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Международная  
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Ref.: AN 10/1-19/25

9 April 2019

**Subject:** Proposals for the amendment of Annex 3 and consequential amendments to Annex 10, Volume II and PANS-ATM (Doc 4444)

**Action required:** Comments to reach Montréal by 9 July 2019

Sir/Madam,

1. I have the honour to inform you that the Air Navigation Commission, at the eighth meeting of its 210th Session held on 12 March 2019, considered proposals developed by the fourth meeting of the Meteorology Panel (METP/4) for the amendment of Standards and Recommended Practices (SARPs) in Annex 3 — *Meteorological Service for International Air Navigation* and consequential amendments in Annex 10 — *Aeronautical Telecommunications, Volume II — Communication Procedures including those with PANS status and Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444). The Commission authorized their transmission to Member States and appropriate international organizations for comments.

2. The background of the aforementioned proposals is explained in Attachment A. The proposals for amendment to Annexes 3 and 10, Volume II and PANS-ATM are contained in Attachments B through D, respectively. A rationale box providing more information has been included immediately following each proposal.

3. May I request that any comments you wish to make on the amendment proposals be dispatched to reach me not later than 9 July 2019. To facilitate the processing of replies with substantive comments, I invite you to submit an electronic version in Word format to [icaohq@icao.int](mailto:icaohq@icao.int). The Air Navigation Commission has asked me to specifically indicate that comments received after the due date may not be considered by the Commission and the Council. In this connection, should you anticipate a delay in the receipt of your reply, please let me know in advance of the due date.

4. For your information, the proposed amendment to Annex 3 is envisaged for applicability on 5 November 2020, except for the provisions related to the dissemination of significant weather (SIGWX) forecasts in IWXXM GML form which are envisaged on 4 November 2021. The consequential

amendments to Annex 10, Volume II and PANS-ATM are envisaged for applicability on 5 November 2020. Any comments you may have thereon would be appreciated.

5. The subsequent work of the Air Navigation Commission and the Council would be greatly facilitated by specific statements on the acceptability or otherwise of the proposals. Please note that for the review of your comments by the Air Navigation Commission and the Council, replies are normally classified as “agreement with or without comments”, “disagreement with or without comments” or “no indication of position”. If in your reply the expressions “no objections” or “no comments” are used, they will be taken to mean “agreement without comment” and “no indication of position”, respectively. In order to facilitate proper classification of your response, a form has been included in Attachment E which may be completed and returned together with your comments, if any, on the proposals in Attachments B to D.

Accept, Sir/Madam, the assurances of my highest consideration.

Fang Liu  
Secretary General

**Enclosures:**

- A — Background information
- B — Proposed amendment to Annex 3
- C — Proposed amendment to Annex 10, Volume II
- D — Proposed amendment to PANS-ATM
- E — Response form

## BACKGROUND INFORMATION

### 1. RE-SUSPENDED VOLCANIC ASH

1.1 Attachment B (Initial Proposal 1) contains a proposal to facilitate the reporting of volcanic ash in cases of re-suspended volcanic-ash events. In this regard, the definition of a volcanic ash advisory centre (VAAC) (Annex 3, Chapter 1 refers) and the template for the advisory message for volcanic ash (Annex 3, Table A2-1 refers) need to be amended. In the definition of a VAAC, the change proposes to delete the words “following volcanic eruptions”, thereby eliminating an existing constraint and better enabling the VAACs to provide advisory information. With regard to the advisory message for volcanic ash (Table A2-1), the change proposes modification to the Examples column, since the extant VA ADVISORY template(s) column already permits appropriate terminology to be used. It is also proposed to improve two other items within the VA ADVISORY template(s) related to the number of a volcano to align with the latest International Association of Volcanology and Chemistry of the Earth’s Interior (IAVCEI) database and the update of a satellite reference. (METP/4 Report, Agenda Item 6, Recommendation 6/5 refers.)

### 2. QUALITY MANAGEMENT SYSTEM FOR THE PROVISION OF METEOROLOGICAL SERVICE

2.1 Attachment B (Initial Proposal 2) contains a proposal to replace in Annex 3 all references to the joint publication of the ICAO *Manual on the Quality Management System for the Provision of Meteorological Service to International Air Navigation* (Doc 9873) and WMO-No. 1001, *Manual on/Guide to the Quality Management System for the Provision of Meteorological Service for International Air Navigation* with WMO-No. 1100, *Guide to the Implementation of Quality Management Systems for National Meteorological and Hydrological Services and other Relevant Service Providers*. The use of only one document by users will facilitate the access to references concerning guidance material on quality management system. (METP/4 Report, Agenda Item 8, Recommendation 8/1 refers.)

### 3. IMPROVED HARMONIZATION OF SIGMET INFORMATION

3.1 Attachment B (Initial Proposal 3) contains proposals related to the introduction of SIGMET coordination as a recommended practice in Annex 3 to address inconsistent or entirely absent SIGMET information in some parts of the world. Given the progress made in improving the harmonization of SIGMET information by the SIGMET through bilateral or multilateral coordination activities in some regions, METP/4 proposes a recommended practice for all States with a responsibility to issue SIGMET information. (METP/4 Report, Agenda Item 4, Recommendation 4/4 refers.)

### 4. MODEL CHARTS (MODEL VAG AND MODEL SVA) USED IN ANNEX 3, APPENDIX 1

4.1 Attachment B (Initial Proposal 4) contains a proposal to amend the model charts used in Annex 3, Part II, Appendix 1 to represent the location and extent of volcanic ash clouds. In this regard, the proposal addresses the need to overcome identified shortcomings in the existing MODEL VAG and MODEL SVA used in Appendix 1, notably when related to the map projections, the depiction of polygons to describe the coverage of volcanic ash cloud(s) and the cloud layers. The World Meteorological Organization (WMO), as the custodian of (all) the model charts used in Appendix 1, developed a maximum of two examples per MODEL VAG and MODEL SVA. (METP/4 Report, Agenda Item 6, Recommendation 6/4 refers.)

## 5. **WORLD AREA FORECAST SYSTEM (WAFS) INFORMATION**

5.1 Attachment B (Initial Proposal 5) contains a proposal to improve the world area forecast system (WAFS) forecasts as requested by the ICAO/WMO Meteorology Divisional Meeting (MET/14, 2014). These requirements include: a) improvements in horizontal spatial resolution of the hazard grids (e.g. turbulence, icing and cumulonimbus (CB) cloud forecasts) from the current 1.25 degrees horizontal spacing to 0.25 degrees; and b) changes to the parameters being forecast. Coupled with this increase in resolution of the hazard grids will be the replacement of turbulence and icing potential with turbulence and icing severity information. In addition, in-cloud turbulence grid point forecasts will be retired, in favour of extending the new turbulence severity grid point forecasts downward to Flight Level (FL)100, FL140 and FL180. These new turbulence levels, when used in combination with the CB cloud grid, will provide more scientifically sound turbulence information than the outgoing in-cloud turbulence algorithm. These improvements to the horizontal and vertical resolution of WAFS forecasts are intended to fully meet the needs of the aviation industry.

## 6. **TROPICAL CYCLONE ADVISORIES AND SIGMET FOR TROPICAL CYCLONE**

6.1 Attachment B (Initial Proposal 6) contains proposals to amend the tropical cyclone (TC) SIGMET and TC advisory messages to correct and reduce inconsistencies and deficiencies in the format of these messages. The proposed changes will prevent user misinterpretation with associated safety implications. The proposals will also improve the validation and the translation of these messages from traditional alphanumeric codes (TAC) into the ICAO Meteorological Information Exchange Model (IWXXM) to prevent IWXXM errors. (METP/4 Report, Agenda Item 5, Recommendation 5/4 refers.)

## 7. **SPACE WEATHER ADVISORY INFORMATION PROVISIONS**

7.1 Attachment B (Initial Proposal 7) contains proposals to improve existing provisions on space weather. Such improvements will allow for more than one space weather effect (i.e., GNSS, RADIATION, SATCOM and HF COM) with the same intensity to be combined in one space weather advisory, and for all space weather effects to be described using latitude bands. Additionally, the proposal will improve vertical resolution of the information provided. (METP/4 Report, Agenda Item 4, Recommendation 4/6 refers.)

## 8. **INDICATION OF MISSING AND/OR INCORRECT PARAMETERS IN METAR**

8.1 Attachment B (Initial Proposal 8) contains proposals to ensure that IWXXM schema can easily indicate missing and/or incorrect mandatory parameters in METAR in TAC form to avoid failures in the validation process once translated from TAC into IWXXM. The METP considers that the use of solidus (/) to indicate missing figures or letters in the text of meteorological bulletins is an essential proposal in the transition to IWXXM and system-wide information management (SWIM). (METP/4 Report, Agenda Item 5, Recommendation 5/1 refers.)

## 9. **REVISED EDDY DISSIPATION RATE (EDR) THRESHOLD VALUES**

9.1 Attachment B (Initial Proposal 9) contains a proposal to update the values of eddy dissipation rate (EDR) and the index-based metric for reporting aircraft turbulence. Since scientific

evidence has shown that the EDR threshold values in Annex 3 are too high, the proposal introduces: a) updated EDR threshold values based on scientific studies of over 100 million aircraft turbulence reports; b) some adjustments regarding terminology; and c) the addition of one explanatory note. (METP/4 Report, Agenda Item 6, Recommendation 6/10 refers.)

**10. AIRMET AND GAMET INFORMATION**

10.1 Attachment B (Initial Proposal 10) contains a proposal to allow area forecasts for low-level flights prepared and produced in accordance with regional air navigation agreement to be transmitted to Secure Aviation Data Information Service (SADIS) and WAFS Information File Service (WIFS). The change in the requirement, requested by Annex 3 users, will enable the availability of a more comprehensive AIRMET and GAMET data set thereby benefiting SADIS and WIFS users around the world. (METP/4 Report, Agenda Item 6, Recommendation 6/11 refers.)

**11. RELEASE OF RADIOACTIVE MATERIAL IN THE ATMOSPHERE**

11.1 Attachment B (Initial Proposal 11) contains proposals concerning radioactive cloud (RDOACT CLD) SIGMET. The proposal is necessary for consistency with Amendment 78 to Annex 3 which introduced the representation of the RDOACT CLD SIGMET area by a cylinder with a fixed radius that extends to all flight levels and that is not time dependent. Proposed changes to Table A6-1A (Template for SIGMET and AIRMET messages) and to Example A6-4 (SIGMET message for radioactive cloud) will simplify existing requirements. (METP/4 Report, Agenda Item 4, Recommendation 4/2 refers.)

**12. INCLUSION OF HEAVY DUST STORMS IN TABLES A4-1 AND A6-1B RELATED TO UPLINK AND DOWNLINK OF SPECIAL AIR-REPORTS**

12.1 Attachment B (Initial Proposal 12) contains a proposal to include the reporting of heavy dust storms (HVY DS) in special air-reports to improve the availability of AIREPs to support international civil aviation. (METP/4 Report, Agenda Item 8, Recommendation 8/2 refers.)

12.2 Attachment D (Initial Proposal 1) is a consequential amendment to PANS-ATM (Doc 4444) related to heavy dust and sand storms (HVY DS and HVY SS).

**13. ICAO INFORMATION METEOROLOGICAL EXCHANGE MODEL (IWXXM) AND AERONAUTICAL FIXED TELECOMMUNICATION NETWORK (AFTN) AND AERONAUTICAL FIXED SERVICE (AFS)**

13.1 Attachment A (Initial Proposal 13) contains proposed provisions to introduce some minor changes to Annex 3 to facilitate the exchange of IWXXM, given that IWXXM cannot be exchanged over the aeronautical fixed telecommunication network (AFTN), by using the generic term aeronautical fixed service (AFS). (METP/4 Report, Agenda Item 5, Recommendation 5/6 refers.)

13.2 Attachment C (Initial Proposal 1) presents consequential amendments to Annex 10, Volume II related to IWXXM, AFTN and AFS. (METP/4 Report, Agenda Item 5, Recommendation 5/6 refers.)



**ATTACHMENT B** to State letter AN 10/1-19/25

**PROPOSED AMENDMENT TO ANNEX 3**

**NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT**

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

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

Text to be deleted

New text to be inserted is highlighted with grey shading.

New text to be inserted

~~Text to be deleted is shown with a line through it~~ followed by the replacement text which is highlighted with grey shading.

New text to replace existing text

**TEXT OF PROPOSED AMENDMENT TO THE  
INTERNATIONAL STANDARDS  
AND RECOMMENDED PRACTICES  
METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION  
ANNEX 3  
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION**

**INITIAL PROPOSAL 1  
RE-SUSPENDED VOLCANIC ASH**

**PART I. CORE SARP<sub>s</sub>**

**CHAPTER 1. DEFINITIONS**

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**1.1 Definitions**

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*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.

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**PART II. APPENDICES AND ATTACHMENTS**

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

*(See Chapter 3 of this Annex.)*

...

**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 19 are included only for clarity and are not part of the advisory message, as shown in the example.

| Element | Detailed content       | Template(s)   | Examples  |   |
|---------|------------------------|---|---|---|
| ...     | ...                    | ...   | ...   |   |
| 5       | Name of volcano (M)    | Name and IAVCEI <sup>2</sup> number of volcano        | VOLCANO: nnnnnnnnnnnnnnnnnnn<br>[nnnnn]<br>or<br>UNKNOWN or UNNAMED | VOLCANO: KARYMSKY <del>1000-</del><br>: 43300130<br><br>UNNAMED<br><br>UNKNOWN  |
| 6       | ...                    | ...   | ...   |   |
| 7       | State or region (M)    | State, or region if ash is not reported over a State  | AREA: nnnnnnnnnnnnnnnn<br>or<br>UNKNOWN                             | AREA: RUSSIA<br><br>UNKNOWN   |
| 8       | Summit elevation (M)   | Summit elevation in m (or ft)                         | SUMMIT ELEV: nnnnM (or nnnnnFT)                                     | SUMMIT ELEV: 1536M<br>SFC   |
| 9       | ...                    | ...   | ...   |   |
| 10      | Information source (M) | Information source using free text                    | INFO SOURCE: Free text up to 32 characters                          | INFO SOURCE: <del>MTSAT-</del><br>4RHIMAWARI-8<br>KVERT KEMSD   |
| 11      | ...                    | ...   | ...   |   |
| 12      | Eruption details (M)   | Eruption details (including date/time of eruption(s)) | ERUPTION DETAILS: Free text up to 64 characters<br>or<br>UNKNOWN    | ERUPTION DETAILS: ERUPTION AT<br>20080923/0000Z<br>FL300 REPORTED<br><br>NO ERUPTION - RE-SUSPENDED VA <sup>6</sup>   |
| ...     | ...                    | ...   | ...   |   |
| 18      | Remarks (M)            | Remarks, as necessary                                 | RMK: Free text up to 256 characters<br>or<br>NIL                    | RMK: LATEST REP FM<br>KVERT (0120Z)<br>INDICATES<br>ERUPTION HAS<br>CEASED. TWO<br>DISPERSING VA CLD<br>ARE EVIDENT ON<br>SATELLITE IMAGERY<br><br>RE-SUSPENDED VA <sup>6</sup><br>7<br><br>NIL |

| Element | Detailed content | Template(s) | Examples |
|---------|------------------|-------------|----------|
| 19      | ...              | ...         | ...      |

Notes.—

...

- 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.

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|                              |   |
|------------------------------|---|
| <b>Origin:</b><br><br>METP/4 | <b>Rationale:</b><br><br>This proposed amendment has been introduced to allow the reporting of re-suspended volcanic ash by VAACs through the template for advisory message for volcanic ash (Table A2-1 of Annex 3). |
|------------------------------|---|

**INITIAL PROPOSAL 2**  
**REFERENCES TO QUALITY MANAGEMENT SYSTEM FOR THE PROVISION OF METEOROLOGICAL SERVICE**

**PART I. CORE SARP<sub>s</sub>**

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**CHAPTER 2. GENERAL PROVISIONS**

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

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**2.2.3 Recommendation.**— *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 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 systems is given in the ~~Manual on the Quality Management System for the Provision of Meteorological Service for 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).*

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|                              |  |
|------------------------------|--|
| <b>Origin:</b><br><br>METP/4 | <b>Rationale:</b><br><br>This proposed amendment updates references in Annex 3 to align with the current quality management system guidance material, due to the discontinuation of the joint publication ICAO Doc 9873/WMO 1001 (agreed by both organizations) and its replacement by WMO-NO. 1100. |
|------------------------------|--|

|   |
|---|
| <p><b>INITIAL PROPOSAL 3</b></p> <p><b>IMPROVEMENT OF THE PROVISION OF SIGMET INFORMATION BY METEOROLOGICAL WATCH OFFICES (MWOS).</b></p> |
|---|

**CHAPTER 3. GLOBAL SYSTEMS, SUPPORTING CENTRES AND METEOROLOGICAL OFFICES**

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*Insert new text as follows:*

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3.4.4 **Recommendation.**— *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).*

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End of new text.

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|                              |  |
|------------------------------|--|
| <b>Origin:</b><br><br>METP/4 | <b>Rationale:</b><br><br>The introduction of this proposal would contribute to the harmonization of SIGMET information provision across the flight information regions (FIRs). |
|------------------------------|--|

**INITIAL PROPOSAL 4**

**ANNEX 3, APPENDIX 1 (MODEL VAG AND MODEL SVA)**

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**PART II**

**APPENDICES AND ATTACHMENTS**

**APPENDIX 1. FLIGHT DOCUMENTATION —  
MODEL CHARTS AND FORMS**

*(See Chapter 9 of this Annex.)*

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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

...

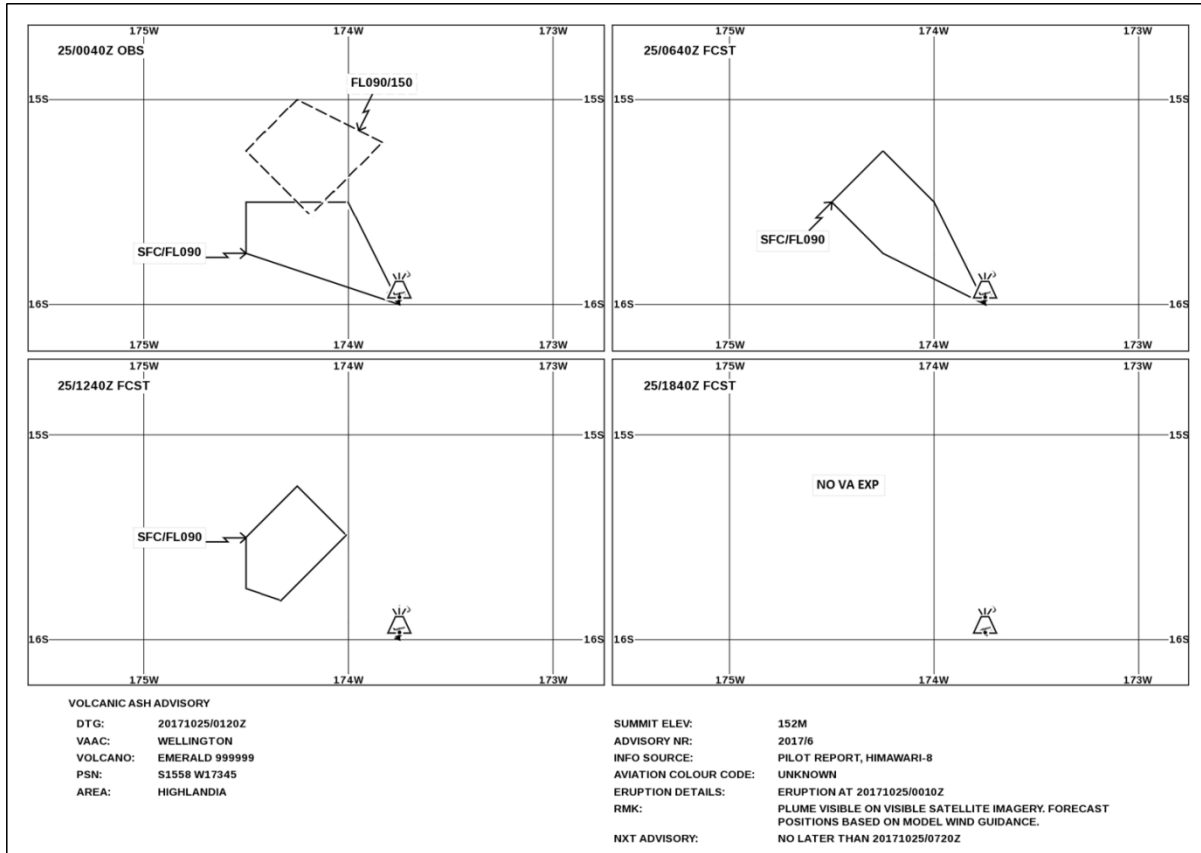
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*Editorial Note.— Replace the existing MODEL VAG example in toto by the following two new examples.*

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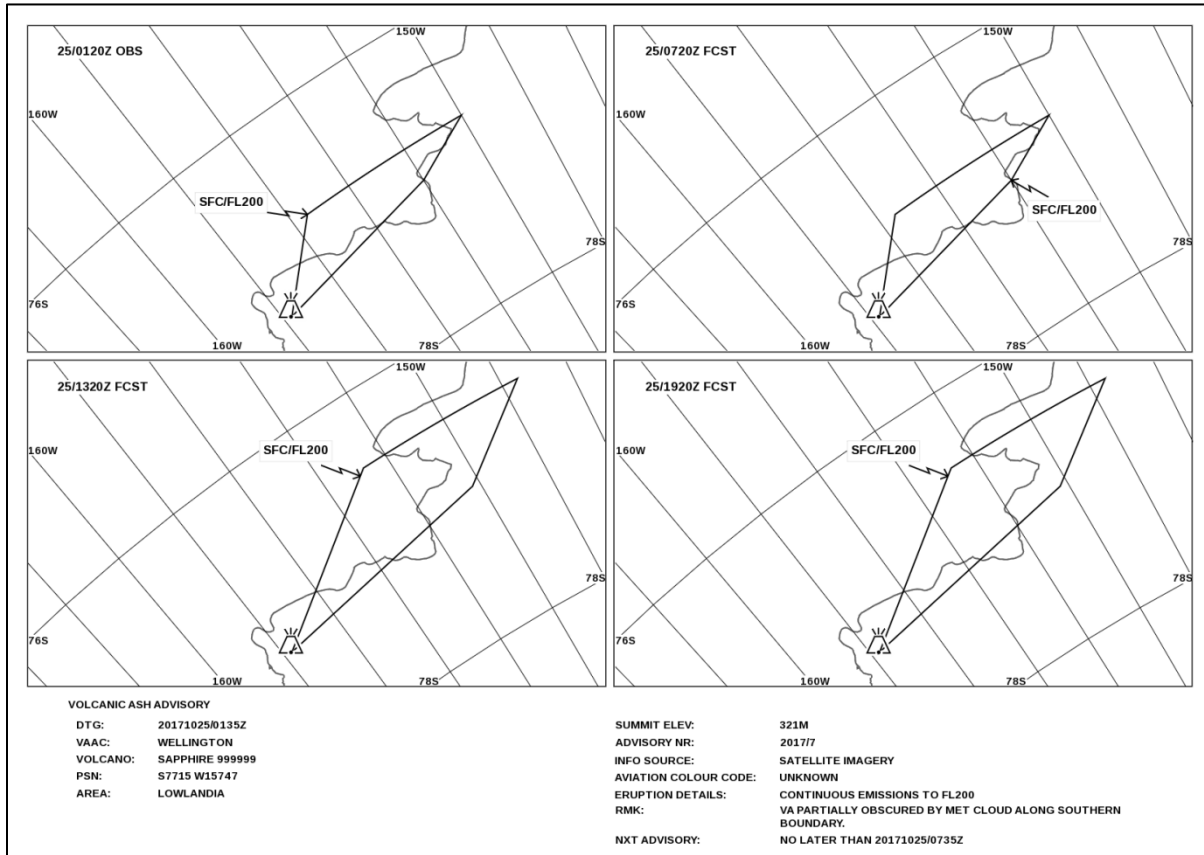
**VOLCANIC ASH ADVISORY INFORMATION IN GRAPHICAL FORMAT**  
**Example 1. Mercator projection**

**MODEL VAG**



**VOLCANIC ASH ADVISORY INFORMATION IN GRAPHICAL FORMAT**  
**Example 2. Polar stereographic projection**

**MODEL VAG**



...

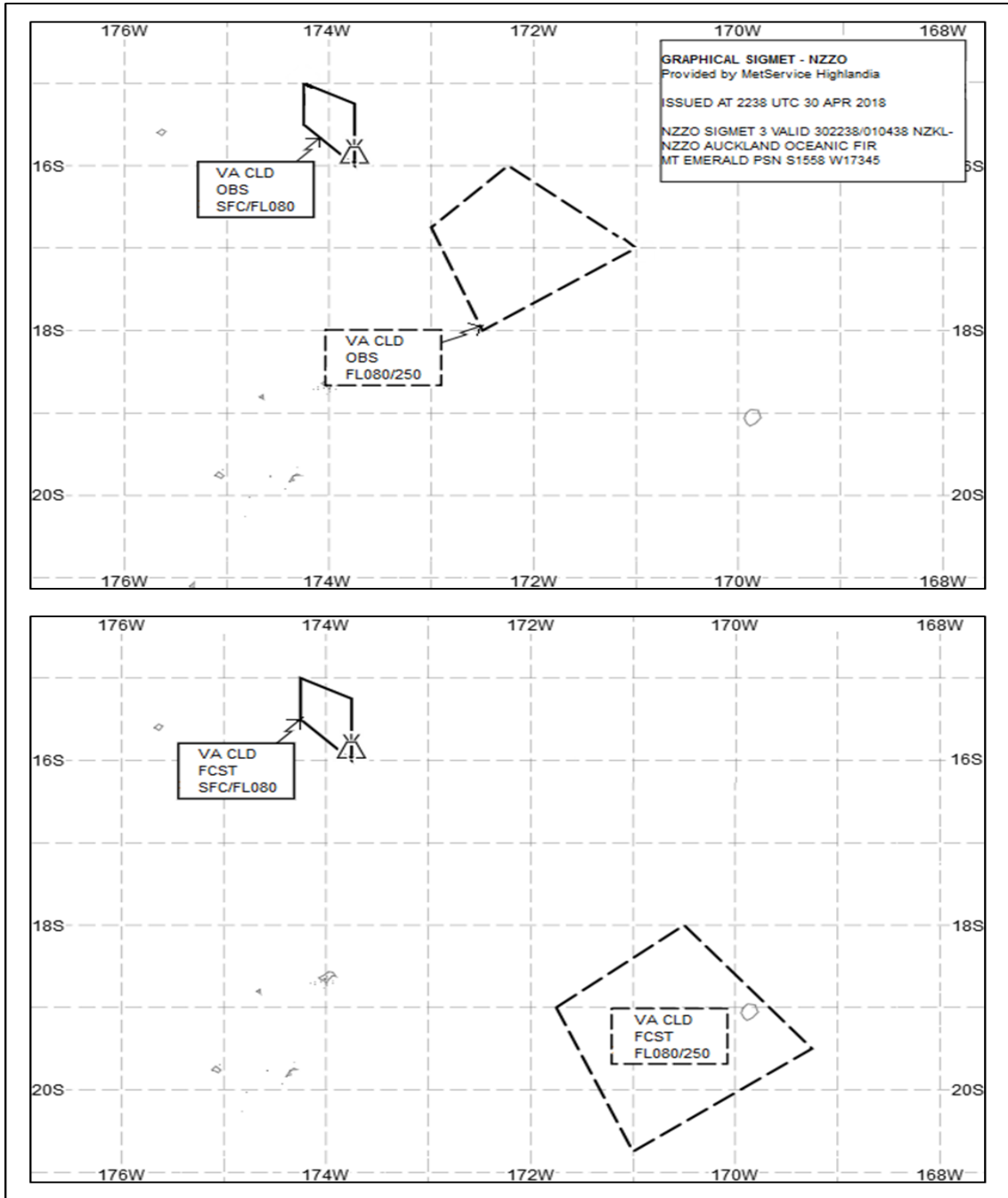
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*Editorial Note.— Replace the existing MODEL SVA example in toto by the following two new examples.*

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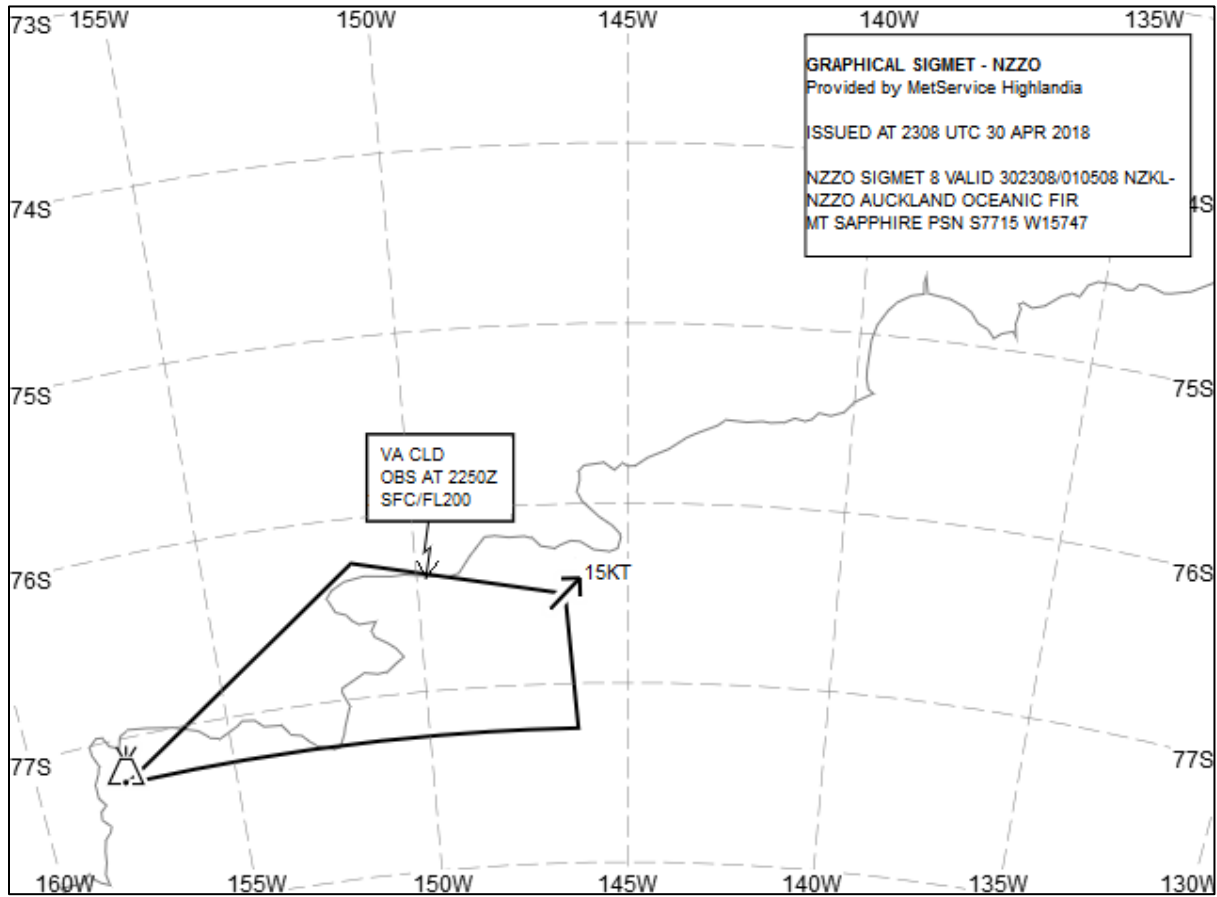
**SIGMET FOR VOLCANIC ASH IN GRAPHICAL FORMAT**  
**Example 1. Mercator projection**

MODEL SVA



**SIGMET FOR VOLCANIC ASH IN GRAPHICAL FORMAT**  
**Example2. Polar stereographic projection**

MODEL SVA



...

|                                       |   |
|---------------------------------------|---|
| <p><b>Origin:</b><br/><br/>METP/4</p> | <p><b>Rationale:</b><br/><br/>This proposed amendment better represents the location and extent of volcanic ash clouds in the existing MODEL VAG and MODEL SVA by improving map projections, the description of the coverage of volcanic ash cloud(s) and cloud layers.</p> |
|---------------------------------------|---|



**INITIAL PROPOSAL 5**  
**WORLD AREA FORECAST SYSTEM (WAFS) INFORMATION (ANNEX 3)**

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

*(See Chapter 3 of this Annex.)*

**1. WORLD AREA FORECAST SYSTEM**

**1.1 Formats and codes**

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**1.2 Upper-air gridded forecasts**

1.2.1 The forecasts of upper winds; 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 WAFC 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 forecast shall be in the above order and shall be completed-disseminated 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 WAFC 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);
- g) ~~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 2.— 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.*

hi) 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 the World Meteorological Organization (WMO).

*Note.— The GRIB code form is contained in the Manual on Codes (WMO-No. 306), Volume I.2, Part B — Binary Codes.*

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

1.2.5 The foregoing grid point forecasts e) through 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 forecast shall be completed-disseminated as soon as technically feasible but not later than 9-7 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 the Manual on Codes (WMO-No. 306), Volume I.2, Part B — Binary Codes.*

1.3.1.3 **Recommendation.**— *As of 4 November 2021, in addition to 1.3.1.2, SIGWX forecasts*

*should be disseminated in IWXXM GML form.*

*Note.— 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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## **2. AERODROME METEOROLOGICAL OFFICES**

### **2.1 Use of world area forecast system (WAFS) products**

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

### **2.2 Notification of WAFC concerning significant discrepancies**

Aerodrome meteorological offices using WAFS BUFR or, as of 4 November 2021, IWXXM data shall notify the WAFC concerned immediately if significant discrepancies are detected or reported in respect of WAFS SIGWX forecasts concerning:

...

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

*(See Chapter 9 of this Annex.)*

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## **2. SPECIFICATIONS RELATED TO INFORMATION FOR PRE-FLIGHT PLANNING AND IN-FLIGHT REPLANNING**

...

### **2.2 Format of information on significant weather**

2.2.1 Information on significant weather supplied by WAFCs for pre-flight and in-flight replanning shall be in the BUFR code form.

*Note.— The BUFR code form is contained in the Manual on Codes (WMO-No. 306), Volume I.2, Part B — Binary Codes.*

2.2.2 **Recommendation.**— *As of 4 November 2021, in addition to 2.2.1, information on significant*

*weather supplied by WAFCS for pre-flight and in-flight replanning should be in IWXXM GML form.*

*Note 2.— Guidance on the implementation of IWXXM is provided in the Manual on the ICAO Meteorological Information Exchange Model (IWXXM) (Doc 10003).*

...

|                              |  |
|------------------------------|--|
| <b>Origin:</b><br><br>METP/4 | <b>Rationale:</b><br><br>This proposed amendment has been introduced to fully meet the emerging needs of the aviation industry, as requested by the MET Divisional Meeting (MET/14, 2014), by providing more detailed and precise world area forecast system (WAFS) information which will increase safety and efficiency of air navigation. |
|------------------------------|--|

|   |
|---|
| <p><b>INITIAL PROPOSAL 6</b></p> <p><b>TROPICAL CYCLONE ADVISORIES AND SIGMET FOR TROPICAL CYCLONE</b><br/><b>(TABLES A2-2 AND A6-1A)</b></p> |
|---|

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

*(See Chapter 3 of this Annex.)*

...

**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.

...

| Element | Detailed content                          | Template(s)  | Examples                               |
|---------|---|--|--|
| 1       | Identification of the type of message (M) | TC ADVISORY  | TC ADVISORY                            |
| ...     | ...                                       | ... ..   | ... ..                                 |
| 8       | Observed CB cloud <sup>3</sup> (GO)       | CB: WI nnnKM (or nnnNM) OF TC CENTRE<br>or<br>WI <sup>4</sup> Nnn[nn] or Snn[nn] Wnnn[nn] or | CB: WI 250NM OF TC CENTRE TOP<br>FL500 |

|  |                             |   |  |  |
|--|-----------------------------|---|--|--|
|  |                             | and minutes)) <i>and</i><br>vertical extent (flight<br>level) | Ennn[nn] –<br>Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]<br>–<br>Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]<br>–<br>[Nnn[nn] or Snn[nn] Wnnn[nn] or<br>Ennn[nn] –<br>Nnn[nn] or Snn[nn] Wnnn[nn] or<br>Ennn[nn]]<br><i>and</i><br>TOP [ABV or BLW] FLnnn |  |
| 9  | ...                         | ...   | ...  | ...                                    |
| 10   | Changes in<br>intensity (M) | Expected changes in<br>intensity                              | INTENSITY<br>CHANGE:   | INTSF <i>or</i><br>WKN <i>or</i><br>NC |
| <i>Editorial Note — Renumber subsequent Elements</i> |                             |   |  |  |

Notes.—

...

**Example A2-2. Advisory message for tropical cyclones**

```

TC ADVISORY

DTG:                20040925/1900Z
TCAC:              YUFO*
TC:                GLORIA
ADVISORY NR:      2004/13
OBS PSN:          25/1800Z N2706 W07306
CB:               WI 250NM OF TC CENTRE TOP FL500
MOV:              NW 20KMH
INTENSITY CHANGE: INTSF
C:                965HPA
MAX WIND:         22MPS
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

*Fictitious location
    
```

...

**APPENDIX 6. TECHNICAL SPECIFICATIONS RELATED TO  
SIGMET AND AIRMET INFORMATION, AERODROME WARNINGS  
AND WIND SHEAR WARNINGS AND ALERTS**

*(See Chapter 7 of this Annex.)*

...

**Table A6-1A. Template for SIGMET and AIRMET messages**

Key: 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.

*Note 1.— The ranges and resolutions for the numerical elements included in SIGMET/AIRMET messages are shown in Table A6-4 of this appendix.*

*Note 2.— In accordance with 1.1.5 and 2.1.5, severe or moderate icing and severe or moderate turbulence (SEV ICE, MOD ICE, SEV TURB, MOD TURB) associated with thunderstorms, cumulonimbus clouds or tropical cyclones should not be included.*

| <i>Element</i>  | <i>Detailed content</i>  | <i>SIGMET template</i>               | <i>AIRMET template</i> | <i>SIGMET message examples</i>               | <i>AIRMET message examples</i> |
|---|--|--------------------------------------|------------------------|--|--------------------------------|
| ...   | ...  | ...                                  | ...                    | ...  | ...                            |
| IF THE SIGMET OR AIRMET MESSAGE IS TO BE CANCELLED, SEE DETAILS AT THE END OF THE TEMPLATE. |  |                                      |                        |  |                                |
| Status indicator (C) <sup>5</sup>   | Indicator of test or exercise  | TEST or EXER                         | TEST or EXER           | TEST<br>EXER                                 | TEST<br>EXER                   |
| ...   | ...  | ...                                  | ...                    | ...  | ...                            |
| Observed or forecast phenomenon (M) <sup>20, 21</sup>                                       | Indication whether the information is observed and expected to continue, or forecast | OBS [AT nnnnZ] or<br>FCST [AT nnnnZ] |                        | OBS<br>OBS AT 1210Z<br>FCST<br>FCST AT 1815Z |                                |

B-17

| Element                        | Detailed content  | SIGMET template  | AIRMET template | SIGMET message examples   | AIRMET message examples |
|--------------------------------|---|--|-----------------|---|-------------------------|
| Location (C) <sup>20, 21</sup> | Location (referring to latitude and longitude (in degrees and minutes)) | <p>Nnn[nn] Wnnn[nn] or Nnn[nn] Ennn[nn] or Snn[nn] Wnnn[nn] or Snn[nn] Ennn[nn]</p> <p>or</p> <p>N OF Nnn[nn] or S OF Nnn[nn] or N OF Snn[nn] or S OF Snn[nn] [AND]</p> <p>W OF Wnnn[nn] or E OF Wnnn[nn] or W OF Ennn[nn] or E OF Ennn[nn]</p> <p>or</p> <p>N OF Nnn[nn] or N OF Snn[nn] AND S OF Nnn[nn] or S OF Snn[nn]</p> <p>or</p> <p>W OF Wnnn[nn] or W OF Ennn[nn] AND E OF Wnnn[nn] or E OF Ennn[nn]</p> <p>or</p> <p>N OF LINE<sup>2122</sup> or NE OF LINE<sup>2122</sup> or E OF LINE<sup>2122</sup> or SE OF LINE<sup>2122</sup> or S OF LINE<sup>2122</sup> or SW OF LINE<sup>2122</sup> or W OF LINE<sup>2122</sup> or NW OF LINE<sup>2122</sup> Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]</p> <p>[– 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 LINE<sup>2122</sup> or NE OF LINE<sup>2122</sup> or E OF LINE<sup>2122</sup> or SE OF LINE<sup>2122</sup> or S OF LINE<sup>2122</sup> or SW OF LINE<sup>2122</sup> or W OF LINE<sup>2122</sup> or NW OF LINE<sup>2122</sup> Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]]</p> <p>or</p> <p>WI<sup>2122, 2223</sup> 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</p> <p>APRX nnKM WID LINE<sup>2122</sup> BTN (or nnNM WID LINE<sup>2122</sup> BTN) Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]</p> <p>[– Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]] [– Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]]</p> <p>or</p> <p>ENTIRE UIR</p> <p>or</p> <p>ENTIRE FIR</p> <p>or</p> <p>ENTIRE FIR/UIR</p> <p>or</p> <p>ENTIRE CTA</p> <p>or<sup>2223</sup></p> <p>WI nnnKM (or nnNM) OF TC CENTRE</p> <p>or<sup>2425</sup></p> <p>WI nnKM (or nnNM) OF Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]</p> |                 | <p>N2020 W07005</p> <p>N48 E010</p> <p>S60 W160</p> <p>S0530 E16530</p> <p>N OF N50</p> <p>S OF N5430</p> <p>N OF S10</p> <p>S OF S4530</p> <p>W OF W155</p> <p>E OF W45</p> <p>W OF E15540</p> <p>E OF E09015</p> <p>N OF N1515 AND W OF E13530</p> <p>S OF N45 AND N OF N40</p> <p>N OF LINE S2520 W11510 – S2520 W12010</p> <p>SW OF LINE N50 W005 – N60 W020</p> <p>SW OF LINE N50 W020 – N45 E010 AND NE OF LINE N45 W020 – N40 E010</p> <p>WI N6030 E02550 – N6055 E02500 – N6050 E02630 – N6030 E02550</p> <p>APRX 50KM WID LINE BTN N64 W017 – N60 W010 – N57 E010</p> <p>ENTIRE FIR</p> <p>ENTIRE UIR</p> <p>ENTIRE FIR/UIR</p> <p>ENTIRE CTA</p> <p>WI 400KM OF TC CENTRE</p> <p>WI 250NM OF TC CENTRE</p> <p>WI 30KM OF N6030 E02550<sup>†</sup></p> |                         |

<sup>†</sup> Applicable as of 7 November 2019

B-18

| Element   | Detailed content  | SIGMET template   | AIRMET template | SIGMET message examples   | AIRMET message examples |
|---|---|---|-----------------|---|-------------------------|
| Level (C) <sup>20, 21, 24</sup>                         | Flight level or altitude  | [SFC]/FLnnn or<br>[SFC]/nnnnM (or [SFC]/[n]nnnnFT) or<br>FLnnn/nnn or<br>TOP FLnnn or<br>[TOP] ABV FLnnn (or [TOP] ABV [n]nnnnFT)<br>[nnnn]/nnnnM (or [[n]nnnn]/[n]nnnnFT) or [nnnnM]/FLnnn<br>(or [[n]nnnnFT]/FLnnn)<br><br>or <sup>22, 24</sup><br>TOP [ABV or BLW] FLnnn   |                 | FL180<br>SFC/FL070<br>SFC/3000M<br>SFC/10000FT<br>FL050/080<br>TOP FL390<br>ABV FL250<br>TOP ABV FL100<br>ABV 7000FT<br>TOP ABV 9000FT<br>TOP ABV 10000FT<br>3000M<br>2000/3000M<br>8000FT<br>6000/12000FT<br>2000M/FL150<br>10000FT/FL250<br><br>TOP FL500<br>TOP ABV FL500<br>TOP BLW FL450 |                         |
| Movement or expected movement (C) <sup>20, 25, 26</sup> | 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<br>MOV NE [nnKMH] or MOV ENE [nnKMH] or<br>MOV E [nnKMH] or MOV ESE [nnKMH] or<br>MOV SE [nnKMH] or MOV SSE [nnKMH] or<br>MOV S [nnKMH] or MOV SSW [nnKMH] or<br>MOV SW [nnKMH] or MOV WSW [nnKMH] or<br>MOV W [nnKMH] or MOV WNW [nnKMH] or<br>MOV NW [nnKMH] or MOV NNW [nnKMH]<br>(or MOV N [nnKT] or MOV NNE [nnKT] or<br>MOV NE [nnKT] or MOV ENE [nnKT] or<br>MOV E [nnKT] or MOV ESE [nnKT] or<br>MOV SE [nnKT] or MOV SSE [nnKT] or<br>MOV S [nnKT] or MOV SSW [nnKT] or<br>MOV SW [nnKT] or MOV WSW [nnKT] or<br>MOV W [nnKT] or MOV WNW [nnKT] or<br>MOV NW [nnKT] or MOV NNW [nnKT])<br><br>or<br>STNR |                 | MOV SE<br>MOV NNW<br><br>MOV E 40KMH<br>MOV E 20KT<br>MOV WSW 20KT<br><br>STNR  |                         |
| Changes in intensity (C) <sup>20</sup>                  | Expected changes in intensity   | INTSF or<br>WKN or<br>NC  |                 | INTSF<br>WKN<br>NC  |                         |
| Forecast time (C) <sup>20, 21, 25, 26</sup>             | Indication of the forecast time of phenomenon   | FCST AT nnnnZ   | —               | FCST AT 2200Z   | —                       |
| TC forecast position (C) <sup>22, 24</sup>              | Forecast position of TC centre at the end of the validity period of the SIGMET message                                    | TC CENTRE PSN Nnn[nn]<br>or Snn[nn] Wnnn[nn]<br>or Ennn[nn] or <sup>31</sup><br>TC CENTRE PSN Nnn[nn]<br>or Sbb[nn] Wnnn[nn] or<br>Ennn[nn] CB  | —               | TC CENTRE PSN N1030<br>TC CENTRE PSN E1600015<br>CB   | —                       |



| Element  | Detailed content  | SIGMET template   | AIRMET template | SIGMET message examples   | AIRMET message examples |
|--|---|---|-----------------|---|-------------------------|
| Forecast position (C) <sup>20, 21, 25-26, 27</sup> | Forecast position of phenomenon at the end of the validity period of the SIGMET message | <p>Nnn[nn] Wnnn[nn] or<br/>                     Nnn[nn] Ennn[nn] or<br/>                     Snn[nn] Wnnn[nn] or<br/>                     Snn[nn] Ennn[nn]</p> <p>or</p> <p>N OF Nnn[nn] or<br/>                     S OF Nnn[nn] or<br/>                     N OF Snn[nn] or<br/>                     S OF Snn[nn] [AND]<br/>                     W OF Wnnn[nn] or<br/>                     E OF Wnnn[nn] or<br/>                     W OF Ennn[nn] or<br/>                     E OF Ennn[nn]</p> <p>or</p> <p>N OF Nnn[nn] or<br/>                     N OF Snn[nn] AND S OF<br/>                     Nnn[nn] or S OF Snn[nn]</p> <p>or</p> <p>W OF Wnnn[nn] or<br/>                     W OF Ennn[nn] AND E OF<br/>                     Wnnn[nn] or E OF Ennn[nn]</p> <p>or</p> <p>N OF LINE<sup>22</sup> or<br/>                     NE OF LINE<sup>22</sup> or<br/>                     E OF LINE<sup>22</sup> or<br/>                     SE OF LINE<sup>22</sup> or<br/>                     S OF LINE<sup>22</sup> or<br/>                     SW OF LINE<sup>22</sup> or<br/>                     W OF LINE<sup>22</sup> or<br/>                     NW OF LINE<sup>22</sup> Nnn[nn]</p> <p>or</p> <p>Snn[nn] Wnnn[nn] or<br/>                     Ennn[nn] – Nnn[nn] or<br/>                     Snn[nn] Wnnn[nn] or<br/>                     Ennn[nn]</p> <p>[– Nnn[nn] or Snn[nn]<br/>                     Wnnn[nn] or Ennn[nn]]<br/>                     [AND N OF LINE<sup>22</sup> or<br/>                     NE OF LINE<sup>22</sup> or<br/>                     E OF LINE<sup>22</sup> or<br/>                     SE OF LINE<sup>22</sup> or<br/>                     S OF LINE<sup>22</sup> or<br/>                     SW OF LINE<sup>22</sup> or<br/>                     W OF LINE<sup>22</sup> or<br/>                     NW OF LINE<sup>22</sup> Nnn[nn]<br/>                     or Snn[nn] Wnnn[nn] or<br/>                     Ennn[nn] – Nnn[nn] or<br/>                     Snn[nn] Wnnn[nn] or<br/>                     Ennn[nn]]<br/>                     [– Nnn[nn] or Snn[nn]<br/>                     Wnnn[nn] or Ennn[nn]]</p> | —               | <p>N30 W170</p> <p>N OF N30</p> <p>S OF S50 AND W OF<br/>E170</p> <p>S OF N46 AND N OF N39</p> <p>NE OF LINE N35 W020 –<br/>N45 W040</p> <p>SW OF LINE N48 W020 –<br/>N43 E010 AND NE OF<br/>LINE N43 W020 – N38<br/>E010</p> <p>WI N20 W090 –<br/>N05 W090 – N10 W100 –<br/>N20 W100 – N20 W090</p> <p>APRX 50KM WID LINE<br/>BTN N64 W017 –<br/>N57 W005 – N55 E010 –<br/>N55 E030</p> <p>ENTIRE FIR<br/>ENTIRE UIR<br/>ENTIRE FIR/UIR</p> <p>ENTIRE CTA</p> <p>NO VA EXP</p> <p>WI 30KM OF N6030<br/>E02550<sup>†</sup></p> <p>WI 150NM OF TC<br/>CENTRE</p> | —                       |

<sup>†</sup> Applicable as of 7 November 2019

| Element                                     | Detailed content   | SIGMET template   | AIRMET template | SIGMET message examples | AIRMET message examples |
|---|--|---|-----------------|-------------------------|-------------------------|
|   |  | <p>or<br/>                     WI<sup>21, 22, 23</sup> Nnn[nn] or<br/>                     Snn[nn] Wnnn[nn] or<br/>                     Ennn[nn] – Nnn[nn] or<br/>                     Snn[nn] Wnnn[nn] or<br/>                     Ennn[nn] – Nnn[nn] or<br/>                     Snn[nn] Wnnn[nn] or<br/>                     Ennn[nn] – Nnn[nn] or<br/>                     Snn[nn] Wnnn[nn] or<br/>                     Ennn[nn]</p> <p>or<br/>                     APRX nnKM WID LINE<sup>21,22</sup><br/>                     BTN (nnNM WID LINE<sup>21,22</sup><br/>                     BTN)<br/>                     Nnn[nn] or<br/>                     Snn[nn] Wnnn[nn] or<br/>                     Ennn[nn] – Nnn[nn] or<br/>                     Snn[nn] Wnnn[nn] or<br/>                     Ennn[nn]<br/>                     [– Nnn[nn] or<br/>                     Snn[nn] Wnnn[nn] or<br/>                     Ennn[nn]]<br/>                     [– Nnn[nn] or<br/>                     Snn[nn] Wnnn[nn] or<br/>                     Ennn[nn]]</p> <p>or<br/>                     ENTIRE FIR<br/>                     or<br/>                     ENTIRE UIR<br/>                     or<br/>                     ENTIRE FIR/UIR<br/>                     or<br/>                     ENTIRE CTA<br/>                     or<sup>22,28</sup><br/>                     NO VA EXP</p> <p>or<sup>24,25</sup><br/>                     WI nnKM (or nnNM) OF<br/>                     Nnn[nn] or Snn[nn]<br/>                     Wnnn[nn] or Ennn[nn]</p> <p>or<sup>24</sup><br/>                     WI nnnKM (nnnNM) OF TC<br/>                     CENTRE</p> |                 |                         |                         |
| Repetition of elements (C) <sup>28,29</sup> | Repetition of elements included in a SIGMET message for volcanic ash cloud or tropical cyclone | [AND] <sup>28,29</sup>  | —               | AND                     | —                       |

OR

|  |   |   |                                     |   |                                |
|--|---|---|-------------------------------------|---|--------------------------------|
| Cancellation of SIGMET/AIRMET (C) <sup>29,30</sup> | Cancellation of SIGMET/AIRMET referring to its identification | CNL SIGMET [n][n]n<br>nnnnnn/nnnnnn<br>or <sup>22,28</sup><br>CNL SIGMET<br>[n][n]n nnnnnn/nnnnnn<br>VA MOV TO nnnn FIR | CNL AIRMET [n][n]n<br>nnnnnn/nnnnnn | CNL SIGMET 2<br>101200/101600<br>CNL SIGMET A13<br>251030/251430 VA MOV<br>TO YUDO FIR <sup>2</sup> | CNL AIRMET 05<br>151520/151800 |
|--|---|---|-------------------------------------|---|--------------------------------|

Notes.—

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- 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.
- 2422. 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.
- 2223. The number of coordinates are to be kept to a minimum and should not normally exceed seven.
- 2324. Only for SIGMET messages for tropical cyclones.
- 2425. 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 can 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]*
- 2526. The elements "forecast time" and "forecast position" are not to be used in conjunction with the element "movement or expected movement".
- 2627. The levels of the phenomena remain fixed throughout the forecast period.
- 2728. Only for SIGMET messages for volcanic ash.
- 2829. To be used for two volcanic ash clouds or two centres of tropical cyclones cumulonimbus clouds associated with a tropical cyclone simultaneously affecting the FIR concerned.
- 2930. End of the message (as the SIGMET/AIRMET message is being cancelled).
- 31. The term CB is to be used when the forecast position for the cumulonimbus cloud is included.

...

|                              |  |
|------------------------------|--|
| <b>Origin:</b><br><br>METP/4 | <b>Rationale:</b><br><br>This proposed amendment corrects and reduces inconsistencies and deficiencies relating to the format of tropical cyclone (TC) SIGMET and TC advisory messages; it will prevent user misinterpretation and IWXXM errors. |
|------------------------------|--|

**INITIAL PROPOSAL 7**

**PROVISION OF SPACE WEATHER ADVISORY INFORMATION**

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

*(See Chapter 3 of this Annex.)*

...

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

...

|   | Element | Detailed content | Template(s) | Examples |
|---|---------|------------------|-------------|----------|
| 1 | ...     | ...              | ...         | ...      |

| ... | Element   | Detailed content  | Template(s)   | Examples  |
|-----|---|---|---|---|
| 7   | Space weather effect and intensity (M)                  | Effect and intensity of the space weather phenomena   | SWX EFFECT: HF COM MOD <i>or</i> SEV [AND] <sup>3</sup> <i>or</i> SATCOM MOD <i>or</i> SEV [AND] <sup>3</sup> <i>or</i> GNSS MOD <i>or</i> SEV <del>or</del> HF COM MOD <i>or</i> SEV AND GNSS MOD <i>or</i> SEV [AND] <sup>3</sup> <i>or</i> RADIATION <sup>4</sup> MOD <i>or</i> SEV  | SWX EFFECT: HF COM MOD<br><br>SATCOM SEV<br><br>GNSS SEV<br><br>HF COM MOD AND SATCOM MOD AND GNSS MOD<br><br>RADIATION MOD<br><br>SATCOM SEV |
| 8   | Observed <i>or</i> expected space weather phenomena (M) | Day and time (n UTC) of observed phenomena ( <i>or</i> forecast if phenomena have yet to occur);<br><br>Horizontal extent <sup>34</sup> (latitude bands and longitude in degrees) <i>and/or</i> altitude of space weather phenomena | OBS (or FCST) SWX: nn/nnnnZ DAYLIGHT SIDE <i>or</i> HNH <i>and/or</i> MNH <i>and/or</i> EQN <i>and/or</i> EQS <i>and/or</i> MSH <i>and/or</i> HSH Wnnn(nn) <i>or</i> Ennn(nn) – Wnnn(nn) <i>or</i> Ennn(nn) <i>and/or</i> ABV FLnnn <i>or</i> FLnnn – nnn <i>or</i> Nnn[nn] <i>or</i> Snn[nn] Wnnn[nn] <i>or</i> Ennn[nn] – Nnn[nn] <i>or</i> Snn[nn] Wnnn[nn] <i>or</i> Ennn[nn] – Nnn[nn] <i>or</i> Snn[nn] Wnnn[nn] <i>or</i> Ennn[nn] – [Nnn[nn] <i>or</i> Snn[nn] Wnnn[nn] <i>or</i> Ennn[nn]] – Nnn[nn] <i>or</i> Snn[nn] Wnnn[nn] <i>or</i> Ennn[nn]] <i>or</i> NO SWX EXP | OBS SWX: 08/0100Z DAYLIGHT SIDE<br><br>08/0100Z HNH HSH E18000 – W18000<br><br>08/0100Z HNH HSH W18000 – W09000 ABV FL350                     |
| ... | ...   | ...   | ...   | ...   |

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. Fictitious location.
3. One or more effects with the same intensity may be combined.
34. One or more latitude ranges should be included in the space weather advisory information for "GNSS" and "RADIATION".

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## ATTACHMENT E. SPATIAL RANGES AND RESOLUTIONS FOR SPACE WEATHER ADVISORY INFORMATION

(See Appendix 2, 6.1 of this Annex.)

| Element to be forecast             | Range     | Resolution |
|------------------------------------|-----------|------------|
| Flight level affected by radiation | 250 – 600 | 310        |

| <i>Element to be forecast</i>       | <i>Range</i> | <i>Resolution</i> |
|-------------------------------------|--------------|-------------------|
| Longitudes for advisories (degrees) | 000 – 180    | 15                |
| Latitudes for advisories (degrees)  | 00 – 90      | 10                |
| ...                                 | ...          | ...               |
| ...                                 |              |                   |

| <i>Origin</i> | <b>Rationale</b>  |
|---------------|---|
| METP/4        | This proposed amendment supports the implementation of provisions related to space weather advisories by allowing the combination of space weather effects and the description of all space weather effects using latitude bands, and by the provision of improved vertical resolution information. |

**INITIAL PROPOSAL 8**

**INDICATION OF MISSING AND/OR INCORRECT PARAMETERS IN METAR**  
**(TABLE A3-2)**

**APPENDIX 3. TECHNICAL SPECIFICATIONS RELATED TO METEOROLOGICAL OBSERVATIONS AND REPORTS**

*(See Chapter 4 of this Annex.)*

...

**Table A3-2. Template for METAR and SPECI**

...

| <i>Element as specified in Chapter 4</i> | <i>Detailed content</i> | <i>Template(s)</i>                     | <i>Examples</i>   |
|--|-------------------------|--|---|
| ...                                      | ...                     | ...                                    | ...   |
| END OF METAR IF THE REPORT IS MISSING.   |                         |  |   |
| Surface wind (M)                         | Wind direction (M)      | nnn <i>or</i> // <sup>12,19</sup>      | VRB   |
|  | Wind speed (M)          | [P]nn[n] <i>or</i> // <sup>12,19</sup> | 24004MPS VRB01MPS<br>///10MPS<br>(24008KT) (VRB02KT) 240//KT<br>19006MPS<br>(19012KT) /////KT<br>00000MPS<br>(00000KT)<br>140P49MPS<br>(140P99KT) |

| <i>Element as specified in Chapter 4</i> | <i>Detailed content</i>   | <i>Template(s)</i>  |                                 |                          | <i>Examples</i>   |
|--|---|---|---------------------------------|--------------------------|---|
|  | Significant speed variations (C) <sup>3</sup>                               | G[P]nn[n]   |                                 |                          | 12003G09MPS<br>(12006G18KT)   |
|  | Units of measurement (M)  | MPS (or KT)   |                                 |                          | 24008G14MPS<br>(24016G28KT)   |
|  | Significant directional variations (C) <sup>4</sup>                         | nnnVnnn   | —                               |                          | 02005MPS 350V070<br>(02010KT 350V070)   |
| Visibility (M)                           | Prevailing or minimum visibility (M) <sup>5</sup>                           | nnnn or /// <sup>12,19</sup>  |                                 |                          | C<br>A<br>V<br>O<br>K<br><br>0350    ///<br>CAVOK<br><br>7000<br>9999<br>0800<br><br>2000 1200NW<br>6000 2800E<br>6000 2800 |
|  | Minimum visibility and direction of the minimum visibility (C) <sup>6</sup> | nnnn[N] or nnnn[NE] or nnnn[E] or nnnn[SE] or nnnn[S] or nnnn[SW] or nnnn[W] or nnnn[NW]  |                                 |                          |   |
| Runway visual range (C) <sup>7</sup>     | Name of the element (M)   | R   |                                 |                          | R32/0400<br>R12R/1700<br>R10/M0050<br>R14L/P2000  |
|  | Runway (M)  | nn[L]/or nn[C]/or nn[R]/  |                                 |                          | R16L/0650 R16C/0500<br>R16L///// R10/////   |
|  | Runway visual range (M)   | [P or M]nnnn or /// <sup>12,19</sup>  |                                 |                          | R16R/0450 R17L/0450   |
|  | Runway visual range past tendency (C) <sup>8</sup>                          | U, D or N   |                                 |                          | R12/1100U<br>R26/0550N R20/0800D<br>R12/0700  |
| ...                                      | ...   | ...   | ...                             | ...                      |   |
| Cloud (M) <sup>14</sup>                  | Cloud amount and height of cloud base or vertical visibility (M)            | FEWnnn or SCTnnn or BKNnnn or OVCnnn or FEW/// <sup>12</sup> or SCT/// <sup>12</sup> or BKN/// <sup>12</sup> or OVC/// <sup>12</sup> or ///nnn <sup>12</sup> or //// <sup>12,19</sup> | VVnnn or VV/// <sup>12,19</sup> | NSC or NCD <sup>12</sup> | FEW015 VV005<br>OVC030 VV/// NSC<br><br>SCT010 OVC020<br><br>BKN/// ///015  |
|  | Cloud type (C) <sup>2</sup>   | CB or TCU or /// <sup>12</sup>  | —                               |                          | BKN009TCU NCD<br><br>SCT008 BKN025CB BKN025///<br>///CB   |
| Air and dew-point temperature (M)        | Air and dew-point temperature (M)   | [M]nn/[M]nn or ///[M]nn <sup>12,19</sup> or [M]nn/// <sup>12,19</sup> or //// <sup>12,19</sup>  |                                 |                          | 17/10    ///10    17///    ////<br>02/M08<br>M01/M10  |
| Pressure values (M)                      | Name of the element (M)   | Q   |                                 |                          | Q0995<br>Q1009<br>Q1022    Q///<br>Q0987  |
|  | QNH (M)   | Nnnn or //// <sup>12,19</sup>   |                                 |                          |   |
| ...                                      | ...   | ...   |                                 |                          | ...   |

Notes.—

...

- 16. To be included in accordance with 4.8.1.5 b) until 4 November 2020.
  - 17. To be included in accordance with Chapter 6, 6.3.2.
  - 18. Number of change indicators to be kept to a minimum in accordance with Appendix 5, 2.2.1, normally not exceeding three groups.
  - 19. 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.
- ...

|                              |   |
|------------------------------|---|
| <b>Origin:</b><br><br>METP/4 | <b>Rationale:</b><br><br>This proposed amendment has been introduced to support the ability of the ICAO Meteorological Information Exchange Model (IWXXM) schema to appropriately handle missing and/or incorrect mandatory parameters in METAR when translating from the traditional alphanumeric code (TAC) into IWXXM. |
|------------------------------|---|

**INITIAL PROPOSAL 9**

**REVISED EDDY DISSIPATION RATE (EDR) THRESHOLD VALUES FOR REPORTING AIRCRAFT TURBULENCE**

**APPENDIX 4. TECHNICAL SPECIFICATIONS RELATED TO AIRCRAFT OBSERVATIONS AND REPORTS**

*(See Chapter 5 of this Annex.)*

...

**2.6 Turbulence**

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

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 0.70.45;
- b) moderate when the peak value of the cube root of EDR is equal to or above 0.40.20 and below or equal to 0.70.45;
- c) light when the peak value of the cube root of EDR is above 0.10 and below or equal to 0.40.20; and
- d) nil when the peak value of the cube root of EDR is below or equal to 0.10.

*Note 1.— 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 en-route conditions (i.e. altitude, airspeed and weight).*

*Note 2.— The EDR refers to the cube root of the energy or eddy dissipation rate estimated from aircraft data parameters (e.g. vertical wind velocity or aircraft vertical acceleration).*

### 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 0.40.20. 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 0.40.20.

...

## **APPENDIX 6. TECHNICAL SPECIFICATIONS RELATED TO SIGMET AND AIRMET INFORMATION, AERODROME WARNINGS AND WIND SHEAR WARNINGS AND ALERTS**

*(See Chapter 7 of this Annex.)*

...

### **4.2 Criteria related to phenomena included in SIGMET and AIRMET messages and special air-reports (uplink)**

...

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 when the peak value of the cube root of EDR is equal to or above 0.40.20 and below or equal to 0.70.45.



...

|                              |  |
|------------------------------|--|
| <b>Origin:</b><br><br>METP/4 | <b>Rationale:</b><br><br>This proposed amendment updates the thresholds for EDR, as an improved index-based metric for reporting aircraft turbulence, in accordance with scientific studies. |
|------------------------------|--|

|  |
|--|
| <p><b>INITIAL PROPOSAL 10</b></p> <p><b>AIRMET AND GAMET INFORMATION</b></p> |
|--|

**APPENDIX 5. TECHNICAL SPECIFICATIONS  
RELATED TO FORECASTS**

*(See Chapter 6 of this Annex.)*

...

**4.4 Exchange and dissemination of area forecasts for low-level flights**

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.

4.4.2 **Recommendation.**—*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 aeronautical fixed service Internet-based services.*

...

|                              |   |
|------------------------------|---|
| <b>Origin:</b><br><br>METP/4 | <b>Rationale:</b><br><br>This proposed amendment will eliminate some constraints in the current ICAO Annex 3 and, as requested by users, will allow that low-level forecasts, prepared in accordance with regional air navigation agreement, be internationally disseminated benefiting users around the world. |
|------------------------------|---|

**INITIAL PROPOSAL 11**  
**SIGMET INFORMATION FOR RADIOACTIVE CLOUD (TABLE A6-1A AND EXAMPLE A6-4)**

**APPENDIX 6. TECHNICAL SPECIFICATIONS RELATED TO  
 SIGMET AND AIRMET INFORMATION, AERODROME WARNINGS  
 AND WIND SHEAR WARNINGS AND ALERTS**

*(See Chapter 7 of this Annex.)*

...

**Table A6-1A. Template for SIGMET and AIRMET messages**

Key: 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.

...

| <i>Element</i>  | <i>Detailed content</i>   | <i>SIGMET template</i>   | <i>AIRMET template</i> | <i>SIGMET message examples</i> | <i>AIRMET message examples</i> |
|---|---|--|------------------------|--------------------------------|--------------------------------|
| ...   | ...   | ...  | ...                    | ...                            | ...                            |
| Location (C) <sup>20, 32</sup>                          | Location (referring to latitude and longitude (in degrees and minutes))   | ...<br>or <sup>25</sup><br>WI nnKM (or nnNM) OF Nnn[nn] or Snn[nn]<br>Wnnn[nn] or Ennn[nn] |                        | WI 30KM OF<br>N6030 E02550†    |                                |
| ...   | ...   | ...  | ...                    | ...                            | ...                            |
| Movement or expected movement (C) <sup>20, 25, 33</sup> | Movement or expected movement (direction and speed) with reference to one of the sixteen points of compass, or stationary | ...<br>or<br>STNR  |                        | STNR                           |                                |
| ...   | ...   | ...  | ...                    | ...                            | ...                            |
| Forecast position (C) <sup>20, 25, 26, 32</sup>         | Forecast position of phenomenon at the end of the validity period of the SIGMET message                                   | ...<br>or <sup>25</sup><br>WI nnKM (or nnNM) OF Nnn[nn] or Snn[nn]<br>Wnnn[nn] or Ennn[nn] |                        | WI 30KM OF<br>N6030 E02550†    |                                |
| ...   | ...   | ...  | ...                    | ...                            | ...                            |

† Applicable as of 7 November 2019

Notes.—

...

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.
2422. 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.
2223. The number of coordinates ~~should~~ are to be kept to a minimum and should not normally exceed seven.
2324. Only for SIGMET messages for tropical cyclones.
2425. 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~~ can 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]
25. ~~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 5 November 2020]~~
2526. The elements "forecast time" and "forecast position" are not to be used in conjunction with the element "movement or expected movement".
2627. The levels of the phenomena remain fixed throughout the forecast period.
2728. Only for SIGMET messages for volcanic ash.
2829. To be used for two volcanic ash clouds or ~~two centres of tropical cyclones~~ cumulonimbus clouds associated with a tropical cyclone simultaneously affecting the FIR concerned.
2930. End of the message (as the SIGMET/AIRMET message is being cancelled).
31. The term CB is to be used when the forecast position for the cumulonimbus cloud is included.
32. For SIGMET messages for radioactive cloud, only within (WI) is to be used for the elements "location" and "forecast position".
33. For SIGMET messages for radioactive cloud, only stationary (STNR) is to be used for the element "movement or expected movement".

...

**Example A6-4. SIGMET message for radioactive cloud**

YUCC SIGMET 2 VALID 201200/201600 YUDO –  
 YUCC AMSWELL FIR RDOACT CLD OBS AT 1155Z WI 30KM 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 Amswell 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

...

|                |  |
|----------------|--|
| <b>Origin:</b> | <b>Rationale:</b>  |
| METP/4         | This amendment supports the radioactive cloud (RDOACT CLD) SIGMET implementation; it simplifies existing requirements. |

**INITIAL PROPOSAL 12**  
**INCLUSION OF HEAVY DUST STORMS IN SPECIAL AIR-REPORT**

**APPENDIX 4. TECHNICAL SPECIFICATIONS RELATED TO  
 AIRCRAFT OBSERVATIONS AND REPORTS**

*(See Chapter 5 of this Annex.)*

...

**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                                 |
| ...  | ...                                 | ...   | ...                                 |
| DATA BLOCK 1   |                                     |   |                                     |
| Latitude (M)   | Latitude in degrees and minutes (M) | Nnnnn or Snnnn  | S4506                               |
| ...  | ...                                 | ...   | ...                                 |
| DATA BLOCK 2   |                                     |   |                                     |
| Wind direction (M)   | Wind direction in degrees true (M)  | nnn/  | 262/                                |
| ...  | ...                                 | ...   | ...                                 |
| DATA BLOCK 3   |                                     |   |                                     |
| Condition prompting the issuance of a special air-report (M) |                                     | SEV TURB [EDRnnn] <sup>2</sup> or<br>SEV ICE or<br>SEV MTW or<br>TS GR <sup>3</sup> or<br>TS <sup>3</sup> or<br>HVY DS <sup>4</sup> or<br>HVY SS <sup>4</sup> or<br>VA CLD [FLnnn/nnn] or<br>VA <sup>5</sup><br>[MT nnnnnnnnnnnnnnnnnnnnn] or<br>MOD TURB [EDRnnn] <sup>2</sup> or<br>MOD ICE | SEV TURB EDR076<br>VA CLD FL050/100 |

...

**APPENDIX 6. TECHNICAL SPECIFICATIONS RELATED TO  
SIGMET AND AIRMET INFORMATION, AERODROME WARNINGS  
AND WIND SHEAR WARNINGS AND ALERTS**

*(See Chapter 7 of this Annex.)*

...

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

Key: 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.

*Note.— The ranges and resolutions for the numerical elements included in special air-reports are shown in Table A6-4 of this appendix.*

| <i>Element</i>              | <i>Detailed content</i>  | <i>Template<sup>1,2</sup></i>  | <i>Examples</i>  |
|-----------------------------|--|--|--|
| Identification (M)          | Message identification   | ARS  | ARS  |
| Aircraft identification (M) | Aircraft radiotelephony call sign  | nnnnnn   | VA812 <sup>3</sup>   |
| Observed phenomenon (M)     | Description of observed phenomenon causing the issuance of the special air-report <sup>4</sup> | TS<br>TSGR<br><br>SEV TURB<br>SEV ICE<br><br>SEV MTW<br><br>HVY DS<br><br>HVY SS<br><br>VA CLD<br>VA [MT nnnnnnnnn]<br><br>MOD TURB<br>MOD ICE | TS<br>TSGR<br><br>SEV TURB<br>SEV ICE<br><br>SEV MTW<br><br>HVY DS<br><br>HVY SS<br><br>VA CLD<br>VA<br>VA MT ASHVAL <sup>5</sup><br><br>MOD TURB<br>MOD ICE |
| Observation time (M)        | Time of observation of observed phenomenon   | OBS AT nnnnZ   | OBS AT 1210Z   |
| Observed Location (C)       | Location (referring to latitude and longitude (in degrees and minutes)) of observed phenomenon | NnnnnWnnnnn or<br>NnnnnEnnnnn or<br>SnnnnWnnnnn or<br>SnnnnEnnnnn  | N2020W07005<br>S4812E01036   |
| Observed Level (C)          | Flight level or altitude of observed phenomenon  | FLnnn or<br>FLnnn/nnn or<br>nnnnM (or [n]nnnnFT)   | FL390<br>FL180/210<br>3000M<br>12000FT   |

...

|                                     |  |
|-------------------------------------|--|
| <p><b>Origin:</b></p> <p>METP/4</p> | <p><b>Rationale:</b></p> <p>This proposed amendment, based on practical experience and operational needs, aligns the templates given in Annex 3 (Table A4-1 and Table A6-1B) with the template given in Doc 4444, Appendix 1, Section 1 (Reporting instructions) since Annex 3 is missing the phenomenon heavy dust storm. The said alignment in turn will allow the reporting of heavy dust storms (HVY DS) in special air-reports to improve the availability of AIREPs to support international civil aviation.</p> |
|-------------------------------------|--|

|  |
|--|
| <p><b>INITIAL PROPOSAL 13</b></p> <p><b>ICAO METEOROLOGICAL INFORMATION EXCHANGE MODEL (IWXXM)</b></p> |
|--|

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

*(See Chapter 11 of this Annex.)*

**1. SPECIFIC REQUIREMENTS FOR COMMUNICATIONS**

**1.1 Required transit times of meteorological information**

~~AFTN-m~~ 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.

...

2.1.4 ~~Structure~~ Exchange of OPMET bulletins

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

...

|                                     |  |
|-------------------------------------|--|
| <p><b>Origin:</b></p> <p>METP/4</p> | <p><b>Rationale:</b></p> <p>This proposed amendment facilitates the exchange in IWXXM of a number of operational meteorological products over the AFS.</p> |
|-------------------------------------|--|

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**ATTACHMENT C to State letter AN 10/1-19/25**

**PROPOSED AMENDMENT TO ANNEX 10, VOLUME II**

**NOTES ON THE PRESENTATION OF THE AMENDMENT**

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

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

Text to be deleted

New text to be inserted is highlighted with grey shading.

New text to be inserted

~~Text to be deleted is shown with a line through it~~ followed by the replacement text which is highlighted with grey shading.

New text to replace existing text

**TEXT OF PROPOSED AMENDMENT TO  
INTERNATIONAL STANDARDS  
AND RECOMMENDED PRACTICES**

**AERONAUTICAL TELECOMMUNICATIONS**

**ANNEX 10**

**VOLUME II — COMMUNICATION PROCEDURES INCLUDING THOSE WITH PANS STATUS  
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION**

**INITIAL PROPOSAL 1**

**ICAO INFORMATION METEOROLOGICAL EXCHANGE MODEL (IWXXM),  
AERONAUTICAL FIXED TELECOMMUNICATION NETWORK (AFTN) AND  
AERONAUTICAL FIXED SERVICE (AFS)**

...

**CHAPTER 4. AERONAUTICAL FIXED SERVICE (AFS)**

...

**4.3 METEOROLOGICAL OPERATIONAL CHANNELS AND METEOROLOGICAL  
OPERATIONAL TELECOMMUNICATION NETWORKS**

Meteorological operational channel procedures and meteorological operational communication network procedures shall be compatible with aeronautical fixed telecommunication network (AFTN) or ATS message handling services (AMHS) procedures.

*Note.— “Compatible” is to be interpreted as a mode of operation ensuring that the information exchanged over the meteorological operational channels also can be exchanged over the ~~aeronautical fixed telecommunication network~~AFTN or AMHS without harmful effect on the operation of the ~~aeronautical fixed telecommunication network~~AFTN or AMHS and vice versa.*

**4.4 AERONAUTICAL FIXED TELECOMMUNICATION NETWORK (AFTN)**

**4.4.1 General**

4.4.1.1 *Categories of messages.* Subject to the provisions of 3.3, the following categories of message shall be handled by the aeronautical fixed telecommunication network:

- a) distress messages;
- b) urgency messages;
- c) flight safety messages;
- d) meteorological messages;

...

|                              |  |
|------------------------------|--|
| <b>Origin:</b><br><br>METP/4 | <b>Rationale:</b><br><br>This proposed amendment facilitates the exchange in IWXXM of a number of operational meteorological products over the aeronautical fixed service (AFS). |
|------------------------------|--|

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**ATTACHMENT D** to State letter AN 10/1-19/25

**PROPOSED AMENDMENT TO PANS-ATM (DOC 4444)**

**NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT**

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

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

text to be deleted

New text to be inserted is highlighted with grey shading.

new text to be inserted

~~Text to be deleted is shown with a line through it~~ followed by the replacement text which is highlighted with grey shading.

new text to replace existing text

**TEXT OF PROPOSED AMENDMENT TO THE  
PROCEDURES FOR AIR NAVIGATION SERVICES —  
AIR TRAFFIC MANAGEMENT (PANS-ATM, DOC 4444)**

**INITIAL PROPOSAL 1**

**Appendix 1**

**INSTRUCTIONS FOR AIR-REPORTING  
BY VOICE COMMUNICATIONS**

...

**3. Forwarding of meteorological information  
received by voice communications**

...

**Section 3**

**Item 9** — PHENOMENON PROMPTING A SPECIAL AIR-REPORT. Record the phenomenon reported as follows:

...

- thunderstorm with hail as “TSGR”
- heavy ~~duststorm or sandstorm~~ as “HVY SS”
- heavy duststorm as “HVY DS”

...

|                          |   |
|--------------------------|---|
| <b>Origin:</b><br>METP/4 | <b>Rationale:</b><br>This amendment is consequential to the Annex 3 amendment to align the relevant requirements. |
|--------------------------|---|

-----

**ATTACHMENT E** to State letter AN 10/1-19/25

**RESPONSE FORM TO BE COMPLETED AND RETURNED TO ICAO TOGETHER  
WITH ANY COMMENTS YOU MAY HAVE ON THE PROPOSED AMENDMENTS**

To: The Secretary General  
International Civil Aviation Organization  
999 Robert-Bourassa Boulevard  
Montréal, Quebec  
Canada, H3C 5H7

(State) \_\_\_\_\_

Please make a checkmark (✓) against one option for each amendment. If you choose options “agreement with comments” or “disagreement with comments”, **please provide your comments on separate sheets.**

|  | <i>Agreement<br/>without<br/>comments</i> | <i>Agreement<br/>with<br/>comments*</i> | <i>Disagreement<br/>without<br/>comments</i> | <i>Disagreement<br/>with<br/>comments</i> | <i>No position</i> |
|--|---|---|--|---|--------------------|
| Amendment to Annex 3 — <i>Meteorological Service for International Air Navigation</i><br>(Attachment B refers)   |   |   |  |   |                    |
| Amendment to Annex 10 — <i>Aeronautical Telecommunications, Volume II — Communication Procedures including those with PANS status</i><br>(Attachment C refers) |   |   |  |   |                    |
| Amendment to the <i>Procedures for Air Navigation Services — Air Traffic Management</i><br>(PANS-ATM, Doc 4444)<br>(Attachment D refers)                       |   |   |  |   |                    |

\*“Agreement with comments” indicates that your State or organization agrees with the intent and overall thrust of the amendment proposal; the comments themselves may include, as necessary, your reservations concerning certain parts of the proposal and/or offer an alternative proposal in this regard.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

— END —