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 (WAFC), 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


5.2.1 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
   new text to be inserted is highlighted with grey shading
   text to be deleted is shown with a line through it
   followed by the new text which is highlighted with grey shading

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

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

CHAPTER 1. DEFINITIONS

1.1 Definitions

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.

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.

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.

CHAPTER 2. GENERAL PROVISIONS

2.1 Objective, determination and provision of meteorological service
**2.2 Supply, use, and quality management and interpretation of meteorological information**

...
2.3 Notifications required from operators

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.

...

CHAPTER 3. WORLD AREA FORECAST SYSTEM AND METEOROLOGICAL OFFICES

...

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:

...

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

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:

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.

...
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:

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

3.7 Tropical cyclone advisory centres

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:

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 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

... 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.

... AMOFSG

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 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.

... METWSG

CHAPTER 5. AIRCRAFT OBSERVATIONS AND REPORTS

... METWSG

5.3 Routine aircraft observations — designation

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.

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 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:

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.
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

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.

... 

6.5 Area forecasts for low-level flights

... 

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

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.

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.

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.
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

... 

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.

... 

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).

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

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).

...
CHAPTER 11. REQUIREMENTS FOR AND USE OF COMMUNICATIONS

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.

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.

Note 1.— Three aeronautical fixed service satellite distribution systems 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 are given in Annex 10, Volume III, Part 1, 10.1 and 10.2.
APPENDICES AND ATTACHMENTS

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

(See Chapter 3 of this Annex.)

1. WORLD AREA FORECAST SYSTEM

1.2 Upper-air gridded forecasts

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);

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

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).
3. VOLCANIC ASH ADVISORY CENTRES (VAAC)

3.1 Volcanic ash advisory information

...
4. STATE VOLCANO OBSERVATORIES

4.1 Information from State volcano observatories

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

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Note 2.— The State volcano observatories may use the Volcano Observatory Notice for Aviation (VONA) format to send information to 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

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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 1.2, 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

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:

\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.

**AMOFSG**

3.2 Local routine and special reports

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:

**AMOFSG**

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) 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

4.4.1 Siting

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

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4.4.2 Reporting

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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:

<table>
<thead>
<tr>
<th>(local routine and special reports)</th>
<th>(METAR and SPECI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light</td>
<td>FBL</td>
</tr>
<tr>
<td>Moderate</td>
<td>MOD</td>
</tr>
<tr>
<td>Heavy</td>
<td>HVY</td>
</tr>
<tr>
<td>Vicinity</td>
<td>VC</td>
</tr>
</tbody>
</table>

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 — 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.
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 4.4.2.6 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 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 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 agreed locally between the meteorological authority, and air traffic services the ATS authorities and the operators concerned, on a regular basis;

...
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).

<table>
<thead>
<tr>
<th>Element as specified in Chapter 4</th>
<th>Detailed content</th>
<th>Template(s)</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Secretariat</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present weather (C)§ 16</td>
<td>Intensity of present weather (C)§</td>
<td>FBL or MOD or HVY</td>
<td>—</td>
</tr>
<tr>
<td>Characteristics and type of present weather (C)§ 11</td>
<td>DZ or RA or SN or SG or PL or DS or SS or FZDZ or FZUP or FC13 or SHG or FZRA or SHS or SHSR or SHS or SHUP or TSG or TSRA or TSS or TSUP or UP</td>
<td>FG or BR or SA or DU or HZ or FU or VA or SQ or PO or EC or TS or BCFG or BLSD or BLSA or BLSN or DRLD or DRSN or DRSA or FZFG or MIFG or FG or VA</td>
<td>MOD RA HZY TSRA HZY DZ FBL SN HZ FG MIFG</td>
</tr>
<tr>
<td><strong>AMOFSG</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplementary information (C)§</td>
<td>Significant meteorological phenomena (C)§</td>
<td>CB or TS or MOD TURB or SEV TURB or WS or GR or SEV SQ or MOD ICE or SEV ICE or FZDZ or FZRA or SEV MTW or SS or DS or BLSN or FC15</td>
<td>—</td>
</tr>
<tr>
<td>Location of the phenomena (C)§</td>
<td>IN APCH [n][n][n][M-WIND nnn[n][MPS] or IN CLIMB-OUT [n][n][n][M-WIND nnn[n][MPS]</td>
<td>—</td>
<td>FC IN APCH WS IN APCH 60M-WIND 360/13MPS</td>
</tr>
<tr>
<td>Recent weather (C)§ 10</td>
<td>REFMF or REFRA or REDZ or RESHRA or [PERSN or RESH or RESG or RESGH or RESHGS or REBS or RES or REDS or RETS or RETS or RETS or RETS or RETS or RETS or RETS or RETS or RETS or RETS</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>
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).

<table>
<thead>
<tr>
<th>Element as specified in Chapter 4</th>
<th>Detailed content</th>
<th>Template(s)</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplementary information (C)</td>
<td>Recent weather (C)(^2)(^9)</td>
<td>REFZDZ or REFZRA or REDZ or RE[SH]RA or RE[SH]SN 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(^\text{12}) or REFZUP(^\text{12}) or RETSUP(^\text{12}) or RESHUP(^\text{12})</td>
<td>REFZRA RETSRA</td>
</tr>
</tbody>
</table>

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

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:

...
5.A-24 Appendix A to the Report on Agenda Item 5

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 A6-1A6-1B.

...
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.

...
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.

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 system and the Internet-based services, in accordance with regional air navigation agreement.

Table A5-1. Template for TAF

<table>
<thead>
<tr>
<th>Element as specified in Chapter 6</th>
<th>Detailed content</th>
<th>Template(s)</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days and period of validity of forecast (M)</td>
<td>Days and period of the validity of the forecast in UTC (M)</td>
<td>nnnn/hnnn</td>
<td>1606/1624/1700 0812/0913</td>
</tr>
</tbody>
</table>
### 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.

<table>
<thead>
<tr>
<th>Element</th>
<th>Detailed content</th>
<th>Template(s)</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location indicator of FIR/CTA (M)</td>
<td>ICAO location indicator of the ATS unit serving the FIR or CTA to which the GAMET refers (M)</td>
<td>nnnn</td>
<td>YUCC¹</td>
</tr>
<tr>
<td>Identification (M)</td>
<td>Message identification (M)</td>
<td>GAMET</td>
<td>GEMET</td>
</tr>
<tr>
<td>Validity period (M)</td>
<td>Day-time groups indicating the period of validity in UTC (M)</td>
<td>VALID nnnnn/nnnnn</td>
<td>VALID 220600/221200</td>
</tr>
<tr>
<td>Location indicator of aerodrome meteorological office or meteorological watch office (M)</td>
<td>Location indicator of aerodrome meteorological office or meteorological watch office originating the message with a separating hyphen (M)</td>
<td>nnnn--</td>
<td>YUDO--¹</td>
</tr>
<tr>
<td>Name of the FIR/CTA or part thereof (M)</td>
<td>Location indicator and name of the FIR/CTA, or part thereof for which the GAMET is issued (M)</td>
<td>nnnn nnnnnnnnnn FIR[n] [BLW FLnnn] or nnnn nnnnnnnnnn CTA[n] [BLW FLnnn]</td>
<td>YUCC AMSWELL FIR/2 BLW FL120 YUCC AMSWELL FIR</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Element</th>
<th>Detailed content</th>
<th>Identifier and time</th>
<th>Location</th>
<th>Content</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface wind (C)</td>
<td>Widespread surface wind exceeding 15 m/s (30 kt)</td>
<td>SECN I</td>
<td></td>
<td></td>
<td>SFC WSPD: 10/12 16 MPS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SFC WIND: 10/12 310/16 MPS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SFC WSPD: 40 KT E OF W110</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SFC WIND: E OF W110 050/40KT</td>
</tr>
<tr>
<td>Element</td>
<td>Detailed content</td>
<td>Template(s)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface visibility (C)</td>
<td>Widespread surface visibility below 5 000 m including the weather phenomena causing the reduction in visibility</td>
<td>SFC VIS: ([nn/nn]) 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</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SFC VIS: 06/08 3000 M BR N of N51</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SFC VIS: 06/08 N of N51 3000 M BR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Significant weather (C)</td>
<td>Significant weather conditions encompassing thunderstorms, and heavy sandstorm and duststorm, and volcanic ash</td>
<td>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 EMBD TSGR or SQL TSGR or VA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SIGWX: 11/12 ISOL TS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SIGWX: 12/14 SS S OF N35</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SIGWX: 12/14 S OF N35 HVY SS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mountain obscuration (C)</td>
<td>Mountain obscuration</td>
<td>MT OBSC: ([nn/nn])</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MT OBSC: MT PASSES S OF N48</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MT OBSC: S OF N48 MT PASSES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cloud (C)</td>
<td>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</td>
<td>SIG CLD: ([nn/nn]) BKN or OVC ([nnn/nnn]) M or ([nnn/nnn]) FT ([nnnn/nnnn]) M or ([nnnn/nnnn]) FT AGL or AMSL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SIG CLD: 06/09 OVC 800/1100 FT AGL N OF N51</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SIG CLD: 06/09 N OF N51 10/12 ISOL TCU 1200/8000 FT AGL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SIG CLD: 08/09 N OF N51 OVC 800/1100FT AGL 10/12 ISOL TCU 1200/8000FT AGL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Icing (C)</td>
<td>icing (except for that occurring in convective clouds and for severe icing for which a SIGMET message has already been issued)</td>
<td>ICE: ([nn/nn]) MOD FLnnn/nnn or MOD ABV FLnnn or SEV FLnnn/nnn or SEV ABV FLnnn</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ICE: MOD FL050/080</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Element</td>
<td>Detailed content</td>
<td>Template(s)</td>
<td>Examples</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>-----------------</td>
<td>-------------</td>
<td>----------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turbulence (C)</td>
<td>Turbulence (except for that occurring in convective clouds and for severe turbulence for which a SIGMET message has already been issued)</td>
<td>TURB: [nn/nn]</td>
<td>TURB: MOD ABV FL090</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mountain wave (C)</td>
<td>Mountain wave (except for severe mountain wave for which a SIGMET message has already been issued)</td>
<td>MTW: [nn/nn]</td>
<td>MTW: MOD ABV FL080 N OF N63 MTW: N OF N63 MOD ABV FL080</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIGMET (C)</td>
<td>SIGMET messages applicable to the FIR/CTA concerned or a sub-area thereof, for which the area forecast is valid</td>
<td>SIGMET APPLICABLE:</td>
<td>SIGMET APPLICABLE: 3, A5, B06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>or HAZARDOUS WX NIL (C)</td>
<td></td>
<td>HAZARDOUS WX NIL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicator for the beginning of Section II (M)</td>
<td>Indicator to identify the beginning of Section II (M)</td>
<td>SECN II</td>
<td>SECN II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressure centres and fronts (M)</td>
<td>Pressure centres and fronts and their expected movements and developments</td>
<td>PSYS: [nn]</td>
<td>PSYS: 06 L 1004 HPA N5130 E01000 MOV NE 25KT WKN PSYS: 06 N5130 E01000 L 1004HPA MOV NE 25KT WKN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper winds and temperatures (M)</td>
<td>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)</td>
<td>WIND/T:</td>
<td>WIND/T: 2000 FT 270/18 MPS PS03 5000 FT 250/20 MPS MS02 40000 FT 240/22 MPS MS11 WIND/T: 2000FT NS500 W01000 270/18MPS PS03 5000FT N0500 W30000 250/20MPS MS02 10000FT N5500 W01000 240/22MPS MS11</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Template(s)

<table>
<thead>
<tr>
<th>Element</th>
<th>Detailed content</th>
<th>Identifier and time</th>
<th>Location</th>
<th>Content</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cloud (M)</td>
<td>Cloud information not included in Section I giving type, height of base and top above ground level (AGL) or above mean sea level (AMSL)</td>
<td>CLD: [nn/nn]</td>
<td></td>
<td>FEW or SCT or ST or SC or CU or AS or AC or AS or AC or AS or AC or AS or AC</td>
<td>CLD: BKN SC 2500/8000 FT AGL CLD: NIL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freezing level (M)</td>
<td>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</td>
<td>FZLVL:</td>
<td>[ABV]</td>
<td>[nn/nn] FT</td>
<td>FZLVL: 3000 FT AGL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>[nn/nn]</td>
<td>AGL or AMSL or NIL</td>
<td></td>
</tr>
<tr>
<td>Forecast QNH (M)</td>
<td>Forecast lowest QNH during the period of validity</td>
<td>MNM QNH:</td>
<td>[nn/nn]</td>
<td>HPA</td>
<td>MNM QNH: 1004 HPA</td>
</tr>
<tr>
<td>Sea-surface temperature and state of the sea (O)</td>
<td>Sea-surface temperature and state of the sea if required by regional air navigation agreement</td>
<td>SEA:</td>
<td>Tnn</td>
<td>HGT [nn/nn] M</td>
<td>SEA: T15 HGT 2450 M</td>
</tr>
<tr>
<td>Volcanic eruptions (M)</td>
<td>Name of volcano</td>
<td>VA:</td>
<td>nnnnnnnn</td>
<td>or NIL</td>
<td>VA: ETNA VA: NIL</td>
</tr>
</tbody>
</table>

**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.

...
Example A5-1.  TAF

TAF for YUDO (Donlon/International)*:

TAF YUDO 160000Z 1606/16241700 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 16th17th 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 1606/16241700 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 16th17th of the month to 24000000 UTC on the 16th17th of the month.

* Fictitious location
Example A5-3. GAMET area forecast

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

**Meaning:**
An area forecast for low-level flights (GAMET) issued for sub-area two of the Amswell* flight information region (identified by YUCC Amswell 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 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;
- **Icing:** between 1000 UTC and 1200 UTC, isolated towering cumulus base 1 200, top 8 000 feet above ground level;
- **Turbulence:** moderate between flight level 050 and 080;
- **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, wind direction 270 degrees; wind speed 18 metres per second, temperature plus 3 degrees Celsius; at 5 000 feet above ground level, wind direction 250 degrees; wind speed 20 metres per second, temperature minus 2 degrees Celsius;
- **Clouds:** at 10 000 feet above ground level, wind direction 240 degrees; wind speed 22 metres per second, temperature minus 11 degrees Celsius;
- **Freezing level:** broken stratocumulus, base 2 500 feet, top 8 000 feet above ground level;
- **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

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 A6-1A.

1.1.3 The sequence number referred to in the template in Table 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 A6-1A, 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.

1.1.9 Recommendation.— SIGMET, when issued in graphical format, should be as specified in Appendix 1, including the use of applicable symbols and/or abbreviations.
1.2 Dissemination of SIGMET messages

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

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.

2.1.2 The sequence number referred to in the template in Table A6-1 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, 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):

— 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, PL, PO, RA, SA, SG, SN, SQ, SS or VA)
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.


End of new text.

2.2 Dissemination of AIRMET messages

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

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:
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.

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.
Appendix A to the Report on Agenda Item 5

**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)

<table>
<thead>
<tr>
<th>Element as specified in Chapter 5 and Appendix 6</th>
<th>Detailed content</th>
<th>SIGMET template</th>
<th>AIRMET template</th>
<th>SIGMET message examples</th>
<th>AIRMET message examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location indicator of FIR/CTA (M)</td>
<td>ICAO location indicator of the ATS unit serving the FIR or CTA to which the SIGMET/AIRMET refers (M)</td>
<td>nnnn</td>
<td></td>
<td>YUCC</td>
<td>YUDD</td>
</tr>
<tr>
<td>Identification (M)</td>
<td>Message identification and sequence number (M)</td>
<td>SIGMET [n][n][n]</td>
<td>AIRMET [n][n][n]</td>
<td>SIGMET 5</td>
<td>AIRMET A3</td>
</tr>
<tr>
<td>Validity period (M)</td>
<td>Day-time groups indicating the period of validity in UTC (M)</td>
<td>VALID nnnnnnnnnnn</td>
<td></td>
<td>VALID 010000/010400</td>
<td>AIRMET 2</td>
</tr>
<tr>
<td>Location indicator of MWO (M)</td>
<td>Location indicator of MWO originating the message with a separating hyphen (M)</td>
<td>nnnn–</td>
<td></td>
<td>VALID 221215/221600</td>
<td>AIRMET 9</td>
</tr>
<tr>
<td>Name of the FIR/CTA or aircraft identification (M)</td>
<td>Location indicator and name of the FIR/CTA for which the SIGMET/AIRMET is issued or aircraft radio telephony call sign (M)</td>
<td>nnnn nnnnnnnnnn FIR([UIR]) or nnnn nnnnnnnnnn CTA</td>
<td>nnnn nnnnnnnnnn FIR[n]</td>
<td>YUCC AMSWELL FIR/2</td>
<td>YUDD SHANLON CTA</td>
</tr>
</tbody>
</table>

**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.

IF THE SIGMET OR AIRMET MESSAGE IS TO BE CANCELLED, SEE DETAILS AT THE END OF THE TEMPLATE.
<table>
<thead>
<tr>
<th>Element as specified in Chapter 5 and Appendix 6</th>
<th>Detailed content</th>
<th>SIGMET template</th>
<th>AIRMET template</th>
<th>SIGMET message examples</th>
<th>AIRMET message examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>phenomenon causing the issuance of SIGMET/AIRMET (C)</td>
<td>EMBD [GR]</td>
<td>(or SFC WSPD [n][n]KT)</td>
<td>EMBD TS</td>
<td>OBS TSGR</td>
<td>SFC WIND 310/20KT</td>
</tr>
<tr>
<td></td>
<td>FRO [GR]</td>
<td>SFC WIND nnn[m]MPS</td>
<td>FRO TS</td>
<td>SFC VIS 1500(M)BR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SQL [GR]</td>
<td>SFC WIND nnn[n]KT</td>
<td>SQL TS</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TC nnnnnnnn</td>
<td>SFC WIND nnnnn[M]</td>
<td>SQL TSGR</td>
<td>ISOL TS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PSN Nnn[nn] or Sn[nn]</td>
<td></td>
<td>OCNL TS</td>
<td>OCNL TSGR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wnn[nn] or Ennn[nn] CB</td>
<td></td>
<td>OCNL TS</td>
<td>OCNL TSGR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>or TC NN=n</td>
<td></td>
<td>MT OBSC</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PSN Nnn[nn] or Sn[nn]</td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>or Sn[nn] Wnn[nn] or Ennn[nn] CB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SEV TURB</td>
<td>BKN CLD</td>
<td></td>
<td>SEV TURB</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SEV ICE</td>
<td>nnn[ABV]nnnnM</td>
<td>SEV ICE</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SEV ICE (FZRA)</td>
<td>(or BKN CLD nnn[ABV][nnnnFT])</td>
<td>SEV ICE (FZRA)</td>
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</tr>
<tr>
<td></td>
<td>SEV MTW</td>
<td>(or BKN CLD BKN CLD)</td>
<td>SEV MTW</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>HNV DS</td>
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<td></td>
<td>HNV SS</td>
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<td>HNV SS</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>[VA ERUPTION]</td>
<td>OVC CLD</td>
<td></td>
<td>VA ERUPTION MT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[MT] nnnnnnnnn</td>
<td>(or OVC CLD nnn[ABV][nnnnFT])</td>
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<td>ASHVAL</td>
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<tr>
<td></td>
<td>PSN Nnn[nn] or Sn[nn]</td>
<td>(or OVC CLD OVC CLD)</td>
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<td>PSN S15 E073</td>
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<tr>
<td></td>
<td>Ennn[nn] or Wnn[nn]</td>
<td>(or OVC CLD OVC CLD)</td>
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<td>VA CLD</td>
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<tr>
<td></td>
<td>VA CLD</td>
<td>(or OVC CLD OVC CLD)</td>
<td></td>
<td>RDOACT CLD</td>
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<tr>
<td></td>
<td>RDOACT CLD</td>
<td>(or OVC CLD OVC CLD)</td>
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<tr>
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<td>Indication whether the information is observed and expected to continue, or forecast (M)</td>
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<td>OBS</td>
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</tr>
<tr>
<td></td>
<td>or FCST [AT nnnZ]</td>
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<td></td>
<td>FCST AT 1210Z</td>
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<td></td>
<td>FCST</td>
<td></td>
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<td></td>
<td>FCST AT 1815Z</td>
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</tr>
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</table>
### Appendix A to the Report on Agenda Item 5

#### 5.A-39

<table>
<thead>
<tr>
<th>Element as specified in Chapter 5 and Appendix 6</th>
<th>Detailed content</th>
<th>SIGMET template</th>
<th>AIRMET template</th>
<th>SIGMET message examples</th>
<th>AIRMET message examples</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>or N OF Nnn[nm] or N OF Snn[nm] AND S OF Nnn[nm] or S OF Snn[nm]</td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>or W OF Wnn[nm] or W OF Enn[nm] AND E OF Wnn[nm] or E OF Enn[nm]</td>
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<tr>
<td></td>
<td>or ENTIRE FIR/UIR</td>
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<td></td>
<td>or ENTIRE CTA</td>
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<tr>
<td></td>
<td>or WI nnnKM (or nnNM) OF TC Centre</td>
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<tr>
<td>Element</td>
<td>Detailed content</td>
<td>SIGMET template</td>
<td>AIRMET template</td>
<td>SIGMET message examples</td>
<td>AIRMET message examples</td>
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</tr>
<tr>
<td>Level (C)</td>
<td>Flight level or altitude and extent (C)</td>
<td>[SFC]/FLnnn or [SFC]/nnnnM (or [SFC]/nnnnFT) or FLnnnn or TOP FLnnn or [TOP] ABV FLnnn or [nnnn]/nnnnM (or [nnnn]/nnnnFT) or [nnnnM]/FLnnn</td>
<td>FL180</td>
<td>SFC/FL070</td>
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<tr>
<td>Movement or expected movement (C)</td>
<td>Movement or expected movement (direction and speed) with reference to one of the sixteen points of compass, or stationary (C)</td>
<td>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 S [nnKM] or MOV SSE [nnKM] or MOV W [nnKM] or MOV WNW [nnKM] or MOV NW [nnKM] or MOV NNW [nnKM]</td>
<td>MOV SE</td>
<td>MOV NW</td>
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<tr>
<td>Changes in intensity (C)</td>
<td>Expected changes in intensity (C)</td>
<td>INTSF or WKN or NC</td>
<td>STNR</td>
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<tr>
<td>Forecast time (C)</td>
<td>Indication of the forecast time of phenomenon</td>
<td>FCST nnnnZ</td>
<td>FCST 2200Z</td>
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<td><strong>Element as specified in Chapter 5 and Appendix 6</strong></td>
<td><strong>Detailed content</strong></td>
<td><strong>SIGMET template</strong></td>
<td><strong>SIGMET message examples</strong></td>
<td><strong>AIRMET message examples</strong></td>
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</tr>
<tr>
<td>Forecast position (C)</td>
<td>Forecast position of volcanic ash cloud or the centre of the TC or other hazardous phenomena at the end of the validity period of the SIGMET message (C)</td>
<td>--</td>
<td>N30 W170</td>
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<td></td>
<td></td>
<td></td>
<td>N OF N30</td>
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<td></td>
<td></td>
<td></td>
<td>S OF S50 AND W OF E170</td>
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<td></td>
<td>S OF N46 AND N OF N39</td>
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<td></td>
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<td>NE OF LINE N35 W20 – N45 W40</td>
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<td>SW OF LINE N48 W20 – N43 E010 AND NE OF LINE N43 W20 – N38 E010</td>
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<td></td>
<td>WI N20 W090 – N05 W090 – N10 W100 – N20 W100 – N20 W090</td>
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<td>APRX 50KM WID LINE BTN N64 W017 – N57 W005 – N55 E010 – N55 E030</td>
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<td>ENTIRE FIR</td>
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<td>ENTIRE FIR/UIR</td>
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<td>ENTIRE CTA</td>
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<td>TC CENTRE PSN N2740 W07345</td>
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<td></td>
<td>NO VA EXP</td>
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<td>APRX S15 E075 – S15 E081 – S17 E083 – S18 E073 – S15 E075</td>
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<td></td>
<td>FCST 0500Z ENTIRE FIR</td>
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<td>FCST 0500Z ENTIRE CTA</td>
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<td>FCST 0500Z TC CENTRE N2740 W07345</td>
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<tr>
<td>Element as specified in Chapter 5 and Appendix 6</td>
<td>Detailed content</td>
<td>SIGMET template</td>
<td>AIRMET template</td>
<td>SIGMET examples</td>
<td>AIRMET examples</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>-----------------</td>
<td>----------------</td>
<td>----------------</td>
<td>----------------</td>
<td>----------------</td>
</tr>
</tbody>
</table>

Repetition of elements (C)(2)

Repetition of elements included in a SIGMET message for volcanic ash cloud or tropical cyclone

AND

<table>
<thead>
<tr>
<th>Cancellation of SIGMET/ AIRMET (C)(2)</th>
<th>Cancellation of SIGMET/AIRMET referring to its identification</th>
<th>CNL SIGMET [n][n][nn] nnnnnnnnnnn</th>
<th>CNL AIRMET [n][n][nn] nnnnnnnnnnn</th>
<th>CNL SIGMET 2 101200/101600</th>
<th>CNL SIGMET 3A/13 251030/251430 VA MOV TO YUDO FIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNL AIRMET 05 151520/151800</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes.—

1. No wind and temperature to be uplinked to other aircraft in flight in accordance with 3.2.
2. See 4.1.
3. 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.
15.13. In accordance with 4.2.7.
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’.
29.27. To be used for hazardous phenomena other than volcanic ash cloud and tropical cyclones.
30.28. End of the message (as the SIGMET/AIRMET message is being cancelled).
31.29. 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.

<table>
<thead>
<tr>
<th>Element as specified in Chapter 5 and Appendix 6</th>
<th>Detailed content</th>
<th>SPECIAL AIR-REPORT Template</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification (M)</td>
<td>Message identification and sequence number (M)</td>
<td>ARS</td>
<td>ARS</td>
</tr>
<tr>
<td>Name of the FIR/CTA or Aircraft identification (M)</td>
<td>Location indicator and name of the FIR/CTA for which the SIGMET/AIRMET is issued or Aircraft radiotelephony call sign (M)</td>
<td>nnnnn</td>
<td>VA8123</td>
</tr>
<tr>
<td>Observed phenomenon (M)</td>
<td>Description of observed phenomenon causing the issuance of SIGMET/AIRMET (C) the special air-report (C)</td>
<td>TS TSGR SEV TURB SEV ICE SEV MTW HVY SS VA CLD [FLnnnnnnnn] VA [MT nnnnnnnnn] MOD TURB MOD ICE</td>
<td>TS TSGR SEV TURB SEV ICE SEV MTW HVY SS VA CLD VA VA MT ASHVAL</td>
</tr>
<tr>
<td>Observed or forecast phenomenon Observation time (M)</td>
<td>Indication whether the information is observed and expected to continue, or forecast (M)</td>
<td>OBS AT nnnnnZ</td>
<td>OBS AT 1210Z</td>
</tr>
<tr>
<td>Location (C)</td>
<td>Location (referring to latitude and longitude (in degrees and minutes)) of observed phenomenon</td>
<td>NnnnnWnnnnn or NnnnnEnnnnn or SnnnnWnnnnn or SnnnnEnnnnn</td>
<td>N2020W0700 N4812E0103</td>
</tr>
<tr>
<td>Level (C)</td>
<td>Flight level or altitude and extent (C) of observed phenomenon</td>
<td>FLnnnn or FLnnnnnn or FLnnnn (or [n]nnnnF)</td>
<td>FL390 FL180/210 3000M 12000FT</td>
</tr>
</tbody>
</table>
Notes.—

1. No wind and temperature to be uplinked to other aircraft in flight in accordance with 3.2.
3. Fictitious call sign.
4. In the case of special air-report for volcanic ash cloud, the vertical extent (if observed) and name of the volcano (if known) can be used.
5. Fictitious location.
6. In accordance with 1.1.3 and 2.1.2.
7. See 3.1.
8. See 2.1.3.
9. In accordance with 1.1.4 and 2.1.4.
10. In accordance with 4.2.1.a).
11. In accordance with 4.2.4.
12. In accordance with 4.2.2.
13. Fictitious location.
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. 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

<table>
<thead>
<tr>
<th>SIGMET</th>
<th>Cancellation of SIGMET</th>
</tr>
</thead>
<tbody>
<tr>
<td>YUDD SIGMET 2</td>
<td>YUDD SIGMET 3</td>
</tr>
<tr>
<td>VALID 101200/101600 YUSO –</td>
<td>VALID 101345/101600 YUSO –</td>
</tr>
<tr>
<td>YUDD SHANLON FIR/UIR OBSC TS FCST</td>
<td>YUDD SHANLON FIR/UIR CNL SIGMET 2</td>
</tr>
<tr>
<td>S OF N54 AND E OF W012 TOP FL390 MOV E</td>
<td>101200/101600</td>
</tr>
<tr>
<td>WKN FCST 1600Z S OF N54 AND E OF W010</td>
<td></td>
</tr>
<tr>
<td>20KT</td>
<td>101200/101600</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AIRMET</th>
<th>Cancellation of AIRMET</th>
</tr>
</thead>
<tbody>
<tr>
<td>YUDD AIRMET 1</td>
<td>YUDD AIRMET 2</td>
</tr>
<tr>
<td>VALID 151520/151800 YUSO –</td>
<td>VALID 151650/151800 YUSO –</td>
</tr>
<tr>
<td>YUDD SHANLON FIR ISOL TS OBS</td>
<td>YUDD SHANLON FIR CNL AIRMET 1</td>
</tr>
<tr>
<td>N OF S50 TOP ABV FL100 STNR WKN</td>
<td>151520/151800</td>
</tr>
</tbody>
</table>
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 Amswell
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 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 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 –

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 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

\[
\begin{align*}
\text{METAR} & \quad 0-900 \text{ km} \\
\text{Trend forecasts} & \quad (500 \text{ NM}) \quad 5 \text{ minutes} \\
\text{TAF} & \quad \text{more than 900 km} \\
\text{SPECI} & \quad (500 \text{ NM}) \quad 10 \text{ minutes}
\end{align*}
\]

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 the world area forecast centre WAFC concerned, the meteorological authority and the operators.

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

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.

⋆ ⋆ ⋆
## ATTACHMENT C. SELECTED CRITERIA APPLICABLE TO AERODROME REPORTS

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

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Surface wind</th>
<th>Speed variations(^1)</th>
<th>Mean speed</th>
<th>Directional variations(^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>≥ 60° and &lt; 180°</td>
<td>≥ 180°</td>
<td>Exceeding the mean speed by ≥ 5 m/s (10 kt)</td>
</tr>
<tr>
<td></td>
<td>&lt; 1.5 m/s (3 kt)</td>
<td>≥ 1.5 m/s (3 kt)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local routine and special report</td>
<td>2/10 min ↑</td>
<td>2/10 min ↑</td>
<td>2 min</td>
<td>10 min ↑</td>
</tr>
<tr>
<td>METAR/ SPECI</td>
<td>VRB (no extremes)</td>
<td>mean + 2 extreme directions(^4)</td>
<td>VRB (no extremes)(^4)</td>
<td>Minimum and maximum speed</td>
</tr>
<tr>
<td>Relevant reporting scales for all messages</td>
<td>Direction in three figures rounded off to the nearest 10 degrees</td>
<td>Speed in 1 m/s or 1 kt</td>
<td>Speed &lt; 0.5 m/s (1 kt) indicated as CALM</td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) Mean speed
\(^2\) VRB (no extremes)\(^4\)
\(^3\) Directional variations
\(^4\) VRB (no extremes)\(^4\)
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

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

...  

SIGMET information. Information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en-route weather phenomena 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 —