



**INTERNATIONAL
CIVIL AVIATION
ORGANIZATION**



**WORLD
METEOROLOGICAL
ORGANIZATION**

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18/7/14

Meteorology (MET) Divisional Meeting
(2014)

Commission for Aeronautical Meteorology
Fifteenth Session

Montréal, 7 to 18 July 2014

REPORT ON AGENDA ITEM 5

*(All Agenda Items considered conjointly with the
Fifteenth Session of the Commission for Aeronautical Meteorology
of the World Meteorological Organization)*

This report will be subject to review by the Air Navigation Commission and the Council of ICAO, and the Executive Council of WMO. The decisions of these bodies on the recommendations of the Meeting will be set forth in a Supplement to the Report of the Meeting, which will be issued in due course.

Agenda Item 5: Standards, Recommended Practices and Procedures

5.1: Amendment 77 to Annex 3/Technical Regulations [C.3.1]

5.1.1 The meeting undertook a review of a consolidated proposal for amendment of Annex 3—*Meteorological Service for International Air Navigation/Technical Regulations* [C.3.1]. The meeting noted that the sources of the proposed amendments had been the International Airways Volcano Watch Operations Group (IAVWOPSG), the World Area Forecast System Operations Group (WAFSOPSG), the Aerodrome Meteorological Observation and Forecast Study Group (AMOFSG), the Meteorological Warnings Study Group (METWSG), the Meteorological Aeronautical Requirements and Information Exchange Project Team (MARIE-PT) and the Secretariat.

5.1.2 The meeting recalled discussions under Agenda Item 2.2 concerning space weather, for which it was noted that the roles, requirements and capabilities of global and regional centres had not been fully elaborated. The meeting had therefore agreed to *not include* draft initial provisions for space weather in the draft Amendment 77 to Annex 3/Technical Regulations [C.3.1].

5.1.3 In respect of the provision of world area forecast system (WAFS) upper-air gridded forecasts and, more specifically, the grid point forecasts prepared by a world area forecast centres (WAFS), the meeting agreed to a request made by the International Air Transport Association (IATA) to include a requirement for humidity data for flight level 80 (750 hPa) in the draft Amendment 77 to Annex 3/Technical Regulations [C.3.1].

5.1.4 The meeting was informed of a potential cost impact, with no operational benefits, of the switch to the “00” midnight notation in TAF. A view was expressed to wait for the implementation of IWXXM which uses this notation from the outset. It was noted that the switch from “24” notation to “00” notation had been proposed in order to ensure that Annex 3/Technical Regulations [C.3.1] provisions were consistent with provisions in Annex 5 — *Units of Measurement to be Used in Air and Ground Operations*, Attachment E.

5.1.5 Having completed its review, including taking into account the foregoing, the meeting agreed that the proposed amendment to Annex 3/Technical Regulations [C.3.1] should serve as the basis for Amendment 77. The meeting noted the need for consequential amendments to Annex 11 — *Air Traffic Services*, the *Procedures for Air Navigation Services — ICAO Abbreviations and Codes* (PANS-ABC, Doc 8400) and the *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444). The meeting formulated the following recommendation accordingly:

RSPP | **Recommendation 5/1 — Amendment 77 to Annex 3/Technical Regulations [C.3.1] and consequential amendments to Annex 11, PANS-ABC and PANS-ATM**

That:

- a) the proposal given in Appendix A be included as part of draft Amendment 77 to Annex 3 — *Meteorological Service for International Air Navigation/Technical Regulations* [C.3.1]; and
- b) the consequential amendments to Annex 11, the PANS-ABC and the PANS-ATM, given in Appendices B, C and D respectively, be consolidated with other proposals for amendment of these documents.

Agenda Item 5: Standards, Recommended Practices and Procedures

5.2: Proposed Procedures for Air Navigation Services — Meteorology (PANS-MET, Doc xxxx), First Edition (not later than 2019)

5.2.1 The meeting recalled that under Agenda Item 1 it had initialized consideration of the need for a restructuring of Annex 3/Technical Regulations [C.3.1] and the development of a new *Procedures for Air Navigation Services — Meteorology* (PANS-MET) in the spirit of Resolution A38-11 of the 38th Session of the ICAO Assembly. The meeting agreed that Annex 3/Technical Regulations [C.3.1] and a PANS-MET should clearly identify the following:

- a) State obligations;
- b) service provider obligations; and
- c) technical requirements for the service.

And, moreover, that Annex 3/Technical Regulations [C.3.1] should specify service requirements whilst PANS-MET should specify the means of complying with the service requirements.

5.2.2 When considering a restructuring of Annex 3/Technical Regulations [C.3.1] and the development of a new PANS-MET, the meeting recognized that every functional and performance requirement and technical specification contained in Annex 3/Technical Regulations [C.3.1] would need to be assessed in order to determine whether a particular provision was retained or instead transferred to a PANS-MET. In addition, the meeting agreed that a roadmap should be developed by ICAO to support such provisions developments. The meeting was also cognizant of the need to ensure that the developments respect the rights and obligations of States contained in the *Convention on International Civil Aviation* (Doc 7300).

5.2.3 The meeting noted that the PANS did not have the same status as the Standards and Recommended Practices contained in the Annexes. While the latter were adopted by Council in pursuance of Article 37 of the Convention on International Civil Aviation, subject to the full procedure of Article 90, the PANS were approved by the Council and recommended to Contracting States for worldwide application. The PANS therefore did not come within the obligation imposed by Article 38 of the Convention to notify differences in the event of non-implementation. Nevertheless, the attention of the meeting was drawn to the provision of Annex 15 — *Aeronautical Information Services* related to the publication in their Aeronautical Information Publications (State AIPs) of lists of significant differences between their procedures and the related ICAO procedures. The meeting further noted that, as with Annexes and Regional Air Navigation Plans, those aeronautical meteorological services which serve to meet the aeronautical requirements stated in a PANS are subject to cost recovery through air navigation charges.

5.2.4 In view of the significant work that would be required to restructure Annex 3/Technical Regulations [C.3.1] and concurrently develop a first edition of a PANS-MET, the meeting considered it prudent to undertake such work as part of Amendment 78 to Annex 3/Technical Regulations [C.3.1], the adoption (or applicability) of which should respect Block 1 of the aviation system block upgrades (ASBU) methodology contained in the *Global Air Navigation Plan* (Doc 9750). This would allow Amendment 77 to Annex 3/Technical Regulations [C.3.1], as discussed at 5.1 above, to proceed in the meantime.

5.2.5 Noting the expressed need for functional and performance requirements elaborated by technical specifications (i.e. means of compliance) in the restructured Annex 3/Technical Regulations [C.3.1] and new PANS-MET, the meeting agreed that it was advisable to not be prescriptive at this stage insofar as the exact content and structure of the provisions were concerned. Recalling earlier discussions under Agenda Item 2, the meeting noted that meteorological services for the terminal area and arrangements for the regional hazardous weather advisory centres would be important aspects that would need to be included in the restructured Annex 3/Technical Regulations [C.3.1] and new PANS-MET. In addition, the meeting noted a need to ensure the proper positioning (in the Annex and/or the PANS) of requirements addressing the accuracy and quality of aeronautical meteorological observations.

5.2.6 In view of the foregoing, the meeting formulated the following recommendation accordingly:

Recommendation 5/2 — Reorganization of provisions relating to aeronautical meteorology

That ICAO in close coordination with WMO undertake:

- a) a restructuring of Annex 3/Technical Regulations [C.3.1] as part of Amendment 78; and
- b) the development of a *Procedures for Air Navigation Services — Meteorology* (PANS-MET, Doc xxxx) so that a first edition be available concurrent with Amendment 78 referenced in a) above

based on a roadmap (to be developed and published by ICAO) and the principles contained in Appendix E.

Agenda Item 5: Standards, Recommended Practices and Procedures

5.3: Consequential amendments, if any, to other Annexes or PANS

5.3.1 The meeting noted that consequential amendments to other Annexes and PANS arising from the proposed amendment (Amendment 77) to Annex 3/Technical Regulations [C.3.1] had been addressed at 5.1.5 above and the associated Recommendation 5/1.

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENTS

1. The text of the proposed 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 new text which is highlighted with grey shading

new text to replace existing text

2. The sources of the proposed amendments have been indicated as follows:

Source	Annotation
International Airways Volcano Watch Operations Group (IAVWOPSG)	<u>IAVWOPSG</u>
World Area Forecast System Operations Group (WAFSOPSG)	<u>WAFSOPSG</u>
Aerodrome Meteorological Observation and Forecast Study Group (AMOFSG)	<u>AMOFSG</u>
Meteorological Warnings Study Group (METWSG)	<u>METWSG</u>
Meteorological Aeronautical Requirements and Information Exchange Project Team (MARIE-PT)	<u>MARIE-PT</u>
Meteorological Divisional Meeting (2014)	<u>MET/14</u>
Secretariat	<u>Secretariat</u>

APPENDIX A

PROPOSED AMENDMENT TO

**INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES**

**METEOROLOGICAL SERVICE
FOR INTERNATIONAL AIR NAVIGATION**

ANNEX 3

TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

EIGHTEENTH EDITION — JULY 2013

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CHAPTER 1. DEFINITIONS

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1.1 Definitions

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METWSG

~~**Automatic dependent surveillance (ADS).** A surveillance technique in which aircraft automatically provide, via a data link, data derived from on-board navigation and position fixing systems, including aircraft identification, four dimensional position and additional data as appropriate.~~

Automatic dependent surveillance — contract (ADS-C). A means by which the terms of an ADS-C agreement will be exchanged between the ground system and the aircraft, via a data link, specifying under what conditions ADS-C reports would be initiated, and what data would be contained in the reports.

Note.— The abbreviated term “ADS contract” is commonly used to refer to ADS event contract, ADS demand contract, ADS periodic contract or an emergency mode.

...

AMOFSG

Meteorological watch office. An office designated to provide information concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations within its specified area of responsibility.

...

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

...

Secretariat

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

...

WAFSOPSG

World area forecast centre (WAFc). A meteorological centre designated to prepare and issue significant weather forecasts and upper-air forecasts in digital form on a global basis direct to States by ~~appropriate means as part of~~ using the aeronautical fixed service ~~satellite distribution system and the Internet-based services.~~

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CHAPTER 2. GENERAL PROVISIONS

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2.1 Objective, determination and provision of meteorological service

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AMOFSG

2.1.3 Each Contracting State shall determine the meteorological service which it will provide to meet the needs of international air navigation. This determination shall be made in accordance with the provisions of this Annex and ~~with due regard to~~ in accordance with regional air navigation agreements; it shall include the determination of the meteorological service to be provided for international air navigation over international waters and other areas which lie outside the territory of the State concerned.

...

METWSG

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

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AMOFSG

~~2.2.6 **Recommendation.**— Demonstration of compliance of the quality system applied should be by audit. If non-conformity of the system is identified, action should be initiated to determine and correct the cause. All audit observations should be evidenced and properly documented.~~

2.2.6 Demonstration of compliance of the quality system applied shall be by audit. If non-conformity of the system is identified, action shall be initiated to determine and correct the cause. All audit observations shall be evidenced and properly documented.

...

METWSG

Editorial Note.— Insert the following new text.

2.2.7 Owing to the variability of meteorological elements in space and time, to limitations of observing techniques and to limitations caused by the definitions of some of the elements, the specific value of any of the elements given in a report shall be understood by the recipient to be the best approximation to the actual conditions at the time of observation.

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

2.2.8 Owing to the variability of meteorological elements in space and time, to limitations of forecasting techniques and to limitations caused by the definitions of some of the elements, the specific value of any of the elements given in a forecast shall be understood by the recipient to be the most probable value which the element is likely to assume during the period of the forecast. Similarly, when the time of occurrence or change of an element is given in a forecast, this time shall be understood to be the most probable time.

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

End of new text.

2.2.79 The meteorological information supplied to the users listed in 2.1.2 shall be consistent with Human Factors principles and shall be in forms which require a minimum of interpretation by these users, as specified in the following chapters.

...

2.3 Notifications required from operators

AMOFSG

2.3.1 An operator requiring meteorological service or changes in existing meteorological service shall notify, sufficiently in advance, the meteorological authority or the aerodrome meteorological office concerned. The minimum amount of advance notice required shall be as agreed between the meteorological authority or aerodrome meteorological office and the operator **concerned**.

...

2.3.4 **Recommendation.**— *The notification to the aerodrome meteorological office of individual flights should contain the following information except that, in the case of scheduled flights, the requirement for some or all of this information may be waived ~~by agreement~~ as agreed between the aerodrome meteorological office and the operator **concerned**.*

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CHAPTER 3. WORLD AREA FORECAST SYSTEM AND METEOROLOGICAL OFFICES

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3.4 Meteorological watch offices

3.4.1 A Contracting State, having accepted the responsibility for providing air traffic services within a flight information region or a control area, shall establish, ~~on the basis of~~ **in accordance with** regional air navigation agreement, one or more meteorological watch offices, or arrange for another Contracting State to do so.

...

Secretariat

3.4.2 A meteorological watch office shall:

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Note.— *The information is provided by WMO regional specialized meteorological centres (RSMC) for the provision of transport model products for radiological environmental emergency response, at the request of the delegated authority of the State in which the radioactive material was released into the atmosphere, or the International Atomic Energy Agency (IAEA). The information is sent by the RSMC to a single contact point of the national meteorological service in each State. This contact point has the responsibility of redistributing the RSMC products within the State concerned. Furthermore, the*

information is provided by IAEA to RSMC co-located with VAAC London (designated as the focal point) which in turn notifies the ACCs/FICs concerned about the release.

...

3.5 Volcanic ash advisory centres

AMOFSG

3.5.1 A Contracting State, having accepted, ~~by regional air navigation agreement~~, the responsibility for providing a VAAC within the framework of the international airways volcano watch and as designated by regional air navigation agreement, 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:

IAVWOPSG

- 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.

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WAFSOPSG

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

...

- 3) world area forecast centres, international OPMET databanks, international NOTAM offices, and centres designated by regional air navigation agreement for the operation of the aeronautical fixed service satellite distribution ~~systems~~ system and the Internet-based services; and

...

IAVWOPSG

- 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 the volcanic ash “cloud” is no longer identifiable from satellite data and, where available, ground-based and airborne data, no further reports of volcanic ash are received from the area, and no further eruptions of the volcano are reported.

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3.6 State volcano observatories

Contracting States with active or potentially active volcanoes shall arrange that selected State volcano observatories, as designated by regional air navigation agreement, monitor these volcanoes and when observing:

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shall send this information as quickly as practicable to their associated ACC/FIC, MWO and VAAC.

...

3.7 Tropical cyclone advisory centres

AMOFSG

A Contracting State having accepted, ~~by regional air navigation agreement~~, the responsibility for providing a TCAC ~~and as designated by regional air navigation agreement~~ shall arrange for that centre to:

...

WAFSOPSG

- b) issue advisory information concerning the position of the cyclone centre, its direction and speed of movement, central pressure and maximum surface wind near the centre, in abbreviated plain language to:

...

- 3) world area forecast centres, international OPMET databanks, and centres designated by regional air navigation agreement for the operation of ~~the~~ aeronautical fixed service satellite distribution ~~systems~~ ~~system~~ and the Internet-based services; and

...

CHAPTER 4. METEOROLOGICAL OBSERVATIONS AND REPORTS

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

4.1 Aeronautical meteorological stations and observations

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METWSG

~~4.1.9 Owing to the variability of meteorological elements in space and time, to limitations of observing techniques and to limitations caused by the definitions of some of the elements, the specific value of any of the elements given in a report shall be understood by the recipient to be the best approximation to the actual conditions at the time of observation.~~

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

...

4.3 Routine observations and reports

AMOFSG

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

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CHAPTER 5. AIRCRAFT OBSERVATIONS AND REPORTS

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5.3 Routine aircraft observations — designation

METWSG

5.3.1 **Recommendation.**— *When air-ground data link is used and automatic dependent surveillance — ~~contract~~ (ADS-C) or secondary surveillance radar (SSR) Mode S is being applied,*

automated routine observations should be made every 15 minutes during the en-route phase and every 30 seconds during the climb-out phase for the first 10 minutes of the flight.

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AMOFSG

5.3.3 In the case of air routes with high-density air traffic (e.g. organized tracks), an aircraft from among the aircraft operating at each flight level shall be designated, at approximately hourly intervals, to make routine observations in accordance with 5.3.1. The designation procedures shall be ~~subject to~~ **in accordance with** regional air navigation agreement.

...

5.8 Relay of air-reports by air traffic services units

The meteorological authority concerned shall make arrangements with the appropriate ATS authority to ensure that, on receipt by the air traffic services units of:

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METWSG

- b) routine and special air-reports by data link communications, the air traffic services units relay them without delay to their associated meteorological watch office ~~and, the~~ WAFCs, ~~and the centres designated by regional air navigation agreement for the operation of the aeronautical fixed service satellite distribution system and the Internet-based services.~~

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CHAPTER 6. FORECASTS

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

6.1 ~~Interpretation and u~~Use of forecasts

~~6.1.1— Owing to the variability of meteorological elements in space and time, to limitations of forecasting techniques and to limitations caused by the definitions of some of the elements, the specific value of any of the elements given in a forecast shall be understood by the recipient to be the most probable value which the element is likely to assume during the period of the forecast. Similarly, when the time of occurrence or change of an element is given in a forecast, this time shall be understood to be the most probable time.~~

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

~~6.1.2~~ The issue of a new forecast by an aerodrome meteorological office, such as a routine aerodrome forecast, shall be understood to cancel automatically any forecast of the same type previously issued for the same place and for the same period of validity or part thereof.

6.2 Aerodrome forecasts

AMOFSG

6.2.1 An aerodrome forecast shall be prepared, ~~on the basis of~~ in accordance with regional air navigation agreement, by the aerodrome meteorological office designated by the meteorological authority concerned.

...

6.4 Forecasts for take-off

6.4.1 A forecast for take-off shall be prepared by the aerodrome meteorological office designated by the meteorological authority concerned ~~if required by agreement as agreed~~ between the meteorological authority and operators concerned.

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6.5 Area forecasts for low-level flights

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6.5.2 When the density of traffic operating below flight level 100 warrants the issuance of AIRMET information in accordance with 7.2.1, area forecasts for such operations shall be prepared in a format ~~as agreed upon~~ between the meteorological authorities concerned. When abbreviated plain language is used, the forecast shall be prepared as a GAMET area forecast, employing approved ICAO abbreviations and numerical values; when chart form is used, the forecast shall be prepared as a combination of forecasts of upper wind and upper-air temperature, and of SIGWX phenomena. The area forecasts shall be issued to cover the layer between the ground and flight level 100 (or up to flight level 150 in mountainous areas, or higher, where necessary) and shall contain information on en-route weather phenomena hazardous to low-level flights, in support of the issuance of AIRMET information, and additional information required by low-level flights.

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CHAPTER 7. SIGMET AND AIRMET INFORMATION, AERODROME WARNINGS AND WIND SHEAR WARNINGS AND ALERTS

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

7.1 SIGMET information

AMOFSG

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

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CHAPTER 8. AERONAUTICAL CLIMATOLOGICAL INFORMATION

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

8.1 General provisions

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

8.1.1 Aeronautical climatological information required for the planning of flight operations shall be prepared in the form of aerodrome climatological tables and aerodrome climatological summaries. Such information shall be supplied to aeronautical users as agreed between the meteorological authority and ~~those the~~ users concerned.

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8.2 Aerodrome climatological tables

Recommendation.— *Each Contracting State should make arrangements for collecting and retaining the necessary observational data and have the capability:*

...

b) *to make available such climatological tables to an aeronautical user within a time period as agreed between the meteorological authority and ~~that the~~ user concerned.*

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CHAPTER 9. SERVICE FOR OPERATORS AND FLIGHT CREW MEMBERS

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

9.1 General provisions

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9.1.3 Meteorological information supplied to operators and flight crew members shall be up to date and include the following information, as ~~established by~~ **agreed between** the meteorological authority ~~in consultation with and the~~ operators concerned:

...

- g) ~~subject to~~ **as determined by** regional air navigation agreement, GAMET area forecast and/or area forecasts for low-level flights in chart form prepared in support of the issuance of AIRMET information, and AIRMET information for low-level flights relevant to the whole route;

...

9.1.10 Meteorological information shall be supplied to operators and flight crew members at the location to be determined by the meteorological authority, after consultation with the operators and at the time ~~to be~~ **agreed upon** between the aerodrome meteorological office and the operator concerned. The service for pre-flight planning shall be confined to flights originating within the territory of the State concerned. At an aerodrome without an aerodrome meteorological office at the aerodrome, arrangements for the supply of meteorological information shall be as agreed ~~upon~~ between the meteorological authority and the operator concerned.

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9.2 Briefing, consultation and display

Note.— The requirements for the use of automated pre-flight information systems in providing briefing, consultation and display are given in 9.4.

9.2.1 Briefing and/or consultation shall be provided, on request, to flight crew members and/or other flight operations personnel. Its purpose shall be to supply the latest available information on existing and expected meteorological conditions along the route to be flown, at the aerodrome of intended landing, alternate aerodromes and other aerodromes as relevant, either to explain and amplify the information contained in the flight documentation or, ~~if so~~ **as** agreed between the meteorological authority and the operator, in lieu of flight documentation.

...

9.2.4 The required briefing, consultation, display and/or flight documentation shall normally be provided by the aerodrome meteorological office associated with the aerodrome of departure. At an aerodrome where these services are not available, arrangements to meet the requirements of flight crew members shall be as agreed ~~upon~~ between the meteorological authority and the operator concerned. In

exceptional circumstances, such as an undue delay, the aerodrome meteorological office associated with the aerodrome shall provide or, if that is not practicable, arrange for the provision of a new briefing, consultation and/or flight documentation as necessary.

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

9.3 Flight documentation

Note.— *The requirements for the use of automated pre-flight information systems in providing flight documentation are given in 9.4.*

AMOFSG & IAVWOPSG

9.3.1 Flight documentation to be made available shall comprise information listed under 9.1.3 a) 1) and 6), b), c), e), f) and, if appropriate, g). However, ~~when agreed between the meteorological authority and operator concerned~~, flight documentation for flights of two hours' duration or less, after a short stop or turnaround, shall be limited to the information operationally needed, **as agreed between the meteorological authority and operator concerned**, but in all cases the flight documentation shall at least comprise information on 9.1.3 b), c), e), f) and, if appropriate, g).

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9.4 Automated pre-flight information systems for briefing, consultation, flight planning and flight documentation

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AMOFSG

9.4.2 **Recommendation.**— *Automated pre-flight information systems providing for a harmonized, common point of access to meteorological information and aeronautical information services information by operators, flight crew members and other aeronautical personnel concerned should be ~~established by an agreement as agreed~~ between the meteorological authority and the ~~relevant~~ **appropriate** civil aviation authority or the agency to which the authority to provide service has been delegated in accordance with Annex 15, 2.1.1 c).*

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CHAPTER 11. REQUIREMENTS FOR AND USE OF COMMUNICATIONS

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11.1 Requirements for communications

11.1.7 **Recommendation.**— *As agreed between the meteorological authority and ~~the~~ operators ~~concerned~~, provision should be made to enable operators to establish suitable telecommunications facilities for obtaining meteorological information from aerodrome meteorological offices or other appropriate sources.*

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

WAFSOPSG

Note 1.—~~Three~~ ~~One~~ aeronautical fixed service satellite distribution ~~systems~~ ~~system~~ and two ~~Internet-based services~~ providing for global coverage are used to support the global exchanges of operational meteorological information. Provisions relating to the satellite distribution ~~systems~~ ~~system~~ are given in Annex 10, Volume III, Part 1, 10.1 and 10.2.

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PART II

APPENDICES AND ATTACHMENTS

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**APPENDIX 2. TECHNICAL SPECIFICATIONS RELATED TO
WORLD AREA FORECAST SYSTEM AND METEOROLOGICAL OFFICES**

(See Chapter 3 of this Annex.)

1. WORLD AREA FORECAST SYSTEM

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1.2 Upper-air gridded forecasts

WAFSOPSG

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);

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MET/14

- d) humidity data for flight levels 50 (850 hPa), 80 (750 hPa), 100 (700 hPa), 140 (600 hPa) and 180 (500 hPa);

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WAFSOPSG

- i) 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).

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3. VOLCANIC ASH ADVISORY CENTRES (VAAC)

3.1 Volcanic ash advisory information

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IAVWOPSG

~~— 3.1.2 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:~~

~~— a) the portable network graphics (PNG) format; or~~

~~— b) the BUFR code form, when exchanged in binary format.~~

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

IAVWOPSG &
MARIE-PT

Editorial note.— Insert the following new text.

3.1.2 **Recommendation.**— *Volcanic ash advisory centres should issue volcanic ash advisory information in digital form in addition the issuance of this advisory information in abbreviated plain language in accordance with 3.1.1.*

3.1.3 Volcanic ash advisory information, if disseminated in digital form shall be formatted in accordance with a globally interoperable information exchange model and shall use extensible markup language (XML)/geography markup language (GML).

3.1.4 Volcanic ash advisory information if disseminated in digital form shall be accompanied by the appropriate metadata.

Note.— Guidance on the information exchange model, XML/GML and the metadata profile is provided in the Manual on the Digital Exchange of Aeronautical Meteorological Information (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.

End of new text.

4. STATE VOLCANO OBSERVATORIES

4.1 Information from State volcano observatories

IAVWOPSG &
MET/14

Recommendation.— *The information required to be sent by State volcano observatories to their associated ACCs/FICs, MWO and VAAC should comprise:*

...

Note 2.— *The State volcano observatories may use the Volcano Observatory Notice for Aviation (VONA) format to send information to ~~its~~ their associated ACCs/FICs, MWO and VAAC. The VONA format is included in the Handbook on the International Airways Volcano Watch (IAVW) — Operational Procedures and Contact List (Doc 9766) which is available on the ICAO IAVWOPSG website.*

5. TROPICAL CYCLONE ADVISORY CENTRES (TCAC)

5.1 Tropical cyclone advisory information

...

MARIE-PT

~~— 5.1.3 Recommendation.— The tropical cyclone advisory information listed in Table A2-2, when prepared in graphical format, should be as specified in Appendix 1 and issued using:~~

~~— a) the portable network graphics (PNG) format; or~~

~~— b) the BUFR code form, when exchanged in binary format.~~

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

Editorial note.— *Insert the following new text.*

5.1.3 **Recommendation.**— *Tropical cyclone advisory centres should issue tropical cyclone advisory information in digital form in addition the issuance of this advisory information in abbreviated plain language in accordance with 5.1.2.*

5.1.4 Tropical cyclone advisory information, if disseminated in digital form shall be formatted in accordance with a globally interoperable information exchange model and shall use extensible markup language (XML)/geography markup language (GML).

5.1.5 Tropical cyclone advisory information if disseminated in digital form shall be accompanied by the appropriate metadata.

Note.— Guidance on the information exchange model, XML/GML and the metadata profile is provided in the Manual on the Digital Exchange of Aeronautical Meteorological Information (Doc 10003).

5.1.6 The tropical cyclone advisory information listed in Table A2-2, when prepared in graphical format, shall be as specified in Appendix 1 and issued using the portable network graphics (PNG) format.

End of new text.

...

APPENDIX 3. TECHNICAL SPECIFICATIONS RELATED TO METEOROLOGICAL OBSERVATIONS AND REPORTS

...

2. GENERAL CRITERIA RELATED TO METEOROLOGICAL REPORTS

2.1 Format of meteorological reports

...

MARIE-PT &
MET/14

2.1.3 **Recommendation.**— *METAR and SPECI should be disseminated, ~~under bilateral agreements between States in a position to do so~~, in digital form, in addition to the dissemination of the METAR and SPECI in accordance with 2.1.2.*

...

2.3 Criteria for issuance of local special reports and SPECI

...

2.3.3 **Recommendation.**— *Where required in accordance with Chapter 4, 4.4.2 b), SPECI should be issued whenever changes in accordance with the following criteria occur:*

...

AMOFSG

h) *any other criteria based on local aerodrome operating minima, as agreed between the meteorological authority and the operators concerned.*

...

3. DISSEMINATION OF METEOROLOGICAL REPORTS

3.1 METAR and SPECI

WAFSOPSG

3.1.1 METAR and SPECI shall be disseminated to international OPMET databanks and the centres designated by regional air navigation agreement for the operation of ~~the~~ aeronautical fixed service satellite distribution ~~systems system and the Internet-based services~~, in accordance with regional air navigation agreement.

...

3.2 Local routine and special reports

...

AMOFSG

3.2.2 Local special reports shall be transmitted to local air traffic services units as soon as the specified conditions occur. However, ~~by agreement as agreed~~ between the meteorological authority and the appropriate ATS authority ~~concerned~~, they need not be issued in respect of:

...

4. OBSERVING AND REPORTING OF METEOROLOGICAL ELEMENTS

...

4.3 Runway visual range

...

4.3.5 Runway light intensity

Recommendation.— *When instrumented systems are used for the assessment of runway visual range, computations should be made separately for each available runway. ~~Runway visual range should not be computed for a light intensity of 3 per cent or less of the maximum light intensity available on a runway.~~ For local routine and special reports, the light intensity to be used for the computation should be:*

- a) *for a runway with the lights switched on ~~and the light intensity of more than 3 per cent~~, the light intensity actually in use on that runway; ~~and~~*
- b) *for a runway with the lights switched on ~~and the light intensity of 3 per cent or less~~, the optimum light intensity that would be appropriate for operational use in the prevailing conditions; ~~and~~*

~~b)c)~~ for a runway with lights switched off (or at the lowest setting pending the resumption of operations), the optimum light intensity that would be appropriate for operational use in the prevailing conditions.

...

4.4 Present weather

Secretariat

4.4.1 Siting

Recommendation.— When instrumented systems are used for observing present weather phenomena listed under 4.4.2.3, ~~4.4.2.5 and 4.4.2.6,~~ and 4.4.2.4 representative information should be obtained by the use of sensors appropriately sited.

...

4.4.2 Reporting

...

AMOFSG

4.4.2.7 Recommendation.— In automated local routine and special reports and METAR and SPECI when showers (SH) referred to in 4.4.2.6 cannot be determined based upon a method that takes account of the presence of convective cloud, the precipitation should not be characterized by SH.

4.4.2.78 Recommendation.— In local routine and special reports and in METAR and SPECI, the relevant intensity or, as appropriate, the proximity to the aerodrome of the reported present weather phenomena should be indicated as follows:

	(local routine and special reports)	(METAR and SPECI)
Light	FBL	—
Moderate	MOD	(no indication)
Heavy	HVY	+

Used with types of present weather phenomena in accordance with the templates shown in Tables A3-1 and A3-2. Light intensity should be indicated only for precipitation.

Vicinity

VC

— Between approximately 8 and 16 km of the aerodrome reference point and used only in METAR and SPECI with present weather in accordance with the template shown in Table A3-2 when not reported under 4.4.2.5 and 4.4.2.6.

Secretariat

4.4.2.89 In local routine and special reports and in METAR and SPECI:

- a) one or more, up to a maximum of three, of the present weather abbreviations given in 4.4.2.3, 4.4.2.5 and 4.4.2.64 shall be used, as necessary, together with an indication, where appropriate, of the characteristics given in 4.4.2.5 and 4.4.2.6 and intensity or proximity to the aerodrome given in 4.4.2.8, so as to convey a complete description of the present weather of significance to flight operations;

...

4.4.2.910 **Recommendation.**— *In automated local routine and special reports and METAR and SPECI, the present weather should be replaced by “//” when the present weather cannot be observed by the automatic observing system due to a temporary failure of the system/sensor.*

4.5 Clouds

4.5.1 Siting

AMOFSG

Recommendation.— *When instrumented systems are used for the measurement of the cloud amount and the height of cloud base, representative observations should be obtained by the use of sensors appropriately sited. For local routine and special reports, in the case of aerodromes with precision approach runways, sensors for cloud amount and height of cloud base should be sited to give the best practicable indications of the cloud amount and height of cloud base ~~and cloud amount at the middle marker site of the instrument landing system or, at aerodromes where a middle marker beacon is not used, at a distance of threshold of the runway in use. For that purpose, a sensor should be installed at a distance of less than 900 to 1 200 m (3 000 to 4 000 ft) from before the landing threshold at the approach end of the runway.~~*

~~— *Note.*— *Specifications concerning the middle marker site of an instrument landing system are given in Annex 10, Volume I, Chapter 3 and at Attachment C, Table C-5.*~~

...

4.5.4 Reporting

...

4.5.4.2 **Recommendation.**— *At aerodromes where low-visibility procedures are established for approach and landing, as agreed between the meteorological authority and the appropriate ATS authority concerned, in local routine and special reports the height of cloud base should be reported in steps of 15 m (50 ft) up to and including 90 m (300 ft) and in steps of 30 m (100 ft) between 90 m (300 ft) and 3 000 m (10 000 ft), and the vertical visibility in steps of 15 m (50 ft) up to and including 90 m (300 ft) and in steps of 30 m (100 ft) between 90 m (300 ft) and 600 m (2 000 ft). Any observed value which does not fit the reporting scale shall should be rounded down to the nearest lower step in the scale.*

...

4.7 Atmospheric pressure

...

4.7.3 Reporting

...

4.7.3.2 In local routine and special reports:

...

- b) QFE shall be included if required by users or, ~~if so as~~ agreed ~~locally~~ between the meteorological ~~authority, and air traffic services~~ the ATS authorities and ~~the~~ operators concerned, on a regular basis;

...

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Table A3-1. Template for the local routine (MET REPORT) and local special (SPECIAL) reports

Key: M = inclusion mandatory, part of every message;
C = inclusion conditional, dependent on meteorological conditions;
O = inclusion optional.

Note 1.— The ranges and resolutions for the numerical elements included in the local routine and special reports are shown in Table A3-4 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).

Element as specified in Chapter 4	Detailed content	Template(s)		Examples
...				
Secretariat				
Present weather (C) ^{9,10}	Intensity of present weather (C) ⁹	FBL <i>or</i> MOD <i>or</i> HVY	—	
	Characteristics and type of present weather (C) ^{9,11}	DZ <i>or</i> RA <i>or</i> SN <i>or</i> SG <i>or</i> PL <i>or</i> DS <i>or</i> SS <i>or</i> FZDZ <i>or</i> FZUP ¹² <i>or</i> FC ¹³ <i>or</i> FZRA <i>or</i> SHGR <i>or</i> SHGS <i>or</i> SHRA <i>or</i> SHSN <i>or</i> SHUP ¹² <i>or</i> TSGR <i>or</i> TSGS <i>or</i> TSRA <i>or</i> TSSN <i>or</i> TSUP ¹² <i>or</i> UP ¹²	FG <i>or</i> BR <i>or</i> SA <i>or</i> DU <i>or</i> HZ <i>or</i> FU <i>or</i> VA <i>or</i> SQ <i>or</i> PO <i>or</i> FC <i>or</i> TS <i>or</i> BCFG <i>or</i> BLDU <i>or</i> BLSA <i>or</i> BLSN <i>or</i> DRDU <i>or</i> DRSA <i>or</i> DRSN <i>or</i> FZFG <i>or</i> MIFG <i>or</i> PRFG <i>or</i> // ¹²	MOD RA HVY TSRA HVY DZ FBL SN HZ FG VA MIFG HVY TSRASN FBL SNRA FBL DZ FG HVY SHSN BLSN HVY TSUP //
...				
AMOFSG				
Supplementary information (C) ⁹	Significant meteorological phenomena (C) ⁹	CB <i>or</i> TS <i>or</i> MOD TURB <i>or</i> SEV TURB <i>or</i> WS <i>or</i> GR <i>or</i> SEV SQL <i>or</i> MOD ICE <i>or</i> SEV ICE <i>or</i> FZDZ <i>or</i> FZRA <i>or</i> SEV MTW <i>or</i> SS <i>or</i> DS <i>or</i> BLSN <i>or</i> FC ¹⁵		FC IN APCH WS IN APCH 60M-WIND 360/13MPS WS RWY 12
	Location of the phenomena (C) ⁹	IN APCH [n][n][n]M-WIND nnn/n[n]MPS] <i>or</i> IN CLIMB-OUT [n][n][n]M-WIND nnn/n[n]MPS] (IN APCH [n][n][n]FT-WIND nnn/n[n]KT] <i>or</i> IN CLIMB-OUT [n][n][n]FT-WIND nnn/n[n]KT] <i>or</i> RWY nn[L] <i>or</i> RWY nn[C] <i>or</i> RWY nn[R]		
	Recent weather (C) ^{9,10}	REFZDZ <i>or</i> REFZRA <i>or</i> REDZ <i>or</i> RE[SH]RA <i>or</i> PERASN <i>or</i> RE[SH]SN <i>or</i> RESG <i>or</i> RESHGR <i>or</i> RESHGS <i>or</i> REBLSN <i>or</i> RESS <i>or</i> REDS <i>or</i> RETSRA <i>or</i> RETSSN <i>or</i> RETSGR <i>or</i> RETSGS <i>or</i> REFC <i>or</i> REPL <i>or</i> REUP ¹² <i>or</i> REFZUP ¹² <i>or</i> RETSUP ¹² <i>or</i> RESHUP ¹² <i>or</i> REVA <i>or</i> RETS		REFZRA CB IN CLIMB-OUT RETSRA
...				

...

AMOFSG

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).

<i>Element as specified in Chapter 4</i>	<i>Detailed content</i>	<i>Template(s)</i>	<i>Examples</i>
...			
Supplementary information (C)	Recent weather (C) ^{2, 9}	REFZDZ or REFZRA or REDZ or RE[SH]RA or PERASN or RE[SH]SN or RESG or RESHGR or RESHGS or REBLSN or RESS or REDS or RETSRA or RETSSN or RETSGR or RETSGS or RETS or REFC or REVA or REPL or REUP ¹² or REFZUP ¹² or RETSUP ¹² or RESHUP ¹²	REFZRA RETSRA
...			

...

APPENDIX 4. TECHNICAL SPECIFICATIONS RELATED TO AIRCRAFT OBSERVATIONS AND REPORTS

(See Chapter 5 of this Annex.)

1. CONTENTS OF AIR-REPORTS

1.1 Routine air-reports by air-ground data link

METWSG

1.1.1 When air-ground data link is used and automatic dependent surveillance — ~~contract~~ (ADS-~~C~~) or SSR Mode S is being applied, the elements contained in routine air-reports shall be:

...

Note.— When ADS-C or SSR Mode S is being applied, the requirements of routine air-reports may be met by the combination of the basic ADS-C/SSR Mode S data block (data block 1) and the meteorological information data block (data block 2), available from ADS-C or SSR Mode S reports. The ADS-C message format is specified in the PANS-ATM (Doc 4444), 4.11.4 and Chapter 13 and the SSR Mode S message format is specified in Annex 10, Volume III, Part I — Digital Data Communication Systems, Chapter 5.

...

1.1.2 When air-ground data link is used while ADS-C and SSR Mode S are not being applied, the elements contained in routine reports shall be:

Note.— When air-ground data link is used while ADS-C and SSR Mode S are not being applied, the requirements of routine air-reports may be met by the controller-pilot data link communication (CPDLC) application entitled “Position report”. The details of this data link application are specified in the Manual of Air Traffic Services Data Link Applications (Doc 9694) and in Annex 10, Volume III, Part I.

...

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 the aeronautical fixed service satellite distribution system and the Internet-based services.

...

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, does not warrant issuance of a SIGMET, the special air-report shall be disseminated in the same way that SIGMET messages are disseminated in accordance with Appendix 6, 1.2.1, i.e. to meteorological watch offices, WAFCs, and other meteorological offices in accordance with regional air navigation agreement.

METWSG
MARIE-PT

Note.— The format for special air-reports (uplink) is in Appendix 6, 1.1. The template used for special air-reports which are uplinked to aircraft in flight is in Appendix 6, Table ~~A6-1~~ A6-1B.

...

AMOFSG

3.3 Supplementary dissemination of air-reports

Recommendation.— *Where supplementary dissemination of air-reports is required to satisfy special aeronautical or meteorological requirements, such dissemination should be arranged **and agreed** between the meteorological authorities concerned.*

...

APPENDIX 5. TECHNICAL SPECIFICATIONS RELATED TO FORECASTS

(See Chapter 6 of this Annex.)

1. CRITERIA RELATED TO TAF

1.1 TAF format

...

MARIE-PT

1.1.2 **Recommendation.**— *TAF should be disseminated, ~~under bilateral agreements between States in a position to do so~~, in digital form, in addition to the dissemination of the TAF in accordance with 1.1.1.*

...

1.2 Inclusion of meteorological elements in TAF

...

1.2.3 Weather phenomena

One or more, up to a maximum of three, of the following weather phenomena or combinations thereof, together with their characteristics and, where appropriate, intensity, shall be forecast if they are expected to occur at the aerodrome:

...

AMOFSG

— other weather phenomena given in Appendix 3, 4.4.2.3, as agreed **by between** the meteorological authority with the ATS authority and operators concerned.

...

1.3 Use of change groups

...

1.3.2 **Recommendation.**— *The criteria used for the inclusion of change groups in TAF or for the amendment of TAF should be based on the following:*

...

- j) *any other criteria based on local aerodrome operating minima, as agreed between the meteorological authority and the operators **concerned**.*

...

WAFSOPSG

1.6 Dissemination of TAF

TAF and amendments thereto shall be disseminated to international OPMET databanks and the centres designated by regional air navigation agreement for the operation of **the** aeronautical fixed service satellite distribution ~~systems~~ **system and the Internet-based services**, in accordance with regional air navigation agreement.

...

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).

AMOFSG

<i>Element as specified in Chapter 6</i>	<i>Detailed content</i>	<i>Template(s)</i>	<i>Examples</i>
...			
Days and period of validity of forecast (M)	Days and period of the validity of the forecast in UTC (M)	nnnn/nnnn	1606/46241700 0812/0918
...			

...

METWSG

Table A5-3. Template for GAMET

Key: M = inclusion mandatory, part of every message;
 C = inclusion conditional, dependent on meteorological conditions;
 O = inclusion optional;
 = = a double line indicates that the text following it should be placed on the subsequent line.

<i>Element</i>	<i>Detailed content</i>	<i>Template(s)</i>	<i>Examples</i>
Location indicator of FIR/CTA (M)	ICAO location indicator of the ATS unit serving the FIR or CTA to which the GAMET refers (M)	nnnn	YUCC ¹
Identification (M)	Message identification (M)	GAMET	GAMET
Validity period (M)	Day-time groups indicating the period of validity in UTC (M)	VALID nnnnnn/hnnnnn	VALID 220600/221200
Location indicator of aerodrome meteorological office or meteorological watch office (M)	Location indicator of aerodrome meteorological office or meteorological watch office originating the message with a separating hyphen (M)	nnnn-	YUDO ⁻¹
Name of the FIR/CTA or part thereof (M)	Location indicator and name of the FIR/CTA, or part thereof for which the GAMET is issued (M)	nnnn nnnnnnnnnn FIR/[n] [BLW FLnnn] or nnnn nnnnnnnnnn CTA/[n] [BLW FLnnn]	YUCC AMSWELL FIR/2 BLW FL120 YUCC AMSWELL FIR

Editorial note.— In the following part of the template, the order of the columns titled “Content” and “Location” has been reversed.

<i>Element</i>	<i>Detailed content</i>	<i>Template(s)</i>			<i>Examples</i>
		<i>Identifier and time</i>	<i>Location</i>	<i>Content</i>	
Indicator for the beginning of Section I (M)	Indicator to identify the beginning of Section I (M)	SECN I			SECN I
Surface wind (C)	Widespread surface wind exceeding 15 m/s (30 kt)	SFC WSPD WIND: [nn/nn]	[N e ^f O ^F Nnn or Snn] or [S e ^f O ^F Nnn or Snn] or [W e ^f O ^F Wnnn or Ennn] or [E e ^f O ^F Wnnn or Ennn] or [nnnnnnnnnn] ²	[n]nn MPS {or [n]nn KT) nnn/[n]nnMPS (or nnn/[n]nnKT)	SFC WSPD: 10/12 16 MPS SFC WIND: 10/12 310/16MPS SFC WSPD: 40 KT E OF W110 SFC WIND: E OF W110 050/40KT

Element	Detailed content	Template(s)			Examples
		Identifier and time	Location	Content	
Surface visibility (C)	Widespread surface visibility below 5 000 m including the weather phenomena causing the reduction in visibility	SFC VIS: [nn/nn]		nnnnM nnnnM FG or BR or SA or DU or HZ or FU or VA or PO or DS or SS or DZ or RA or SN or SG or IC or FC or GR or GS or PL or SQ	SFC VIS: 06/08 3000 M BR N of N51 SFC VIS: 06/08 N OF N51 3000M BR
Significant weather (C)	Significant weather conditions encompassing thunderstorms and heavy sandstorm and duststorm, and volcanic ash	SIGWX: [nn/nn]		ISOL TS or OCNL TS or FRQ TS or OBSC TS or EMBD TS or HVY DS or HVY SS or SQL TS or ISOL TSGR or OCNL TSGR or FRQ TSGR or OBSC TSGR or EMBD TSGR or SQL TSGR or VA	SIGWX: 11/12 ISOL TS SIGWX: 12/14 SS S OF N35 SIGWX: 12/14 S OF N35 HVY SS
Mountain obscuration (C)	Mountain obscuration	MT OBSC: [nn/nn]		nnnnnnnnn ²	MT OBSC: MT PASSES S OF N48 MT OBSC: S OF N48 MT PASSES
Cloud (C)	Widespread areas of broken or overcast cloud with height of base less than 300 m (1 000 ft) above ground level (AGL) or above mean sea level (AMSL) and/or any occurrence of cumulonimbus (CB) or towering cumulus (TCU) clouds	SIG CLD: [nn/nn]		BKN or OVC nnn[n]/nnn[n] M (or nnn[n]/nnn[n] FT) [n]nnn/[n]nnnM (or [n]nnn/[n]nnnFT) AGL or AMSL ISOL or OCNL or FRQ or OBSC or EMBD CB ³ or TCU ³ nnn[n]/nnn[n] M or nnn[n]/nnn[n] FT [n]nnn/[n]nnnM (or [n]nnn/[n]nnnFT) AGL or AMSL	SIG CLD: 06/09 OVC 800/1100 FT AGL N OF N51 10/12 ISOL TCU 1200/8000 FT AGL SIG CLD: 06/09 N OF N51 OVC 800/1100FT AGL 10/12 ISOL TCU 1200/8000FT AGL
Icing (C)	Icing (except for that occurring in convective clouds and for severe icing for which a SIGMET message has already been issued)	ICE: [nn/nn]		MOD FLnnn/hnn or MOD ABV FLnnn or SEV FLnnn/hnn or SEV ABV FLnnn	ICE: MOD FL050/080

Element	Detailed content	Template(s)			Examples
		Identifier and time	Location	Content	
Turbulence (C)	Turbulence (except for that occurring in convective clouds and for severe turbulence for which a SIGMET message has already been issued)	TURB: [nn/nn]		MOD FLnnn/hnn or MOD ABV FLnnn or SEV FLnnn/hnn or SEV ABV FLnnn	TURB: MOD ABV FL090
Mountain wave (C)	Mountain wave (except for severe mountain wave for which a SIGMET message has already been issued)	MTW: [nn/nn]		MOD FLnnn/hnn or MOD ABV FLnnn or SEV FLnnn/hnn or SEV ABV FLnnn	MTW: MOD ABV FL080 N OF N63 MTW: N OF N63 MOD ABV FL080
SIGMET (C)	SIGMET messages applicable to the FIR/CTA concerned or a sub-area thereof, for which the area forecast is valid	SIGMET APPLICABLE:		n [n] [n] [n] [n] [n]	SIGMET APPLICABLE: 3, A5, B06
<i>or</i> HAZARDOUS WX NIL (C) ⁴⁵		HAZARDOUS WX NIL			
Indicator for the beginning of Section II (M)	Indicator to identify the beginning of Section II (M)	SECN II			SECN II
Pressure centres and fronts (M)	Pressure centres and fronts and their expected movements and developments	PSYS: [nn]	Nnnnn <i>or</i> Snnnn Wnnnnn <i>or</i> Ennnnn <i>or</i> Nnnnn <i>or</i> Snnnn Wnnnnn <i>or</i> Ennnnn TO Nnnnn <i>or</i> Snnnn Wnnnnn <i>or</i> Ennnnn	L [n]nnn HPA <i>or</i> H [n]nnn HPA L [n]nnn HPA <i>or</i> H [n]nnn HPA <i>or</i> FRONT <i>or</i> NIL	PSYS: 06 L 1004 HPA N5130 E01000 MOV NE 25KT WKN PSYS: 06 N5130 E01000 L 1004 HPA MOV NE 25KT WKN
			—	MOV N <i>or</i> MOV NE <i>or</i> MOV E <i>or</i> MOV SE <i>or</i> MOV S <i>or</i> MOV SW <i>or</i> MOV W <i>or</i> MOV NW nnKMH (<i>or</i> nnKT) WKN <i>or</i> NC <i>or</i> INTSF	
Upper winds and temperatures (M)	Upper winds and upper-air temperatures for at least the following altitudes: 600, 1 500 and 3 000 m (2 000, 5 000 and 10 000 ft)	WIND/T:	Nnnnn <i>or</i> Snnnn Wnnnnn <i>or</i> Ennnnn <i>or</i>	[n]nnn M (<i>or</i> [n]nnn FT) nnn/[n]nn MPS (<i>or</i> nnn/[n]nn KT) [n]nnn M (<i>or</i> [n]nnn FT) nnn/[n]nn MPS (<i>or</i> nnn/[n]nn KT) PSnn <i>or</i> MSnn	WIND/T: 2000 FT 270/18 MPS PS03 5000 FT 250/20 MPS MS02 10000 FT 240/22 MPS MS11 WIND/T: 2000FT N5500 W01000 270/18MPS PS03 5000FT N5500 W01000 250/20MPS MS02 10000FT N5500 W01000 240/22MPS MS11

Element	Detailed content	Template(s)			Examples
		Identifier and time	Location	Content	
Cloud (M)	Cloud information not included in Section I giving type, height of base and top above ground level (AGL) or above mean sea level (AMSL)	CLD: [nn/nn]	[N or Nnn or Snn] or [S or Nnn or Snn] or [W or Wnnn or Ennn] or [E or Wnnn or Ennn] or [nnnnnnnnn] ²	FEW or SCT or BKN or OVC ST or SC or CU or AS or AC or NS [nnnn]/[nnnn] M (or [nnnn]/[nnnn] FT) [nnnn]/[nnnn] M (or [nnnn]/[nnnn] FT) AGL or AMSL or NIL	CLD: BKN SC 2500/8000 FT 2500/8000 FT AGL CLD: NIL
Freezing level (M)	Height indication of 0°C level(s) above ground level (AGL) or above mean sea level (AMSL), if lower than the top of the airspace for which the forecast is supplied	FZLVL:		[ABV] nnnn FT [nnnn] FT AGL or AMSL	FZLVL: 3000 FT 3000 FT AGL
Forecast QNH (M)	Forecast lowest QNH during the period of validity	MNM QNH:		[nnnn] HPA [nnnn] HPA	MNM QNH: 1004 HPA 1004 HPA
Sea-surface temperature and state of the sea (O)	Sea-surface temperature and state of the sea if required by regional air navigation agreement	SEA:		Tnn HGT [n]n M M[n]nM	SEA: T15 HGT 5 M 5M
Volcanic eruptions (M)	Name of volcano	VA:		nnnnnnnnn or NIL	VA: ETNA VA: NIL

Notes.—

1. Fictitious location.
2. Free text describing well-known geographical locations should be kept to a minimum.
3. The location of the CB and/or TCU should be specified in addition to any widespread areas of broken or overcast cloud as given in the example.
4. Repeat as necessary, with comma separating.
- 4.5. When no elements are included in Section I.

...

AMOFSG

Example A5-1. TAF

TAF for YUDO (Donlon/International):*

TAF YUDO 160000Z 1606/~~1624~~1700 13005MPS 9000 BKN020 BECMG 1606/1608 SCT015CB
BKN020 TEMPO 1608/1612 17006G12MPS 1000 TSRA SCT010CB BKN020 FM161230 15004MPS
9999 BKN020

Meaning of the forecast:

TAF for Donlon/International* issued on the 16th of the month at 0000 UTC valid from 0600 UTC **on the 16th of the month** to **24000000** UTC on the ~~16th~~17th of the month; surface wind direction 130 degrees; wind speed 5 metres per second; visibility 9 kilometres, broken cloud at 600 metres; becoming between 0600 UTC and 0800 UTC on the 16th of the month, scattered cumulonimbus cloud at 450 metres and broken cloud at 600 metres; temporarily between 0800 UTC and 1200 UTC on the 16th of the month surface wind direction 170 degrees; wind speed 6 metres per second gusting to 12 metres per second; visibility 1 000 metres in a thunderstorm with moderate rain, scattered cumulonimbus cloud at 300 metres and broken cloud at 600 metres; from 1230 UTC on the 16th of the month surface wind direction 150 degrees; wind speed 4 metres per second; visibility 10 kilometres or more; and broken cloud at 600 metres.

* Fictitious location

Note.— In this example, the primary units “metre per second” and “metre” were used for wind speed and height of cloud base, respectively. However, in accordance with Annex 5, the corresponding non-SI alternative units “knot” and “foot” may be used instead.

Example A5-2. Cancellation of TAF

Cancellation of TAF for YUDO (Donlon/International):*

TAF AMD YUDO 161500Z 1606/~~1624~~1700 CNL

Meaning of the forecast:

Amended TAF for Donlon/International* issued on the 16th of the month at 1500 UTC cancelling the previously issued TAF valid from 0600 UTC **on the 16th of the month** to **24000000** UTC on the ~~16th~~17th of the month.

* Fictitious location

METWSG &
MET/14

Example A5-3. GAMET area forecast

YUCC GAMET VALID 220600/221200 YUDO –
YUCC AMSWELL FIR/2 BLW FL120
SECN I
SFC ~~WSPD~~WIND: 10/12 ~~16MPS 310/16MPS~~
SFC VIS: 06/08 ~~3000M BR N OF N51~~ 06/08 N OF N51 3000M BR
SIGWX: 11/12 ISOL TS
SIG CLD: 06/09 ~~OVC 800/1100 FT AGL N OF N51~~ N OF N51 OVC 800/1100FT AGL 10/12 ISOL TCU
~~1200/8000 FT 1200/8000FT~~ AGL
ICE: MOD FL050/080
TURB: MOD ABV FL090
SIGMETS APPLICABLE: 3, 5
SECN II
PSYS: 06 ~~1 1004 HPA N5130 E01000~~ N5130 E01000 1004HPA MOV NE 25 KT WKN
WIND/T: ~~2000 FT 270/18 MPS PS03 5000 FT 250/20 MPS MS02 10000 FT 240/22 MPS MS11~~
~~2000FT N5500 W01000 270/18MPS PS03 5000FT N5500 W01000 250/20MPS MS02 10000FT N5500~~
~~W01000 240/22MPS MS11~~
CLD: BKN SC ~~2500/8000 FT 2500/8000FT~~ AGL
FZLVL: ~~3000 FT 3000FT~~ AGL
MNM QNH: ~~1004 HPA 1004HPA~~
SEA: T15 HGT ~~5M 5M~~
VA: NIL

Meaning: An area forecast for low-level flights (GAMET) issued for sub-area two of the Amwell* flight information region (identified by YUCC Amwell area control centre) for below flight level 120 by the Donlon/International* aerodrome meteorological office (YUDO); the message is valid from 0600 UTC to 1200 UTC on the 22nd of the month.

Section I:

surface wind speeds ~~s~~ and direction: between 1000 UTC and 1200 UTC ~~surface wind direction 310 degrees; wind speed 16 metres per second;~~
surface visibility: between 0600 UTC and 0800 UTC ~~north of 51 degrees north 3 000 metres north of 51 degrees north~~ (due to mist);
significant weather phenomena: between 1100 UTC and 1200 UTC isolated thunderstorms without hail;
significant clouds: between 0600 UTC and 0900 UTC ~~north of 51 degrees north~~ overcast base 800, top 1 100 feet above ground level ~~north of 51 degrees north~~; between 1000 UTC and 1200 UTC isolated towering cumulus base 1 200, top 8 000 feet above ground level;
icing: moderate between flight level 050 and 080;
turbulence: moderate above flight level 090 (at least up to flight level 120);
SIGMET messages: 3 and 5 applicable to the validity period and sub-area concerned.

Section II:

pressure systems: at 0600 UTC low pressure of 1 004 hectopascals at 51.5 degrees north 10.0 degrees east, expected to move north-eastwards at 25 knots and to weaken;
winds and temperatures: at 2 000 feet above ground level ~~at 55 degrees north 10 degrees west~~ wind direction 270 degrees; wind speed 18 metres per second, temperature plus 3 degrees Celsius; at 5 000 feet above ground level ~~at 55 degrees north 10 degrees west~~ wind direction 250 degrees; wind speed 20 metres per second, temperature minus 2 degrees Celsius; at 10 000 feet above ground level ~~at 55 degrees north 10 degrees west~~ wind direction 240 degrees; wind speed 22 metres per second, temperature minus 11 degrees Celsius;
clouds: broken stratocumulus, base 2 500 feet, top 8 000 feet above ground level;
freezing level: 3 000 feet above ground level;
minimum QNH: 1 004 hectopascals;
sea: surface temperature 15 degrees Celsius; and state of the sea 5 metres;
volcanic ash: nil.

* 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.)

Note.— Data type designators to be used in abbreviated headings for SIGMET, AIRMET, tropical cyclone and volcanic ash advisory messages are given in WMO Publication No. 386, Manual on the Global Telecommunication System.

1. SPECIFICATIONS RELATED TO SIGMET INFORMATION

METWSG

1.1 Format of SIGMET messages

1.1.1 The content and order of elements in a SIGMET message shall be in accordance with the template shown in Table ~~A6-1~~ A6-1A.

...

1.1.3 The sequence number referred to in the template in Table ~~A6-1~~ A6-1A shall correspond with the number of SIGMET messages issued for the flight information region since 0001 UTC on the day concerned. The meteorological watch offices whose area of responsibility encompasses more than one FIR and/or CTA shall issue separate SIGMET messages for each FIR and/or CTA within their area of responsibility.

1.1.4 In accordance with the template in Table ~~A6-1~~ A6-1A, only one of the following phenomena shall be included in a SIGMET message, using the abbreviations as indicated below:

...

MARIE-PT

1.1.6 **Recommendation.**— *Meteorological watch offices ~~in a position to do so~~ should issue SIGMET information in digital form, in addition to the issuance of this SIGMET information in abbreviated plain language in accordance with 1.1.1.*

...

METWSG

1.1.9 **Recommendation.**— *SIGMET, when issued in graphical format, should be as specified in Appendix I, including the use of applicable symbols and/or abbreviations.*

...

1.2 Dissemination of SIGMET messages

...

WAFSOPSG

1.2.2 SIGMET messages shall be disseminated to international OPMET databanks and the centres designated by regional air navigation agreement for the operation of ~~the~~ aeronautical fixed service satellite distribution ~~systems system and the Internet-based services~~, in accordance with regional air navigation agreement.

2. SPECIFICATIONS RELATED TO AIRMET INFORMATION

2.1 Format of AIRMET messages

METWSG

2.1.1 The content and order of elements in an AIRMET message shall be in accordance with the template shown in Table ~~A6-1~~ **A6-1A**.

2.1.2 The sequence number referred to in the template in Table ~~A6-1~~ **A6-1A** shall correspond with the number of AIRMET messages issued for the flight information region since 0001 UTC on the day concerned. The meteorological watch offices whose area of responsibility encompasses more than one FIR and/or CTA shall issue separate AIRMET messages for each FIR and/or CTA within its area of responsibility.

...

2.1.4 In accordance with the template in Table ~~A6-1~~ **A6-1A**, only one of the following phenomena shall be included in an AIRMET message, using the abbreviations as indicated below:

At cruising levels below flight level 100 (or below flight level 150 in mountainous areas, or higher, where necessary):

...

Secretariat

- surface visibility
 - widespread areas affected by reduction of visibility to less than 5 000 m, including the weather phenomenon causing the reduction of visibility

SFC VIS
(+ visibility)
(+ one of the following weather phenomena or combinations thereof: BR, DS, DU, DZ, FC, FG, FU, GR, GS, HZ, ~~IC~~, PL, PO, RA, SA, SG, SN, SQ, SS or VA)

...

MARIE-PT

Editorial note.— Insert the following new text.

2.1.6 **Recommendation.**— *Meteorological offices should issue AIRMET information in digital form, in addition to the issuance of this AIRMET information in abbreviated plain language in accordance with 2.1.1.*

2.1.7 AIRMET if disseminated in digital form shall be formatted in accordance with a globally interoperable information exchange model and shall use extensible markup language (XML)/geography markup language (GML).

2.1.8 AIRMET if disseminated in digital form shall be accompanied by the appropriate metadata.

Note.— Guidance on the information exchange model, XML/GML and the metadata profile is provided in the Manual on the Digital Exchange of Aeronautical Meteorological Information (Doc 10003).

End of new text.

2.2 Dissemination of AIRMET messages

...

WAFSOPSG

2.2.2 **Recommendation.**— *AIRMET messages should be transmitted to international operational meteorological databanks and the centres designated by regional air navigation agreement for the operation of ~~the~~ aeronautical fixed service satellite distribution ~~systems~~ system and the Internet-based ~~services~~, in accordance with regional air navigation agreement.*

...

5. SPECIFICATIONS RELATED TO AERODROME WARNINGS

5.1 Format and dissemination of aerodrome warnings

...

METWSG

5.1.3 **Recommendation.**— *In accordance with the template in Table A6-2, aerodrome warnings should relate to the occurrence or expected occurrence of one or more of the following phenomena:*

...

— *tsunami*

...

Note.— Aerodrome warnings related to the occurrence or expected occurrence of tsunami are not required where a national public safety plan for tsunami is integrated with the “at risk” aerodrome concerned.

...

AMOFSG

5.2 Quantitative criteria for aerodrome warnings

Recommendation.— *When quantitative criteria are necessary for the issue of aerodrome warnings covering, for example, the expected maximum wind speed or the expected total snowfall, the criteria **used** should be ~~established by agreement~~ **as agreed** between the aerodrome meteorological office and the users of the warnings concerned.*

...

METWSG

Editorial note.— Delete Table A6-1 in its entirety.

Editorial note.— Insert the following new table.

(Tracked changes are used to show the changes from existing Table A6-1. The template to be used for special air-reports (uplink) is presented in Table A6-1B.)

Table A6-1A. Template for SIGMET and AIRMET messages ~~and 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 1.— The ranges and resolutions for the numerical elements included in SIGMET and AIRMET messages ~~and in special air-reports~~ 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 as specified in Chapter 5 and Appendix 6</i>	<i>Detailed content</i>	SIGMET template	AIRMET template	SIGMET message examples	AIRMET message examples
Location indicator of FIR/CTA (M) ²¹	ICAO location indicator of the ATS unit serving the FIR or CTA to which the SIGMET/AIRMET refers (M)	nnnn		YUCC ²² YUDD ²²	
Identification (M)	Message identification and sequence number ²³ (M)	SIGMET [n][n]n	AIRMET [n][n]n	SIGMET-5 AIRMET-A3 SIGMET 1 SIGMET 01 SIGMET A01	AIRMET-2 AIRMET 9 AIRMET 19 AIRMET B19
Validity period (M)	Day-time groups indicating the period of validity in UTC (M)	VALID nnnnnn/nnnnn		VALID 010000/010400 VALID 221215/221600 VALID 101520/101800 VALID 251600/252200 VALID 152000/160000 VALID 192300/200300	
Location indicator of MWO (M)	Location indicator of MWO originating the message with a separating hyphen (M)	nnnn-		YUDO ⁻³² YUSO ⁻³²	
Name of the FIR/CTA or aircraft identification (M)	Location indicator and name of the FIR/CTA ⁴⁴ for which the SIGMET/AIRMET is issued or aircraft radiotelephony call sign (M)	nnnn nnnnnnnnn FIR/UIR] or nnnn nnnnnnnnn CTA	nnnn nnnnnnnnn FIR/[n]	YUCC AMSWELL FIR ³² YUDD SHANLON FIR/UIR ³² YUDD SHANLON CTA ²	YUCC AMSWELL FIR/2 ³² YUDD SHANLON FIR ³²
IF THE SIGMET OR AIRMET MESSAGE IS TO BE CANCELLED, SEE DETAILS AT THE END OF THE TEMPLATE.					
Phenomenon (M) ²⁵	Description of	OBSC ²⁶ TS[GR ²⁷]	SFC WSPD nn[n]MPS	OBSC TS	SFC WIND 040/40MPS

Element as specified in Chapter 5 and Appendix 6	Detailed content	SIGMET template	AIRMET template	SIGMET message examples	AIRMET message examples
	phenomenon causing the issuance of SIGMET/AIRMET (G)	EMBD ⁺⁴⁸ TS[GR] ⁷ FRO ⁺⁴⁹ TS[GR] ⁷ SQL ⁺²¹⁰ TS[GR] ⁷ TC nnnnnnnnnn PSN Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] CB or TC NN ⁺³¹¹ PSN Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] CB SEV TURB ⁺⁴¹² SEV ICE ⁺⁴⁵¹³ SEV ICE (FZRA) ⁺⁴⁵¹³ SEV MTW ⁺⁴⁶¹⁴ HVY DS HVY SS [VA ERUPTION] [MT ¹ nnnnnnnnnn] [PSN Nnn[nn] or Snn[nn] Ennn[nn] or Wnnn[nn]] VA CLD RDOACT CLD	(or SFC WSPD nn[n]KT) SFC WIND nnn/nn[n]MPS (or SFC WIND nnn/nn[n]KT) SFC VIS nnnnm (nn) ⁺⁷¹⁵ ISOL ⁺⁴¹⁶ TS[GR] ⁷ ^p OCNL ⁺⁴¹⁷ TS[GR] ⁷ MT OBSC BKN CLD nnn/[ABV]nnnnM (or BKN CLD nnn/[ABV][n]nnnnFT) or BKN CLD SFC/[ABV]nnnnM (or BKN CLD SFC/[ABV][n]nnnnFT) 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 ⁺⁴¹⁶ CB ⁺²⁰¹⁸ OCNL ⁺⁴¹⁷ CB ¹⁸ FRQ ⁺⁴¹⁹ CB ¹⁸ ISOL ⁺⁴¹⁶ TCU ⁺²⁰¹⁸ OCNL ⁺⁴¹⁷ TCU ⁺²⁰¹⁸ FRQ ⁺⁴¹⁹ TCU ¹⁸ MOD TURB ⁺⁴¹² MOD ICE ⁺⁴⁵¹³ MOD MTW ⁺⁴⁶¹⁴	OBSC TSGR EMBD TS EMBD TSGR FRO TS FRO TSGR SQL TS SQL TSGR TC GLORIA PSN N10 W060 TC NN PSN S2030 E06030 SEV TURB SEV ICE SEV ICE (FZRA) SEV MTW HVY DS HVY SS VA ERUPTION MT ASHVAL ² PSN S15 E073 VA CLD RDOACT CLD	SFC WIND 310/20KT SFC VIS 1500M (BR) ISOL TS ISOL TSGR OCNL TS OCNL TSGR MT OBSC BKN CLD 120/900M (BKN CLD 400/3000FT) BKN CLD SFC/3000M BKN CLD SFC/ABV10000FT OVC CLD 270/ABV3000M (OVC CLD 900/ABV10000FT) OVC CLD SFC/3000M OVC CLD SFC/ABV10000FT ISOL CB OCNL CB FRO CB ISOL TCU OCNL TCU FRO TCU MOD TURB MOD ICE MOD MTW
Observed or forecast phenomenon (M)	Indication whether the information is observed and expected to continue, or forecast (AA)	OBS [AT nnnnZ] or FCST [AT nnnnZ]		OBS OBS AT 1210Z FCST FCST AT 1815Z	

Element <i>as specified in Chapter 5 and Appendix 6</i>	Detailed content	SIGMET template	AIRMET template	SIGMET message examples	AIRMET message examples
Location (C) ^{23,19}	Location (referring to latitude and longitude (in degrees and minutes))	<p>Nnn[nn] Wnnn[nn] <i>or</i> Nnn[nn] Ennn[nn] <i>or</i> Snn[nn] Wnnn[nn] <i>or</i> Snn[nn] Ennn[nn]</p> <p><i>or</i></p> <p>N OF Nnn[nn] <i>or</i> S OF Nnn[nn] <i>or</i> N OF Snn[nn] <i>or</i> S OF Snn[nn] <i>or</i> [AND] W OF Wnnn[nn] <i>or</i> E OF Wnnn[nn] <i>or</i> W OF Ennn[nn] <i>or</i> E OF Ennn[nn]</p> <p><i>or</i></p> <p>N OF Nnn[nn] <i>or</i> N OF Snn[nn] AND S OF Nnn[nn] <i>or</i> S OF Snn[nn]</p> <p><i>or</i></p> <p>W OF Wnnn[nn] <i>or</i> W OF Ennn[nn] AND E OF Wnnn[nn] <i>or</i> E OF Ennn[nn]</p> <p><i>or</i></p> <p>[N OF, NE OF, E OF, SE OF, S OF, SW OF, W OF, NW OF] [LINE] N OF LINE²³ <i>or</i> NE OF LINE²³ <i>or</i> E OF LINE²³ <i>or</i> SE OF LINE²³ <i>or</i> S OF LINE²³ <i>or</i> SW OF LINE²³ <i>or</i> W OF LINE²³ <i>or</i> NW OF LINE²³ 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> 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]] [AND N OF LINE²³ <i>or</i> NE OF LINE²³ <i>or</i> E OF LINE²³ <i>or</i> SE OF LINE²³ <i>or</i> S OF LINE²³ <i>or</i> SW OF LINE²³ <i>or</i> W OF LINE²³ <i>or</i> NW OF LINE²³ 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]]]</p> <p><i>or</i></p> <p>WI^{23,25} 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]]</p> <p><i>or</i></p> <p>APRX nnKM WID LINE²³ BTN (<i>or</i> nnNM WID LINE²³ BTN) 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]]</p> <p><i>or</i></p> <p>ENTIRE FIR/UIR²⁴</p> <p><i>or</i></p> <p>ENTIRE CTA²⁴</p> <p><i>or</i>²¹</p> <p>WI nnnKM (<i>or</i> nnnNM) OF TC CENTRE</p>		<p>N48 E010 N2020 W07005 N2706 W07306 S60 W160 S0530 E16530</p> <p>N OF N50 S OF N54N5430 N OF S10 S OF S4530 W OF W155 W OF E15540 E OF W45 E OF E09015</p> <p>N OF N1515 AND W OF E13530 S OF N45 AND N OF N40</p> <p>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</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 FIR/UIR</p> <p>ENTIRE CTA</p> <p>WI 400KM OF TC CENTRE WI 250NM OF TC CENTRE</p>	

Element as specified in Chapter 5 and Appendix 6	Detailed content	SIGMET template	AIRMET template	SIGMET message examples	AIRMET message examples
Level (C) ^{24,19}	Flight level or altitude and extent (C) ²²	<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>or²³ CB TOP [ABV] FLnnn WI nnnKM OF CENTRE (or CB TOP [ABV] FLnnn WI nnnNM OF CENTRE) or CB TOP [BLW] FLnnn WI nnnKM OF CENTRE (or CB TOP [BLW] FLnnn WI nnnNM OF CENTRE)</p> <p>or²¹ TOP [ABV or BLW] FLnnn</p> <p>or²⁴ FLnnn/nnn [APRX nnnKM BY nnnKM] [nnKM WID LINE²⁵ 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]] (or FLnnn/nnn [APRX nnnNM BY nnnNM] [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>FL180 SFC/FL070 SFC/3000M SFC/10000FT FL050/080 TOP FL390 ABV FL250 TOP ABV FL100 FL310/450 3000M 2000/3000M 8000FT 6000/12000FT 2000M/FL150 10000FT/FL250</p> <p>CB TOP FL500 WI 270KM OF CENTRE (CB TOP FL500 WI 150NM OF CENTRE) TOP FL500 TOP ABV FL500 TOP BLW FL450</p> <p>FL310/350 APRX 220KM BY 35KM</p> <p>FL390</p>	
Movement or expected movement (C) ^{24,19, 26}	Movement or expected movement (direction and speed) with reference to one of the sixteen points of compass, or stationary (C)	<p>MOV N [nnKM] or MOV NNE [nnKM] or MOV NE [nnKM] or MOV ENE [nnKM] or MOV E [nnKM] or MOV ESE [nnKM] or MOV SE [nnKM] or MOV SSE [nnKM] or MOV S [nnKM] or MOV SSW [nnKM] or MOV SW [nnKM] or MOV WSW [nnKM] or MOV W [nnKM] or MOV WNW [nnKM] or MOV NW [nnKM] or MOV NNW [nnKM] (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</p>		<p>MOV SE MOV NNW</p> <p>MOV E 40KM (MOV E 20KT) MOV WSW 20KT</p> <p>STNR</p>	
Changes in intensity (C) ^{24,19}	Expected changes in intensity (C)	<p>INTSF or WKN or NC</p>		<p>INTSF WKN NC</p>	
Forecast time (C) ²⁶	Indication of the forecast time of phenomenon	FCST nnnnZ	—	FCST 2200Z	—

Element as specified in Chapter 5 and Appendix 6	Detailed content	SIGMET template	AIRMET template	SIGMET message examples	AIRMET message examples
<p>Forecast position (C)^{21, 22, 24, 19, 26, 28}</p>	<p>Forecast position of volcanic ash cloud or the centre of the TC or other hazardous phenomena²³ phenomenon at the end of the validity period of the SIGMET message (C)</p>	<p>FCST²⁹ nnnnZ Nnn[nn] Wnn[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] 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, NE OF, E OF, SE OF, S OF, SW OF, W OF, NW OF] [LINE] N OF LINE²³ or NE OF LINE²³ or E OF LINE²³ or SE OF LINE²³ or S OF LINE²³ or SW OF LINE²³ or W OF LINE²³ or NW OF LINE²³ 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 LINE²³ or NE OF LINE²³ or E OF LINE²³ or SE OF LINE²³ or S OF LINE²³ or SW OF LINE²³ or W OF LINE²³ or NW OF LINE²³ 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>WI^{23, 25} 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]</p>	<p>—</p>	<p>N30 W170</p> <p>N OF N30</p> <p>S OF S50 AND W OF E170</p> <p>S OF N46 AND N OF N39</p> <p>NE OF LINE N35 W020 – N45 W040</p> <p>SW OF LINE N48 W020 – N43 E010 AND NE OF LINE N43 W020 – N38 E010</p> <p>WI N20 W090 – N05 W090 – N10 W100 – N20 W100 – N20 W090</p> <p>APRX 50KM WID LINE BTN N64 W017 – N57 W005 – N55 E010 – N55 E030</p> <p>ENTIRE FIR</p> <p>ENTIRE FIR/UIR</p> <p>ENTIRE CTA</p> <p>TC CENTRE PSN N2740 W07345</p> <p>NO VA EXP</p> <p>FCST 1700Z VA CLD APRX S15 E075 S15 E081 S17 E083 S18 E079 S15 E075</p> <p>FCST 0500Z ENTIRE FIR</p> <p>FCST 0500Z ENTIRE CTA</p> <p>FCST 0500Z NO VA EXP</p> <p>FCST 2200Z TC CENTRE N2740 W07345</p>	<p>—</p>

- ~~15-13.~~ In accordance with 4.2.7.
~~16-14.~~ In accordance with 4.2.8.
~~17-15.~~ In accordance with 2.1.4.
~~18-16.~~ In accordance with 4.2.1 c).
~~19-17.~~ In accordance with 4.2.1 d).
~~20-18.~~ The use of cumulonimbus, ~~CB, (CB)~~ and towering cumulus, ~~TCU, (TCU)~~ is restricted to AIRMETs in accordance with 2.1.4.
~~21-19.~~ In the case of ~~the same phenomenon~~ volcanic ash cloud or tropical cyclone covering more than one area within the FIR, these elements can be repeated, as necessary.
~~22-20.~~ Only for SIGMET messages for volcanic ash cloud and tropical cyclones.
~~23-21.~~ Only for SIGMET messages for tropical cyclones.
~~24-22.~~ Only for SIGMET messages for volcanic ash.
~~25-23.~~ A straight line ~~is to be used~~ 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.
~~26-24.~~ To be used for two volcanic ash clouds or two centres of tropical cyclones simultaneously affecting the FIR concerned.
~~27-25.~~ The number of coordinates should be kept to a minimum and should not normally exceed seven.
~~28-26.~~ ~~Optionally can be used in addition to Movement or Expected Movement.~~ The elements 'Forecast Time' and 'Forecast Position' are not to be used in conjunction with the element 'Movement or Expected Movement'.
~~29.~~ ~~To be used for hazardous phenomena other than volcanic ash cloud and tropical cyclones.~~
~~30-27.~~ End of the message (as the SIGMET/AIRMET message is being cancelled).
~~31-28.~~ The levels of the phenomena remain fixed throughout the forecast period.

~~— Note. — 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.~~

Editorial note.— Insert the following new table.

(Tracked changes are used to show the changes from existing Table A6-1. The template to be used for SIGMET and AIRMET messages is presented in Table A6-1A.)

Table A6-1B. Template for ~~SIGMET and AIRMET messages and~~ 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 SIGMET/AIRMET messages and~~ in special air-reports are shown in Table A6-4 of this appendix.

<i>Element as specified in Chapter 5 and Appendix 6</i>	<i>Detailed content</i>	<i>SPECIAL AIR REPORT Template^{1,2}</i>	<i>Examples</i>
Identification (M)	Message identification and sequence number⁴ (M)	ARS	ARS
Name of the FIR/CTA or aircraft identification (M)	Location indicator and name of the FIR/CTA ⁶ for which the SIGMET/AIRMET is issued or aircraft radiotelephony call sign (M)	nnnnn	VA812 ³
Observed phenomenon (M) ²	Description of observed phenomenon causing the issuance of SIGMET/AIRMET (C) the special air-report ⁴	TS TSGR SEV TURB SEV ICE SEV MTW HVY SS VA CLD (FLnnn/nnn) VA [MT nnnnnnnnn] MOD TURB MOD ICE	TS TSGR SEV TURB SEV ICE SEV MTW HVY SS VA CLD VA VA MT ASHVAL ⁵ MOD TURB MOD ICE
Observed or forecast phenomenon Observation time (M)	Indication whether the information is observed and expected to continue, or forecast (M) Time of observation of observed phenomenon	OBS AT nnnnZ	OBS AT 1210Z
Location (C) ²¹	Location (referring to latitude and longitude (in degrees and minutes)) of observed phenomenon	NnnnnWnnnnn or NnnnnEnnnnn or SnnnnWnnnnn or SnnnnEnnnnn	N2020W07005 S4812E01036
Level (C) ²¹	Flight level or altitude and extent (C) ²² of observed phenomenon	FLnnn or FLnnn/nnn or nnnnM (or [n]nnnnFT)	FL390 FL180/210 3000M 12000FT

Notes.—

1. No wind and temperature to be uplinked to other aircraft in flight in accordance with 3.2.
2. See 4.13.1.
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.
- 3.5. Fictitious location.
- 4.— In accordance with 1.1.3 and 2.1.2.
- 5.— See 3.1.
- 6.— See 2.1.3.
- 7.— In accordance with 1.1.4 and 2.1.4.
- 8.— In accordance with 4.2.1 a).
- 9.— In accordance with 4.2.4.
- 10.— In accordance with 4.2.1 b).
- 11.— In accordance with 4.2.2.
- 12.— In accordance with 4.2.3.
- 13.— Used for unnamed tropical cyclones.
- 14.— In accordance with 4.2.5 and 4.2.6.
- 15.— In accordance with 4.2.7.
- 16.— In accordance with 4.2.8.
- 17.— In accordance with 2.1.4.
- 18.— In accordance with 4.2.1 c).
- 19.— In accordance with 4.2.1 d).
- 20.— The use of cumulonimbus, CB, and towering cumulus, TCU, is restricted to AIRMETs in accordance with 2.1.4.
- 21.— In the case of the same phenomenon covering more than one area within the FIR, these elements can be repeated, as necessary.
- 22.— Only for SIGMET messages for volcanic ash cloud and tropical cyclones.
- 23.— Only for SIGMET messages for tropical cyclones.
- 24.— Only for SIGMET messages for volcanic ash.
- 25.— 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.
- 26.— To be used for two volcanic ash clouds or 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.— Optionally can be used in addition to Movement or Expected Movement.
- 29.— To be used for hazardous phenomena other than volcanic ash cloud and tropical cyclones.
- 30.— End of the message (as the SIGMET/AIRMET message is being cancelled).
- 31.— The levels of the phenomena remain fixed throughout the forecast period.

— *Note.* — 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.

...

Example A6-1. SIGMET and AIRMET message and the corresponding cancellations

SIGMET

YUDD SIGMET 2 VALID 101200/101600 YUSO –
 YUDD SHANLON FIR/UIR OBSC TS FCST
 S OF N54 AND E OF W012 TOP FL390 MOV E **20KT**
 WKN ~~FCST 1600Z S OF N54 AND E OF W010~~

Cancellation of SIGMET

YUDD SIGMET 3 VALID 101345/101600 YUSO –
 YUDD SHANLON FIR/UIR CNL SIGMET 2
 101200/101600

AIRMET

YUDD AIRMET 1 VALID 151520/151800 YUSO –
 YUDD SHANLON FIR ISOL TS OBS
 N OF S50 TOP ABV FL100 STNR WKN

Cancellation of AIRMET

YUDD AIRMET 2 VALID 151650/151800 YUSO –
 YUDD SHANLON FIR CNL AIRMET 1
 151520/151800

Example A6-2. SIGMET message for tropical cyclone

YUCC SIGMET 3 VALID 251600/252200 YUDO –
YUCC AMSWELL FIR TC GLORIA PSN N2706 W07306 CB OBS AT 1600Z ~~N2706 W07306 CB~~ WI 250NM OF
TC CENTRE TOP FL500 ~~WI 150NM OF CENTRE MOV NW 10KT~~ NC FCST 2200Z TC CENTRE PSN N2740
W07345

Meaning:

The third 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 1600 UTC to 2200 UTC on the 25th of the month; tropical cyclone Gloria at 27 degrees 6 minutes north and 73 degrees 6 minutes west; cumulonimbus was observed at 1600 UTC at 27 degrees 6 minutes north and 73 degrees 6 minutes west with within 250 nautical miles of the centre of the tropical cyclone cumulonimbus with top at flight level 500; within 150 nautical miles of the centre; the tropical cyclone is expected to move northwestwards at 10 knots and not to undergo any no changes in intensity are expected; at 2200 UTC the forecast position of the centre of the tropical cyclone at 2200 UTC is expected forecast to be located at 27 degrees 40 minutes north and 73 degrees 45 minutes west.

* Fictitious location

Example A6-3. SIGMET message for volcanic ash

YUDD SIGMET 2 VALID 211100/211700 YUSO –
YUDD SHANLON FIR/UIR VA ERUPTION MT ASHVAL PSN S1500 E07348 VA CLD OBS AT 1100Z APRX
~~220KM BY 35KM~~ 50KM WID LINE BTN S1500 E07348 – S1530 E07642 FL310/450 ~~MOV SE 65KMH~~ FCST
1700Z ~~VA CLD~~ APRX 50KM WID LINE BTN S1506 E07500 – S1518 E08112 – S1712 E08330 – ~~S1824 E07836~~

Meaning:

The second SIGMET message issued for the SHANLON* flight information region (identified by YUDD Shanlon area control centre/upper flight information region) by the Shanlon/International* meteorological watch office (YUSO) since 0001 UTC; the message is valid from 1100 UTC to 1700 UTC on the 21st of the month; volcanic ash eruption of Mount Ashval* located at 15 degrees south and 73 degrees 48 minutes east; volcanic ash cloud observed at 1100 UTC in an approximate area of 220 km by 35 km approximately 50km wide line between 15 degrees south and 73 degrees 48 minutes east, and 15 degrees 30 minutes south and 76 degrees 42 minutes east; between flight levels 310 and 450; the volcanic ash cloud is expected to move southeastwards at 65 kilometres per hour; at 1700 UTC the volcanic ash cloud is forecast to be located approximately in an area bounded by the following points: in an approximately 50km wide line between 15 degrees 6 minutes south and 75 degrees east, 15 degrees 18 minutes south and 81 degrees 12 minutes east, and 17 degrees 12 minutes south and 83 degrees 30 minutes east; and 18 degrees 24 minutes south and 78 degrees 36 minutes east.

* Fictitious location

Example A6-4. SIGMET message for radioactive cloud

YUCC SIGMET 2 VALID 201200/201600 YUDO –
 YUCC AMSWELL FIR RDOACT CLD OBS AT 1155Z WI S5000 W14000 – S5000 W13800 – S5200 W13800 –
 S5200 W14000 – S5000 W14000 SFC/FL100 ~~STNR~~ WKN FCST 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 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 remain stationary and~~ 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 ~~MOV E 40KMH WKN~~ INTSF FCST
 1600Z S OF N2020 AND E OF W06950

Meaning:

The fifth 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 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 ~~move eastwards at 40 kilometres per hour and to weaken~~ strengthen in intensity; ~~forecast position~~ 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

...

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

...

1. MEANS OF SUPPLY AND FORMAT OF METEOROLOGICAL INFORMATION

AMOFSG

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:

...

4. SPECIFICATIONS RELATED TO FLIGHT DOCUMENTATION

4.1 Presentation of information

...

4.1.2 **Recommendation.**— *The flight documentation related to concatenated route-specific upper wind and upper-air temperature forecasts should be provided ~~when~~ **as** agreed between the meteorological authority and **the** operator concerned.*

...

4.2 Charts in flight documentation

4.2.1 Characteristics of charts

4.2.1.1 **Recommendation.**— *Charts included in flight documentation should have a high standard of clarity and legibility and should 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**;*

...

**5. SPECIFICATIONS RELATED TO AUTOMATED
PRE-FLIGHT INFORMATION SYSTEMS FOR BRIEFING,
CONSULTATION, FLIGHT PLANNING AND FLIGHT DOCUMENTATION**

5.1 Access to the systems

...

5.2 Detailed specifications of the systems

Recommendation.— *Automated pre-flight information systems for the supply of meteorological information for self-briefing, pre-flight planning and flight documentation should:*

...

- c) *use access and interrogation procedures based on abbreviated plain language and, as appropriate, ICAO location indicators, and aeronautical meteorological code data-type designators prescribed by the WMO, or based on a menu-driven user interface, or other appropriate mechanisms as agreed between the meteorological authority and **the** operators concerned; and*

...

**APPENDIX 9. TECHNICAL SPECIFICATIONS RELATED TO INFORMATION
FOR AIR TRAFFIC SERVICES, SEARCH AND RESCUE SERVICES
AND AERONAUTICAL INFORMATION SERVICES**

...

1.5 Format of information

...

1.5.2 Recommendation.— *When computer-processed upper-air data for grid points are made available to air traffic services units in digital form for use by air traffic services computers, the contents, format and transmission arrangements should be as agreed between the meteorological authority and the appropriate ATS authority **concerned**. The data should normally be supplied as soon as is practicable after the processing of the forecasts has been completed.*

...

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

Recommendation. ~~Unless otherwise determined by regional air navigation agreement, AFTN messages and bulletins containing operational meteorological information should achieve transit times of less than the following:~~

SIGMET and AIRMET messages, volcanic ash and tropical cyclone advisory information and special air reports	5 minutes
Abbreviated plain language amendments to significant weather and upper air forecasts	5 minutes
Amended TAF and corrections to TAF	5 minutes
METAR	} 0-900 km (500 NM) — 5 minutes
Trend forecasts	
TAF	
SPECI	

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

1.2 Grid point data for ATS and operators

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

1.2.2 **Recommendation.**— ~~When upper-air data for grid points in digital form are made available to operators for flight planning by computer, the transmission arrangements should be as agreed~~ ~~among~~ ~~between the~~ ~~world area forecast centre~~ **W AFC** ~~concerned, the meteorological authority and the operators.~~

...

**ATTACHMENT A. OPERATIONALLY DESIRABLE
ACCURACY OF MEASUREMENT OR OBSERVATION**

METWSG

Note.— The guidance contained in this table relates to Chapter 2 — Supply, use, quality management and interpretation of meteorological information, in particular to 2.2.7, and Chapter 4 — Meteorological observations and reports, in particular to 4.1.9.

...

ATTACHMENT B. OPERATIONALLY DESIRABLE ACCURACY OF FORECASTS

Note 1.— The guidance contained in this table relates to Chapter 2 — Supply, use, quality management and interpretation of meteorological information, in particular to 2.2.8, and Chapter 6 — Forecasts, in particular to 6.1.1.

...

AMOFSG

ATTACHMENT C. SELECTED CRITERIA APPLICABLE TO AERODROME REPORTS

(The guidance in this table relates to Chapter 4 and Appendix 3.)

	<i>Surface wind</i>				...
Specifications	Directional variations ³			Speed variations ³	
	≥ 60° and < 180°			≥ 180°	Exceeding the mean speed by ≥ 5 m/s (10 kt)
	Mean speed				
	< 1.5 m/s (3 kt)	≥ 1.5 m/s (3 kt)			
Local routine and special report	2/10 min ⁷ VRB + 2 extreme directions ⁴	2/10 min ⁷ mean + 2 extreme directions ⁴	2 min VRB (no extremes) ⁴	10 min ⁸ Minimum and maximum speed	
METAR/ SPECI	10 min VRB (no extremes)	10 min mean + 2 extreme directions	10 min VRB (no extremes)	10 min ⁸ Maximum speed ⁴	
Relevant reporting scales for all messages	Direction in three figures rounded off to the nearest 10 degrees (degrees 1 – 4 down, degrees 5 – 9 up)			Speed in 1 m/s or 1 kt Speed < 0.5 m/s (1 kt) indicated as CALM	

...



APPENDIX B

PROPOSED CONSEQUENTIAL AMENDMENT TO

**INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES**

AIR TRAFFIC SERVICES

ANNEX 11

TO THE CONVENTION OF INTERNATIONAL CIVIL AVIATION

THIRTEENTH EDITION — JULY 2001

...

CHAPTER 1. DEFINITIONS

...

AMOFSG

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

APPENDIX C

PROPOSED CONSEQUENTIAL AMENDMENT TO
PROCEDURES FOR AIR NAVIGATION SERVICES
ABBREVIATIONS AND CODES

(PANS-ABC, Doc 8400)

EIGHTH EDITION — 2010

...

H

...

H... Significant wave height (*followed by figures in METAR/SPECI*)

...

I

...

~~IC~~ ~~Ice crystals (*very small ice crystals in suspension, also known as diamond dust*)~~

...

S

...

SIGMET† Information concerning en-route weather ~~phenomena which~~ and other phenomena in the atmosphere that may affect the safety of aircraft operations

...

Editorial note.— Amend Decode section accordingly.

APPENDIX D

**PROPOSED CONSEQUENTIAL AMENDMENT TO
PROCEDURES FOR AIR NAVIGATION SERVICES
AIR TRAFFIC MANAGEMENT**

(PANS-ATM, Doc 4444)

FIFTEENTH EDITION — 2007

...

CHAPTER 1. DEFINITIONS

...

AMOFSG

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

...

METWSG

CHAPTER 4 GENERAL PROVISIONS FOR AIR TRAFFIC SERVICES

...

4.12 REPORTING OF OPERATIONAL AND METEOROLOGICAL INFORMATION

...

4.12.6 Forwarding of meteorological information

...

4.12.6.2 When receiving special air-reports by data link communications, air traffic services units shall forward them without delay to their associated meteorological watch office, ~~and~~ the WAFCs, and the centres designated by regional air navigation agreement for the operation of the aeronautical fixed service satellite distribution system and the Internet-based services.

...

APPENDIX E

PRINCIPLES TO BE FOLLOWED IN THE RESTRUCTURING OF ANNEX 3 AND THE DEVELOPMENT OF A NEW PANS-MET

The restructured Annex 3/Technical Regulations [C.3.1] and the new PANS-MET will:

- 1) contain functional and performance requirements (in the Annex) and technical specifications as means of compliance (in the PANS);
- 2) take into account the identification of provisions according to State obligations, service provider obligations and technical requirements for the service;
- 3) solely link the notion of meteorological authority with the roles and responsibilities associated with the category of State obligations referenced in 2); and
- 4) be developed in time for adoption no later than 2018, in line with Block 1 of the aviation system block upgrades (ASBU) methodology contained in the *Global Air Navigation Plan* (GANP) (Doc 9750).

— END —