nn) – Wnnn(nn) or Ennn(nn) and/or ABV FLnnn or FLnnn–nnn and/or 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]] or NO SWX EXP	OBS SWX: FCST SWX: OBS SWX:	08/0100Z DAYLIGHT SIDE 08/0100Z HNH HSH W18000 – W09000 ABV FL350 08/0100Z HNH HSH E18000-W18000 08/0100Z S2000 W17000 – S2000 W13000 – S1000 W13000 – S1000 W17000 – S2000 W17000 NO SWX EXP
9	Forecast of the phenomena for the next 6 hours (M)	Day, time (in UTC) (6 hours from time given in item 8, rounded to the next full hour); Forecast extent and/or altitude of the space weather phenomena for the fixed valid time	FCST SWX +6 HR: nn/nnnn_ZDAYLIGHT SIDEorHNH_and/or_MNH_ and/orEQNand/orEQSand/orM SH_and/or_HSHandWnnn(nn) or Ennn(nn) –Wnnn(nn) or Ennn(nn) and/or_ABV FLnnnor FLnnn–nnnorNnn[nn] and/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]]orNO SWX EXPor NOT AVBL	FCST SWX +6 HR: FCST SWX +6 HR: FCST SWX +6 HR:	08/0700Z DAYLIGHT SIDE 08/0700Z HNH HSH W18000 – W09000 ABV FL350 08/0700Z HNH HSH E18000-W18000 NO SWX EXP NOT AVBL



10	Forecast of the phenomena for the next 12 hours (M)	Day, time (in UTC) (12 hours from time given in item 8, rounded to the next full hour); Forecast extent and/or altitude of the space weather phenomena for the fixed valid time	nn/nnnnZ DAYLIGHT SIDE or HNH and/or MNH and/or EQN and/or EQS and/or MSH and/or HSH and Wnnn(nn) or Ennn(nn) – Wnnn(nn) or Ennn(nn) and/or ABV FLnnn or FLnnn–nnn and/or 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] or NO SWX EXP or NOT AVBL	FCST SWX +12 HR: FCST SWX +12 HR: FCST SWX +12 HR:	08/1300Z DAYLIGHT SIDE 08/1300Z HNH HSH W18000 – W09000 ABV FL350 08/1300Z HNH HSH E18000-W18000 NO SWX EXP NOT AVBL
11	Forecast of the phenomena for the next 18 hours (M)	Day, time (in UTC) (18 hours from time given in item 8, rounded to the next full hour); Forecast extent and/or altitude of the space weather phenomena for the fixed valid time	nn/nnnnZDAYLIGHT SIDEorHNH_and/or_ MNHand/or_EQN_and/orEQS_ and/or_MSH_and/or_HSH_and_ Wnnn(nn) or Ennn(nn) – Wnnn(nn) or Ennn(nn)and/orABV FLnnn_or FLnnn–nnnorNnn[nn] and/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]]orNO SWX EXPor NOT AVBL	FCST SWX +18 HR: FCST SWX +18 HR: FCST SWX +18 HR:	08/1900Z DAYLIGHT SIDE 08/1900Z HNH HSH W18000 – W09000 ABV FL350 08/1900Z HNH HSH E18000-W18000 NO SWX EXP NOT AVBL



12	Forecast of the phenomena for the next 24 hours (M)	Day, time (in UTC) (24 hours from time given in item 8, rounded to the next full hour); Forecast extent and/or altitude of the space weather phenomena for	FCST SWX +24 HR:	nn/nnnnZ DAYLIGHT SIDE or HNH and/or MNH and/or EQN and/or EQS and/or MSH and/or HSH and Wnnn(nn) or Ennn(nn) – Wnnn(nn) or Ennn(nn) and/or ABV FLnnn or FLnnn–nnn and/or 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]] or NO SWX EXP or NOT AVBL	FCST SWX +24 HR: FCST SWX +24 HR: FCST SWX +24 HR:	09/0100Z DAYLIGHT SIDE 09/0100Z HNH HSH W18000 – W09000 ABV FL350 09/0100Z HNH HSH E18000-W18000 NO SWX EXP NOT AVBL
13	Remarks (M)	Remarks, as necessary	RMK :	Free text up to 256 characters or NIL	RMK: RMK: RMK:	SWX EVENT HAS CEASED WWW.SPACEWEAT HERPROVIDER.GOV NIL
14	Next advisory (M)	Year, month, day and time in UTC	NXT ADVISOR Y:	nnnnnnnn/nnnnZ or NO FURTHER ADVISORIES or WILL BE ISSUED BY	NXT ADVISORY: NXT ADVISORY: WILL BE ISSUED BY:	20161108/0700Z NO FURTHER ADVISORIES 20210726/1800Z

Notes.

1. ~~1-~~ Used only when the message 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”. [Applicable 7 November 2019].
2. Fictitious location.
- ~~3~~ One or more effects with the same intensity may be combined.
3.
4. ~~2-~~ One or more latitude ranges ~~should~~ may be included in the space weather advisory information for “GNSS” and “RADIATION.”



Table A3-2. Template for METAR and SPECI

Key: M = inclusion mandatory, part of every message;
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 shown in Table A3-5 of this appendix.

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

Element as specified in Chapter 4	Detailed content	Template(s)	Examples
Identification of the type of report (M)	Type of report (M)	METAR, METAR COR, SPECI or SPECI COR	METAR METAR COR SPECI
Location indicator (M)	ICAO location indicator (M)	nnnn	YUDO ¹
Time of the observation (M)	Day and actual time of the observation in UTC (M)	nnnnnnZ	221630Z
Identification of an automated or missing report (C) ²	Automated or missing report identifier (C)	AUTO or NIL	AUTO NIL

END OF METAR IF THE REPORT IS MISSING.

Surface wind (M)	Wind direction (M)	Nnn or /// ¹²	VRB	24004MPS VRB01MPS
	Wind speed (M)	[P]nn[n] // ¹²		///10MPS (24008KT) (VRB02KT)240//KT 19006MPS ///KT (19012KT) 00000MPS (00000KT) 140P149MPS (140P99KT)
	Significant speed variations (C) ³	G[P]nn[n]		12003G09MPS
	Units of measurement (M)	MPS (or KT)		(12006G18KT) 24008G14MPS (24016G28KT)
	Significant directional variations (C) ⁴	nnnVnnn		02005MPS 350V070 (02010KT 350V070)
	Visibility (M)	Prevailing or minimum visibility (M) ⁵	nNnnn or /// ¹²	C A V O K
Minimum visibility and direction of the minimum visibility (C) ⁶		nnnn[N] or nnnn[NE] or nnnn[E] or nnnn[SE] or nnnn[S] or nnnn[SW] or nnnn[W] or nnnn[NW]		2000 1200NW 6000 2800E 6000 2800



Runway visual range (C) ⁷	Name of the element (M)	R			R32/0400 R12R/1700 R10/M0050 R14L/P2000
	Runway (M)	nn[L]/or nn[C]/or nn[R]/			
<i>Element as specified in Chapter 4</i>	<i>Detailed content</i>	<i>Template(s)</i>			<i>Examples</i>
	Runway visual range (M)	[P or M]nnnn <u>or</u> <u>////</u> ¹²			R16L/0650 R16C/0500 <u>R16L///// R10/////</u> R16R/0450 R17L/0450
	Runway visual range past tendency (C) ⁸	U, D or N			R12/1100U R26/0550N R20/0800D R12/0700
Present weather (C) ^{2, 9}	Intensity or proximity of present weather (C) ¹⁰	- or +	—	VC	
	Characteristics and type of present weather (M) ¹¹	DZ or RA or SN or SG or PL or DS or SS or FZDZ or FZRA or FZUP ¹² or FC ¹³ or SHGR or SHGS or SHRA or SHSN or SHUP ¹² or TSGR or TSGS or TSRA or TSSN or TSUP ¹² or UP ¹²	FG or BR or SA or DU or HZ or FU or VA or SQ or PO or TS or BCFG or BLDU or or BLSA or BLSN or DRDU or DRSA or DRSN or FZFG or MIFG or PRFG or <u>////</u> ¹²	FG or PO or FC or DS or SS or TS or SH or BLSN or BLSA or BLDU or VA	RA HZ VCFG +TSRA FG VCSH +DZ VA VCTS -SN MIFG VCBLSA +TSRASN -SNRA DZ FG +SHSN BLSN UP FZUP TSUP FZUP //
Cloud (M) ¹⁴	Cloud amount and height of cloud base or vertical visibility (M)	FEWnn n or SCTnn n or BKNnn n or OVCnn n or FEW/// ¹ ² or SCT/// ¹² or BKN/// ¹ ² or	VVnnn or VV/// ¹²	NSC or NCD ¹²	FEW015 VV005 OVC030 VV/// NSC SCT010 OVC020 BKN/// //015



		OVC/// ¹ 2 or ///nnn ¹² or /////1 ²				
	Cloud type (C) ²	CB or TCU or /// ¹²	—			BKN009TCU NCD SCT008 BKN025CB BKN025/// /////CB ///// BKN///TCU
Air and dew-point temperature (M)	Air and dew-point temperature (M)	[M]nn/[M]nnor ///[M]nn12 or [M]nn///12 or ///12				17/10 ///10 17/// 02/M08 M01/M10
Pressure values (M)	Name of the element (M)	Q				Q0995
	QNH (M)	Nnnnnnnn or /// ¹²				Q1009 Q1022 Q/// Q0987
Supplementary information (C)	Recent weather (C) ^{2,9}	REFZDZ or REFZRA or REDZ or RE[SH]RA or RERASN or RE[SH]SN or RESG or RESHGR or RESHGS or REBLN or RESS or REDS or RETSRA or RETSSN or RETSGR or RETSGS or RETS or REFC or REVA or REPL or REUP ¹² or REFZUP ¹² or RETSUP ¹² or RESHUP ¹² or RE// ¹²				REFZRA RETSRA
	Wind shear (C) ²	WS Rnn[L] or WS Rnn[C] or WS Rnn[R] or WS ALL RWY				WS R03 WS ALL RWY WS R18C
	Sea-surface temperature and state of the sea or significant wave height (C) ¹⁵	W[M]nn/Sn or W[M]nn/Hn[n]n] W[M]nn/Sn or W///Sn or W[M]nn/S/ or W[M]nn/Hn[n]n] or W///Hn[n]n] or W[M]nn/H///				W15/S2 W12/H75 W///S3 WM01/S/ W///H104 W17/H/// W///H/// W///S/
Trend forecast (O) ¹⁶	Change indicator (M) ¹⁷	NOSIG	BECMG or TEMPO			NOSIG
	Period of change (C) ²		FMnnnn and/or TLnnnn or ATnnnn			BECMG FEW020
	Wind (C) ²		nnn[P]nn[n][G[P]nn[n]]_MPS (or nnn[P]nn[G[P]nn]_KT)			TEMPO 25018G25MPS (TEMPO 25036G50KT)
	Prevailing visibility (C) ²		nnnn		C A V O	BECMG FM1030 TL1130 CAVOK BECMG TL1700 0800 FG BECMG AT1800 9000 NSW BECMG FM1900 0500 +SNRA BECMG FM1100 SN TEMPO FM1130 BLSN



				K	TEMPO FM0330 TL0430 FZRA
Weather phenomenon: intensity (C) ¹⁰	- or +	—	N S W		
Weather phenomenon: characteristics and type (C) ^{2, 9, 11}	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) ^{2, 14}	FEWnnn or SCTnnn or BKNnnn or OVCnnn	VVnnn or VV///	N S C		TEMPO TL1200 0600 BECMG AT1200 8000 NSW NSC BECMG AT1130 OVC010
Cloud type (C) ^{2, 14}	CB or TCU	—			TEMPO TL1530 +SHRA BKN012CB

Notes.—

1. Fictitious location.
2. To be included whenever applicable.
3. To be included in accordance with 4.1.5.2 c).
4. To be included in accordance with 4.1.5.2 b) 1).
5. To be included in accordance with 4.2.4.4 b).
6. To be included in accordance with 4.2.4.4 a).
7. To be included if visibility or runway visual range < 1 500 m; for up to a maximum of four runways in accordance with 4.3.6.5 b).
8. To be included in accordance with 4.3.6.6.
9. One or more, up to a maximum of three groups, in accordance with 4.4.2.8 a), 4.8.1.1 and Appendix 5, 2.2.4.1.
10. To be included whenever applicable; no qualifier for *moderate* intensity in accordance with 4.4.2.7.
11. Precipitation types listed under 4.4.2.3 a) may be combined in accordance with 4.4.2.8 c) and Appendix 5, 2.2.4.1. Only moderate or heavy precipitation to be indicated in trend forecasts in accordance with Appendix 5, 2.2.4.1.
12. When a meteorological element is temporarily missing, or its value considered temporarily as incorrect, it is replaced by “/” for each digit of the abbreviation of the text message and indicated as missing for its IWXXM version. For automated reports only.
13. Heavy used to indicate tornado or waterspout; moderate (no qualifier) to indicate funnel cloud not reaching the ground.
14. Up to four cloud layers in accordance with 4.5.4.3 e).
15. ~~To be included in accordance with 4.8.1.5.~~

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1.3 Special air-reports by voice communications

When voice communications are used, the elements contained in special air-reports shall be:

Message type designator

Section 1 (Position information)

- Aircraft identification
- Position or latitude and longitude
- Time
- Level or range of levels

Section 3 (Meteorological information)

Condition prompting the issuance of a special air-report, to be selected from the list presented in Table A4-1.

Note 1.- Air-reports are considered routine by default. The message type designator for special air-reports is specified in the PANS-ATM (Doc 4444), Appendix 1.

Note 2.- In the case of a special air-report of pre-eruption volcanic activity, volcanic eruption or volcanic ash cloud, additional requirements are indicated in 4.2.

2. CRITERIA FOR REPORTING

2.1 General

When air-ground data link is used, the wind direction, wind speed, wind quality flag, air temperature, turbulence and humidity included in air-reports shall be reported in accordance with the following criteria.

2.2 Wind direction

The wind direction shall be reported in terms of degrees true, rounded to the nearest whole degree.

2.3 Wind speed

The wind speed shall be reported in metres per second or knots, rounded to the nearest 1 m/s (1 knot). The units of measurement used for the wind speed shall be indicated.

2.4 Wind quality flag

The wind quality flag shall be reported as 0 when the roll angle is less than 5 degrees and as 1 when the roll angle is 5 degrees or more.

2.5 Air temperature

The air temperature shall be reported to the nearest tenth of a degree Celsius.

2.6 Turbulence

The turbulence shall be reported in terms of the cube root of the eddy dissipation rate (EDR).

Note. *The EDR is an aircraft-independent measure of turbulence. However, the relationship between the EDR value and the perception of turbulence is a function of aircraft type, and the mass, altitude, configuration and airspeed of the aircraft. The EDR values given below describe the severity levels for a medium-sized transport aircraft under typical en-route conditions (i.e. altitude, airspeed and weight).*



2.6.1 Routine air-reports

The turbulence shall be reported during the en-route phase of the flight and shall refer to the 15-minute period immediately preceding the observation. Both the average and peak value of turbulence, together with the time of occurrence of the peak value to the nearest minute, shall be observed. The average and peak values shall be reported in terms of ~~the cube root of~~ EDR. The time of occurrence of the peak value shall be reported as indicated in Table A4-2. The turbulence shall be reported during the climb-out phase for the first 10 minutes of the flight and shall refer to the 30-second period immediately preceding the observation. The peak value of turbulence shall be observed.

2.6.2 Interpretation of the turbulence report

Turbulence shall be considered:

- a) severe when the peak value ~~of the cube root of~~ EDR equals or exceeds ~~0.7~~0.45;
- b) moderate when the peak value ~~of the cube root of~~ EDR is equals or above ~~0.4~~0.20 and below ~~or equal to 0.7~~0.45;
- c) light when the peak value of ~~the cube root of~~ EDR is equals or above ~~0.1~~0.10 and below ~~or equal to 0.4~~0.20; and
- d) nil when the peak value ~~of the cube root of~~ EDR is below or equal to ~~0.1~~0.10.

Note. The EDR is an aircraft-independent measure of turbulence. However, the relationship between the EDR value and the perception of turbulence is a function of aircraft type, and the mass, altitude, configuration and airspeed of the aircraft. The EDR values given above describe the severity levels for a medium-sized transport aircraft under typical on-route conditions (i.e. altitude, airspeed and weight).

2.6.3 Special air-reports

Special air-reports on turbulence shall be made during any phase of the flight whenever the peak value of the cube root of EDR ~~equals or~~ exceeds ~~0.4~~0.20. The special air-report on turbulence shall be made with reference to the 1-minute period immediately preceding the observation. Both the average and peak value of turbulence shall be observed. The average and peak values shall be reported in terms of ~~the cube root of~~ EDR. Special air-reports shall be issued every minute until such time as the peak values ~~of the cube root of~~ EDR fall below ~~0.4~~0.20.

2.7 Humidity

The humidity shall be reported as the relative humidity, rounded to the nearest whole per cent.

Note.- The ranges and resolutions for the meteorological elements included in air-reports are shown in Table A4-3.

3. EXCHANGE OF AIR-REPORTS

3.1 Responsibilities of the meteorological watch offices

- 3.1.1 The meteorological watch office shall transmit without delay the special air-reports received by voice communications to the WAFCs and the centres designated by regional air navigation agreement for the operation of aeronautical fixed service Internet-based services..
- 3.1.2 The meteorological watch office shall transmit without delay special air-reports of pre-eruption volcanic activity, a volcanic eruption or volcanic ash cloud received to the associated VAACs.
- 3.1.3 When a special air-report is received at the meteorological watch office but the forecaster considers that the phenomenon causing the report is not expected to persist and, therefore,

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Table A4-1. Template for the special air-report (downlink)

Key: M = inclusion mandatory, part of every message;
C = inclusion conditional; included whenever available.

Note.- Message to be prompted by the pilot-in-command. Currently only the condition “SEV TURB” can be automated (see 2.6.3).

<i>Element as specified in Chapter 5</i>	<i>Detailed content</i>	<i>Template(s)</i>	<i>Examples</i>
Message type designator (M)	Type of air-report (M)	ARS	ARS
Aircraft identification (M)	Aircraft radiotelephony call sign (M)	nnnnnn	VA812
DATA BLOCK 1			
Latitude (M)	Latitude in degrees and minutes (M)	Nnnnn or Snnnn	S4506
Longitude (M)	Longitude in degrees and minutes (M)	Wnnnnn or Ennnnn	E01056
Level (M)	Flight level (M)	FLnnn or FLnnn to FLnnn	FL330 FL280 to FL310
Time (M)	Time of occurrence in hours and minutes (M)	OBS AT nnnnZ	OBS AT 1216Z
DATA BLOCK 2			
Wind direction (M)	Wind direction in degrees true (M)	nnn/	262/
Wind speed (M)	Wind speed in metres per second (or knots) (M)	nnnMPS (or nnnKT)	40MPS (080KT)
Wind quality flag (M)	Wind quality flag (M)	n	1
Air temperature (M)	Air temperature in tenths of degrees C (M)	T[M]nnn	T127 TM455
Turbulence (C)	Turbulence in hundredths of m ^{2/3} s ⁻¹ and the time of occurrence of the peak value (C) ¹	EDRnnn/nn	EDR064/08
Humidity (C)	Relative humidity in per cent (C)	RHnnn	RH054
DATA BLOCK 3			

<i>Element as specified in Chapter 5</i>	<i>Detailed content</i>	<i>Template(s)</i>	<i>Examples</i>
Condition prompting the issuance of a special air-report (M)		SEV TURB [EDRnnn] ² or SEV ICE or SEV MTW or TS GR ³ or TS ³ or HVY DS⁴ or HVY SS ⁴ or VA CLD [FL nnn/nnn] or VA ⁵ [MT nnnnnnnnnnnnnnnnnnnnnn] or MOD TURB [EDRnnn] ² or MOD ICE	SEV TURB EDR076 VA CLD FL050/100

Notes.—

1. The time of occurrence to be reported in accordance with Table A4-2.
2. The turbulence to be reported in accordance with 2.6.3.
3. Obscured, embedded or widespread thunderstorms or thunderstorms in squall lines.
4. Duststorm or sandstorm.
5. Pre-eruption volcanic activity or a volcanic eruption.



4. CRITERIA RELATED TO AREA FORECASTS FOR LOW-LEVEL FLIGHTS

4.1 ~~4.1~~ — Format and content of GAMET area forecasts

When prepared in GAMET format, area forecasts shall contain two sections: Section I related to information on en-route weather phenomena hazardous to low-level flights, prepared in support of the issuance of AIRMET information, and Section II related to additional information required by low-level flights. The content and order of elements in a GAMET area forecast, when prepared, shall be in accordance with the template shown in Table A5-3. Additional elements in Section II shall be included in accordance with regional air navigation agreement. Elements which are already covered by a SIGMET message shall be omitted from GAMET area forecasts.

4.2 ~~4.2~~ — Amendments to GAMET area forecasts

When a weather phenomenon hazardous to low-level flights has been included in the GAMET area forecast and the phenomenon forecast does not occur, or is no longer forecast, a GAMET AMD shall be issued, amending only the weather element concerned.

Note.- Specifications regarding the issuance of AIRMET information amending the area forecast in respect of weather phenomena hazardous for low-level flights are given in Appendix 6.

4.3 Content of area forecasts for low-level flights in chart form

4.3.1 When chart form is used for area forecasts for low-level flights, the forecast of upper wind and upper-air temperature shall be issued for points separated by no more than 500 km (300 NM) and for at least the following altitudes: 600, 1500 and 3000 m (2000, 5000 and 10000 ft), and 4500 m (15000 ft) in mountainous areas.

4.3.2 When chart form is used for area forecasts for low-level flights, the forecast of SIGWX phenomena shall be issued as low-level SIGWX forecast for flight levels up to 100 (or up to flight level 150 in mountainous areas, or higher, where necessary). Low-level SIGWX forecasts shall include the following items:

- a) the phenomena warranting the issuance of a SIGMET as given in Appendix 6 and which are expected to affect low-level flights; and
- b) the elements in area forecasts for low-level flights as given in Table A5-3 except elements concerning:
 - 1) upper winds and temperatures; and
 - 2) forecast QNH.

Note.- Guidance on the use of terms "ISOL", "OCNL" and "FRQ" referring to cumulonimbus and towering cumulus clouds, and thunderstorms is given in Appendix 6.

~~4.3~~ ~~4.4~~ — Exchange and dissemination of area forecasts for low-level flights

4.4

4.4.1 Area forecasts for low-level flights prepared in support of the issuance of AIRMET information shall be exchanged between aerodrome meteorological offices and/or meteorological watch offices responsible for the issuance of flight documentation for low-level flights in the flight information regions concerned.

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4.4.2 Area forecasts for low-level flights, in support of international air navigation, prepared in accordance with regional air navigation agreement and in support of the issuance of AIRMET information should be disseminated to the aeronautical fixed service Internet-based services.

Table A5-1. Template for TAF

Key: M = inclusion mandatory, part of every message;
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 shown in Table A5-4 of this appendix.

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

<i>Element as specified in Chapter 6</i>	<i>Detailed content</i>	<i>Template(s)</i>	<i>Examples</i>
Identification of the type of forecast (M)	Type of forecast (M)	TAF or TAF AMD or TAF COR	TAF TAF AMD
Location indicator (M)	ICAO location indicator (M)	Nnnn	YUDO ¹
Time of issue of forecast (M)	Day and time of issue of the forecast in UTC (M)	nnnnnZ	16000Z
Identification of a missing forecast (C)	Missing forecast identifier (C)	NIL	NIL
END OF TAF IF THE FORECAST IS MISSING.			
Days and period of validity of forecast (M)	Days and period of the validity of the forecast in UTC (M)	nnnn/nnnn	0812/0918
Identification of a cancelled forecast (C)	Cancelled forecast identifier (C)	CNL	CNL
END OF TAF IF THE FORECAST IS CANCELLED.			
Surface wind (M)	Wind direction (M)	nnn or VRB ²	24004MPS; VRB01MPS (24008KT); (VRB02KT)
	Wind speed (M)	[P]nn[n]	19005MPS (19010KT)
	Significant speed variations (C) ³	G[P]nn[n]	00000MPS (00000KT)
	Units of measurement (M)	MPS (or KT)	140P49MPS (140P99KT)
			12003G09MPS (12006G18KT)
			24008G14MPS



recognized;

- c) isolated (ISOL) if it consists of individual features which affect, or are forecast to affect, an area with a maximum spatial coverage less than 50 per cent of the area concerned (at a fixed time or during the period of validity); and
- d) occasional (OCNL) if it consists of well-separated features which affect, or are forecast to affect, an area with a maximum spatial coverage between 50 and 75 per cent of the area concerned (at a fixed time or during the period of validity).

4.2.2 An area of thunderstorms shall be considered frequent (FRQ) if within that area there is little or no separation between adjacent thunderstorms with a maximum spatial coverage greater than 75 per cent of the area affected, or forecast to be affected, by the phenomenon (at a fixed time or during the period of validity).

4.2.3 Squall line (SQL) shall indicate a thunderstorm along a line with little or no space between individual clouds.

4.2.4 Hail (GR) shall be used as a further description of the thunderstorm, as necessary.

4.2.5 Severe and moderate turbulence (TURB) shall refer only to: low-level turbulence associated with strong surface winds; rotor streaming; or turbulence whether in cloud or not in cloud (CAT). Turbulence should not be used in connection with convective clouds.

4.2.6 Turbulence shall be considered:

- a) severe whenever the peak value ~~of the cube root~~ of EDR equals or exceeds ~~0.70.45~~; and
- b) moderate whenever the peak value ~~of the cube root~~ of EDR is equals or above ~~0.40.20~~ and below ~~or equal to~~ ~~0.70.45~~.

4.2.7 Severe and moderate icing (ICE) shall refer to icing in other than convective clouds. Freezing rain (FZRA) should refer to severe icing conditions caused by freezing rain.

4.2.8 A mountain wave (MTW) shall be considered:

- a) severe whenever an accompanying downdraft of 3.0 m/s (600 ft/min) or more and/or severe turbulence is observed or forecast; and
- b) moderate whenever an accompanying downdraft of 1.75–3.0 m/s (350–600 ft/min) and/or moderate turbulence is observed or forecast.

4.2.9 Sandstorm/duststorm shall be considered:

- a) heavy whenever the visibility is below 200 m and the sky is obscured; and
- b) moderate whenever the visibility is:
 - 1) below 200 m and the sky is not obscured; or
 - 2) between 200 m and 600 m.

5. SPECIFICATIONS RELATED TO AERODROME WARNINGS

5.1 Format and dissemination of aerodrome warnings

5.1.1 The aerodrome warnings shall be issued in accordance with the template in Table A6-2 where

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		HVY DS HVY SS [VA ERUPTION] [MT] [nnnnnnnnnn] [PSN Nnn[nn] or Snn[nn] Ennn[nn] or Wnnn[nn]] VA CLD RDOACT CLD	OVC CLD nnn/[ABV]nnnnM (or OVC CLD nnn/[ABV][n]nnnnFT) or OVC CLD SFC/[ABV]nnnnM (or OVC CLD SFC/[ABV][n]nnnnFT) ISOL ¹⁷ CB ¹⁹ OCNL ¹⁸ CB ¹⁹ FRQ ¹⁰ CB ¹⁹ ISOL ¹⁷ TCU ¹⁷ OCNL ¹⁸ TCU ¹⁹ FRQ ¹⁰ TCU ¹⁹ MOD TURB ¹³ MOD ICE ¹⁴ MOD MTW ¹⁵	HVY SS VA ERUPTION MT ASHVAL ² PSN S15 E073 VA CLD RDOACT CLD	270/ABV3000M (OVC CLD 900/ABV10000FT) OVC CLD SFC/3000M OVC CLD SFC/ABV10000FT ISOL CB OCNL CB FRQ CB ISOL TCU OCNL TCU FRQ TCU MOD TURB MOD ICE MOD MTW
Observed or forecast phenomenon (M) ^{20,21}	Indication whether the information is observed and expected to continue, or forecast	OBS [AT nnnnZ] or FCST [AT nnnnZ]		OBS OBS AT 1210Z FCST FCST AT 1815Z	
Location (C) ^{20,21,33}	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 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 <u>LINE²⁴LINE²²</u> or NE OF <u>LINE²⁴LINE²²</u> or E OF <u>LINE²⁴LINE²²</u> or SE OF <u>LINE²⁴LINE²²</u> or S OF <u>LINE²⁴LINE²²</u> or SW OF <u>LINE²⁴LINE²²</u> or W OF <u>LINE²⁴LINE²²</u> or NW OF <u>LINE²⁴LINE²²</u> Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] –	N48 E010 N2020 W07005 S60 W160 S0530 E16530 N OF N50 S OF N5430 N OF S10 S OF S4530 W OF W155 W OF E15540 E OF W45 E OF E09015 N OF N1515 AND W OF E13530 S OF N45 AND N OF N40 N OF LINE S2520 W11510 – S2520 W12010 SW OF LINE N50 W005 – N60 W020 SW OF LINE N50 W020 – N45 E010 AND NE OF LINE N45 W020 – N40 E010 WI N6030 E02550 – N6055 E02500 – N6050 E02630 – N6030 E02550 APRX 50KM WID LINE BTN N64 W017 – N60 W010 – N57 E010 ENTIRE FIR ENTIRE UIR ENTIRE FIR/UIR ENTIRE CTA		



		<p>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]]</p> <p>[AND N OF <u>LINE²⁴</u>-<u>LINE²²</u> or NE OF <u>LINE²⁴</u>-<u>LINE²²</u> or E OF <u>LINE²⁴</u>-<u>LINE²²</u> or SE OF <u>LINE²⁴</u>-<u>LINE²²</u> or S OF <u>LINE²⁴</u>-<u>LINE²²</u> or SW OF <u>LINE²⁴</u>-<u>LINE²²</u> or W OF <u>LINE²⁴</u>-<u>LINE²²</u> or NW OF <u>LINE²⁴</u>-<u>LINE²²</u> 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]]</p> <p>or WI ^{24,22,26,23} 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]</p> <p>or APRX nnKM WID <u>LINE²³</u>-<u>LINE²²</u> BTN (or nnNM WID <u>LINE²⁴</u>-<u>LINE²²</u> 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]]</p> <p>or ENTIRE FIR/[UIR]²⁶</p> <p>or ENTIRE <u>CTA²⁶</u>-<u>CTA²⁴</u></p> <p><u>or²²</u>-<u>or²⁵</u></p> <p>WI nnnKM (or nnnNM) OF TC CENTRE</p>	<p>WI 400KM OF TC CENTRE WI 250NM OF TC CENTRE WI 30KM OF N6030 E02550†</p>
<p>Level (C)^{20,21}</p>	<p>Flight level or altitude</p>	<p>[SFC]/FLnnn or [SFC]/nnnnM (or [SFC]/[n]nnnnFT) or FLnnn/nnn or TOP FLnnn or [TOP] ABV FLnnn or [nnnn]/nnnnM (or [[n]nnnn]/[n]nnnnFT) or [nnnnM]/FLnnn (or [[n]nnnnFT]/FLnnn)</p> <p>or ²⁴</p> <p>TOP [ABV or BLW] FLnnn</p>	<p>FL180 SFC/FL070 SFC/3000M SFC/10000FT FL050/080 TOP FL390 ABV FL250 TOP ABV FL100 ABV 7000FT TOP ABV 9000FT TOP ABV 10000FT 3000M 2000/3000M 8000FT 6000/12000FT 2000M/FL150 10000FT/FL250 TOP FL500</p>



				TOP ABV FL500 TOP BLW FL450
Movement or expected movement (C) ^{20, 26, 34, 40, 26}	Movement or expected movement (direction and speed) with reference to one of the sixteen 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		MOV SE MOV NNW MOV E 40KMH (MOV E 20KT) MOV WSW 20KT STNR
Changes in intensity (C) ²⁰	Expected changes in intensity	INTSF or WKN or NC		INTSF WKN NC
Forecast time (C) ^{20, 21, 26, 27}	Indication of the forecast time of phenomenon	FCST AT nnnnZ	—	FCST AT 2200Z —
TC forecast position (C) ^{21, 23}	Forecast position of TC centre at the end of the validity period of the SIGMET message	TC CENTRE PSN Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] or ³¹ <u>TC CENTRE PSN Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] CB</u>	-	TC CENTRE PSN N1030 E16500015 <u>TC CENTRE PSN N1015 E15030 CB</u>
Forecast position (C) ^{20, 21, 26, 27, 33, 9}	Forecast position of phenomenon at the end of the validity period of the SIGMET message ³²	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]	—	N30 W170 N OF N30 S OF S50 AND W OF E170 S OF N46 AND N OF N39 NE OF LINE N35 W020 – N45 W040 SW OF LINE N48 W020 – N43 E010 AND NE OF LINE N43 W020 – N38 E010 WI N20 W090 – N05 W090 – N10 W100 – N20 W100 – N20 W090



		<p>or N OF LINE²⁴-LINE²² or NE OF LINE²⁴-LINE²² or E OF LINE²⁴-LINE²² or SE OF LINE²⁴-LINE²² or S OF LINE²⁴-LINE²² or SW OF LINE²⁴-LINE²² or W OF LINE²⁴- LINE²² or NW OF LINE²⁴- LINE²² 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 LINE²⁴-LINE²² or NE OF LINE²⁴-LINE²² or E OF LINE²⁴-LINE²² or SE OF LINE²⁴- LINE²² or S OF LINE²⁴-LINE²² or SW OF LINE²⁴-LINE²² or W OF LINE²⁴-LINE²² or NW OF LINE²⁴-LINE²² 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]]]</p>		<p>APRX 50KM WID LINE BTN N64 W017 – N57 W005 – N55 E010 – N55 E030</p> <p>ENTIRE FIR ENTIRE UIR</p> <p>ENTIRE FIR/UIR</p> <p>ENTIRE CTA</p> <p>TC CENTRE PSN N2740 W07345</p> <p>NO VA EXP</p> <p>WI 30KM OF N6030 E02550 †</p> <p><u>WI 150NM OF TC CENTRE</u></p>	
		<p>or WI 24-2422.23 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]]</p> <p>or APRX nnKM WID LINE²⁴- LINE²² BTN (nnNM WID LINE²⁴-LINE²² 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]]</p> <p>or ENTIRE FIR/[UIR]²⁶ -</p> <p>or ENTIRE CTA²⁶-CTA</p> <p>or²² TC CENTRE PSN Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]</p> <p>or²³-or²⁸ NO VA EXP or²⁴-or²⁵ WI nnKM (or nnNM) OF Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] or²⁴ <u>WI nnKM (nnnNM) OF TC CENTRE</u></p>			



Repetition of elements (C) ^{29,5}	Repetition of elements included in a SIGMET message for volcanic ash cloud or tropical cyclone	[AND] ^{29,4}	—	AND	—
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OR

Cancellation of SIGMET/ AIRMET (C) ^{30,28}	Cancellation of SIGMET/AIRMET referring to its identification	CNL SIGMET [n][n]n nnnnnn/nnnnnn or ^{28,3} CNL SIGMET [n][n]n nnnnnn/nnnnnn [VA MOV TO nnnn FIR] ²⁴	CNL AIRMET [n][n]n nnnnnn/nnnn nn	CNL SIGMET 2 101200/101600 CNL SIGMET A13 251030/251430 VA MOV TO YUDO FIR ²	CNL AIRMET 05 151520/151800
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Notes:-

1. See 4.1.
2. Fictitious location.
3. In accordance with 1.1.3 and 2.1.2.
4. See 2.1.3.
5. Used only when the message 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". [Applicable 7 November 2019]
6. In accordance with 1.1.4 and 2.1.4.
7. In accordance with 4.2.1 a).
8. In accordance with 4.2.4.
9. In accordance with 4.2.1 b).
10. In accordance with 4.2.2.
11. In accordance with 4.2.3.
12. Used for unnamed tropical cyclones.
13. In accordance with 4.2.5 and 4.2.6.
14. In accordance with 4.2.7.
15. In accordance with 4.2.8.
16. In accordance with 2.1.4.
17. In accordance with 4.2.1 c).
18. In accordance with 4.2.1 d).
19. The use of cumulonimbus (CB) and towering cumulus, (TCU) is restricted to AIRMETs in accordance with 2.1.4.
20. In the case of volcanic ash cloud ~~or 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 is to be preceded by an observed or forecast time.
21. 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.
22. A straight line is to be used between two points drawn on a map in the Mercator projection or between two points which crosses lines of longitude at a constant angle.
23. The number of coordinates are to be kept to a minimum and should not normally exceed seven.
20. —
21. —



~~22.1. Only for SIGMET messages for volcanic ash cloud and tropical cyclones.~~

24. Only for SIGMET messages for tropical cyclones.

25. Only for SIGMET messages for volcanic ash 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. [Applicable from 7 November 2019 until 4 November 2020] ~~and tropical cyclones.~~

~~23. The elements 'Forecast Time' and 'Forecast Position' are not to be used in conjunction with the element Movement or Expected Movement.~~

26.

27. The levels of the phenomena remain fixed throughout the forecast period.

28. Only for SIGMET messages for volcanic ash.

~~24.-~~

~~25.1. A straight line is to be used between two points drawn on a map in the Mercator projection or between two points which crosses lines of longitude at a constant angle.~~

~~26.29. To be used for more than one two volcanic ash clouds or cumulonimbus clouds associated with a tropical cyclone two centres of tropical cyclones simultaneously affecting the FIR concerned.~~

~~27. The number of coordinates should be kept to a minimum and should not normally exceed seven.~~

~~28. The elements 'Forecast Time' and 'Forecast Position' are not to be used in conjunction with the element Movement or Expected Movement.~~

~~29.30. End of the message (as the SIGMET/AIRMET message is being cancelled).~~

~~30. The levels of the phenomena remain fixed throughout the forecast period.~~

31. The term CB is to be used when the forecast position for the cumulonimbus cloud is included.

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

33. For SIGMET messages for radioactive cloud, only within (WI) is to be used for the elements "location" and "forecast position".

~~34. For SIGMET messages for radioactive cloud, only stationary (STNR) is to be used for the element "movement or expected movement". 29. Only for SIGMET messages for radioactive cloud. When detailed information on the release is not available, a radius of up to 30 kilometres (or 16 nautical miles) from the source may be applied; 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. [Applicable 7 November 2019].~~

Table A6-1B. Template for special air-reports (uplink)

Key:	<p>M = inclusion mandatory, part of every message; C = inclusion conditional, included whenever applicable; == a double line indicates that the text following it should be placed on the subsequent line.</p>
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Note. The ranges and resolutions for the numerical elements included in special air-reports are shown in Table A6-4 of this appendix.

Element	Detailed content	Template ^{1,2}	Examples
Identification (M)	Message identification	ARS	ARS

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<u>Aircraft identification (M)</u>	<u>Aircraft radiotelephony call sign</u>	<u>nnnnnn</u>	<u>VA812₃</u>
<u>Observed phenomenon (M)</u>	<u>Description of observed phenomenon causing the issuance of the special air report₄</u>	<u>TS TSGR SEV TURB SEV ICE SEV MTW HVY DS HVY SS VA CLD VA [MT nnnnnnnnnn] MOD TURB MOD ICE</u>	<u>TS TSGR SEV TURB SEV ICE SEV MTW HVY DS HVY SS VA CLD VA VA MT ASHVAL₅ MOD TURB MOD ICE</u>
<u>Observation time (M)</u>	<u>Time of observation of observed phenomenon</u>	<u>OBS AT nnnnZ</u>	<u>OBS AT 1210Z</u>
<u>Observation Location (C)</u>	<u>Location (referring to latitude and longitude (in degrees and minutes)) of observed phenomenon</u>	<u>NnnnnWnnnnn or NnnnnEnnnnn or SnnnnWnnnnn or SnnnnEnnnnn</u>	<u>N2020W07005 S4812E01036</u>
<u>Observation Level (C)</u>	<u>Flight level or altitude of observed phenomenon</u>	<u>FLnnn or FLnnn/nnn or nnnnM (or [n]nnnnFT)</u>	<u>FL390 FL180/210 3000M 12000FT</u>

Notes.

1. No wind and temperature to be uplinked to other aircraft in flight in accordance with 3.2.
2. See 3.1.
3. Fictitious call sign.
4. In the case of special air-report for volcanic ash cloud, the vertical extent (if observed) and name of the volcano (if known) can be used.
5. Fictitious location.

Table A6-2. Template for aerodrome warnings

Key: M = inclusion mandatory, part of every message;
C = inclusion conditional, included whenever applicable.

Note 1.—The ranges and resolutions for the numerical elements included in aerodrome warnings are shown in Table A6-4 of this appendix.

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

<i>Element</i>	<i>Detailed content</i>	<i>Templates</i>	<i>Examples</i>
Location indicator of the aerodrome (M)	Location indicator of the aerodrome	nnnn	YUCC ¹
Identification of the type of message (M)	Type of message and sequence number	AD WRNG [n]n	AD WRNG 2
Validity period (M)	Day and time of validity period in UTC	VALID nnnnnn/nnnnn	VALID 211230/211530
IF THE AERODROME WARNING IS TO BE CANCELLED, SEE DETAILS AT THE END OF THE TEMPLATE.			
Phenomenon (M) ²	Description of phenomenon causing the issuance of the aerodrome warning	TC ³ nnnnnnnnnn or [HVY] TS or GR or [HVY] SN [nnCM] ³ or [HVY] FZRA or [HVY] FZDZ or RIME ⁴ or [HVY] SS or	TC ANDREW HVY SN 25CM SFC WSPD 20MPS MAX 30 VA TSUNAMI
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Example A6-4. SIGMET message for radioactive cloud

YUCC SIGMET 2 VALID 201200/201600 YUDO –

YUCC AMSWELL FIR RDOACT CLD OBS AT 1155Z WI 0KM OF N6030 E02550 SFC/FL550 STNR~~S5000 W14000 S5000 W13800 S5200 W13800 S5200 W14000 S5000 W14000 SFC/FL100 WKN FCST AT 1600Z WI S5200 W14000 S5200 W13800 S5300 W13800 S5300 W14000 S5200 W14000~~

Meaning:

The second SIGMET message issued for the AMSWELL* flight information region (identified by YUCC Amwell area control centre) by the Donlon/International* meteorological watch office (YUDO) since 0001 UTC; the message is valid from 1200 UTC to 1600 UTC on the 20th of the month; radioactive cloud was observed at 1155 UTC within 30 kilometres of 60 degrees 30 minutes north 25

degrees 50 minutes east between the surface and flight level 550. The radioactive cloud is stationary~~an area bounded by 50 degrees 0 minutes south 140 degrees 0 minutes west to 50 degrees 0 minutes south 138 degrees 0 minutes west to 52 degrees 0 minutes south 138 degrees 0 minutes west to 52 degrees 0 minutes south 140 degrees 0 minutes west to 50 degrees 0 minutes south 140 degrees 0 minutes west and between the surface and flight level 100; the radioactive cloud is expected to weaken in intensity; at 1600 UTC the radioactive cloud is forecast to be located within an area bounded by 52 degrees 0 minutes south 140 degrees 0 minutes west to 52 degrees 0 minutes south 138 degrees 0 minutes west to 53 degrees 0 minutes south 138 degrees 0 minutes west to 53 degrees 0 minutes south 140 degrees 0 minutes west to 52 degrees 0 minutes south 140 degrees 0 minutes west.~~

* Fictitious location

Example A6-5. SIGMET message for severe turbulence

YUCC SIGMET 5 VALID 221215/221600 YUDO –

YUCC AMSWELL FIR SEV TURB OBS AT 1210Z N2020 W07005 FL250 INTSF FCST AT 1600Z S OF N2020 AND E OF W06950

Meaning:

The fifth SIGMET message issued for the AMSWELL* flight information region (identified by YUCC Amwell area control centre) by the Donlon/International* meteorological watch office (YUDO) since 0001 UTC; the message is valid from 1215 UTC to 1600 UTC on the 22nd of the month; severe turbulence was observed at 1210 UTC 20 degrees 20 minutes north and 70 degrees 5 minutes west at flight level 250; the turbulence is expected to strengthen in intensity; at 1600 UTC the severe turbulence is forecast to be located south of 20 degrees 20 minutes north and east of 69 degrees 50 minutes west.

* Fictitious location

Example A6-6. AIRMET message for moderate mountain wave

YUCC AIRMET 2 VALID 221215/221600 YUDO –

YUCC AMSWELL FIR MOD MTW OBS AT 1205Z N48 E010 FL080 STNR NC

Meaning:

The second AIRMET message issued for the AMSWELL* flight information region (identified by YUCC Amwell area control centre) by the Donlon/International* meteorological watch office (YUDO) since 0001 UTC; the message is valid from 1215 UTC to 1600 UTC on the 22nd of the month; moderate mountain wave was observed at 1205 UTC at 48 degrees north and 10 degrees east at flight level 080; the mountain wave is expected to remain stationary and not to undergo any changes in intensity.

* Fictitious location

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APPENDIX 7. TECHNICAL SPECIFICATIONS RELATED TO AERONAUTICAL CLIMATOLOGICAL INFORMATION

(See Chapter 8 of this Regulation)

1. PROCESSING OF AERONAUTICAL CLIMATOLOGICAL INFORMATION

Meteorological observations for regular and alternate aerodromes shall be collected, processed and stored in a form suitable for the preparation of aerodrome climatological information.

2. EXCHANGE OF AERONAUTICAL CLIMATOLOGICAL INFORMATION

Aeronautical climatological information shall be exchanged on request between meteorological authorities. Operators and other aeronautical users desiring such information should normally apply to the meteorological authority responsible for its preparation.

3. CONTENT OF AERONAUTICAL CLIMATOLOGICAL INFORMATION

3.1 Aerodrome climatological tables

3.1.1 An aerodrome climatological table shall give as applicable:

- a) mean values and variations therefrom, including maximum and minimum values, of meteorological elements (for example, of air temperature); and/or
- b) the frequency of occurrence of present weather phenomena affecting flight operations at the aerodrome (for example, of sandstorms); and/or
- c) the frequency of occurrence of specified values of one, or of a combination of two or more, elements (for example, of a combination of low visibility and low cloud).

3.1.2 Aerodrome climatological tables shall include information required for the preparation of aerodrome climatological summaries in accordance with 3.2.

3.2 Aerodrome climatological summaries

Aerodrome climatological summaries shall cover:

- a) frequencies of the occurrence of runway visual range/visibility and/or height of the base of the lowest cloud layer of BKN or OVC extent below specified values at specified times;
- b) frequencies of visibility below specified values at specified times;
- c) frequencies of the height of the base of the lowest cloud layer of BKN or OVC extent below specified values at specified times;
- d) frequencies of occurrence of concurrent wind direction and speed within specified ranges;
- e) frequencies of surface temperature in specified ranges of 5°C at specified times; and
- f) mean values and variations therefrom, including maximum and minimum values of meteorological elements required for operational planning purposes, including take-off performance calculations.

Note.— *Models of climatological summaries related to a) to e) are given in WMO Publication No. 49, Technical Regulations, Volume II, C.3.2.*



APPENDIX 8. TECHNICAL SPECIFICATIONS RELATED TO SERVICE FOR OPERATORS AND FLIGHT CREW MEMBERS

(See Chapter 9 of this Regulation)

Note.- Specifications related to flight documentation (including the model charts and forms) are given in Appendix 1.

1. MEANS OF SUPPLY AND FORMAT OF METEOROLOGICAL INFORMATION

1.1 Meteorological information shall be supplied to operators and flight crew members by one or more of the following, as agreed between the meteorological authority and the operator concerned, and with the order shown below not implying priorities:

- a) written or printed material, including specified charts and forms;
- b) data in digital form;
- c) briefing;
- d) consultation;
- e) display; or
- f) in lieu of a) to e), by means of an automated pre-flight information system providing self-briefing and flight documentation facilities while retaining access by operators and aircrew members to consultation, as necessary, with the aerodrome meteorological office, in accordance with 5.1.

1.2 The meteorological authority, in consultation with the operator, shall determine:

- 1.3 a) the type and format of meteorological information to be supplied; and
- b) methods and means of supplying that information.

1.4 On request by the operator, the meteorological information supplied for flight planning shall include data for the determination of the lowest usable flight level.

2. SPECIFICATIONS RELATED TO INFORMATION FOR PRE-FLIGHT PLANNING AND INFLIGHT REPLANNING

2.1 Format of upper-air gridded information

Upper-air gridded information supplied by WAFCs for pre-flight and in-flight replanning shall be in the GRIB code form.

Note.- The GRIB code form is contained in WMO Publication No. 306, Manual on Codes, Volume I.2, Part B - Binary Codes.

2.2 Format of information on significant weather

2.2.1 Information on significant weather supplied by WAFCs for pre-flight [planning](#) and in-flight replanning shall be in the BUFR code form.

Note.- The BUFR code form is contained in WMO Publication No. 306, Manual on Codes, Volume I.2, Part B - Binary Codes.

2.2.2 As of 4 November 2021, in addition to 2.2.1, information on significant weather supplied by WAFCs for pre-flight planning and in-flight replanning should be in IWXXM GML form.

Note 1.— Guidance on the implementation of IWXXM is provided in the Manual on the ICAO Meteorological Information Exchange Model (IWXXM) (Doc 10003).

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Note 2. — Geography markup language (GML) is an encoding standard of the Open Geospatial Consortium (OGC).

2.3 Specific needs of helicopter operations

Meteorological information for pre-flight planning and in-flight replanning by operators of helicopters flying to offshore structures shall include data covering the layers from sea level to flight level 100. Particular mention should be made of the expected surface visibility, the amount, type (where available), base and tops of cloud below flight level 100, sea state and sea-surface temperature, mean sea-level pressure, and the occurrence and expected occurrence of turbulence and icing, as determined by regional air navigation agreement.

3. SPECIFICATIONS RELATED TO BRIEFING AND CONSULTATION

3.1 Information required to be displayed

The material displayed shall be readily accessible to the flight crew members or other flight operations personnel concerned.

4. SPECIFICATIONS RELATED TO FLIGHT DOCUMENTATION

4.1 Presentation of information

- 4.1.1 The flight documentation related to forecasts of upper wind and upper-air temperature and SIGWX phenomena shall be presented in the form of charts. For low-level flights, alternatively, GAMET area forecasts shall be used.

Note.-Models of charts and forms for use in the preparation of flight documentation are given in Appendix 1. These models and methods for their completion are developed by the World Meteorological Organization on the basis of relevant operational requirements stated by the International Civil Aviation Organization.

- 4.1.2 The flight documentation related to concatenated route-specific upper wind and upper-air temperature forecasts shall be provided as agreed between the meteorological authority and the operator concerned.

Note.- Guidance on the design, formulation and use of concatenated charts is given in the Manual of Aeronautical Meteorological Practice (Doc 8896).

- 4.1.3 METAR and SPECI (including trend forecasts as issued in accordance with regional air navigation agreement), TAF, GAMET, SIGMET and AIRMET, volcanic ash, tropical cyclone and space weather advisory information shall be presented in accordance with the templates in Appendices 1, 2, 3, 5 and 6, respectively. Such meteorological information received from other meteorological offices shall be included in flight documentation without change.

Note.—Examples of the form of presentation of METAR/SPECI and TAF are given in Appendix 1.

- 4.1.4 The location indicators and the abbreviations used shall be explained in the flight documentation.

- 4.1.5 The forms and the legend of charts included in flight documentation shall be printed in English, French, Russian or Spanish. Where appropriate, approved abbreviations should be used. The units employed for each element should be indicated; they should be in accordance with KCASR 5.

4.2 Charts in flight documentation

- 4.2.1 Characteristics of charts

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4.2.1.1 Charts included in flight documentation should have a high standard of clarity and legibility and shall have the following physical characteristics:

- a) for convenience, the largest size of charts should be about 42 × 30 cm (standard size A3) and the smallest size should be about 21 × 30 cm (standard size A4). The choice between these sizes should depend on the route lengths and the amount of detail that needs to be given in the charts as agreed between the meteorological authorities and the users concerned;
- b) major geographical features, such as coastlines, major rivers and lakes should be depicted in a way that makes them easily recognizable;
- c) for charts prepared by computer, meteorological data should take preference over basic chart information, the former cancelling the latter wherever they overlap;
- d) major aerodromes should be shown as a dot and identified by the first letter of the name of the city the aerodrome serves as given in Table AOP of the relevant regional air navigation plan;
- e) a geographical grid should be shown with meridians and parallels represented by dotted lines at each 10° latitude and longitude; dots should be spaced one degree apart;
- f) latitude and longitude values should be indicated at various points throughout the charts (i.e. not only at the edges); and
- g) labels on the charts for flight documentation should be clear and simple and should present the name of the world area forecast centre or, for non-WAFS products, the originating centre, the type of chart, date and valid time and, if necessary, the types of units used in an unambiguous way.

Note. When plotting shapes, particularly polygons, on maps, appropriate corrections are necessary if plotted on projections different to that used in the production of the original forecast area.



4.2.1.2 Meteorological information included in flight documentation shall be represented as follows:

- a) winds on charts shall be depicted by arrows with feathers and shaded pennants on a sufficiently dense grid;
- b) temperatures shall be depicted by figures on a sufficiently dense grid;
- c) wind and temperature data selected from the data sets received from a world area forecast centre shall be depicted in a sufficiently dense latitude/longitude grid; and
- d) wind arrows shall take precedence over temperatures and either shall take precedence over chart background.

4.2.1.3 For short-haul flights, charts shall be prepared covering limited areas at a scale of 1:15 × 10⁶ as required.

4.2.2 Set of charts to be provided

4.2.2.1 The minimum number of charts for flights between flight level 250 and flight level 630 shall include a high-level SIGWX chart (flight level 250 to flight level 630) and a forecast 250 hPa wind and temperature chart. The actual charts provided for pre-flight and in-flight planning and for flight documentation shall be as agreed between meteorological authorities and users concerned.

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APPENDIX 10. TECHNICAL SPECIFICATIONS RELATED TO REQUIREMENTS FOR AND USE OF COMMUNICATIONS

(See Chapter 11 of this Regulation)

1. SPECIFIC REQUIREMENTS FOR COMMUNICATIONS

1.1 Required transit times of operational meteorological information

~~M~~AFTN messages and bulletins containing operational meteorological information shall achieve transit times of less than 5 minutes, unless otherwise determined to be lower by regional air navigation agreement.

1.2 Grid point data for ATS and operators

1.2.1 When upper-air data for grid points in digital form are made available for use by air traffic services computers, the transmission arrangements shall be as agreed between the meteorological authority and the appropriate ATS authority concerned.

1.2.2 When upper-air data for grid points in digital form are made available to operators for flight planning by computer, the transmission arrangements shall be as agreed between the WAFC concerned, the meteorological authority and the operators concerned.

2. USE OF AERONAUTICAL FIXED SERVICE COMMUNICATIONS AND THE PUBLIC INTERNET

2.1 Meteorological bulletins in alphanumeric format

2.1.1 Composition of bulletins

Whenever possible, exchanges of operational meteorological information shall be made in consolidated bulletins of the same types of meteorological information.

2.1.2 Filing times of bulletins

Meteorological bulletins required for scheduled transmissions shall be filed regularly and at the prescribed scheduled times. METAR should be filed for transmission not later than 5 minutes after the actual time of observation. TAF should be filed for transmission not earlier than one hour prior to the beginning of their validity period.

2.1.3 Heading of bulletins

Meteorological bulletins containing operational meteorological information to be transmitted via the aeronautical fixed service or the public Internet shall contain a heading consisting of:

- a) an identifier of four letters and two figures;
- b) the ICAO four-letter location indicator corresponding to the geographical location of the meteorological office originating or compiling the meteorological bulletin;
- c) a day-time group; and



d) if required, a three-letter indicator.

Note 1.-Detailed specifications on format and contents of the heading are given in WMO Publication No. 386, Manual on the Global Telecommunication System, Volume I and are reproduced in the Manual of Aeronautical Meteorological Practice (Doc 8896).

Note 2.- ICAO location indicators are listed in Location Indicators (Doc 7910).

2.1.4 Transmission Structure of bulletins containing operational meteorological information

Meteorological bulletins containing operational meteorological information ~~to~~shall be transmitted via the aeronautical fixed service (AFS)~~AFTN shall be encapsulated in the text part of the AFTN message format.~~

2.2 World area forecast system products

2.2.1 Telecommunications for the supply of WAFS products

The telecommunications facilities used for the supply of world area forecast system products shall be the aeronautical fixed service or the public Internet.

2.2.2 Quality requirements for charts

Where world area forecast system products are disseminated in chart form, the quality of the charts received shall be such as to permit reproduction in a sufficiently legible form for flight planning and documentation. Charts received shall be legible over 95 per cent of their area.

2.2.3 Quality requirements for transmissions

Transmissions should be such as to ensure that their interruption shall not exceed 10 minutes during any period of 6 hours.

2.2.4 Heading of bulletins containing WAFS products

Meteorological bulletins containing WAFS products in digital form to be transmitted via aeronautical fixed service or the public Internet shall contain a heading as given in 2.1.3.

3. USE OF AERONAUTICAL MOBILE SERVICE COMMUNICATIONS

3.1 Content and format of meteorological messages

3.1.1 The content and format of reports, forecasts and SIGMET information transmitted to aircraft shall be consistent with the provisions of Chapters 4, 6 and 7 of this Regulation.

3.1.2 The content and format of air-reports transmitted by aircraft shall be consistent with the provisions of Chapter 5 of this Regulation and the *Procedures for Air Navigation Services – Air Traffic Management* (PANS-ATM, Doc 4444), Appendix 1.

3.2 Content and format of meteorological bulletins

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**ATTACHMENT E SPATIAL RANGES AND
RESOLUTIONS FOR SPACE WEATHER
ADVISORY INFORMATION**

Note.— The guidance contained in this table relates to Appendix 2,
6.1 Space weather advisory information

Element	Range	Resolution	
Flight Level affected by radiation:	250-600	30	
Longitudes for advisories: (degrees)	000 – 180	15	
Latitudes for advisories: (degrees)	00-90	10	
Latitude bands for advisories:	High latitudes northern hemisphere (HNS)	N9000 - N6000	30 <u>10</u>
	Middle latitudes northern hemisphere (MNH)	N6000 - N3000	
	Equatorial latitudes northern hemisphere (EQN)	N3000 - N0000	
	Equatorial latitudes southern hemisphere (EQS)	S0000 - S3000	
	Middle latitudes southern hemisphere (MSH)	S3000 - S6000	
	High latitudes southern hemisphere (HSH)	S6000 - S9000	

END