European Aviation Safety Agency — Rulemaking Directorate

Notice of Proposed Amendment 2014-07 (A)

Technical requirements and operational procedures for the provision of meteorological services

RMT.0473 & RMT.0474 — 28.3.2014

EXECUTIVE SUMMARY

This Notice of Proposed Amendment (NPA) addresses safety issues related to the provision of meteorological services.

The objective is to complement the rules related to the provision of meteorological services that were published in Subpart A of Annex IV (Part-MET) of NPA 2013-08 (A) 'Requirements for ATM/ANS providers and the safety thereof', published on 10 May 2013.

This NPA constitutes the second phase of the transposition of the ICAO Annex 3 provisions ('Meteorological Services for International Air Navigation'), Part II 'Appendices and Attachment' and, consequently, proposes additional technical rules for the provision of meteorological services.

The proposed rules maintain all the objectives of ICAO Annex 3, Part II, and while they are tailored to the obligations of European meteorological service providers, they do not go beyond what is necessary in order to ensure civil aviation safety in Europe.

Applicability		Process map	
Affected regulations and decisions:	Commission Implementing Regulation (EU) No 1035/2011	Concept Paper:	No
Affected stakeholders:	Member States; competent authorities/national supervisory authorities; meteorological service providers; EASA	Terms of Reference:	30.7.2012
Driver/origin:	Legal obligation (Regulation (EC) No 216/2008 and ICAO SARPs)	Rulemaking group:	Yes
Reference:	N/A	RIA type:	N/A
		Technical consultation during NPA drafting:	No
		Duration of NPA consultation:	3 months
		Review group:	TBD
		Focussed consultation:	TBD
		Publication date of the Opinion:	2014/Q4
		Publication date of the Decision:	2014/Q4

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1. Procedural information

1.1. The rule development procedure

The European Aviation Safety Agency (hereinafter referred to as the 'Agency') developed this Notice of Proposed Amendment (NPA) in line with Regulation (EC) No 216/2008[1] (hereinafter referred to as the 'Basic Regulation') and the Rulemaking Procedure[2].

This rulemaking activity is included in the Agency's 4-year Rulemaking Programme under RMT.0473 & RMT.0474[3].

The Terms of Reference (ToR) for this rulemaking task (RMT) were published on 30 July 2012.

The text of this NPA has been developed by the Agency, based on the input of the Rulemaking Group RMT.0473 & RMT.0474. It is hereby submitted for consultation of all interested parties[4].

The process map on the title page contains the major milestones of this rulemaking activity to date and provides an outlook of the timescale of the next steps.

1.2. The structure of this NPA and related documents

Chapter 1 of this NPA contains the procedural information related to this task.

Chapter 2 (Explanatory Note) explains the core technical content.

Chapter 3 contains the proposed text for the new requirements.

Appendix 1 contains the templates and tables which add or illustrate a requirement and which are referred to therein; Appendix 2 contains the drafting document table showing the detailed transposition of ICAO Annex 3 into the European rules; and Appendix 3 contains the cross-reference table showing the corresponding EASA rule against the ICAO Annex 3 rule.

1.3. How to comment on this NPA

Please submit your comments using the automated **Comment-Response Tool (CRT)** available at **http://hub.easa.europa.eu/crt/**[5].

The deadline for submission of comments is **30 June 2014.**

1.4. The next steps in the procedure

Following the closing of the NPA public consultation period, the Agency will review all comments.

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1 Regulation (EC) No 216/2008 of the European Parliament and the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC (OJ L 79, 19.3.2008, p. 1), as last amended by Commission Regulation (EU) No 6/2013 of 8 January 2013 (OJ L 4, 9.1.2013, p. 34).

2 The Agency is bound to follow a structured rulemaking process as required by Article 52(1) of the Basic Regulation. Such process has been adopted by the Agency's Management Board and is referred to as the 'Rulemaking Procedure'. See Management Board Decision concerning the procedure to be applied by the Agency for the issuing of Opinions, Certification Specifications and Guidance Material (Rulemaking Procedure), EASA MB Decision No 01-2012 of 13 March 2012.

3 See http://www.easa.europa.eu/rulemaking/annual-programme-and-planning.php

4 In accordance with Article 52 of the Basic Regulation, and Articles 5(3) and 6 of the Rulemaking Procedure.

5 In case of technical problems, please contact the CRT webmaster (crt@easa.europa.eu).

The outcome of the NPA public consultation will be reflected in the respective Comment-Response Document (CRD).

The Agency will publish the CRD with the Opinion.

The Opinion will contain proposed changes to EU regulations and will be addressed to the European Commission, which will use it as a technical basis in order to prepare a legislative proposal.

The Decision containing Acceptable Means of Compliance (AMC) and Guidance Material (GM) will be published by the Agency when the related Implementing Rule(s) are adopted by the European Commission.

2. Explanatory Note

This NPA constitutes the second step of a phased approach in order to adopt implementing measures with regard to the provision of meteorological services. It contains the safety technical requirements, identified under the reference MET.TR, based on the transposition of the latest ICAO Annex 3 edition[6] ('Meteorological Services for International Air Navigation').

NPA 2013-08 'Requirements for ATM/ANS providers and the safety oversight thereof' already proposed rules applicable to meteorological service providers, identified under the reference MET.OR (Organisation Requirements). The related CRD to NPA 2013-08 is being currently processed.

This NPA transposes Part II (Appendices and Attachments) of ICAO Annex 3, containing safety technical requirements and, therefore, intends to complete the full transposition of ICAO Annex 3.

2.1. Overview of the issues to be addressed

Transposition of ICAO Annex 3

2.1.1. General considerations

The ICAO Standards and Recommended Practices (SARPs) relating to meteorology are contained in Annex 3 'Meteorological Service for International Air Navigation'. Said Annex has been used as the baseline for the development of this NPA. Consideration has also been given to other ICAO annexes, documents (in particular the European Air Navigation Plan (EUR ANP)), and manuals[7] containing material appropriate for aviation meteorology services application and responsibility.

In order to achieve an effective, efficient, and consistent transposition of the ICAO material into European rules, the rulemaking group agreed on the main principle to operate the transposition of ICAO Annex 3 into European rules. While ICAO Standards are generally transposed as EASA Implementing Rule (IR) material, Recommended Practices (RPs) would normally be transposed as Acceptable Means of Compliance (AMC). However, this principle could not be applied in all cases, and a case-by-case approach was applied to determine whether the ICAO rule contained a safety objective or not, based on which the Standards or RPs could be downgraded to AMC or upgraded to IR, as relevant.

A general discussion took place within the rulemaking group about the opportunity to develop Certification Specifications (CSs) for this task. Although this option was preferred by the rulemaking group members, the Agency highlighted that there was no legal basis in the EASA Basic Regulation to use CSs for the implementation of Annex Vb to the Basic Regulation. Therefore, the rulemaking group only developed IRs and AMC/GM for the transposition of ICAO Annex 3.

In order to understand the process the rulemaking group followed while developing the rules, it is important to appreciate that the terms 'transpose(d)' and 'transposition' are intended to mean consideration of the ICAO provisions, and where considered essential to safety, their subsequent adaptation to the European rule structure. These terms are not intended to mean only 'copy-paste' from the ICAO provisions into the European regulations.

<u>Overall transposition approach: continuity but adaptation</u>

In all European contracting States to the Chicago Convention, ICAO Annex 3 is the regulatory reference in the field of aeronautical meteorological service provision. The Agency does not intend to reinvent the wheel and, therefore, it is proposing the

[6] 18th edition of Juy 2013.

[7] ICAO Annex 11, ICAO Doc 8896, ICAO Doc 7754, and ICAO Doc 014.

transposition of ICAO Annex 3, Part II, with no major changes. This NPA maintains the principles and the spirit of said Annex. The proposed rules do not create any additional obligations for providers of meteorological services in Europe and they do not exceed nor diminish the ICAO requirements.

Amendment 76 to ICAO Annex 3 was adopted by the ICAO Council on 27 February 2013, it entered into force on 15 July 2013 and became applicable on 14 November 2013. While Amendment 76 had not yet been adopted at the start of the rulemaking group's activities, the rulemaking group took it into account at an early stage and continuously followed its development. The transposition of ICAO Annex 3 has, therefore, always been made accurately on the basis of its latest version

The majority of the SARPs of ICAO Annex 3, Part II, have been transposed literally. However, the rulemaking group identified many areas where the clarity of the ICAO Annex 3 provisions needed to be enhanced but without changing the intended meaning. Some of the proposed rules clarify the intent of the ICAO provisions, while others have been drafted to avoid confusion with other regulations. In many cases, the provisions were simply moved to another paragraph and have been kept intact. Again, the transposition has maintained the ICAO objectives.

Finally, an efficient transposition exercise has been performed as well. During the review of ICAO Annex 3, the rulemaking group agreed that several technical provisions actually only lay down requirements that are a means to provide the meteorological information but are not an objective per se. The agreed approach has been not to transpose those requirements and to focus only on those that contain the final objective.

Proportionality and flexibility

In striking the right balance between IRs and AMC, the Agency considered the need to ensure resilience of the rules at times where technical progress is occurring in relation to the means with which meteorological providers provide meteorological information (rapid exchange models, digital form, advanced communications means) with ever increasing complexity and density of operations. Today's situation requires flexibility for organisations to meet the safety objectives defined by the EASA Basic Regulation depending on their particular organisation, infrastructure, and type of operations.

Therefore, the proposed rules are structured so as to clearly set the safety objective in the Implementing Rule while the detailed means of achieving this objective are defined as AMC. This provides flexibility, as an organisation may propose alternative means to those established by the Agency. This is particularly important where the 'one size fits all' approach typically does not work.

The European Union environment

While ICAO Annex 3 addresses the provision of meteorological services worldwide, the proposed rules only address the provision of meteorological information in the European Union. The rulemaking group has taken into account the geographical situation where meteorological services need to be provided and has, therefore, based its proposal in accordance with the EUR ANP in that regard.

Consequently, some provisions of ICAO Annex 3 have not been transposed because they make reference to 'Regional Air Navigation Plan (ANP)' on further implementation considerations, whereas the EUR Air Navigation Plan (ANP) do not reflect these for the ICAO European Union Member States. One example of a specific EUR ANP implementation consideration relates to the issuance of SPECI at aerodromes. In this case, SPECI are not mentioned in the proposed rules because according to the EUR ANP, METAR are already issued at half-hourly intervals.

The existing European regulatory framework has also been taken into account. The proposal needs to be consistent and coherent with the SES regulations, the Basic

Regulation, the draft MET.OR[8] rules, and other regulations such as the SERA IR[9], the Air Operations Regulation[10], and the recently adopted ADR rules[11].

In relation to SERA, almost the entire ICAO Annex 3, Appendix 4 (Technical specifications related to aircraft observations and reports), has not been transposed as it was considered to pertain to the rules of the air. This is consistent with the approach followed for the transposition of Chapter 5 (Aircraft observations and reports) during the transposition of ICAO Annex 3, Part I (MET.OR). In that context, the rulemaking group paid special attention to avoid any duplication of rules and over-regulation.

Similarly, ICAO Annex 3 also contains requirements applicable to other entities such as aircraft operators or aerodrome operators. Consequently, some technical provisions related to the location and installation of meteorological equipment at aerodromes have not been transposed because these provisions are related to the aerodrome infrastructure and are already covered by the Aerodromes Regulation. The same approach applies to some ICAO provisions that impose requirements rather on the operator and not on the provider of meteorological services.

The link with MET.OR and the complete transposition of ICAO Annex 3

As mentioned above, NPA 2013-08 lays down the requirements applicable to meteorological service providers which are based on the transposition of ICAO Annex 3, Part I (SARPs). However, many provisions of Annex 3, Part I, have not been included in NPA 2013-08 because they were considered as being technical requirements, subject to the present NPA. These remaining 'Part I' provisions have now been transposed. The cross-reference table indicates the origin of the MET.TR rules, and whether the rule comes from ICAO Annex 3 Part II or Part I.

For consistency reasons, the Agency will publish the MET.OR rules (developed under NPA 2013-08) and MET.TR rules in the same Opinion. Both texts will be aligned in order to avoid overlaps and gaps. During the drafting of this NPA, the rulemaking group members identified some MET.OR provisions that need to be changed during the CRD process for NPA 2013-08. Therefore, it is necessary to wait until the MET.OR rules are mature before the MET.TR rules can be finalised.

The rule reference numbering has been made consistent so as to allow immediate and easy referencing in both MET.OR and MET.TR. For instance, MET.TR.205 on 'SIGMET message' corresponds to MET.OR.205 for 'SIGMET message' as well. The rule sequence is the same for all the requirements. In some rare cases, there is no MET.TR rule corresponding to a MET.OR rule.

States' differences with ICAO Annex 3 — No impact on the proposed rules

The latest available Supplement to ICAO Annex 3, that includes the differences notified by contracting States, is from June 2005 (Amendment 73). Based on this document[12], the Agency conducted an assessment in order to identify the type and the number of differences the European contracting States have filed against ICAO Annex 3. Indeed, such analysis is important — namely to assess if the transposition of a certain provision to which most or all of the European Union Member States have filed a difference is seen as

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8 Published in NPA 2013-08.

9 Commission Implementing Regulation (EU) No 923/2012 of 26 September 2012 laying down the common rules of the air and operational provisions regarding services and procedures in air navigation and amending Implementing Regulation (EU) No 1035/2011 and Regulations (EC) No 1265/2007, (EC) No 1794/2006, (EC) No 730/2006, (EC) No 1033/2006 and (EU) No 255/2010 (OJ L 281, 13.10.2012, p. 1).

10 Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1).

11 Commission Regulation (EU) No 139/2014 of 12 February 2014 laying down requirements and administrative procedures related to aerodromes pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 44, 14.2.2014, p. 1).

12 Supplement to Annex 3 — Meteorological service for international air navigation (15th edition), 15 June 2005.

necessary. Only 13 EU Member States have filed differences to Annex 3, mainly with regard to its Appendix 3. The result of the analysis is that no common differences exist such as to have an impact on the text proposal. There are, therefore, no (known) common EU Member States' differences that could have had an impact on the drafting of the proposed rules.

The EUR Air Navigation Plan (ANP)

Part VI of the EUR Basic Air Navigation Plan introduces the basic planning principles, operational requirements and planning criteria related to Meteorological Services for International Air Navigation as developed for the EUR region. As mentioned above, the proposed rules reflect the EUR ANP. The rulemaking group did not consider useful to transpose the FASID tables which contain all the detailed information on the facilities/services to be provided by States to satisfy the basic requirements of the EUR Basic ANP.

2.1.2. Specific considerations

Provisions related to data link

During the drafting phase, the rulemaking group agreed that the ICAO provisions related to data link should not be transposed in this NPA as they are not strictly related to the technical requirements for the provision of meteorological services as such. A specific rulemaking task is scheduled to start in 2015[13]. In ICAO Annex 3, this relates to Chapter 5 and Appendix 4 on 'Aircraft observations and reports'.

GAMET issue

GAMET is one type of area forecasts for low-level flights and is considered under Appendix 5 to ICAO Annex 3 'Technical Specifications related to Forecasts', in particular in Point 4 'Criteria related to area forecasts for low-level flights'. When assessing this Appendix for transposition, the rulemaking group agreed that GAMET forecasts should not be transposed at this stage but only when more clarity on the uniform implementation status of this type of low-level flight forecast is achieved at European Union (and international) level. Indeed, there is currently no harmonised approach on GAMET implementation and discussions in the meteorological aviation community are still ongoing. Therefore, this NPA does not include any reference to GAMET and only contains provisions on forecasts for low-level flights in general.

Templates and Attachments

ICAO Annex 3, Part II, contains provisions which refer to specific tables and templates. The latter add to or illustrate an ICAO Standard or Recommended Practice and form part of the associated Standard or Recommended Practice, and have the same status. These templates and tables contain highly technical meteorological specifications and are therefore very lengthy. For rule structure purposes only, these have been included in a specific appendix to the IRs. Their binding nature is not affected.

2.2. Objectives

The overall objectives of the EASA system are defined in Article 2 of the Basic Regulation. This proposal will contribute to the achievement of the overall objectives by addressing the issues outlined in Chapter 2 of this NPA.

The specific objective of this proposal is to finalise the transposition of the relevant provisions for meteorological services from ICAO Annex 3, in particular those contained in

[13] RMT.0524 regarding Implementing Rules on the requirement for extended data link operations to include requirements for safety-critical message use, D-TAIX, DCL, PM CPDLC, D-ATIS, CPDLC, and ADS-C outside VHF data link coverage. This task is stemming from SESAR.

Part II, in order to amend the future regulation on the 'requirements for ATM/ANS providers and the safety oversight thereof'.

2.3. Summary of the Regulatory Impact Assessment (RIA)

When transposing ICAO Annex 3, only the minimum necessary changes have been made without detriment to the principles enshrined in ICAO Annex 3. Therefore, the Agency simply transposed ICAO Annex 3 with no major changes. As a consequence, the possibility for choosing the options on how to proceed with the development of the meteorological rules was very limited. Therefore, no detailed RIA has been developed for this task.

However, in order to assist the reader in identifying the changes that have been made to ICAO Annex 3, a drafting document was developed with the aim to facilitate traceability of the changes made. The drafting document shows how ICAO Annex 3 has been transposed, what the changes are and their justification. Said document is contained in NPA 2014-07 (B).

In general, the implementation of the ICAO Annex 3 rules is satisfactorily harmonised in the European Union as only few Member States have notified differences. The table below shows the ICAO Annex 3 State differences for 2005 (latest available information). These differences have been handled in such a way in the new draft rules that the EU Member States which have notified differences to ICAO will have no issues in complying with the new draft rules.

Annex 3 Affected Appendices	Annex 3 Affected Provisions	BE	CZ	EE	FI	FR	DE	LV	LT	PT	RO	SK	SE	UK
2	**1.3.4**													X
3	**2.1.1**							X						
	2.1.2		X											
	2.2									X				
	2.3.1													X
	2.3.1 c)							X						
	2.3.2													X
	2.3.2 f)					X	X							
	2.3.2g)					X								
	2.3.2h)					X					X			
	2.3.2k)					X								
	3.2					X								
	4.1.2.1	X							X					
	4.1.3.1b)					X			X					
	4.1.4.1										X			
	4.1.4.2b)					X	X			X		X		X
	4.1.4.2f)					X								
	4.1.4.2 e)									X				
	4.1.4.3									X	X			
	4.1.4.3 d)												X	
	4.2.4.1									X				
	4.2.4.2									X		X		X
	4.2.3b)					X								
	4.2.4.4		X			X	X	X				X		
	4.3.1.2					X								
	4.3.2.2													X
	4.3.4. b)								X					
	4.3.5		X			X								
	4.3.6.1									X				
	4.3.6.2		X			X								
	4.3.6.3	X								X				
	4.3.6.4 b)									X				
	4.3.6.4 c)									X				
	4.3.6.6													X
	4.4.2.2					X								
	4.4.2.3					X								
	4.4.2.4					X	X							
	4.4.2.5					X								
	4.5.1													X
	4.5.4.1c)					X								
	4.5.4.1d)					X								X
	4.5.4.1e)					X								
	4.5.4.1 f)													X
	4.8					X								
	4.8.1.3					X								X
	4.8.1.4													X
	4.9										X			
	4.9.1.2													X
	4.9.1.3					X								X
	4.9.1.4					X								X
	4.9.1.5													X

4	**1.1**										X			
	1.2										X			
5	**1.1**		X											
	1.2.2							X				X		
	1.3.1 b)													X
	1.3.1 e)													X
	1.3.1 h)													X
	2.2					X								
	2.2.3							X				X		X
	2.2.5													X
	2.2.6													X
6	**5.1.1**					X								
	5.1.2			X										
	6.2.1		X											
7														
	N/A													
8	**4.2.2.1**	X												
	4.5.1											X		
9	**1.1**							X						
	1.1 b)		X											
	1.2.							X						
	1.2 b)		X											

The positive impacts of transposing rules for the provision of meteorological services from ICAO Annex 3 are the following:

— Uniform implementation of the European Union rules for the provision of meteorological services within the scope of the Basic Regulation and the SES regulations.

— Single regulation covering requirements, relevant to the rules for the provision of meteorological services from ICAO Annex 3.

— Reduced inconvenience and risks of misunderstanding caused by varying national sets of rules for the provision of meteorological services.

— Support to Member States by providing a uniform and compliant implementation of ICAO Annex 3. None of the Member States will have to put efforts to transpose the amendments to the relevant provisions in ICAO Annex 3 in the future, since it will be done centrally at European Union level through the relevant rulemaking tasks.

The negative impacts, if any, should be compensated by the overall positive safety impact since there will be uniform implementation of the ICAO SARPs in the European region, once all the relevant measures (Implementing Rules, Acceptable Means of Compliance and Guidance Material) are adopted and implemented. Moreover, none of the Member States will have to put efforts in transposing the ICAO Annex 3 amendments, since it will be done in the IRs.

2.4. Overview of the proposed amendments

Definitions

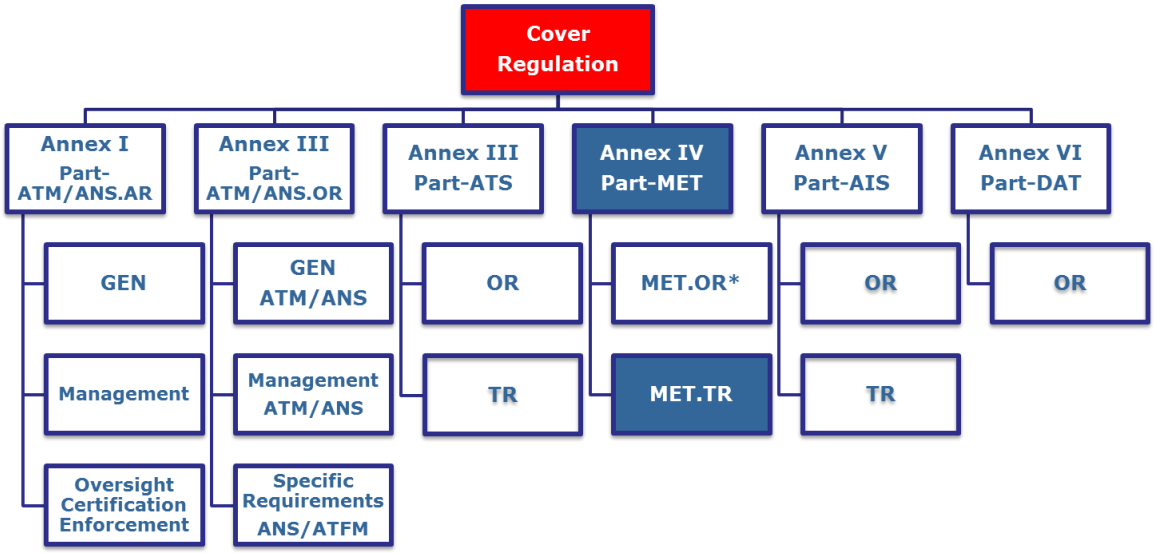
Most of the ICAO Annex 3 definitions are already included in NPA 2013-08 (B). This NPA now covers the remaining definitions for terms which are used for the technical

requirements. The majority of the definitions of ICAO Annex 3 covered by this NPA remains unchanged. In addition, some terms which are not in ICAO Annex 3 have been identified by the rulemaking group and were added to the list of definitions in Article 2 of the Cover Regulation.

Rule structure

This NPA contains the technical requirements for the provision of meteorological services and will, therefore, be integrated in Subpart B of Annex IV to the future draft regulation laying down the 'requirements for ATM/ANS providers and the safety oversight thereof'.

Annex IV (Part-MET), Subpart B (MET.TR), will contain the Implementing Rules proposed in this NPA.



* Organisation requirements developed under NPA 2013-08

Annex IV of NPA 2013-08 is divided in the following subparts:

— **SUBPART A:** Additional organisation requirements for the provision of meteorological services (MET.OR). This subpart contains the rules applicable to meteorological service providers (MET.OR) which is the subject of NPA 2013-08.

— **SUBPART B:** Technical requirements for the provision of meteorological services (MET.TR). This subpart contains some general requirements that were reproduced from Commission Implementing Regulation (EU) No 1035/2011, as shown below:

SUBPART B — TECHNICAL REQUIREMENTS FOR THE PROVISION OF METEOROLOGICAL SERVICES (MET.TR)

Section 1 — General requirements

MET.TR.105 Working methods and operating procedures for the provision of meteorological services

Meteorological services providers shall be able to demonstrate that their working methods and operating procedures are compliant with:

(a) Commission Implementing Regulation (EU) No 923/2012 of 26 September 2012 laying

down the common rules of the air and operational provisions regarding services and procedures in air navigation and amending Implementing Regulation (EU) No 1035/2011 and Regulations (EC) No 1265/2007, (EC) No 1794/2006, (EC) No 730/2006, (EC) No 1033/2006, and (EU) No 255/2010.

(b) the standards in the following Annexes to the Convention on International Civil Aviation as far as they are relevant for the provision of meteorological services in the airspace concerned:

(1) Annex 3 on meteorological service for international air navigation in its 17th edition of July 2010, including all amendments up to No 75;

(2) Annex 11 on air traffic services in its 13th edition of July 2001, including all amendments up to No 48; and

(3) Annex 14 on aerodromes in the following versions:

(i) Volume I on aerodrome design and operations in its 5th edition of July 2009, including all amendments up to No 10-B;

(ii) Volume II on heliports in its 3rd edition of July 2009, including all amendments up to No 4.

(c) Notwithstanding (b)(3), the relevant requirements in Commission Regulation (EU) No XXX/XXX laying down requirements and administrative procedures related to aerodromes pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council in the case the meteorological services providers provide services at aerodromes within the scope of that regulation.

As the rules developed by this NPA constitute the means by which the meteorological services providers can demonstrate that their working methods and operating procedures are compliant with the relevant referenced documents, they will replace the above MET.TR.105.

The **amended Subpart B** wil now contain the following sections and chapters:

Subpart B — TECHNICAL REQUIREMENTS FOR THE PROVISION OF METEOROLOGICAL SERVICES (MET.TR)

Section 1 — General requirements

Section 2 — Specific requirements
Chapter 1 — Technical requirements for SIGMET and AIRMET
Chapter 2 — Technical requirements for forecasts, warnings and alerts
Chapter 3 — Technical requirements for meteorological reports and observations
Chapter 4 — Technical requirements for Volcanic Ash Advisory information
Chapter 5 — Technical requirements for World Area Forecast information
Chapter 6 — Technical requirements for Tropical Cyclone Advisory information

3. Proposed amendments

The text of the amendment is arranged to show deleted text, new or amended text as shown below:

(a) deleted text is marked with ~~strike through~~;

(b) new or amended text is highlighted in grey;

(c) an ellipsis (…) indicates that the remaining text is unchanged in front of or following the reflected amendment.

3.1. Draft Regulation (Draft EASA Opinion)

Draft Opinion

The following definitions are inserted in Article 2 of the future draft regulation (currently NPA 2013-08 (A), published on 10 May 2013) on the 'Requirements for ATM/ANS providers and the safety thereof':

'Aerodrome climatological summary' means a concise summary of specified meteorological elements at an aerodrome, based on statistical data.

'Aerodrome climatological table' means a table providing statistical data on the observed occurrence of one or more meteorological elements at an aerodrome.

'Aerodrome elevation' means the elevation of the highest point of the landing area.

'Aerodrome reference point' means the designated geographical location of an aerodrome.

'Aerodrome warning' means information issued by an aerodrome meteorological office concerning the occurrence or expected occurrence of meteorological conditions which could adversely affect aircraft on the ground, including parked aircraft and the aerodrome facilities and services.

'Aeronautical fixed service (AFS)' means a telecommunication service between specified fixed points provided primarily for the safety of air navigation and for the regular, efficient and economical operation of air services.

'Aeronautical fixed telecommunication network (AFTN)' means a worldwide system of aeronautical fixed circuits provided, as part of the aeronautical fixed service, for the exchange of messages and/or digital data between aeronautical fixed stations having the same or compatible communications characteristics.

'Air report' means a report from an aircraft in flight prepared in conformity with the requirements for position and operational and/or meteorological reporting.

'Area forecast for low-level flights' means a forecast of weather phenomena for a flight information region or sub-area thereof, issued to cover the layer below flight level 100 (or below flight level 150 in mountainous areas, or higher, where necessary).

'Automatic observing system' means an observing system that measures, derives and reports all required elements without human interaction.

'Cloud of operational significance' means a cloud with the height of cloud base below 1 500 m (5 000 ft) or below the highest minimum sector altitude, whichever is greater, or a cumulonimbus cloud or a towering cumulus cloud at any height.

'Elevation' means the vertical distance of a point or a level, on or affixed to the surface of the earth, measured from mean sea level.

'Flight information region' means an airspace of defined dimensions within which flight information service and alerting service are provided.

'Flight level' means a surface of constant atmospheric pressure which is related to a specific pressure datum, 1 013.2 hectopascals (hPa), and is separated from other such surfaces by specific pressure intervals.

'Forecast for take-off' means a forecast for a specified period of time, prepared by an aerodrome meteorological office, which contains information on expected conditions over the runways complex in regard to surface wind direction and speed and any variations thereof, temperature, pressure (QNH), and any other elements as agreed locally.

'Grid point data in digital form' means computer-processed meteorological data for a set of regularly spaced points on a chart, for transmission from a meteorological computer to another computer in a code form suitable for automated use.

'Height' means the vertical distance of a level, a point or an object considered as a point, measured from a specified datum.

'Local routine report' means a meteorological report issued at fixed time intervals, intended only for dissemination at the aerodrome of origin where the observations were made.

'Local special report' means a meteorological report issued in accordance with the criteria established for special observations, intended only for dissemination at the aerodrome of origin where the observations were made.

'Meteorological bulletin' means a text comprising meteorological information preceded by an appropriate heading.

'Aerodrome meteorological office' means an office providing meteorological service for aerodromes serving air navigation.

'Operational planning' means the planning of flight operations by an operator.

'OPMET databank' means a databank established to store internationally operational meteorological information for aeronautical use.

'Prevailing visibility' means the greatest visibility value, observed in accordance with the definition of 'visibility', which is reached within at least half the horizon circle or within at least half of the surface of the aerodrome. These areas could comprise contiguous or non-contiguous sectors.

'Prognostic chart' means a forecast of a specified meteorological element(s) for a specified time or period and a specified surface or portion of airspace, depicted graphically on a chart.

'Semi-automatic observing system' means an observing system that allows the augmentation of measured elements and requires a human in the loop for issuing the appropriate reports.

'Routine air report' means a meteorological report issued at fixed time intervals for the routine aircraft observations made during en route and climb-out phases of the flight.

'Special air report' means a meteorological report by an aircraft issued in accordance with the criteria based on observations made during the flight.

'Terminal Aerdrome Forecast (TAF)' means a concise statement of the expected meteorological conditions at an aerodrome for a specified period.

'Threshold' means the beginning of that portion of the runway usable for landing.

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

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

'Volcano observatory' means a competent provider that observes the activity of a volcano or a group of volcanoes and makes these observations available to an agreed list of recipients.

'World area forecast system (WAFS)' means a worldwide system by which world area forecast centres provide aeronautical meteorological en route forecasts in uniform, standardised formats.

2. The following paragraphs of the current proposal for a Subpart B 'TECHNICAL REQUIREMENTS FOR THE PROVISION OF METEOROLOGICAL SERVICES (MET.TR)', in NPA 2013-08 (B) 'Requirements for ATM/ANS providers and the safety thereof', published on 10 May 2013, are deleted and replaced[14] by the following Implementing Rules:

Annex IV — SPECIFIC REQUIREMENTS FOR THE PROVISION OF METEOROLOGICAL SERVICES (Part-MET)

SUBPART B — TECHNICAL REQUIREMENTS FOR THE PROVISION OF METEOROLOGICAL SERVICES (MET.TR)

Section 1 — General requirements

~~***MET.TR.105 Working methods and operating procedures for the provision of meteorological services***~~

~~Meteorological services providers shall be able to demonstrate that their working methods and operating procedures are compliant with:~~

~~(a) Commission Implementing Regulation (EU) No 923/2012 of 26/09/2012 laying down the common rules of the air and operational provisions regarding services and procedures in air navigation and amending Implementing Regulation (EU) No 1035/2011 and Regulations (EC) No 1265/2007, (EC) No 1794/2006, (EC) No 730/2006, (EC) No 1033/2006, and (EU) No 255/2010.~~

~~(b) the standards in the following Annexes to the Convention on International Civil Aviation as far as they are relevant for the provision of meteorological services in the airspace concerned:~~

~~(1) Annex 3 on meteorological service for international air navigation in its 17th edition of July 2010, including all amendments up to No 75;~~

~~(2) Annex 11 on air traffic services in its 13th edition of July 2001, including all amendments up to No 48; and~~

~~(3) Annex 14 on aerodromes in the following versions:~~

~~(i) Volume I on aerodrome design and operations in its 5th edition of July 2009, including all amendments up to No 10-B;~~

~~(ii) Volume II on heliports in its 3rd edition of July 2009, including all amendments up to No 4.~~

~~(c) Notwithstanding (b)(3), the relevant requirements in Commission Regulation (EU) No XXX/XXX laying down requirements and administrative procedures related to aerodromes pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council in the case the meteorological services providers provide services at aerodromes within the scope of that regulation.~~

MET.TR.115 Meteorological bulletins

(a) Meteorological bulletins shall contain a suitable heading consisting of:

[14] This NPA does not amend a Commission regulation but the proposed text of NPA 2013-08 'Requirements for ATM/ANS providers and the safety thereof', pubished on 10 May 2013.

(1) an identifier of four letters and two figures;

(2) the ICAO four-letter location indicator corresponding to the geographical location of the meteorological office originating or compiling the meteorological bulletin;

(3) a day-time group; and

(4) if required, a three-letter indicator.

(b) Meteorological bulletins containing operational meteorological information to be transmitted via the AFTN shall be encapsulated in the text part of the AFTN message format.

Section 2 — Specific requirements

1. Chapter 1 — Technical requirements for meteorological watch offices

MET.TR.205 SIGMET messages

(a) The content and order of elements in a SIGMET message shall be in accordance with the template shown in Table 1 of Appendix 1.

(b) The sequence number referred to in Table 1 of Appendix 1 shall correspond to the number of SIGMET messages, independent of SIGMET type, issued for the flight information region since 00.01 UTC on the day concerned.

(c) Only one of the phenomena listed in Table 1 of Appendix 1 shall be included in a SIGMET message, using the appropriate abbreviations.

(d) SIGMET, if disseminated in digital form, shall be:

(1) formatted in accordance with a globally interoperable information exchange model and shall use geography markup language (GML);

(2) accompanied by the appropriate metadata.

MET.TR.210 AIRMET messages

(a) The content and order of elements in an AIRMET message shall be in accordance with the template shown in Table 1 of Appendix 1.

(b) The sequence number referred to in the template in Table 1 of Appendix 1 shall correspond to the number of AIRMET messages issued for the flight information region since 00.01 UTC on the day concerned.

(c) Only one of the phenomena in Table 1 of Appendix 1 shall be included in an AIRMET message, using the appropriate abbreviations and when the phenomena is below flight level 100, or below flight level 150 in mountainous areas, or higher, where necessary.

MET.TR.215 Area forecasts for low-level flights

(a) When chart form is used for area forecasts for low-level flights, the forecast of upper wind and upper-air temperature shall be issued for points separated by no more than 300 NM and for at least the following altitudes: 2 000, 5 000 and 10 000 ft (600, 1 500 and 3 000 m) and 15 000 ft (4 500 m) in mountainous areas.

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

(1) the phenomena warranting the issuance of a SIGMET as given in Table 1 of Appendix 1 and which are expected to affect low-level flights; and

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

(c) When the competent authority has determined that the density of traffic operating below flight level 100 warrants the issuance of AIRMET information, 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.

2. Chapter 2 — Technical requirements for aerodrome meteorological offices

MET.TR.220 Forecast and other meteorological information

(a) Meteorological information provided to operators and flight crew members shall:

(1) cover the flight in respect of time, altitude and geographical extent;

(2) relate to appropriate fixed times, or periods of time;

(3) extend to the aerodrome of intended landing, also covering the meteorological conditions expected between the aerodrome of intended landing and alternate aerodromes designated by the operator;

(4) be up to date; and

(b) Meteorological information provided to rescue coordination centres shall include the meteorological conditions that existed in the last known position of a missing aircraft and along the intended route of that aircraft with particular reference to elements which are not being distributed routinely.

(c) Meteorological information provided to aeronautical information services units shall include:

(1) information on meteorological service intended for inclusion in the aeronautical information publication(s) concerned;

(2) information necessary for the preparation of NOTAM or ASHTAM; and

(3) information necessary for the preparation of aeronautical information circulars.

(d) Meteorological information included in flight documentation shall be represented as follows:

(1) winds on charts shall be depicted by arrows with feathers and shaded pennants on a sufficiently dense grid;

(2) temperatures shall be depicted by figures on a sufficiently dense grid;

(3) wind and temperature data shall be depicted in a sufficiently dense latitude/longitude grid;

(4) wind arrows shall take precedence over temperatures and chart background; and

(5) height indications to en route meteorological conditions shall be expressed and all references to aerodrome meteorological conditions shall be expressed in height above the aerodrome elevation.

(e) Flight documentation shall comprise:

(1) forecasts of upper-wind and upper-air temperature;

(2) SIGWX phenomena;

(3) METAR for the aerodromes of departure and intended landing, and for take-off, en route and destination alternate aerodromes;

(4) TAF or amended TAF for the aerodromes of departure and intended landing, and for take-off, en route and destination alternate aerodromes;

(5) SIGMET information and appropriate special air reports relevant to the whole route;

(6) volcanic ash and tropical cyclone advisory information relevant to the whole route.

However, when agreed between the aerodrome meteorological office and the operators concerned, flight documentation for flights of two hours' duration or less, after a short stop or turnaround, may be limited to the information operationally needed, but in all cases the flight documentation shall at least comprise the meteorological information listed in (2), (3) and (5).

(f) Charts generated from digital forecasts shall be made available, as required by operators, for fixed areas of coverage as shown in Table 2 of Appendix 1.

(g) When forecasts of upper-wind and upper-air temperature listed under MET.OR.240(a)(1) are supplied in chart form, they shall be fixed-time prognostic charts for flight levels as specified in MET.TR.265(b)(3)(i) and (ii). When forecasts of SIGWX phenomena listed under MET.OR.240(a)(1) are supplied in chart form, they shall be fixed-time prognostic charts for an atmospheric layer limited by flight levels as specified in MET.TR.265(c)(3) and MET.230(b).

(h) The forecasts of upper-wind and upper-air temperature and of SIGWX phenomena above flight level 100 shall be supplied as soon as they become available, but not later than 3 hours before departure.

(i) Aeronautical climatological information shall be prepared in the form of aerodrome climatological tables and aerodrome climatological summaries.

MET.TR.225 Aerodrome forecasts (TAF)

(a) Aerodrome forecasts and amendments thereto shall be issued as TAF and shall include, in the order indicated, the:

(1) identification of the type of forecast;
(2) location indicator;
(3) time of issue of forecast;

(4) identification of a missing forecast, when applicable;
(5) date and period of validity of forecast;
(6) identification of a cancelled forecast, when applicable;
(7) surface wind;
(8) visibility;
(9) weather;
(10) cloud; and
(11) expected significant changes to one or more of these elements during the period of validity.

(b) TAF shall be issued in accordance with the template shown in Table 3 of Appendix 1 and disseminated in the TAF code form.

(c) The period of validity of a routine TAF shall be either 9 hours or 24 or 30 hours and shall be filed for transmission at least 1 hour before the commencement of their period of validity.

(d) TAF, if disseminated in digital form, shall:

(1) be formatted in accordance with a globally interoperable information exchange model;

(2) use extensible markup language (XML)/geography markup language (GML); and

(3) be accompanied by the appropriate metadata.

(e) The meteorological elements included in TAF shall be:

(1) Surface wind

(i) In forecasting surface wind, the expected prevailing direction shall be given.

(ii) When it is not possible to forecast a prevailing surface wind direction due to its expected variability, the forecasted wind direction shall be indicated as variable using 'VRB'.

(iii) When the wind is forecasted to be less than 1 kt (0.5 m/s), the forecasted wind speed shall be indicated as calm.

(iv) When the forecasted maximum speed (gust) exceeds the forecasted mean wind speed by 10 kt (5 m/s) or more, the forecasted maximum wind speed shall be indicated.

(v) When a wind speed of 100 kt (50 m/s) or more is forecasted, it shall be indicated to be more than 99 kt (49 m/s).

(2) Visibility

(i) When the visibility is forecasted to be less than 800 m, it shall be expressed in steps of 50 m; when it is forecasted to be 800 m or more, but less than 5 km, in steps of 100 m; 5 km or more, but less than 10 km, in kilometre steps; and when it is forecasted to be 10 km or more, it shall be expressed as 10 km, except when conditions of CAVOK are forecasted to apply. The prevailing visibility shall be forecasted.

(ii) When visibility is forecasted to vary in different directions and the prevailing visibility cannot be forecasted, the lowest forecasted visibility shall be given.

(3) Weather phenomena

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

(A) freezing precipitation;
(B) freezing fog;
(C) moderate or heavy precipitation (including showers thereof);
(D) low drifting dust, sand or snow;
(E) blowing dust, sand or snow;
(F) duststorm;
(G) sandstorm;
(H) thunderstorm (with or without precipitation);
(I) squall;
(J) funnel cloud (tornado or waterspout);
(K) other weather phenomena, as agreed by the aerodrome meteorological office with the ATS units and operators concerned.

(ii) The expected end of occurrence of those phenomena shall be indicated by the abbreviation 'NSW'.

(4) Cloud

(i) Cloud amount shall be forecast using the abbreviations 'FEW', 'SCT', 'BKN' or 'OVC' as necessary. When it is expected that the sky will remain or become obscured and clouds cannot be forecasted and information on vertical visibility is available at the aerodrome, the vertical visibility shall be forecasted in the form 'VV' followed by the forecasted value of the vertical visibility.

(ii) When several layers or masses of cloud are forecasted, their amount and height of base shall be included in the following order:

(A) the lowest layer or mass regardless of amount, to be forecasted as FEW, SCT, BKN or OVC as appropriate;
(B) the next layer or mass covering more than 2/8, to be forecast as SCT, BKN or OVC as appropriate;
(C) the next higher layer or mass covering more than 4/8, to be forecast as BKN or OVC as appropriate; and
(D) cumulonimbus clouds and/or towering cumulus clouds, whenever forecasted and not already included under (a) to (c).

(iii) Cloud information shall be limited to cloud of operational significance; when no cloud of operational significance is forecasted, and 'CAVOK' is not appropriate, the abbreviation 'NSC' should be used.

(f) Use of change groups

(1) The criteria used for the inclusion of change groups in TAF or for the amendment of TAF shall be based on any of the following weather

phenomena, or combinations thereof, being forecasted to begin or end or change in intensity:

(i) freezing fog;
(ii) freezing precipitation;

(iii) moderate or heavy precipitation (including showers thereof);

(iv) thunderstorm;

(v) duststorm;

(vi) sandstorm.

(2) When a change in any of the elements given in (a) is required to be indicated in accordance with the criteria given in (g)(2), the change indicators 'BECMG' or 'TEMPO' shall be used followed by the time period during which the change is expected to occur. The time period shall be indicated as the beginning and end of the period in whole hours UTC. Only those elements for which a significant change is expected shall be included following a change indicator. However, in the case of significant changes in respect of cloud, all cloud groups, including layers or masses not expected to change, shall be indicated.

(3) The change indicator 'BECMG' and the associated time group shall be used to describe changes where the meteorological conditions are expected to reach or pass through specified threshold values at a regular or irregular rate and at an unspecified time during the time period. The time period shall not exceed 4 hours.

(4) The change indicator 'TEMPO' and the associated time group shall be used to describe expected frequent or infrequent temporary fluctuations in the meteorological conditions which reach or pass specified threshold values and last for a period of less than 1 hour in each instance and, in the aggregate, cover less than one half of the forecast period during which the fluctuations are expected to occur. If the temporary fluctuation is expected to last 1 hour or longer, the change group 'BECMG' shall be used in accordance with (4) above, or the validity period should be subdivided in accordance with (6) below.

(5) Where one set of prevailing weather conditions is expected to change significantly and more or less completely to a different set of conditions, the period of validity shall be subdivided into self-contained periods using the abbreviation 'FM' followed immediately by a six-figure time group in days, hours and minutes UTC indicating the time the change is expected to occur. The subdivided period following the abbreviation 'FM' shall be self-contained and all forecasted conditions given before the abbreviation shall be superseded by those following the abbreviation.

(g) The probability of occurrence of an alternative value of a forecast element or elements shall be included when:

(1) a 30 or 40 % probability of alternative meteorological conditions exists during a specific forecast time period;

(2) a 30 or 40 % probability exists of temporary fluctuations in meteorological conditions during a specific forecast time period.

This shall be indicated in the TAF by use of the abbreviation 'PROB' followed by the probability in tens of per cent and, in the case of (1) above, the time period during which the values are expected to apply, or in the case of (2) above, by use of the abbreviation 'PROB' followed by the probability in tens of per cent, the change indicator 'TEMPO' and associated time group.

MET.TR.230 Aerodrome forecasts — Landing (TREND)

(a) TREND forecasts shall be issued in accordance with the templates shown in Table 4 and Table 5 of Appendix 1.

(b) The units and scales used in the TREND forecast shall be the same as those used in the report to which it is appended.

(c) The TREND forecast shall indicate significant changes in respect of one or more of the elements: surface wind, visibility, weather, and clouds. Only those elements shall be included for which a significant change is expected. However, in the case of significant changes in respect of cloud, all cloud groups, including layers or masses not expected to change, shall be indicated. In the case of a significant change in visibility, the phenomenon causing the reduction of visibility shall also be indicated. When no change is expected to occur, this shall be indicated by the term 'NOSIG'.

(1) Surface wind

The TREND forecast shall indicate changes in the surface wind which involve:

(i) a change in the mean wind direction of 60° or more, the mean speed before and/or after the change being 10 kt (5 m/s) or more;

(ii) a change in mean wind speed of 10 kt (5 m/s) or more;

(iii) changes in the wind through values of operational significance.

(2) Visibility

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

(ii) When significant numbers of flights are conducted in accordance with the visual flight rules, the forecast shall additionally indicate changes to or passing through 5 000 m.

(iii) In TREND forecasts appended to METAR, visibility shall refer to the forecast prevailing visibility.

(3) Weather phenomena

(i) The TREND forecast shall indicate the expected onset, cessation or change in intensity of any of the following weather phenomena, or combinations thereof:

(A) freezing precipitation;
(B) moderate or heavy precipitation;
(C) thunderstorm (with precipitation);
(D) duststorm;

(E) sandstorm;
(F) other weather phenomena as agreed by the aerodrome meteorological office with the ATS units and operators concerned.

(ii) The TREND forecast shall indicate the expected onset or cessation of any of the following weather phenomena, or combinations thereof:

(A) freezing fog;
(B) low drifting dust, sand or snow;
(C) blowing dust, sand or snow;
(D) thunderstorm (without precipitation);
(E) squall;
(F) funnel cloud (tornado or waterspout).

(iii) The total number of phenomena reported in (i) and (ii) shall not exceed three.

(iv) The expected end of occurrence of the weather phenomena shall be indicated by the abbreviation 'NSW'.

(4) Clouds

(i) When the height of base of a cloud layer of BKN or OVC extent is expected to lift and change to or pass through one or more of the following values, or when the height of base of a cloud layer of BKN or OVC extent is expected to lower and pass through one or more of the following values: 100, 200, 500, 1 000 and 1 500 ft (30, 60, 150, 300 and 450 m), the TREND forecast shall indicate the change.

(ii) When the height of base of a cloud layer is below or is expected to fall below or rise above 1 500 ft (450 m), the TREND forecast shall also indicate changes in cloud amount from FEW, or SCT increasing to BKN or OVC, or changes from BKN or OVC decreasing to FEW or SCT.

(iii) When no clouds of operational significance are forecast and 'CAVOK' is not appropriate, the abbreviation 'NSC' shall be used.

(5) Vertical visibility

When the sky is expected to remain or become obscured and vertical visibility observations are available at the aerodrome, and the vertical visibility is forecast to improve and change to or pass through one or more of the following values, or when the vertical visibility is forecast to deteriorate and pass through one or more of the following values: 100, 200, 500 or 1 000 ft (30, 60, 150 or 300 m), the TREND forecast shall indicate the change.

(6) Additional criteria

The aerodrome meteorological office and the users may agree on additional criteria to be used, based on local aerodrome operating minima.

(7) Use of change groups

(i) When a change is expected to occur, the TREND forecast shall begin with one of the change indicators 'BECMG' or 'TEMPO'.

(ii) The change indicator 'BECMG' shall be used to describe forecast changes where the meteorological conditions are expected to reach or pass through specified values at a regular or irregular rate. The period during which, or the time at which, the change is forecast to occur shall be indicated using the abbreviations 'FM', 'TL' or 'AT', as appropriate, each followed by a time group in hours and minutes.

(iii) The change indicator 'TEMPO' shall be used to describe forecast temporary fluctuations in the meteorological conditions which reach or pass specified values and last for a period of less than 1 hour in each instance and, in the aggregate, cover less than one half of the period during which the fluctuations are forecast to occur. The period during which the temporary fluctuations are forecast to occur shall be indicated using the abbreviations 'FM' and/or 'TL', as appropriate, each followed by a time group in hours and minutes.

(8) Use of the probability indicator

The indicator 'PROB' shall not be used in TREND forecasts.

MET.TR.235 Forecasts — Take-off

(a) A forecast for take-off shall refer to a specified period of time and shall contain information on expected conditions over the runway complex in regard to surface wind direction and speed and any variations thereof, temperature, pressure, and any other elements as agreed between the aerodrome meteorological office and the operators.

(b) The order of the elements and the terminology, units and scales used in forecasts for take-off shall be the same as those used in reports for the same aerodrome.

MET.TR.240 Aerodrome warnings and wind shear warnings and alerts

(a) The aerodrome warnings shall be issued in accordance with the template in Table 6 of Appendix 1.

(b) The sequence number referred to in the template in Table 6 of Appendix 1 shall correspond to the number of aerodrome warnings issued for the aerodrome since 00.01 UTC on the day concerned.

(c) Wind shear warnings shall be issued in accordance with the template in Table 7 of Appendix 1.

(d) The sequence number referred to in the template in Table 7 of Appendix 1 shall correspond to the number of wind shear warnings issued for the aerodrome since 00.01 UTC on the day concerned.

(e) Wind shear alerts shall give concise, up-to-date information related to the observed existence of wind shear involving a headwind/tailwind change of 15 kt (7.5 m/s) or more which could adversely affect aircraft on the final approach path or initial take-off path and aircraft on the runway during the landing roll or take-off run.

(f) Wind shear alert shall, if practicable, relate to specific sections of the runway and distances along the approach path or take-off path as agreed between the aerodrome meteorological office, the appropriate ATS units and the operators concerned.

3. Chapter 3 — Technical requirements for meteorological stations

MET.TR.250 Meteorological reports and other information

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

(1) identification of the type of report;

(2) location indicator;

(3) time of the observation;

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

(5) surface wind direction and speed;

(6) visibility;

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

(8) present weather;

(9) cloud amount, cloud type only for cumulonimbus and towering cumulus clouds and height of cloud base or, where measured, vertical visibility;

(10) air temperature and dew-point temperature; and

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

(12) supplementary information, as determined by the competent authority

(b) Local routine and special reports.

(1) Local routine and special reports shall be issued in abbreviated plain language, in accordance with the template shown in Table 4 of Appendix 1 or in a format agreed between meteorological stations and ATS units.

(2) In local routine and special reports:

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

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

(iii) when variations from the mean wind direction are reported in accordance with MET.TR.252(a)(3)(ii)2), the two extreme directions between which the surface wind has varied shall be reported; and

(iv) when variations from the mean wind speed are reported in accordance with MET.TR.252(a)(3)(iii), they shall be reported as the maximum and minimum values of the wind speed attained.

(c) METAR.

(1) METAR shall be issued in accordance with the template shown in Table 5 to Appendix 1 and disseminated in the METAR code forms prescribed by the World Meteorological Organization.

(2) If disseminated in digital form, METAR shall be:

(i) formatted in accordance with a globally interoperable information exchange model and shall use geography markup language (GML).

(ii) accompanied by the appropriate metadata.

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

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

(ii) no cloud of operational significance;

(iii) no weather of significance to aviation.

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

(d) The local special reports shall include:

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

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

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

(4) the available supplementary information concerning the occurrence of significant meteorological conditions in the approach and climb-out areas as given in Table 4 of Appendix 1;

(5) when noise abatement procedures are applied and the variation of the mean surface wind speed (gusts) has changed by 5 kt (2.5 m/s) or more from that at the time of the latest local special report, the mean speed before and/or after the change being 15 kt (7.5 m/s) or more;

MET.TR.252 Reporting of meteorological elements

(a) Surface wind direction and speed

(1) In local routine and special reports and in METAR, the surface wind direction and speed shall be reported in steps of 10 degrees true and 1 kt (0.5 m/s), respectively.

(2) Any observed value that does not fit the reporting scale in use shall be rounded to the nearest step in the scale.

(3) In local routine and special reports and in METAR:

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

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

(A) when the total variation is 60° or more and less than 180° and the wind speed is 3 kt (1.5 m/s) or more, such directional variations shall be reported as the two extreme directions between which the surface wind has varied;

(B) when the total variation is 60° or more and less than 180° and the wind speed is less than 3 kt (1.5 m/s), the wind direction shall be reported as variable with no mean wind direction; or

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

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

(A) 5 kt (2.5 m/s) or more in local routine and special reports when noise abatement procedures are applied;

(B) 10 kt (5 m/s) or more otherwise;

(iv) when a wind speed of less than 1 kt (0.5 m/s) is reported, it shall be indicated as calm;

(v) when a wind speed of 100 kt (50 m/s) or more is reported, it shall be indicated to be more than 99 kt (49 m/s); and

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

(vii) when variations from the mean wind speed are reported in accordance with MET.TR.255 (a), the maximum value of the wind speed attained shall be reported.

(b) Visibility

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

(2) Any observed value which does not fit the reporting scale in use shall be rounded down to the nearest lower step in the scale.

(3) In local routine and special reports, visibility along the runway(s) shall be reported together with the units of measurement used to indicate visibility.

(c) RVR

(1) In local routine and special reports and in METAR, the runway visual range shall be reported in steps of 25 m when the runway visual range is less than 400 m; in steps of 50 m when it is between 400 and 800 m; and in steps of 100 m when the runway visual range is more than 800 m.

(2) Any observed value which does not fit the reporting scale in use shall be rounded down to the nearest lower step in the scale.

(3) In local routine and special reports and in METAR:

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

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

(4) In local routine and special reports:

(i) the units of measurement used shall be included;

(ii) if the runway visual range is observed from only one location along the runway, such as the touchdown zone, it shall be included without any indication of location;

(iii) if the runway visual range is observed from more than one location along the runway, the value representative of the touchdown zone shall be reported first, followed by the values representative of the mid-point and stop-end and the locations for which these values are representative shall be indicated; and

(iv) when there is more than one runway in use, the available runway visual range values for each runway shall be reported and the runways to which the values refer shall be indicated.

(d) Present weather at the aerodrome

(1) In local routine and special reports and in METAR, observed present weather phenomena shall be reported in terms of type and characteristics and qualified with respect to intensity, as appropriate.

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

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

(i) Thunderstorm (TS)

— Used to report a thunderstorm with precipitation in accordance with the templates shown in Table 4 and Table 5 of Appendix 1. When thunder is heard or lightning is detected at the aerodrome during the 10-minute period preceding the time of observation but no precipitation is observed at the aerodrome, the abbreviation 'TS' shall be used without qualification.

(ii) Freezing

— Supercooled water droplets or precipitation, used with types of present weather phenomena in accordance with the templates shown in Table 4 and Table 5 of Appendix 1.

(4) In local routine and special reports and in METAR:

(i) one or more, up to a maximum of three, of the present weather abbreviations shall be used, as necessary, together with an indication, where appropriate, of the characteristics and intensity or proximity to the

aerodrome, so as to convey a complete description of the present weather of significance to flight operations;

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

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

(e) Clouds

(1) In local routine and special reports and in METAR, the height of cloud base shall be reported in steps of 100 ft (30 m) up to 10 000 ft (3 000 m).

(2) Any observed value which does not fit the reporting scale in use shall be rounded down to the nearest lower step in the scale.

(3) In local routine and special reports:

(i) the units of measurement used for the height of cloud base and vertical visibility shall be indicated;

(ii) when there is more than one runway in use and the heights of cloud bases are observed by instruments for these runways, the available heights of cloud bases for each runway shall be reported and the runways to which the values refer shall be indicated.

(f) Air temperature and dew-point temperature

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

(2) Any observed value which does not fit the reporting scale in use shall be rounded to the nearest whole degree Celsius, with observed values involving 0.5° rounded up to the next higher whole degree Celsius.

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

(g) Atmospheric pressure

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

(2) Any observed value which does not fit the reporting scale in use shall be rounded down to the nearest lower whole hectopascal.

(3) In local routine and special reports:

(i) QNH shall be included;

(ii) QFE shall be included if required by users or, if so agreed locally between the provider of meteorological services, the ATS unit and the operators concerned, on a regular basis;

(iii) the units of measurement used for QNH and QFE values shall be included; and

(iv) if QFE values are required for more than one runway, the required QFE values for each runway shall be reported and the runway(s) to which the values refer shall be indicated.

(4) In METAR, only QNH values shall be included.

MET.TR.255 Observing meteorological elements

The meteorological elements listed in MET.OR.255 shall be observed and/or measured and disseminated by automatic or semi-automatic meteorological observing system.

(a) Surface wind direction and speed

The mean direction and the mean speed of the surface wind shall be measured, as well as significant variations of the wind direction and speed, and reported in degrees true and knots, respectively.

(1) Siting

The meteorological instrument used to measure surface wind direction and speed shall be situated in such a way as to provide data which are representative of the area for which the measurements are required.

(2) Averaging

The averaging period for surface wind observations shall be:

(i) 2 minutes for local routine and special reports and for wind displays in ATS units; and

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

(3) Accuracy of measurement

The direction and speed of the mean surface wind, as well as variations from the mean surface, shall be measured with specified accuracy.

(b) Visibility

(1) The visibility shall be measured or observed, and reported in meters or kilometers.

(2) Siting

The meteorological instrument used to measure visibility shall be situated in such a way as to supply data which are representative of the area for which the measurements are required.

(3) Displays

The visibility shall be displayed.

(4) Averaging

The averaging period shall be:

(i) 1 minute for local routine and special reports and for visibility displays in ATS units; and

(ii) 10 minutes for METAR, except that when the 10-minute period immediately preceding the observation includes a marked discontinuity in the visibility, only those values occurring after the discontinuity shall be used for obtaining mean values.

(c) Runway visual range

(1) Siting

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

(2) Instrumented systems

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

(3) Display

(i) Where the runway visual range is determined by instrumented systems, one display or more, if required, shall be located in the meteorological station with corresponding displays in the appropriate ATS units.

(ii) The displays in the meteorological station and in the ATS units shall be related to the same sensors, and where separate sensors are required, the displays shall be clearly marked to identify the runway and section of runway monitored by each sensor.

(4) Averaging

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

(ii) The averaging period for runway visual range values shall be:

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

(B) 10 minutes for METAR, except that when the 10-minute period immediately preceding the observation includes a marked discontinuity in runway visual range values, only those values occurring after the discontinuity shall be used for obtaining mean values.

(d) Present weather at the aerodrome and its vicinity

(1) The following present weather phenomena shall be reported, as a minimum: rain, drizzle, snow and freezing precipitation, including intensity thereof, haze, mist, fog, freezing fog and thunderstorms, including thunderstorms in the vicinity.

(2) Siting

The meteorological instrument used to measure present weather at the aerodrome and its vicinity shall be situated in such a way as to provide data which are representative of the area for which the measurements are required.

(e) Clouds

(1) Cloud amount, cloud type and height of cloud base shall be observed and reported as necessary to describe the clouds of operational significance. When the sky is obscured, vertical visibility shall be observed and reported, where measured, instead of cloud amount, cloud type and height of cloud base. The height of cloud base and vertical visibility shall be reported in feet.

(2) Siting

The meteorological instrument used to measure clouds' amount and height shall be situated in such a way as to provide data which are representative of the area for which the measurements are required.

(3) Display

When automated equipment is used for the measurement of the height of cloud base, at least one display shall be located in the meteorological station with corresponding displays in the appropriate ATS units.

(4) Reference level

(i) The height of cloud base shall be reported above aerodrome elevation.

(ii) When a precision approach runway is in use which has a threshold elevation of 50 ft (15 m) or more below the aerodrome elevation, local arrangements shall be made in order that the height of cloud bases reported to arriving aircraft shall refer to the threshold elevation.

(iii) In the case of reports from offshore structures, the height of cloud base shall be given above mean sea level.

(f) Air temperature and dew-point temperature

The air temperature and dew-point temperature shall be measured, displayed and reported in degrees Celsius.

(g) Atmospheric pressure

(1) The atmospheric pressure shall be measured, and QNH and QFE values shall be computed and reported in hectopascals.

(2) Display

(i) When automated equipment is used for the measurement of atmospheric pressure, QNH and, if required in accordance with MET.TR.255(f), QFE, displays relating to the barometer shall be located in the meteorological station with corresponding displays in the appropriate ATS units.

(ii) When QFE values are displayed for more than one runway, as specified in MET.TR.255(g), the displays shall be clearly marked to identify the runway to which the QFE value displayed refers.

(3) Reference level

A reference level for the computation of QFE shall be used.

4. Chapter 4 — Technical requirements for Volcanic Ash Advisory Centres (VAACs)

MET.TR.260 Volcanic Ash Advisory Centre responsibilities

(a) The advisory information on volcanic ash shall be issued in abbreviated plain language and in accordance with the template shown in Table 8 of Appendix 1. When no abbreviations are available, English plain language text, to be kept to a minimum, shall be used.

(b) The volcanic ash advisory information listed in Table 8 of Appendix 1, when prepared in graphical format, shall be as specified in Appendix 1 to ICAO Annex 3 and shall be issued using:

(1) the portable network graphics (PNG) format; or

(2) the BUFR code form, when exchanged in binary format.

5. Chapter 5 — Technical requirements for World Area Forecast Centres (WAFCs)

MET.TR.265 World Area Forecast Centre responsibilities

(a) WAFCs shall use GRIB 2 code form for the supply of gridded global forecasts and BUFR code form for the supply of forecast of significant weather phenomena.

(b) For global gridded forecasts, WAFCs shall:

(1) prepare forecasts of upper wind; upper-air temperature; humidity; direction, speed and flight level of maximum wind; flight level and temperature of tropopause; areas of cumulonimbus clouds; icing; clear-air and in-cloud turbulence; and geopotential altitude of flight levels, four times a day and be valid for fixed valid times at 6, 9, 12, 15, 18, 21, 24, 27, 30, 33 and 36 hours after the time (00.00, 06.00, 12.00 and 18.00 UTC) of the synoptic data on which the forecasts were based;

(2) issue forecasts in the order in (1) and complete their dissemination as soon as technically feasible, but not later than 6 hours after standard time of observation;

(3) provide grid point forecasts in a regular grid with a horizontal resolution of 1.25° of latitude and longitude and comprising:

(i) wind data for flight levels 50 (850 hPa), 100 (700 hPa), 140 (600 hPa), 180 (500 hPa), 240 (400 hPa), 270 (350 hPa), 300 (300 hPa), 320 (275 hPa), 340 (250 hPa), 360 (225 hPa), 390 (200 hPa), 410 (175hPa), 450 (150 hPa) and 530 (100 hPa);

(ii) temperature data for flight levels 50 (850 hPa), 100 (700 hPa), 140 (600 hPa), 180 (500 hPa), 240 (400 hPa), 270 (350 hPa), 300 (300 hPa), 320 (275 hPa), 340 (250 hPa), 360 (225 hPa), 390 (200 hPa), 410 (175hPa), 450 (150 hPa) and 530 (100 hPa);

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

(iv) horizontal extent and flight levels of base and top of cumulonimbus clouds;

(v) icing for layers centred at flight levels 60 (800 hPa), 100 (700 hPa), 140 (600 hPa), 180 (500 hPa), 240 (400 hPa) and 300 (300 hPa);

(vi) clear-air turbulence for layers centred at flight levels 240 (400 hPa), 270 (350 hPa), 300 (300 hPa), 340 (250 hPa), 390 (200 hPa) and 450 (150 hPa);

(vii) in-cloud turbulence for layers centred at flight levels 100 (700 hPa), 140 (600 hPa), 180 (500 hPa), 240 (400 hPa) and 300 (300 hPa); and

(viii) geopotential altitude data for flight levels 50 (850 hPa), 100 (700 hPa), 140 (600 hPa), 180 (500 hPa), 240 (400 hPa), 270 (350hPa), 300 (300 hPa), 320 (275 hPa), 340 (250 hPa), 360 (225 hPa), 390 (200 hPa), 410 (175 hPa), 450 (150 hPa) and 530 (100 hPa).

(c) For global forecasts of significant weather phenomena, WAFCs shall:

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

(2) issue SIGWX forecasts as high-level SIGWX forecasts for flight levels between 250 and 630.

(3) include in SIGWX forecasts the following items:

(i) tropical cyclone provided that the maximum of the 10-minute mean surface wind speed is expected to reach or exceed 34 kt (17 m/s);

(ii) severe squall lines;

(iii) moderate or severe turbulence (in cloud or clear air);

(iv) moderate or severe icing;

(v) widespread sandstorm/duststorm;

(vi) cumulonimbus clouds associated with thunderstorms and with (i) to (v);

(vii) Non-convective cloud areas associated with in-cloud moderate or severe turbulence and/or moderate or severe icing;

(viii) flight level of tropopause;

(ix) jet streams;

(x) information on the location of volcanic eruptions that are producing ash clouds of significance to aircraft operations, comprising: volcanic eruption

symbol at the location of the volcano and, in a separate text box on the chart, the volcanic eruption symbol, the name of the volcano, if known, and the latitude/longitude of the eruption. In addition, the legend of SIGWX charts should indicate 'CHECK SIGMET, ADVISORIES FOR TC AND VA, AND ASHTAM AND NOTAM FOR VA'; and

(xi) information on the location of a release of radioactive materials into the atmosphere of significance to aircraft operations, comprising: the radioactive materials in the atmosphere symbol at the location of the release and, in a separate box on the chart, the radioactive materials in the atmosphere symbol, latitude/longitude of the site of the release and, if known, the name of the site of the radioactive source. In addition, the legend of SIGWX charts on which a release of radiation is indicated should contain 'CHECK SIGMET AND NOTAM FOR RDOACT CLD'.

(4) The following criteria shall be applied for SIGWX forecasts:

(i) items (i) to (v) of (3) above shall only be included if expected to affect the levels between the lower and upper bounds of the SIGWX forecast;

(ii) information included in SIGWX for items (i), (ii), (x) and (xi) to (v) of (3) above shall make reference to the surface position of the feature concerned.

(iii) the abbreviation 'CB' shall only be included when it refers to the occurrence or expected occurrence of cumulonimbus clouds:

(A) affecting an area with a maximum spatial coverage of 50 per cent or more of the area concerned;

(B) along a line with little or no space between individual clouds; or

(C) embedded in cloud layers or concealed by haze;

(iv) the inclusion of 'CB' shall be understood to include all weather phenomena normally associated with cumulonimbus clouds, i.e. thunderstorm, moderate or severe icing, moderate or severe turbulence, and hail;

(v) where a volcanic eruption or a release of radioactive materials into the atmosphere warrants the inclusion of the volcanic activity symbol or the radioactivity symbol in SIGWX forecasts, the symbols shall be included on SIGWX forecasts irrespective of the height to which the ash column or radioactive material is reported or expected to reach; and

(vi) in the case of coincident or the partial overlapping of items (i), (x) and (xi) of (3), the highest priority shall be given to item (x), followed by items (xi) and (i). The item with the highest priority shall be placed at the location of the event, and an arrow shall be used to link the location of the other item(s) to its associated symbol or text box.

(d) Medium-level SIGWX forecasts for flight levels between 100 and 250 for limited geographical areas shall be issued.

6. Chapter 6 — Technical requirements for Tropical Cyclone Advisory Centres (TCACs)

MET.TR.270 Tropical Cyclone Advisory Centre responsibilities

(a) The advisory information on tropical cyclones shall be issued for tropical cyclones when the maximum of the 10-minute mean surface wind speed is expected to reach or exceed 34 kt during the period covered by the advisory.

(b) The advisory information on tropical cyclones shall be in accordance with the template shown in Table 9 of Appendix 1.

3.2. Draft Acceptable Means of Compliance and Guidance Material (Draft EASA Decision)

Section 1 — General requirements

GM1 MET.TR.115(a) Meteorological bulletins
HEADING

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

GM1 MET.TR.115(a)(2) Meteorological bulletins
LOCATION INDICATOR

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

Section 2 — Specific requirements

Chapter 1 — Technical requirements for meteorological watch offices

AMC1 MET.TR.205(a) SIGMET
GRAPHICAL FORMAT

SIGMET, when issued in graphical format, should be as specified in Appendix 1 to ICAO Annex 3.

GM1 MET.TR.205(a) SIGMET & MET.TR.210(a) AIRMET
EXAMPLE OF SIGMET AND AIRMET MESSAGE, AND THE CORRESPONDING CANCELLATIONS

SIGMET	**Cancellation of SIGMET**
YUDD SIGMET 2 VALID 101200/101600 YUSO – YUDD SHANLON FIR/UIR OBSC TS FCST S OF N54 AND E OF W012 TOP FL390 MOV E WKN FCST 1600Z S OF N54 AND E OF W010	YUDD SIGMET 3 VALID 101345/101600 YUSO – YUDD SHANLON FIR/UIR CNL SIGMET 2 101200/101600
AIRMET	**Cancellation of AIRMET**

YUDD AIRMET 1 VALID 151520/151800 YUSO – YUDD SHANLON FIR ISOL TS OBS N OF S50 TOP ABV FL100 STNR WKN	YUDD AIRMET 2 VALID 151650/151800 YUSO – YUDD SHANLON FIR CNL AIRMET 1 151520/151800

GM2 MET.TR.205(a) SIGMET
EXAMPLE OF SIGMET MESSAGE FOR TROPICAL CYCLONE

YUCC SIGMET 3 VALID 251600/252200 YUDO –
YUCC AMSWELL FIR TC GLORIA OBS AT 1600Z N2706 W07306 CB TOP FL500 WI 150NM OF CENTRE
MOV NW 10KT NC FCST 2200Z TC CENTRE 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 00.01 UTC; the message is valid from 16.00 UTC to 22.00 UTC on the 25th of the month; tropical cyclone Gloria was observed at 16.00 UTC at 27 degrees 6 minutes north and 73 degrees 6 minutes west with cumulonimbus top at flight level 500 within 150 nautical miles of the centre; the tropical cyclone is expected to move northwestwards at 10 knots and not to undergo any changes in intensity; the forecast position of the centre of the tropical cyclone at 22.00 UTC is expected to be at 27 degrees 40 minutes north and 73 degrees 45 minutes west.

* *Fictitious locations*

GM3 MET.TR.205(a) SIGMET
EXAMPLE OF 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 S1500 E07348 - S1530 E07642 FL310/450 MOV SE 35KT FCST 1700Z VA CLD
APRX 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 00.01 UTC; the message is valid from 11.00 UTC to 17.00 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 11.00 UTC in an approximate area of 220 km by 35 km 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 450the volcanic ash cloud is expected to move southeastwards at 35 knots; at 17.00 UTC the volcanic ash cloud is forecast to be located approximately in an area bounded by the following points: 15 degrees 6 minutes south and 75 degrees east, 15 degrees 18 minutes south and 81 degrees 12 minutes east, 17 degrees 12 minutes south and 83 degrees 30 minutes east, and 18 degrees 24 minutes south and 78 degrees 36 minutes east.

* *Fictitious locations*

GM4 MET.TR.205(a) SIGMET
EXAMPLE OF SIGMET MESSAGE FOR RADIOACTIVE CLOUD

YUCC SIGMET 2 VALID 201200/201600 YUDO –
YUCC AMSWELL FIR RDOACT CLD OBS AT 1155Z WI S5000 W14000 – S5000 W13800 – S5200 W13800 – S5200 W14000 – S5000 W14000 SFC/FL100 STNR WKN

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 00.01 UTC; the message is valid from 12.00 UTC to 16.00 UTC on the 20th of the month; radioactive cloud was observed at 11.55 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.

* *Fictitious locations*

GM5 MET.TR.205(a) SIGMET
EXAMPLE OF 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 20KT WKN FCST 1600Z S OF N2020 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 12.15 UTC to 16.00 UTC on the 22nd of the month; severe turbulence was observed at 12.10 UTC 20 degrees 20 minutes north and 70 degrees 5 minutes west at flight level 250; the turbulence is expected to move eastwards at 20 knots and to weaken in intensity; forecast position at 16.00 UTC south of 20 degrees 20 minutes north and east of 69 degrees 50 minutes west.

* *Fictitious locations*

GM6 MET.TR.205(a) SIGMET
EXAMPLE OF AIRMET MESSAGE FOR MODERATE MOUNTAIN WAVE

YUCC AIRMET 2 VALID 221215/221600 YUDO –
YUCC AMSWELL FIR MOD MTW OBS AT 1205Z N48 E010 FL080 STNR NC

Meaning:
The second AIRMET message issued for the AMSWELL* flight information region (identified by YUCC Amswell area control centre) by the Donlon/International* meteorological watch office (YUDO) since 00.01 UTC; the message is valid from 12.15 UTC to 16.00 UTC on the 22nd of the month; moderate mountain wave was observed at 12.05 UTC at 48 degrees north and 10 degrees east at flight level 080; the mountain wave is expected to remain stationary and not to undergo any changes in intensity.

* *Fictitious locations*

AMC1 MET.TR.205(b) SIGMET
FLIGHT INFORMATION REGION

In cases where the airspace is divided into a flight information region (FIR) and an upper-flight information region (UIR), the SIGMET message should be identified by the location indicator of the ATS unit serving the FIR.

GM1 MET.TR.205(b) SIGMET
FLIGHT INFORMATION REGION

The SIGMET message applies to the whole airspace within the lateral limits of the FIR, i.e. to the FIR and to the UIR. The particular areas and/or flight levels affected by the meteorological phenomena causing the issuance of the SIGMET message are given in the text of the message.

AMC1 MET.TR.205(c) SIGMET
& MET.TR.210(c) AIRMET
CRITERIA RELATED TO PHENOMENA

Sandstorm/duststorm should be considered:

(a) heavy whenever the visibility is below 200 m and the sky is obscured; and

(b) moderate whenever the visibility is:

(1) below 200 m and the sky is not obscured; or

(2) between 200 and 600 m.

GM1 MET.TR.205(c) SIGMET
& MET.TR.210(c) AIRMET
CRITERIA RELATED TO PHENOMENA

(a) An area of thunderstorms and cumulonimbus clouds is considered:

(1) obscured (OBSC) if it is obscured by haze or smoke or cannot be readily seen due to darkness;

(2) embedded (EMBD) if it is embedded within cloud layers and cannot be readily recognised;

(3) isolated (ISOL) if it consists of individual features which affect, or are forecast to affect, an area with a maximum spatial coverage less than 50 per cent of the area concerned (at a fixed time or during the period of validity); and

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

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

(c) Squall line (SQL) indicates a thunderstorm along a line with little or no space between individual clouds.

(d) Hail (GR) is used as a further description of the thunderstorm, as necessary.

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

(f) Turbulence is considered:

(1) severe whenever the peak value of the cube root of EDR exceeds 0.7; and

(2) moderate whenever the peak value of the cube root of EDR is above 0.4 and below or equal to 0.7.

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

(h) A mountain wave (MTW) is considered:

(1) severe whenever an accompanying downdraft of 600 ft/min (3.0 m/s) or more and/or severe turbulence is observed or forecast; and

(2) moderate whenever an accompanying downdraft of 350–600 ft/min (1.75–3.0 m/s) and/or moderate turbulence is observed or forecast.

AMC1 MET.OR.205(d) SIGMET
FORMAT

SIGMET messages should be issued in digital form, in addition to the abbreviated plain language.

GM1 MET.TR.205(d) SIGMET
FORMAT

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

GM1 MET.TR.210(b) AIRMET message
FIR

The flight information region may be divided in sub-areas.

Chapter 2 — Technical requirements for aerodrome meteorological offices

AMC1 MET.TR.220(a) Forecast and other meteorological information
MEANS BY WHICH METEOROLOGICAL INFORMATION CAN BE PROVIDED

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

AMC2 MET.TR.220(a) Forecasts and other meteorological information
SPECIFIC NEEDS OF HELICOPTER OPERATIONS

(a) Meteorological information for pre-flight planning and in-flight replanning by operators of helicopters flying to offshore structures should include data covering the layers from sea level to flight level 100.

(b) Particular mention should be made of the expected surface visibility, the amount, type where available, base and tops of cloud below flight level 100, sea state and

sea-surface temperature, mean sea-level pressure, and the occurrence and expected occurrence of turbulence and icing.

GM1 MET.TR.220(a)(5)(iii),(iv)&(v) Forecasts and other meteorological information
BRIEFING, CONSULTATION, AND DISPLAY

The purpose of briefing and consultation is to provide 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, in order to either explain or amplify the information contained in the flight documentation.

AMC1 MET.TR.220(a)(5)(vi) Forecasts and other meteorological information
AUTOMATED PRE-FLIGHT INFORMATION SYSTEMS

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

(a) provide for the continuous and timely updating of the system database and monitoring of the validity and integrity of the meteorological information stored;

(b) permit access to the system by operators and flight crew members and also by other aeronautical users concerned through suitable telecommunications means;

(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 WMO, or based on a menu-driven user interface, or other appropriate mechanisms as agreed between the meteorological authority and the operators concerned; and

(d) provide for rapid response to a user request for information.

GM1 MET.TR.220(a)(5)(vi) Forecasts and other meteorological information
AUTOMATED PRE-FLIGHT INFORMATION SYSTEMS

(a) ICAO abbreviations and codes and location indicators are given respectively in the Procedures for Air Navigation Services — ICAO Abbreviations and Codes (PANS-ABC, Doc 8400) and Location Indicators (Doc 7910).

(b) Aeronautical meteorological code data-type designators are given in the WMO Publication No 386, Manual on the Global Telecommunication System.

GM1 MET.TR.220(b) Forecasts and other meteorological information
METEOROLOGICAL INFORMATION TO RESCUE COORDINATION CENTRES

(a) The elements which are not distributed routinely are:

(1) state of ground, and in particular any snow cover or flooding;

(2) sea-surface temperature, state of the sea, ice cover (if any) and ocean currents, if relevant to the search area; and

(3) sea-level pressure data.

(b) On request from the rescue coordination centre, the designated aerodrome meteorological office or meteorological watch office should arrange to obtain details of the flight documentation which was supplied to the missing aircraft, together with any amendments to the forecast which were transmitted to the aircraft in flight.

AMC1 MET.TR.220(d)(5) Forecasts and other meteorological information

HEIGHT INDICATIONS
All references to en route meteorological conditions, such as height indications of upper winds, turbulence or bases and tops of clouds, should be expressed in flight levels.

GM1 MET.TR.220(d)(5) Forecasts and other meteorological information
HEIGHT INDICATIONS

Height indications may also be expressed in pressure, altitude or, for low-level flights, in height above ground level.

AMC1 MET.TR.220(e) Forecasts and other meteorological information
FLIGHT DOCUMENTATION

(a) Where the forecasts are supplied in chart form, flight documentation for low-level flights, including those in accordance with the visual flight rules, operating up to flight level 100 or up to flight level 150 in mountainous areas or higher, where necessary, should contain the following as appropriate to the flight:

(1) information from relevant SIGMET and AIRMET messages;

(2) upper wind and upper-air temperature charts; and

(3) significant weather charts.

(b) Where the forecasts are not supplied in chart form, flight documentation for low-level flights, including those in accordance with the visual flight rules, operating up to flight level 100 or up to flight level 150 in mountainous areas or higher, where necessary, should contain the following information as appropriate to the flight: SIGMET and AIRMET information.

AMC1 MET.TR.220(e)(1) & (2) Forecasts and other meteorological information
FORMAT OF FLIGHT DOCUMENTATION

When the flight documentation related to forecasts of upper wind and upper-air temperature and SIGWX phenomena is presented in the form of charts, it should be in accordance with the model charts in Appendix 1 of ICAO Annex 3.

AMC2 MET.TR.220(e)(1) & (2) Forecasts and other meteorological information
FORMAT OF FLIGHT DOCUMENTATION

The location indicators and the abbreviations used should be explained in the flight documentation.

AMC1 MET.TR.220(f) Forecasts and other meteorological information
CHARACTERISTICS OF CHARTS

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 A3 size) and the smallest size should be about 21 × 30 cm (standard A4 size). 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;

(b) major geographical features, such as coastlines, major rivers and lakes, should be depicted in a way that makes them easily recognisable;

(c) for charts prepared by computer, meteorological data should take preference over basic chart information, the former cancelling the latter wherever they overlap;

(d) major aerodromes should be shown as a dot and identified by the first letter of the name of the city the aerodrome serves as given in Table AOP of the EUR air navigation plan;

(e) a geographical grid should be shown with meridians and parallels represented by dotted lines at each 10° latitude and longitude; dots should be spaced one degree apart;

(f) latitude and longitude values should be indicated at various points throughout the charts; and

(g) labels on the charts for flight documentation should be clear and simple and should present the name of the world area forecast centre or, for non-WAFS products, the originating centre, the type of chart, date and valid time and, if necessary, the types of units used in an unambiguous way.

AMC2 MET.TR.220(f) Forecasts and other meteorological information
SET OF CHARTS TO BE PROVIDED

(a) The minimum number of charts for flights between flight level 250 and flight level 630 should include a high-level SIGWX chart (flight level 250 to flight level 630) and a forecast 250 hPa wind and temperature chart.

(b) The actual charts provided for pre-flight and in-flight planning and for flight documentation should be agreed between the meteorological providers and the users concerned.

GM1 MET.TR.220(f) Forecasts and other meteorological information
CHARTS — SHORT-HAUL FLIGHTS

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

GM1 MET.TR.220(g) Forecasts and other meteorological information
CONCATENATED ROUTE-SPECIFIC FORECASTS

(a) The flight documentation related to concatenated route-specific upper wind and upper-air temperature forecasts should be provided when agreed between the meteorological service provider and the operator concerned.

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

AMC1 MET.TR.220(i) Forecasts and other meteorological information
CLIMATOLOGICAL INFORMATION — PERIOD OF OBSERVATION
Aeronautical climatological information should be based on observations made over a period of at least five years. The period should be indicated in the information supplied.

AMC2 MET.TR.220(i) Forecasts and other meteorological information
CLIMATOLOGICAL DATA RELATED TO SITES FOR NEW AERODROMES

Climatological data related to sites for new aerodromes and to additional runways at existing aerodromes should be collected starting as early as possible before the commissioning of those aerodromes or runways.

AMC3 MET.TR.220(i) Forecasts and other meteorological information
PURPOSE OF CLIMATOLOGICAL SUMMARIES

Aerodrome climatological summaries should follow the procedures prescribed by the World Meteorological Organization and should be made available in a form to meet a specific user request.

AMC4 MET.TR.220(i) Forecast and other meteorological information
CLIMATOLOGICAL TABLE — GENERAL

An aerodrome climatological table should indicate:

(a) mean values and variations therefrom, including maximum and minimum values, of meteorological elements; and/or

(b) the frequency of occurrence of present weather phenomena affecting flight operations at the aerodrome; and/or

(c) the frequency of occurrence of specified values of one, or of a combination of two or more, elements.

AMC5 MET.TR.220(i) Forecast and other meteorological information
CLIMATOLOGICAL TABLE — GENERAL

Aerodrome climatological tables should include information required for the preparation of aerodrome climatological summaries.

AMC6 MET.TR.220(i) Forecast and other meteorological information
CLIMATOLOGICAL SUMMARIES — GENERAL

Aerodrome climatological summaries should cover:

(a) frequencies of the occurrence of runway visual range/visibility and/or height of base of the lowest cloud layer of BKN or OVC extent below specified values at specified times;

(b) frequencies of visibility below specified values at specified times;

(c) frequencies of the height of base of the lowest cloud layer of BKN or OVC extent below specified values at specified times;

(d) frequencies of occurrence of concurrent wind direction and speed within specified ranges;

(e) frequencies of surface temperature in specified ranges of 5 °C at specified times; and

(f) mean values and variations therefrom, including maximum and minimum values of meteorological elements required for operational planning purposes, including take-off performance calculations.

GM1 MET.TR.220(i) Forecasts and other meteorological information
CLIMATOLOGICAL INFORMATION — GENERAL

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 between the competent authorities concerned.

GM2 MET.TR.220(i) Forecast and other meteorological information
MODELS OF CLIMATOLOGICAL SUMMARIES

Models of climatological summaries related to (a) to (e) of AMC6 MET.TR.215(i) are given in the WMO Publication No 49, Technical Regulations, Volume II, C.3.2.

GM3 MET.TR.220(i) Forecasts and other meteorological information
CLIMATOLOGICAL DATA REQUIRED FOR AERODROME PLANNING PURPOSES

Climatological data required for aerodrome planning purposes are set out in GM1 ADR-DSN.B.025 'Data to be used'.

GM1 MET.TR.225(a)(8) Aerodrome forecasts (TAF)
VISIBILITY

The visibility included in TAF refers to the forecast prevailing visibility.

AMC1 MET.TR.225(b) Aerodrome forecasts (TAF)
PERIOD OF VALIDITY

(a) The periods of validity for 9-hour TAF should commence at 00, 03, 06, 09, 12, 15, 18 and 21 UTC and for 24- and 30-hour TAF at 00, 06, 12 and 18 UTC or 03, 09, 15, and 21 UTC.

(b) The 24- and 30-hour TAF periods of validity should be determined based on the types of operations, as agreed between the aerodrome meteorological office and the operators concerned.

(c) At aerodromes with limited hours of operation, the beginning of the period of validity of a TAF should commence at least 1 hour prior to the aerodrome resuming operations, or more as agreed between the aerodrome meteorological office and the operators concerned, to meet planning requirements for flights that arrive at the aerodromes as soon as it is opened for use.

(d) The period of validity of a routine TAF should be not less than 6 hours nor more than 30 hours.

(e) Routine TAF valid for less than 12 hours should be issued every 3 hours, and those valid for 12 to 30 hours should be issued every 6 hours.

GM1 MET.TR.225(c) Aerodrome forecasts (TAF)

EXAMPLE OF TAF

TAF for YUDO (Donlon/International)*:
TAF YUDO 160000Z 1606/1624 13005KT 9000 BKN020 BECMG 1606/1608 BKN008 TEMPO 1608/1612 17015G25KT 3000 RA BKN004 FM161230 15004KT 9999 SCT020

Meaning of the forecast:

TAF for Donlon/International* issued on the 16th of the month at 00.00 UTC valid from 06.00 UTC to 24.00 UTC on the 16th of the month; surface wind direction 130 degrees; wind speed 5 knots; visibility 9 kilometres, broken cloud at 2000 feet; becoming between 06.00 UTC and 08.00 UTC on the 16th of the month, broken cloud at 800 feet; temporarily between 08.00 UTC and 12.00 UTC on the 16th of the month surface wind direction 170 degrees; wind speed 15 knots gusting to 25 knots; visibility 3000 metres with moderate rain, broken cloud at 400 feet; from 12.30 UTC on the 16th of the month surface wind direction 150 degrees; wind speed 4 knots; visibility 10 kilometres or more; and broken cloud at 2000 feet.

** Fictitious location*

GM2 MET.TR.225(c) Aerodrome forecasts (TAF)
EXAMPLE OF CANCELLATION OF TAF

Cancellation of TAF for YUDO (Donlon/International):* TAF AMD YUDO 161500Z 1606/1624 CNL *Meaning of the forecast:* Amended TAF for Donlon/International* issued on the 16th of the month at 15.00 UTC cancelling the previously issued TAF valid from 06.00 UTC to 24.00 UTC on the 16th of the month. ** Fictitious location*

GM3 MET.TR.225(c) Aerodrome forecasts (TAF)
TAF CODE FORM

The TAF code form is contained in the WMO Publication No 306, Manual on Codes, Volume I.1, Part A — Alphanumeric Codes.

GM1 MET.TR.225(d) Aerodrome forecasts (TAF)
FORMAT OF TAF

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).

GM1 MET.TR.225(e) Aerodrome forecasts (TAF)
ACCURACY OF FORECASTS

Guidance on operationally desirable accuracy of forecasts is given in Attachment B to ICAO Annex 3.

AMC1 MET.TR.225(f) Aerodrome forecasts (TAF)

CRITERIA USED FOR THE INCLUSION OF CHANGE GROUPS IN TAF

The inclusion of change groups in TAF, or amendments to TAF, should be based:

(a) when the mean surface wind direction is forecasted to change by 60° or more, the mean speed before and/or after the change being 10 kt (5 m/s) or more;

(b) when the mean surface wind speed is forecasted to change by 10 kt (5 m/s) or more;

(c) when the variation from the mean surface wind speed (gusts) is forecasted to increase by 10 kt (5 m/s) or more, the mean speed before and/or after the change being 15 kt (7.5 m/s) or more;

(d) when the surface wind is forecasted to change through values of operational significance;

(e) when the visibility is forecasted to improve and change to or pass through one or more of the following values, or when the visibility is forecasted to deteriorate and pass through one or more of the following values:

(1) 150, 350, 600, 800, 1 500 or 3 000 m; and

(2) 5 000 m in cases where significant numbers of flights are operated in accordance with the visual flight rules;

(f) when any of the following weather phenomena, or combinations thereof, are forecasted to begin or end:
(1) low drifting dust, sand or snow;
(2) blowing dust, sand or snow;
(3) squall;
(4) funnel cloud (tornado or waterspout);

(g) when the height of base of the lowest layer or mass of cloud of BKN or OVC extent is forecasted to lift and change to or pass through one or more of the following values, or when the height of the lowest layer or mass of cloud of BKN or OVC extent is forecasted to lower and pass through one or more of the following values:
(1) 100, 200, 500 or 1 000 ft (30, 60, 150 or 300 m); or
(2) 1 500 ft (450 m) in cases where significant numbers of flights are operated in accordance with the visual flight rules;

(h) when the amount of a layer or mass of cloud below 1 500 ft (450 m) is forecasted to change:
(1) from NSC, FEW or SCT to BKN or OVC; or
(2) from BKN or OVC to NSC, FEW or SCT;

(i) when the vertical visibility is forecasted to improve and change to or pass through one or more of the following values, or when the vertical visibility is forecasted to deteriorate and pass through one or more of the following values: 100, 200, 500 or 1 000 ft (30, 60, 150 or 300 m); and

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

GM1 MET.TR.225(f)(1) Aerodrome forecasts (TAF)
USE OF CHANGE AND TIME INDICATORS IN TAF

Guidance on the use of change and time indicators in TAF is given in the table below:

Change or time indicator		*Time period*	*Meaning*
FM		ndndnhnhnmnm	used to indicate a significant change in most weather elements occurring at ndnd day, nhnh hours and nmnm minutes (UTC); all the elements given before 'FM' are to be included following 'FM' (i.e. they are all superseded by those following the abbreviation)
BECMG		nd1nd1nh1nh1/nd2nd2nh2nh2	the change is forecast to commence at nd1nd1 day and nh1nh1 hours (UTC) and be completed by nd2nd2 day and nh2nh2 hours (UTC); only those elements for which a change is forecast are to be given following 'BECMG'; the time period nd1nd1nh1nh1/nd2nd2nh2nh2 should normally be less than 2 hours and in any case should not exceed 4 hours
TEMPO		nd1nd1nh1nh1/nd2nd2nh2nh2	temporary fluctuations are forecast to commence at nd1nd1 day and nh1nh1 hours (UTC) and cease by nd2nd2 day and nh2nh2 hours (UTC);

Change or time indicator		*Time period*	*Meaning*	
			only those elements for which fluctuations are forecast are to be given following 'TEMPO'; temporary fluctuations should not last more than one hour in each instance, and in the aggregate, cover less than half of the period nd1nd1nh1nh1/nd2nd2nh2nh2	
PROBnn	—	nd1nd1nh1nh1/nd2nd2nh2nh2	probability of occurrence (in %) of an alternative value of a forecast element or elements; nn = 30 or nn = 40 only; to be placed after the element(s) concerned	—
	TEMPO	nd1nd1nh1nh1/nd2nd2nh2nh2		probability of occurrence of temporary fluctuations

AMC1 MET.TR.225(f)(2)(iv) Aerodrome forecasts (TAF)
& MET.TR.230(c)(1)(iii) Aerodrome forecasts — Landing (TREND)
THRESHOLD VALUES

The threshold values should be established by the aerodrome meteorological office in consultation with the appropriate ATS units and operators concerned, taking into account changes in the wind which would:

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

(b) indicate that the runway tailwind and crosswind components will change through values representing the main operating limits for typical aircraft operating at the aerodrome.

AMC1 MET.TR.225(g) Aerodrome forecasts (TAF)
USE OF PROBABILITY INDICATORS

The number of change and probability groups should be kept to a minimum.

GM1 MET.TR.225(g) Aerodrome forecasts (TAF)
USE OF PROBABILITY INDICATORS

(a) A probability of an alternative value or change of less than 30 per cent should not be considered sufficiently significant to be indicated.

(b) A probability of an alternative value or change of 50 per cent or more should not be considered a probability but instead should be indicated, as necessary, by use of the change indicators 'BECMG' or 'TEMPO' or by subdivision of the validity period using the abbreviation 'FM'. The probability group should not be used to qualify the change indicator 'BECMG' nor the time indicator 'FM'.

AMC1 MET.TR.230(c)(1) Aerodrome forecasts — Landing (TREND)
THRESHOLD VALUES

The threshold values should be established by the meteorological authority in consultation with the appropriate ATS authority and operators concerned, taking into account changes in the wind which would:

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

(b) indicate that the runway tailwind and crosswind components will change through values representing the main operating limits for typical aircraft operating at the aerodrome.

AMC1 MET.TR.230(c)(7)(ii) Aerodrome forecasts — Landing (TREND)
USE OF CHANGE GROUPS — BECMG

(a) When the change is forecast to begin and end wholly within the trend forecast period, the beginning and end of the change should be indicated by using the abbreviations 'FM' and 'TL', respectively, with their associated time groups.

(b) When the change is forecast to commence at the beginning of the trend forecast period but be completed before the end of that period, the abbreviation 'FM' and its associated time group should be omitted and only 'TL' and its associated time group should be used.

(c) When the change is forecast to begin during the trend forecast period and be completed at the end of that period, the abbreviation 'TL' and its associated time group should be omitted and only 'FM' and its associated time group should be used.

(d) When the change is forecast to occur at a specified time during the trend forecast period, the abbreviation 'AT' followed by its associated time group should be used.

(e) When the change is forecast to commence at the beginning of the trend forecast period and be completed by the end of that period, or when the change is forecast to occur within the trend forecast period but the time is uncertain, the abbreviations 'FM', 'TL' or 'AT' and their associated time groups should be omitted and the change indicator 'BECMG' should be used alone.

GM1 MET.TR.230(c)(7)(ii) Aerodrome forecasts — Landing (TREND)
USE OF CHANGE INDICATORS IN TREND FORECASTS

Guidance on the use of change indicators in trend forecasts is given in the table below:

<table>
<tr><th>Change indicator</th><th>Time indicator and period</th><th colspan="2">Meaning</th></tr>
<tr><td>NOSIG</td><td>—</td><td colspan="2">no significant changes are forecast</td></tr>
<tr><td rowspan="5">BECMG</td><td>FMn1n1n1n1 TLn2n2n2n2</td><td rowspan="5">the change is forecast to</td><td>commence at n1n1n1n1 UTC and be completed by n2n2n2n2 UTC</td></tr>
<tr><td>TLnnnn</td><td>commence at the beginning of the trend forecast period and be completed by nnnn UTC</td></tr>
<tr><td>FMnnnn</td><td>commence at nnnn UTC and be completed by the end of the trend forecast period</td></tr>
<tr><td>ATnnnn</td><td>occur at nnnn UTC (specified time)</td></tr>
<tr><td>—</td><td>commence at the beginning of the trend forecast period and be completed by the end of the trend forecast period; or
the time is uncertain</td></tr>
<tr><td>TEMPO</td><td>FMn1n1n1n1 TLn2n2n2n2</td><td>temporary fluctuations are</td><td>commence at n1n1n1n1 UTC and cease by n2n2n2n2 UTC</td></tr>
</table>

	TLnnnn	forecast to	commence at the beginning of the trend forecast period and cease by nnnn UTC
	FMnnnn		commence at nnnn UTC and cease by the end of the trend forecast period
	—		commence at the beginning of the trend forecast period and cease by the end of the trend forecast period

AMC1 MET.TR.230(c)(7)(iii) Aerodrome forecasts — Landing (TREND)
USE OF CHANGE GROUPS — TEMPO

(a) When the period of temporary fluctuations in the meteorological conditions is forecast to begin and end wholly within the trend forecast period, the beginning and end of the period of temporary fluctuations should be indicated by using the abbreviations 'FM' and 'TL' respectively, with their associated time groups.

(b) When the period of temporary fluctuations is forecast to commence at the beginning of the trend forecast period but cease before the end of that period, the abbreviation 'FM' and its associated time group should be omitted and only 'TL' and its associated time group should be used.

(c) When the period of temporary fluctuations is forecast to begin during the trend forecast period and cease by the end of that period, the abbreviation 'TL' and its associated time group should be omitted and only 'FM' and its associated time group should be used.

(d) When the period of temporary fluctuations is forecast to commence at the beginning of the trend forecast period and cease by the end of that period, both abbreviations 'FM' and 'TL' and their associated time groups should be omitted and the change indicator 'TEMPO' should be used alone.

AMC1 MET.TR.235(a) Aerodrome forecasts — Take-off
AMENDMENTS TO FORECASTS

(a) The criteria for the issuance of amendments to forecasts for take-off for surface wind direction and speed, temperature and pressure, and any other elements agreed locally should be agreed between the aerodrome meteorological office and the operators concerned.

(b) The criteria should be consistent with the corresponding criteria for special reports established for the aerodrome.

AMC1 MET.TR.215 Area forecasts for low-level flights

(a) In case the AIRMET/low-level forecast concept is not fully implemented, the criteria for amendments should as a minimum include the weather phenomena hazardous to low-level flights, which constitute the criteria for the issuance of AIRMET.

(b) When low-level forecast is issued as an SIGWX chart or as a wind and temperature (W+T) chart, it should, as appropriate, include the cloud/visibility information in the form of visibility/cloud base category which should be provided for well defined sub-

areas and/or route segments. For each sub-area and/or route segment the reference height to which the cloud base information refers should be specified.

(c) The graphical part of an SIGWX chart should depict the weather situation at the beginning of the validity period. Significant changes of initial weather parameters should be depicted together with time intervals determining the duration of expected changes.

GM1 MET.TR.215 Area forecasts for low-level flights
CONTENT OF AREA FORECASTS FOR LOW-LEVEL FLIGHTS

The terms 'ISOL', 'OCNL' and 'FRQ' referring to cumulonimbus and towering cumulus clouds and thunderstorms are given as prescribed in Table 1 of Appendix 1.

AMC1 MET.TR.240(a) Aerodrome warnings and wind shear warnings and alerts
FORMAT OF AERODROME WARNINGS

(a) The additional text should be prepared in abbreviated plain language using approved ICAO abbreviations and numerical values. If no ICAO-approved abbreviations are available, English plain language text should be used.

(b) When quantitative criteria are necessary for the issuance of aerodrome warnings, the criteria should be established by agreement between the aerodrome meteorological office and the users of the warnings.

AMC2 MET.TR.240(a) Aerodrome warnings and wind shear warnings and alerts
SUPPLEMENTARY INFORMATION

Information on wind shear should be included as supplementary information in local routine and special reports and in METAR.

AMC1 MET.TR.240(c) Aerodrome warnings and wind shear warnings and alerts
FORMAT OF WIND SHEAR WARNINGS

(a) The use of text additional to the abbreviations listed in the template in Table 7 of Appendix 1 should be kept to a minimum. The additional text should be prepared in abbreviated plain language using ICAO-approved abbreviations and numerical values.

(b) When an aircraft report is used to prepare a wind shear warning, or to confirm a warning previously issued, the corresponding aircraft report, including the aircraft type, should be disseminated unchanged in accordance with the local arrangements to those concerned.

GM1 MET.TR.240(c) Aerodrome warnings and wind shear warnings and alerts
WIND SHEAR TYPES

Following reported encounters by both arriving and departing aircraft, two different wind shear warnings may exist: one for arriving aircraft and one for departing aircraft.

GM2 MET.TR.240(c) Aerodrome warnings and wind shear warnings and alerts
REPORTING THE INTENSITY OF WIND SHEAR

Specifications for reporting the intensity of wind shear are still under development. It is recognised, however, that pilots, when reporting wind shear, may use the qualifying terms 'moderate', 'strong' or 'severe', based to a large extent on their subjective assessment of the intensity of the wind shear encountered.

GM1 MET.TR.240(e) Aerodrome warnings and wind shear warnings and alerts
DETECTION OF WIND SHEAR

Wind shear conditions are normally associated with the following phenomena:

(a) thunderstorms, microbursts, funnel cloud, tornado or waterspout, and gust fronts;

(b) frontal surfaces;

(c) strong surface winds coupled with local topography;

(d) sea breeze fronts;

(e) mountain waves, including low-level rotors in the terminal area;

(f) low-level temperature inversions.

Chapter 3 — Technical requirements for meteorological stations

GM1 MET.TR.250(a)(2) Meteorological reports and other information
LOCATION INDICATOR

The location indicators and their significations are published in Location Indicators (Doc 7910).

AMC1 MET.TR.250(a)(4) Meteorological reports and other information
AUTOMATED REPORTING

Local routine and special reports and METAR from automatic observing systems should be identified with the word 'AUTO'.

AMC1 MET.TR.250(a)(12) Meteorological reports and other information
SUPPLEMENTARY INFORMATION — WEATHER PHENOMENA TO BE REPORTED BY A SEMI-AUTOMATIC OBSERVING SYSTEM

In local routine and special reports and in METAR reported by a semi-automatic observing system, the following recent weather phenomena should be reported, up to a maximum of three groups, in the supplementary information:

(a) freezing precipitation;

(b) moderate or heavy precipitation, including showers thereof;

(c) blowing snow;

(d) duststorm, sandstorm;

(e) thunderstorm;

(f) funnel cloud, tornado or water spout;

(g) volcanic ash.

AMC2 MET.TR.250(a)(12) Meteorological reports and other information
SUPPLEMENTARY INFORMATION — WEATHER PHENOMENA TO BE REPORTED BY AN AUTOMATIC OBVSERVING SYSTEM

(a) In local routine and special reports and in METAR reported by an automatic observing system, the following recent weather phenomena should be reported, up to a maximum of three groups, in the supplementary information:

(1) freezing precipitation;

(2) moderate or heavy precipitation, including showers thereof;

(3) thunderstorm;

(4) unknown precipitation (UP).

(b) In local routine and special reports when reported by a semi-automatic observing system, the following significant meteorological conditions, or combinations thereof, should be reported in the supplementary information:

(1) cumulonimbus clouds (CB);

(2) thunderstorm (TS);

(3) moderate or severe turbulence (MOD TURB, SEV TURB);

(4) wind shear (WS);

(5) hail (GR);

(6) severe squall line (SEV SQL);

(7) moderate or severe icing (MOD ICE, SEV ICE);

(8) freezing precipitation (FZDZ, FZRA);

(9) severe mountain waves (SEV MTW);

(10) duststorm, sandstorm (DS, SS);

(11) blowing snow (BLSN);

(12) funnel cloud (tornado or water spout) (FC).

(c) The location of the condition should be indicated. Where necessary, additional information should be included using abbreviated plain language.

AMC3 MET.TR.250(a)(12) Meteorological reports and other information
SUPPLEMENTARY INFORMATION — WIND SHEAR

Information on wind shear should be included as supplementary information in local routine and special reports and in METAR, where local circumstances so warrant.

AMC4 MET.TR.250(a)(12) Meteorological reports and other information
SUPPLEMENTARY INFORMATION — METAR

In METAR, the following information should be included in the supplementary information:

(a) information on sea-surface temperature and the state of the sea or the significant wave height from aeronautical meteorological stations established on offshore structures in support of helicopter operations; and

(b) information on the state of the runway provided by the appropriate airport authority.

AMC5 MET.TR.250(a)(12) Meteorological reports and other information
SUPPLEMENTARY INFORMATION — OBSERVATIONS

(a) Observations made at aerodromes should include the available supplementary information concerning significant meteorological conditions, particularly those in the approach and climb-out areas.

(b) Where practicable, the information should identify the location of the meteorological condition.

GM1 AMC1 & 2 MET.TR.250(a)(12) Meteorological reports and other information
SUPPLEMENTARY INFORMATION — WEATHER PHENOMENA TO BE REPORTED

Recent weather phenomena is understood as being the weather phenomena observed at the aerodrome during the period since the last issued routine report or last hour, whichever is the shorter, but not at the time of observation.

GM2 MET.TR.250(a)(12) Meteorological reports and other information
SUPPLEMENTARY INFORMATION — LOCAL CIRCUMSTANCES

Local circumstances include, but are not necessarily limited to, wind shear of non-transitory nature such as might be associated with low-level temperature inversions or local topography.

GM1 MET.TR.250(b) & (c) Meteorological reports and other information
EXAMPLE OF METAR AND LOCAL ROUTINE REPORT

a) Local routine report (same location and weather conditions as METAR):

MET REPORT YUDO 221630Z WIND 240/4KT VIS 600M RVR RWY 12 TDZ 1000M MOD DZ FG CLD SCT 1000FT OVC 2000FT T17 DP16 QNH 1018HPA TREND BECMG TL1700 VIS 800M FG BECMG AT1800 VIS 10KM NSW

b) METAR for YUDO (Donlon/International)*:

METAR YUDO 221630Z 24004KT 0600 R12/1000U DZ FG SCT010 OVC020 17/16 Q1018 BECMG TL1700 0800 FG ECMG AT 1800 9999 NSW

Meaning of both reports:

Routine report for Donlon/International* issued on the 22nd of the month at 16.30 UTC; surface wind direction 240 degrees; wind speed 4 knots; visibility (along the runway(s) in the local routine report; prevailing visibility in METAR) 600 metres; runway visual range representative of the touchdown zone for runway 12 is 1 000 metres and the runway visual range values have shown an upward tendency during previous 10 minutes (Runway visual range tendency to be included in METAR only); and moderate drizzle and fog; scattered cloud at 1000 feet; overcast at 2000 feet; air temperature 17 degrees Celsius; dew-point temperature 16 degrees Celsius; QNH 1 0 18 hectopascals; trend during next 2 hours, visibility (along the runway(s) in the local routine report; prevailing visibility in METAR) becoming 800 metres in fog by 17.00 UTC; at 18.00 UTC visibility (along the runway(s) in the local routine report; prevailing visibility in METAR) becoming 10 kilometres or more and nil significant weather.

** Fictitious location*

GM2 MET.TR.250(b)(1) Meteorological reports and other information
EXAMPLE OF LOCAL SPECIAL REPORT

Local special report:

SPECIAL YUDO 151115Z WIND 050/25KT MAX37 MNM10 VIS 1200M RVR RWY 05 ABV 1800M HVY TSRA CLD BKN CB 500FT T25 DP22 QNH 1018HPA TREND TEMPO TL1200 VIS 600M BECMG AT1200 VIS 8KM NSW NSC

Meaning:

Special report for Donlon/International* issued on the 15th of the month at 11.15 UTC; surface wind direction 050 degrees; wind speed 25 knots gusting between 10 and 37 knots; visibility 1 200 metres along the runway; Runway visual range above 1 800 metres at the threshold on runway 05; thunderstorm with heavy rain; broken cumulonimbus cloud at 500 feet; air temperature 25 degrees Celsius; dew-point temperature 22 degrees Celsius; QNH 1 008 hectopascals; trend during next 2 hours, visibility along the runway temporarily 600 metres from 1115 to 1200, becoming at 12.00 UTC visibility along the runway 8 kilometres, thunderstorm ceases and nil significant weather and nil significant cloud.

** Fictitious location*

GM3 MET.TR.250(b)(1) Meteorological reports and other information
EXAMPLE OF VOLCANIC ACTIVITY REPORT

VOLCANIC ACTIVITY REPORT YUSB* 231500 MT TROJEEN* VOLCANO N5605 W12652 ERUPTED 231445 LARGE ASH CLOUD EXTENDING TO APPROX 30000 FEET MOVING SW

Meaning:

Volcanic activity report issued by Siby/Bistock meteorological station at 15.00 UTC on the 23rd of the month. Mt. Trojeen volcano 56 degrees 5 minutes north 126 degrees 52 minutes west erupted at 14.45 UTC on the 23rd; a large ash cloud was observed extending to approximately 30 000 feet and moving in a south-westerly direction.

** Fictitious location*

GM1 MET.TR.250(c)(1) Meteorological reports and other information
FORMAT OF METAR

The METAR code form is contained in the WMO Publication No 306, Manual on Codes, Volume I.1, Part A — Alphanumeric Codes.

AMC1 MET.TR.250(c)(2) Meteorological reports and other information

METAR should be disseminated, under bilateral agreements between Member States, in digital form.

GM1 MET.TR.250(c)(2) Meteorological reports and other information

METAR — FORM

(a) When METAR is disseminated in digital form, this is in addition to the METAR code form.

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

GM1 MET.TR.250(d)(5) Meteorological reports and other information
NOISE ABATEMENT

Noise abatement procedures are those in accordance with 7.2.7 of the PANS-ATM (Doc 4444).

AMC1 MET.TR.252(a)(1) Reporting of meteorological elements
SURFACE WIND OBSERVATIONS

(a) When local routine and special reports are used for departing aircraft, the surface wind observations for these reports should be representative of conditions along the runway; when local routine and special reports are used for arriving aircraft, the surface wind observations for these reports should be representative of the touchdown zone.

(b) For METAR, the surface wind observations should be representative of the conditions above the whole runway where there is only one runway and the whole runway complex where there is more than one runway.

GM1 MET.TR.252(a)(3)(iii) Reporting of meteorological elements
NOISE ABATEMENT PROCEDURE

The noise abatement procedures are those in accordance with 7.2.6 of the PANS-ATM (Doc 4444).

AMC1 MET.TR.252(b)(1) Reporting of meteorological elements
VISIBILITY — VALUES

In local routine and special reports, when instrumented systems are used for the measurement of visibility:

(a) if the visibility is observed from more than one location along the runway, the values representative of the touchdown zone should be reported first, followed, as necessary, by the values representative of the mid-point and stop-end of the runway, and the locations for which these values are representative should be indicated; and

(b) when there is more than one runway in use and the visibility is observed related to these runways, the available visibility values for each runway should be reported, and the runways to which the values refer should be indicated.

AMC2 MET.TR.252(b)(1) Reporting of meteorological elements
VISIBILITY

In METAR, visibility should be reported as prevailing visibility. When the visibility is not the same in different directions and:

(a) when the lowest visibility is different from the prevailing visibility, and 1) less than 1 500 m or 2) less than 50 per cent of the prevailing visibility, and less than 5 000 m; the lowest visibility observed should also be reported and, when possible, its general direction in relation to the aerodrome reference point indicated by reference to one of the eight points of the compass;

(b) if the lowest visibility is observed in more than one direction, then the most operationally significant direction should be reported; and

(b) when the visibility is fluctuating rapidly, and the prevailing visibility cannot be determined, only the lowest visibility should be reported, with no indication of direction.

AMC1 MET.TR.252(c)(1) Reporting of meteorological elements
RVR — THRESHOLD LIMIT

(a) 50 m should be considered the lower limit, and 2 000 m the upper limit for RVR.

(b) Beyond these limits, local routine and special reports and METAR should merely indicate that the runway visual range is less than 50 or more than 2 000 m.

AMC1 MET.TR.252(c)(3) Reporting of meteorological elements
RVR — VALUES

(a) In METAR, when instrumented systems are used for the assessment of RVR, the variations in RVR during the 10-minute period immediately preceding the observation should be included.

(b) If the RVR values during the 10-minute period have shown a distinct tendency, such that the mean during the first 5 minutes varies by 100 m or more from the mean during the second 5 minutes of the period.

(c) When the variation of the RVR values shows an upward or downward tendency, this should be indicated by the abbreviation 'U' or 'D', respectively. In cases when actual fluctuations during the 10-minute period show no distinct tendency, this should be indicated using the abbreviation 'N'.

(d) When indications of tendency are not available, no abbreviations should be included.

AMC1 MET.TR.252(c)(4) Reporting of meteorological elements
RVR — TOUCHDOWN ZONE VALUES

In METAR:

(a) only the value representative of the touchdown zone should be reported and no indication of location on the runway should be included; and

(b) where there is more than one runway available for landing, touchdown zone runway visual range values should be included for all such runways, up to a maximum of four, and the runways to which the values refer should be indicated.

AMC1 MET.TR.252(c)(4)(iii) Reporting of meteorological elements
RVR — ASSESSMENTS

RVR assessments should be representative of:

(a) the touchdown zone and the mid-point of the runway intended for Category II instrument approach and landing operations; and

(b) the touchdown zone, mid-point, and stop-end of the runway intended for Category III instrument approach and landing operations.

AMC1 MET.TR.252(d)(1) Reporting of meteorological elements
REPORT BY AUTOMATIC AND SEMI-AUTOMATIC OBSERVING SYSTEM

(a) In local routine and special reports and in METAR reported by an automatic observing system, the following types of present weather phenomena should be reported, using their respective abbreviations and relevant criteria, as appropriate:

(1) Precipitation:

(i) drizzle (DZ);

(ii) rain (RA);

(iii) snow (SN).

(2) Obscurations (hydrometeors).

(3) Fog (FG):

— reported when visibility is less than 1 000 m, except when qualified by 'MI', 'BC', 'PR' or 'VC'.

(4) Mist (BR):

— reported when visibility is at least 1 000 m, but not more than 5 000 m.

(5) Obscurations (lithometeors).

Haze (HZ) should be used when the obscuration consists predominantly of lithometeors and the visibility is 5 000 m or less.

(6) Unidentified precipitation (UP).

(7) Temporary failure of system/sensor:

— the present weather should be replaced by '//' when it cannot be observed due to a temporary failure of the system/sensor.

(b) In local routine and special reports and in METAR reported by a semi-automatic observing system, the following types of present weather phenomena should be reported, using their respective abbreviations and relevant criteria, as appropriate:

(1) Precipitation:

(i) drizzle (DZ);

(ii) rain (RA);

(iii) snow (SN);

(iv) snow grains (SG);

(v) ice pellets (PL);

(vi) hail (GR):

— reported when diameter of largest hailstones is 5 mm or more;

(vii) small hail and/or snow pellets (GS)

— reported when diameter of largest hailstones is less than 5 mm.

(2) Obscurations (hydrometeors):

(i) fog (FG)

— reported when visibility is less than 1 000 m, except when qualified by 'MI', 'BC', 'PR' or 'VC' (to be changed).

(ii) mist (BR):

— Reported when visibility is at least 1 000 m, but not more than 5 000 m;

(3) Obscurations (lithometeors)

The following should be used only when the obscuration consists predominantly of lithometeors and the visibility is 5 000 m or less, except 'SA' when qualified by 'DR' to be changed and volcanic ash:

(i) sand (SA);

(ii) dust (widespread) (DU);

(iii) haze (HZ);

(iv) smoke (FU);

(v) volcanic ash (VA).

(4) Other phenomena:

(i) dust/sand whirls (dust devils) (PO);

(ii) squall (SQ);

(iii) funnel cloud (tornado or waterspout) (FC);

(iv) duststorm (DS);

(v) sandstorm (SS).

AMC2 MET.TR.252(d)(1) Reporting of meteorological elements
TYPES OF PRESENT WEATHER PHENOMENA FOR AUTOMATED REPORTS

In automated local routine and special reports and in METAR, in addition to drizzle (DZ), rain (RA) and snow (SN), the abbreviation UP should be used for unidentified precipitation when the type of precipitation cannot be identified by the automatic observing system.

AMC1 MET.TR.252(d)(3) Reporting of meteorological elements
TYPES OF PRESENT WEATHER PHENOMENA

In local routine and special reports and in METAR, only when reported by a semi-automatic observing system, the following characteristics of present weather phenomena, as necessary, should be reported using their respective abbreviations and relevant criteria, as appropriate:

(a) Shower (SH)

— Used to report showers. Showers observed in the vicinity of the aerodrome should be reported as 'VCSH' without qualification regarding type or intensity of precipitation.

(b) Blowing (BL)

— Used with types of present weather phenomena raised by the wind to a height of 6 ft (2 m) or more above the ground.

(c) Low drifting (DR)

— Used with types of present weather phenomena raised by the wind to less than 6 ft (2 m) above ground level.

(d) Shallow (MI)

— Less than 6 ft (2 m) above ground level.

(e) Patches (BC)

— Fog patches randomly covering the aerodrome.

(f) Partial (PR)

— A substantial part of the aerodrome covered by fog while the remainder is clear.

AMC2 MET.TR.252(d)(3) Reporting of meteorological elements
PRESENT WEATHER PHENOMENA — INTENSITY

In local routine and special reports, the relevant intensity or, as appropriate, the proximity to the aerodrome of the reported present weather phenomena should be indicated as follows:

(local routine and special reports)

Light	FBL	–
Moderate	MOD	(no indication)
Heavy	HVY	+

— Used with types of present weather phenomena. Light intensity should be indicated only for precipitation.

Vicinity (VC)

— Between approximately 8 and 16 km of the aerodrome reference point and used only in METAR with present weather when not reported under AMC1 MET.TR.252(d)(3) and AMC3 MET.TR.255(d)(3)(i).

AMC1 MET.TR.252(d)(3)(i) Reporting of meteorological elements
PRESENT WEATHER PHENOMENA — CHARACTERISTICS

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

Thunderstorm (TS)

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

Freezing (FZ)

— Supercooled water droplets or precipitation, used with types of present weather phenomena.

GM1 MET.TR.252(d)(3)(i) Reporting of meteorological elements
PRESENT WEATHER PHENOMENA — LIGHTNING DETECTION EQUIPMENT

(a) At aerodromes with human observers, lightning detection equipment may supplement human observations.

(b) For aerodromes with automatic observing systems, guidance on the use of lightning detection equipment intended for thunderstorm reporting is given in the Manual on Automatic Meteorological Observing Systems at Aerodromes (Doc 9837).

AMC1 MET.TR.252(e)(1) Reporting of meteorological elements
CLOUD — REPORTING

At aerodromes where low-visibility procedures are established for approach and landing, as agreed between the meteorological station and the appropriate ATS unit, in local routine and special reports, the height of cloud base should be reported in steps of 50 ft up to and including 300 ft (90 m) and in steps of 100 ft (30 m) between 300 ft (90 m) and 10 000 ft (3 000 m), and the vertical visibility in steps of 50 ft (15 m) up to and including 300 ft (90 m) and in steps of 100 ft (30 m) between 300 ft (90 m) and 2 000 ft (600 m).

AMC2 MET.TR.252(e)(1) Reporting of meteorological elements
CLOUD — REPORTING

In local routine and special reports and in METAR:

(a) Cloud amount should be reported using the abbreviations 'FEW' (1 to 2 oktas), 'SCT' (3 to 4 oktas), 'BKN' (5 to7 oktas) or 'OVC' (8 oktas).

(b) Cumulonimbus clouds and towering cumulus clouds should be indicated as 'CB' and 'TCU', respectively.

(c) The vertical visibility should be reported in steps of 100 ft (30 m) up to 2 000 ft (600 m).

(d) If there are no clouds of operational significance and no restriction on vertical visibility and the abbreviation 'CAVOK' is not appropriate, the abbreviation 'NSC' should be used.

(e) When several layers or masses of cloud of operational significance are observed, their amount and height of cloud base should be reported in increasing order of the height of cloud base, and in accordance with the following criteria:

(1) the lowest layer or mass, regardless of amount to be reported as FEW, SCT, BKN or OVC, as appropriate;

(2) the next layer or mass, covering more than 2/8 to be reported as SCT, BKN or OVC, as appropriate;

(3) the next higher layer or mass, covering more than 4/8 to be reported as BKN or OVC, as appropriate; and

(4) cumulonimbus and/or towering cumulus clouds, whenever observed and not reported in (1) to (3).

(f) When the cloud base is diffuse or ragged or fluctuating rapidly, the minimum height of cloud base, or cloud fragments, should be reported.

(g) When an individual layer (mass) of cloud is composed of cumulonimbus and towering cumulus clouds with a common cloud base, the type of cloud should be reported as cumulonimbus only.

AMC1 MET.TR.252(e)(3) Reporting of meteorological elements
CLOUD — AUTOMATED REPORTS

When an automatic observing system is used to report local routine and special reports and METAR:

(a) when the cloud type cannot be observed, the cloud type in each cloud group should be replaced by '///';

(b) when no clouds are detected, it should be indicated by using the abbreviation 'NCD'; and

(c) when cumulonimbus clouds or towering cumulus clouds are detected and the cloud amount and/or the height of cloud base cannot be observed, the cloud amount and/or the height of cloud base should be replaced by '///'.

(d) The vertical visibility should be replaced by '///' when the sky is obscured and the value of the vertical visibility cannot be determined due to a temporary failure of the system/sensor.

GM1 MET.TR.255 Observing meteorological elements
GENERAL

The World Meteorological Organization promulgates practices, procedures and specifications for the exposure, operation and maintenance of meteorological instruments at aeronautical meteorological stations.

AMC1 MET.TR.255(a) Observing meteorological elements

The mean values of, and significant variations in, the surface wind direction and speed for each sensor should be derived and displayed by automated equipment.

GM1 MET.TR.255(a) Observing meteorological elements
SELECTED CRITERIA APPLICABLE TO AERODROME REPORTS

Selected criteria applicable to meteorological information related to surface wind, visibility, RVR, present weather, clouds, air and dew-point temperatures, atmospheric pressure and supplementary information for inclusion in aerodrome reports are given the tabular form in Attachment C to ICAO Annex 3.

GM2 MET.TR.255(a) Observing meteorological elements
SURFACE WIND OBSERVATIONS FOR TAKE-OFF AND LANDING

Since, in practice, the surface wind cannot be measured directly on the runway, surface wind observations for take-off and landing are expected to be the best practicable indication of the winds which an aircraft will encounter during take-off and landing.

AMC1 MET.TR.255(a)(1) Observing meteorological elements
SITING

Reported surface wind should be representative of a wind at a height of 30 ± 3 ft (10 ± 1 m) above the ground.

AMC2 MET.TR.255(a)(1) Observing meteorological elements
SITING

(a) Representative surface wind observations should be obtained by the use of sensors appropriately sited.

(b) Sensors for surface wind observations for local routine and special reports should be sited to give the best practicable indication of conditions along the runway and touchdown zones.

(c) At aerodromes where topography or prevalent weather conditions cause significant differences in surface wind at various sections of the runway, additional sensors should be provided.

GM1 MET.TR.255(a)(1) Observing meteorological elements
SITING

Specifications concerning the siting of equipment and installations on operational areas, aiming at reducing the hazard to aircraft to a minimum, are contained in the EASA CS ADR-DSN.T.915 'Siting of equipment and installations on operational areas'.

AMC1 MET.TR.255(a)(2) Observing meteorological elements
REPORTING VARIATIONS FROM THE MEAN WIND SPEED

The averaging period for measuring variations from the mean wind speed (gusts) reported in accordance with MET.TR.252 (a)(3)(iii) should be 3 seconds for local routine and special reports and for METAR and for wind displays used for depicting variations from the mean wind speed (gusts) in ATS units.

GM1 MET.TR.255(a)(2)(ii) Observing meteorological elements
MARKED DISCONTINUITY

A marked discontinuity occurs when there is an abrupt and sustained change in wind direction of 30° or more, with a wind speed of 10 kt (5 m/s) before or after the change, or a change in wind speed of 10 kt (5 m/s) or more, lasting at least 2 minutes.

AMC1 MET.TR.255(a)(3) Observing meteorological elements
OPERATIONALLY DESIRABLE ACCURACY OF MEASUREMENT OR OBSERVATION FOR WIND

The reported direction and speed of the mean surface wind, as well as variations from the mean surface wind, should meet the operationally desirable accuracy of measurement as given in Attachment A to ICAO Annex 3.

AMC1 MET.TR.255(b)(1) Observing meteorological elements
VISIBILITY — GENERAL

(a) When instrumented systems are used for the measurement of visibility, it should be measured at a height of approximately 7.5 ft (2.5 m) above the runway.

(b) When local routine and special reports are used for departing aircraft, the visibility observations for these reports should be representative of conditions along the runway.

(c) When local routine and special reports are used for arriving aircraft, the visibility observations for these reports should be representative of the touchdown zone of the runway.

(d) For METAR, the visibility observations should be representative of the aerodrome.

AMC1 MET.TR.255(b)(2) Observing meteorological elements
VISIBILITY — SITING

(a) When instrumented systems are used for the measurement of visibility, representative visibility observations should be obtained by the use of sensors appropriately sited.

(b) Sensors for visibility observations for local routine and special reports should be sited to give the best practicable indications of visibility along the runway and touchdown zone.

AMC1 MET.TR.255(b)(3) Observing meteorological elements
VISIBILITY — DISPLAYS

(a) When instrumented systems are used for the measurement of visibility, visibility displays relating to each sensor should be located in the meteorological station with corresponding displays in the appropriate ATS units.

(b) The displays in the meteorological station and in the ATS units should relate to the same sensors, and where separate sensors are required as specified in AMC2 MET.TR.255(a)(1), the displays should be clearly marked to identify the area, e.g. runway and section of runway, monitored by each sensor.

AMC1 MET.TR.255(b)(4) Observing meteorological elements

When instrumented systems are used for the measurement of visibility, their output should be updated at least every 60 seconds to permit provision of current representative values.

AMC1 MET.TR.255(c) Observing meteorological elements
RVR ASSESSMENT

Runway visual range (RVR) should be assessed:

(a) at a height of approximately 7.5 ft (2.5 m) above the runway for instrument systems or assessed at a height of approximately 15 ft (5 m) above the runway by a human observer;

(b) at a lateral distance from the runway centre line of not more than 120 m.

AMC1 MET.TR.255(c)(1) Observing meteorological elements
RVR — SITING

(a) The site for observations to be representative of the touchdown zone should be located about 300 m along the runway from the threshold.

(b) The sites for observations to be representative of the mid-point and stop-end of the runway should be located at a distance of 1 000 to 1 500 m along the runway from the threshold and at a distance of about 300 m from the other end of the runway.

(c) The exact position of these sites and, if necessary, additional sites should be decided after considering aeronautical, meteorological and climatological factors such as long runways, swamps and other fog-prone areas.

GM1 MET.TR.255(c)(1) Observing meteorological elements
ASSESSMENT OF RUNWAY VISUAL RANGE

A detailed understanding of the assessment of RVR is described in ICAO Doc 9328 Manual on 'RVR — Observing and reporting practices'.

AMC1 MET.TR.255(c)(2) Observing meteorological elements
RVR — RUNWAY LIGHT INTENSITY

(a) Instrument systems should consider the runway light intensity.

(b) When instrumented systems are used for the assessment of RVR, computations should be made separately for each available runway.

(c) RVR should not be computed for a light intensity of 3 per cent or less of the maximum light intensity available on a runway.

(d) For local routine and special reports, the light intensity to be used for the computation should be:

(1) for a runway with the lights switched on, the light intensity actually in use on that runway; and

(2) 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.

(e) In METAR, the RVR should be based on the maximum light intensity available on the runway.

GM1 MET.TR.255(c)(2) Observing meteorological elements
RVR — USE OF INSTRUMENTED SYSTEMS

(a) Since accuracy can vary from one instrument design to another, performance characteristics are to be checked before selecting an instrument for assessing runway visual range.

(b) The calibration of a forward-scatter meter has to be traceable and verifiable to a transmissometer standard, whose accuracy has been verified over the intended operational range.

(c) Guidance on the use of transmissometers and forward-scatter meters in instrumented Runway Visual Range systems is given in the Manual of Runway Visual Range Observing and Reporting Practices (Doc 9328).

AMC1 MET.TR.255(c)(3) Observing meteorological elements
RVR — DISPLAY

(a) Where RVR is determined by human observers, it should be reported to the appropriate local ATS units, whenever there is a change in the value to be reported in accordance with the reporting scale.

(b) The transmission of such reports should normally be completed within 15 seconds after the termination of the observation.

GM1 MET.TR.255(c)(4)(ii)(B) Observing meteorological elements
RVR — AVERAGING

A marked discontinuity occurs when there is an abrupt and sustained change in RVR, lasting at least 2 minutes, which reaches or passes through the values 800, 550, 300 and 175.

AMC1 MET.TR.255(d)(1) Observing meteorological elements
PRESENT WEATHER — GENERAL

(a) For local routine and special reports, the present weather information should be representative of the conditions at the aerodrome.

(b) For METAR, the present weather information should be representative of the conditions at the aerodrome and, for certain specified present weather phenomena, in its vicinity.

AMC1 MET.TR.255(d)(2) Observing meteorological elements
PRESENT WEATHER — SITING

When instrumented systems are used for observing present weather phenomena listed under AMC1 MET.TR.252(d)(1), AMC1 MET.TR.252(d)(3) and AMC3 MET.TR.252(d)(3)(i), representative information should be obtained by the use of sensors appropriately sited.

AMC1 MET.TR.255(e) Observing meteorological elements
CLOUD — GENERAL

(a) Cloud observations for local routine and special reports should be representative of the runway threshold(s) in use.

(b) Cloud observations for METAR should be representative of the aerodrome and its vicinity.

AMC1 MET.TR.255(e)(2) Observing meteorological elements
CLOUD — SITING

(a) 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.

(b) 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 height of cloud base and cloud amount at the middle marker site of the instrument landing system or, at aerodromes where a middle marker beacon is not used, at a distance of 3 000 to 4 000 ft (900 to 1 200 m) from the landing threshold at the approach end of the runway.

GM1 MET.TR.255(e)(2) Observing meteorological elements
CLOUD — SITING

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

AMC1 MET.TR.255(e)(3) Observing meteorological elements
DISPLAY

(a) When automated equipment is used for the measurement of the height of cloud base, height of cloud base display(s) should be located in the meteorological station with corresponding display(s) in the appropriate ATS units.

(b) The displays in the meteorological station and in the ATS units should relate to the same sensor, and where separate sensors are required, the displays should clearly identify the area monitored by each sensor.

AMC1 MET.TR.255(f) Observing meteorological elements
AIR TEMPERATURE AND DEW-POINT TEMPERATURE — GENERAL

(a) Observations of air temperature and dew-point temperature for local routine and special reports and METAR should be representative of the whole runway complex.

(b) When automated equipment is used for the measurement of air temperature and dew-point temperature, air temperature and dew-point temperature displays should be located in the meteorological station with corresponding displays in the appropriate ATS units.

(c) The displays in the meteorological station and in the ATS units should relate to the same sensors.

AMC1 MET.TR.255(g)(3) Observing meteorological elements
ATMOSPHERIC PRESSURE — REFERENCE LEVEL

(a) The reference level for the computation of QFE should be the aerodrome elevation.

(b) For non-precision approach runways, whose thresholds are 7 ft (2 m) or more below the aerodrome elevation, and for precision approach runways, the QFE, if required, should refer to the relevant threshold elevation.

Chapter 4 — Technical requirements for Volcanic Ash Advisory Centres (VAACs)

GM1 MET.TR.260(a) Volcanic Ash Advisory Centre responsibilities
EXAMPLE OF ADVISORY MESSAGE FOR VOLCANIC ASH

FVFE01 RJTD 230130
VA ADVISORY

DTG:	20080923/0130Z
VAAC:	TOKYO
VOLCANO:	KARYMSKY 1000-13
PSN:	N5403 E15927
AREA:	RUSSIA
SUMMIT ELEV:	1536M

ADVISORY NR:	2008/4
INFO SOURCE:	MTSAT-1R KVERT KEMSD
AVIATION COLOUR CODE:	RED
ERUPTION DETAILS:	ERUPTION AT 20080923/0000Z FL300 REPORTED
OBS VA DTG:	23/0100Z
OBS VA CLD:	)/300 N5400 E15930 – N5400 E16100 – N5300 E15945 MOV SE 20KT SFC/FL200 N5130 E16130 – N5130 E16230 – N5230 E16230 – N5230 E16130 MOV SE 15KT
FCST VA CLD +6 HR:	00Z FL250/350 N5130 E16030 – N5130 E16230 – N5330 E16230 – N5330 E16030 SFC/FL180 N4830 E16330 – N4830 E16630 – N5130 E16630 – N5130 E16330
FCST VA CLD +12 HR:	00Z SFC/FL270 N4830 E16130 – N4830 E16600 – N5300 E16600 – N5300 E16130
FCST VA CLD +18 HR:	23/1900Z NO VA EXP
RMK:	LATEST REP FM KVERT (0120Z) INDICATES ERUPTION HAS CEASED. TWO DISPERSING VA CLD ARE EVIDENT ON SATELLITE IMAGERY
NXT ADVISORY:	20080923/0730Z

GM1 MET.TR.260(b)(2) Volcanic Ash Advisory Centre responsibilities
BUFR CODE

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

Chapter 5 — Technical requirements for World Area Forecast Centres (WAFCs)

AMC1 MET.TR.265(a) World Area Forecast Centre responsibilities
GRIDDED GLOBAL FORECASTS

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

AMC2 MET.TR.265(a) World Area Forecast Centre responsibilities
GRIDDED GLOBAL FORECASTS

The telecommunications facilities used for the supply of world area forecast system products should be continuous and should not have interruptions exceeding 10 minutes during any period of 6 hours.

GM1 MET.TR.265(a) World Area Forecast Centre responsibilities
GRIB CODE

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

GM2 MET.TR.265(a) World Area Forecast Centre responsibilities
BUFR CODE

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

GM1 MET.TR.265(b)(3) World Area Forecast Centre responsibilities
GRID POINT FORECASTS

(a) Layers centred at a flight level referred to in (v) and (vii) have a depth of 100 hPa.

(b) Layers centred at a flight level referred to in (vi) have a depth of 50 hPa.

AMC1 MET.TR.265(d) World Area Forecast Centre responsibilities
MEDIUM-LEVEL SIGWX FORECASTS

The medium-level SIGWX forecasts provided for flight levels between 100 and 250 for limited geographical areas should cover the areas as shown in Table 2 of Appendix 1.

Chapter 6 — Technical requirements for Tropical Cyclone Advisory Centres (TCACs)

AMC1 MET.TR.270(b) Tropical Cyclone Advisory Centre responsibilities
FORMAT OF ADVISORY INFORMATION ON TROPICAL CYCLONES

The tropical cyclone advisory information listed in Table 9 of Appendix 1, when prepared in graphical format, should be as specified in Appendix 1 of ICAO Annex 3 and should be issued using:

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

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

GM1 MET.TR.270(b) Tropical Cyclone Advisory Centre responsibilities
CODE FOR ADVISORY INFORMATION ON TROPICAL CYCLONES

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

GM2 MET.TR.270(b) Tropical Cyclone Advisory Centre responsibilities
EXAMPLE FOR ADVISORY MESSAGE FOR TROPICAL CYCLONES

TC ADVISORY

DTG:	20040925/1600Z
TCAC:	YUFO
TC:	GLORIA
NR:	01
PSN:	N2706 W07306
MOV:	NW 12KT
C:	965HPA
MAX WIND:	73KT
FCST PSN +6 HR:	25/2200Z N2748 W07350
FCST MAX WIND +6 HR:	73KT
FCST PSN +12 HR:	26/0400Z N2830 W07430
FCST MAX WIND +12 HR:	73KT

FCST PSN +18 HR:	26/1000Z N2852 W07500
FCST MAX WIND +18 HR:	70KT
FCST PSN +24 HR:	26/1600Z N2912 W07530
FCST MAX WIND +24 HR:	60KT
RMK:	NIL
NXT MSG:	20040925/2000Z

4. References

4.1. Affected regulations

— Commission Implementing Regulation (EU) No 1035/2011 of 17 October 2011 laying down common requirements for the provision of air navigation services and amending Regulations (EC) No 482/2008 and (EU) No 691/2010 (OJ 271, 18.10.2011, p. 23).

4.2. Affected AMC and GM

None.

4.3. Reference documents

— Regulation (EC) No 1070/2009 of the European Parliament and of the Council of 21 October 2009 amending Regulations (EC) No 549/2004, (EC) No 550/2004, (EC) No 551/2004 and (EC) No 552/2004 in order to improve the performance and sustainability of the European aviation system (OJ L 300, 14.11.2009, p. 34).

— ICAO Documents:

- Doc 8896: Manual of aeronautical meteorological practices;
- Doc 4444: Procedures for air navigation services (Pans-ATM);
- Doc 7754: European Air Navigation Plan;
- Doc 9837: Manual on automatic meteorological observing systems at aerodromes;
- Doc 9817: Manual on Low-Level Wind Shear and Turbulence;
- Doc 9377 Manual on Coordination between air traffic services, aeronautical information services and meteorological services:
- EUR Doc 014: EUR SIGMET and AIRMET Guide
- EUR Doc 019: Volcanic Ash Contingency Plan — EUR Region;
- Any other ICAO document relevant to this task.

— WMO Documents:

- Any Technical Regulations, Manuals, Guides and Technical documentation relevant to this task.

5. Appendices

I. Templates and tables related to Subpart B of Annex IV (Part-MET)

The following tables and templates are referred to in the draft Implementing Rules.

Appendix I to SUBPART B — TECHNICAL REQUIREMENTS FOR THE PROVISION OF METEOROLOGICAL SERVICES (MET.TR)

Table 1 - 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 1a of this appendix.

Element as specified in Chapter 5 and Appendix 6	*Detailed content*	*Template(s)*			*Examples*
		SIGMET	*AIRMET*	*SPECIAL AIR-REPORT*	
Location indicator of FIR/CTA (M)	ICAO location indicator of the ATS unit serving the FIR or CTA to which the SIGMET/AIRMET refers (M)	nnnn		—	YUCC YUDD
Identification (M)	Message identification and sequence number (M)	SIGMET [nn]n	AIRMET [nn]n	ARS	SIGMET 5 SIGMET A3 AIRMET 2 ARS
Validity period (M)	Day-time groups indicating the period of validity in UTC (M)	VALID nnnnnn/nnnnnn		—	VALID 221215/221600 VALID 101520/101800 VALID 251600/252200
Location indicator of MWO (M)	Location indicator of MWO originating the message with a separating hyphen (M)	nnnn–			YUDO– YUSO–
Name of the FIR/CTA *or* aircraft identification (M)	Location indicator and name of the FIR/CTA for which the SIGMET/AIRMET is issued *or* aircraft radiotelephony call sign (M)	nnnn nnnnnnnnnn FIR[/UIR] *or* nnnn nnnnnnnnnn CTA	nnnn nnnnnnnnnn FIR[/n]	nnnnnn	YUCC AMSWELL FIR YUDD SHANLON FIR/UIR YUCC AMSWELL FIR/2 YUDD SHANLON FIR VA812
IF THE SIGMET IS TO BE CANCELLED, SEE DETAILS AT THE END OF THE TEMPLATE.					
Phenomenon (M)	Description of phenomenon causing the issuance of SIGMET/AIRMET (C)	OBSC TS[GR] EMBD TS[GR] FRQ TS[GR] SQL TS[GR] TC nnnnnnnnnn *or* NN	SFC WSPD nn[n]MPS (*or* SFC WSPD nn[n]KT) SFC VIS nnnnM (nn)	TS TSGR SEV TURB SEV ICE	SEV TURB FRQ TS OBSC TSGR EMBD TSGR TC GLORIA

Element as specified in Chapter 5 and Appendix 6	*Detailed content*	*Template(s)*			*Examples*
		SIGMET	*AIRMET*	*SPECIAL AIR-REPORT*	
		SEV TURB SEV ICE SEV ICE (FZRA) SEV MTW HVY DS HVY SS [VA ERUPTION] [MT] [nnnnnnnnnn] [PSN Nnn[nn] *or* Snn[nn] Ennn[nn] *or* Wnnn[nn]] VA CLD RDOACT CLD	ISOL TS[GR] OCNL TS[GR] MT OBSC BKN CLD nnn/[ABV]nnnnM (*or* BKN CLD nnn/[ABV]nnnnFT) OVC CLD nnn/[ABV]nnnnM (*or* OVC CLD nnn/[ABV]nnnnFT) ISOL CB OCNL CB FRQ CB ISOL TCU OCNL TCU FRQ TCU MOD TURB MOD ICE MOD MTW	SEV MTW HVY SS VA CLD [FL nnn/nnn] VA [MT nnnnnnnnnn] MOD TURB MOD ICE	TC NN VA ERUPTION MT ASHVAL PSN S15 E073 VA CLD MOD TURB MOD MTW ISOL CB BKN CLD 120/900M (BKN CLD 400/3000FT) OVC CLD 270/ABV3000M (OVC CLD 900/ABV10000FT) SEV ICE RDOACT CLD
Observed or forecast phenomenon (M)	Indication whether the information is observed and expected to continue, *or* forecast (M)	OBS [AT nnnnZ] FCST [AT nnnnZ]		OBS AT nnnnZ	OBS AT 1210Z OBS FCST AT 1815Z
Location (C)	Location (referring to latitude and longitude (in degrees and minutes))	Nnn[nn] Wnnn[nn] *or* Nnn[nn] Ennn[nn] *or* Snn[nn] Wnnn[nn] *or* Snn[nn] Ennn[nn] *or* N OF Nnn[nn] *or* S OF Nnn[nn] *or* N OF Snn[nn] *or* S OF Snn[nn] *or* [AND] W OF Wnnn[nn] *or* E OF Wnnn[nn] *or* W OF Ennn[nn] *or* E OF Ennn[nn] *or* [N OF, NE OF, E OF, SE OF, S OF, SW OF, W OF, NW OF] [LINE] Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] *or* WI Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – [Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] *or*		NnnnnWnnnnn *or* NnnnnEnnnnn *or* SnnnnWnnnnn *or* SnnnnEnnnnn	S OF N54 N OF N50 N2020 W07005 N2706 W07306 N48 E010 N OF N1515 AND W OF E13530 W OF E1554 N OF LINE S2520 W11510 – S2520 W12010 WI N6030 E02550 – N6055 E02500 – N6050 E02630 ENTIRE FIR ENTIRE CTA

Element as specified in Chapter 5 and Appendix 6	*Detailed content*	*Template(s)*			*Examples*
		SIGMET	*AIRMET*	*SPECIAL AIR-REPORT*	
		ENTIRE FIR *or* ENTIRE CTA			
Level (C)	Flight level or altitude and extent (C)	[SFC/]FLnnn *or* [SFC/]nnnnM (*or* [SFC/]nnnnFT) *or* FLnnn/nnn *or* TOP FLnnn *or* [TOP] ABV FLnnn *or* CB TOP [ABV] FLnnn WI nnnKM OF CENTRE (*or* CB TOP [ABV] FLnnn WI nnnNM OF CENTRE) *or* CB TOP [BLW] FLnnn WI nnnKM OF CENTRE (*or* CB TOP [BLW] FLnnn WI nnnNM OF CENTRE) *or* FLnnn/nnn [APRX nnnKM BY nnnKM] [nnKM WID LINE BTN (nnNM WID LINE BTN)] [Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] [– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] [– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]]] (*or* FLnnn/nnn [APRX nnnNM BY nnnNM] [Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] [– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] [– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]]])		FLnnn *or* nnnnM (*or* nnnnFT)	FL180 FL050/080 TOP FL390 SFC/FL070 TOP ABV FL100 FL310/450 CB TOP FL500 WI 270KM OF CENTRE (CB TOP FL500 WI 150NM OF CENTRE) FL310/350 APRX 220KM BY 35KM FL390
Movement *or* expected movement (C)	Movement *or* expected movement (direction and speed) with reference to one of the sixteen points of compass, *or* stationary (C)	MOV N [nnKMH] *or* MOV NNE [nnKMH] *or* MOV NE [nnKMH] *or* MOV ENE [nnKMH] *or* MOV E [nnKMH] *or* MOV ESE [nnKMH] *or* MOV SE [nnKMH] *or* MOV SSE [nnKMH] *or* MOV S [nnKMH] *or* MOV SSW [nnKMH] *or* MOV SW [nnKMH] *or* MOV WSW [nnKMH] *or* MOV W [nnKMH] *or* MOV WNW [nnKMH] *or* MOV NW [nnKMH] *or* MOV NNW [nnKMH] (*or* MOV N [nnKT] *or* MOV NNE [nnKT] *or* MOV NE [nnKT] *or* MOV ENE [nnKT] *or* MOV E [nnKT] *or* MOV ESE [nnKT] *or* MOV SE [nnKT] *or* MOV SSE [nnKT] *or* MOV S [nnKT] *or* MOV SSW [nnKT] *or* MOV SW [nnKT] *or* MOV WSW [nnKT] *or* MOV W [nnKT] *or* MOV WNW [nnKT] *or* MOV NW [nnKT] *or* MOV NNW [nnKT]) or STNR		—	MOV E 40KMH (MOV E 20KT) MOV SE STNR
Changes in intensity (C)	Expected changes in intensity (C)	INTSF *or* WKN *or* NC		—	WKN
Forecast position (C)	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	FCST nnnnZ TC CENTRE Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] *or* FCST nnnnZ VA CLD APRX [nnKM WID LINE BTN (nnNM WID LINE	—	—	FCST 2200Z TC CENTRE N2740 W07345 FCST 1700Z VA CLD APRX S15 E075 – S15 E081 – S17 E083 –

Element as specified in Chapter 5 and Appendix 6	*Detailed content*	*Template(s)*			*Examples*
		SIGMET	*AIRMET*	*SPECIAL AIR-REPORT*	
	message (C)	BTN)] Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] [– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] [– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] [AND] *or* FCST nnnnZ ENTIRE FIR *or* FCST nnnnZ ENTIRE CTA *or* FCST nnnnZ NO VA EXP *or* [FCST nnnnZ Nnn[nn] Wnnn[nn] *or* Nnn[nn] Ennn[nn] *or* Snn[nn] Wnnn[nn] *or* Snn[nn] Ennn[nn] *or* N OF Nnn[nn] *or* S OF Nnn[nn] *or* N OF Snn[nn] *or* S OF Snn[nn] [AND] W OF Wnnn[nn] *or* E OF Wnnn[nn] *or* W OF Ennn[nn] *or* E OF Ennn[nn] *or* [N OF, NE OF, E OF, SE OF, S OF, SW OF, W OF, NW OF] [LINE] Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] *or* WI Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]]			S18 E079 – S15 E075 FCST 0500Z ENTIRE FIR FCST 0500Z ENTIRE CTA FCST 0500Z NO VA EXP
OR					
Cancellation of SIGMET/	Cancellation of SIGMET/AIRMET	CNL SIGMET [nn]n nnnnnn/nnnnnn	CNL AIRMET [nn]n nnnnnn/nnnnnn	—	CNL SIGMET 2 101200/101600

Element as specified in Chapter 5 and Appendix 6	*Detailed content*	*Template(s)*			*Examples*
		SIGMET	*AIRMET*	*SPECIAL AIR-REPORT*	
AIRMET (C)	referring to its identification	*or* CNL SIGMET [nn]n nnnnnn/nnnnnn [VA MOV TO nnnn FIR]			CNL SIGMET 3 251030/251430 VA MOV TO YUDO FIR CNL AIRMET 151520/151800

Table 1a — Ranges and resolutions for the numerical elements included in volcanic ash and tropical cyclone advisory messages, SIGMET/AIRMET messages and aerodrome and wind shear warnings

Element as specified in Appendices 2 and 6		*Range*	*Resolution*
Summit elevation:	M	000 – 8 100	1
	FT	000 – 27 000	1
Advisory number:	for VA (index)*	000 – 2 000	1
	for TC (index)*	00 – 99	1
Maximum surface wind:	MPS	00 – 99	1
	KT	00 – 199	1
Central pressure:	hPa	850 – 1 050	1
Surface wind speed:	MPS	15 – 49	1
	KT	30 – 99	1
Surface visibility:	M	0000 – 0750	50
	M	0800 – 5 000	100
Cloud: height of base:	M	000 – 300	30
	FT	000 – 1 000	100
Cloud: height of top:	M	000 – 2 970	30
	M	3 000 – 20 000	300
	FT	000 – 9 900	100
	FT	10 000 – 60 000	1 000
Latitudes:	° (degrees)	00 – 90	1
	(minutes)	00 – 60	1
Longitudes:	° (degrees)	000 – 180	1
	(minutes)	00 – 60	1
Flight levels:		000 – 650	10
Movement:	KMH	0 – 300	10
	KT	0 – 150	5

* Non-dimensional

Table 2 - Fixed areas of coverage of WAFS forecasts in chart form

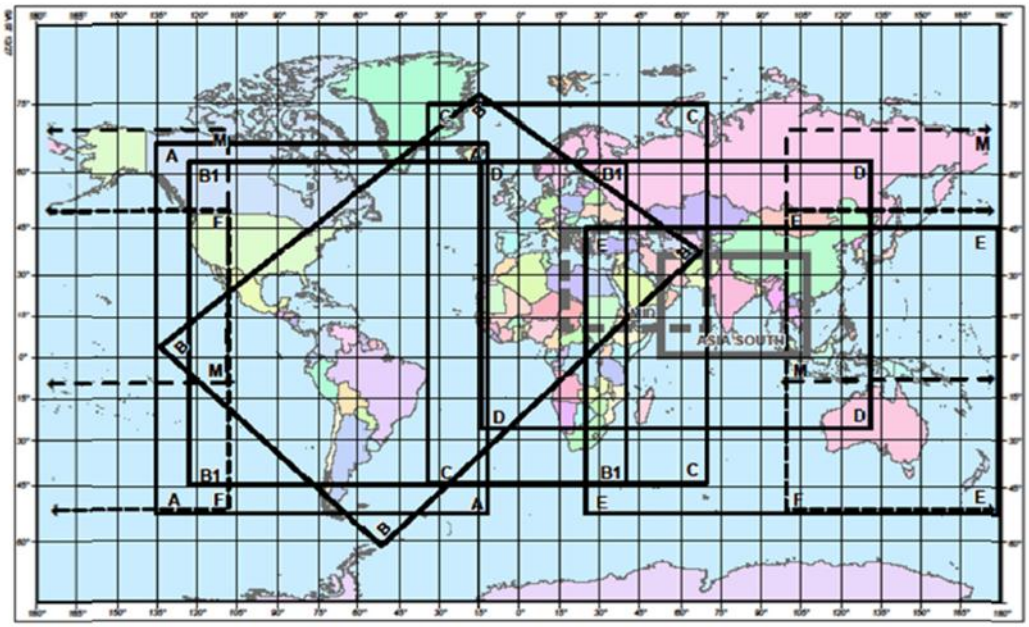


CHART	LATITUDE	LONGITUDE	CHART	LATITUDE	LONGITUDE
A	N6700	W13724	D	N6300	W01500
A	N6700	W01236	D	N6300	E13200
A	S5400	W01236	D	S2700	E13200
A	S5400	W13724	D	S2700	W01500
ASIA	N3600	E05300	E	N4455	E02446
ASIA	N3600	E10800	E	N4455	E18000
ASIA	0000	E10800	E	S5355	E18000
ASIA	0000	E05300	E	S5355	E02446
B	N0304	W13557	F	N5000	E10000
B	N7644	W01545	F	N5000	W11000
B	N3707	E06732	F	S5242	W11000
B	S6217	W05240	F	S5242	E10000
B1	N6242	W12500	M	N7000	E10000
B1	N6242	E04000	M	N7000	W11000
B1	S4530	E04000	M	S1000	W11000
B1	S4530	W12500	M	S1000	E10000
C	N7500	W03500	MID	N4400	E01700
C	N7500	E07000	MID	N4400	E07000
C	S4500	E07000	MID	N1000	E07000
C	S4500	W03500	MID	N1000	E01700

Fixed areas of coverage of WAFS forecasts in chart form — Mercator projection

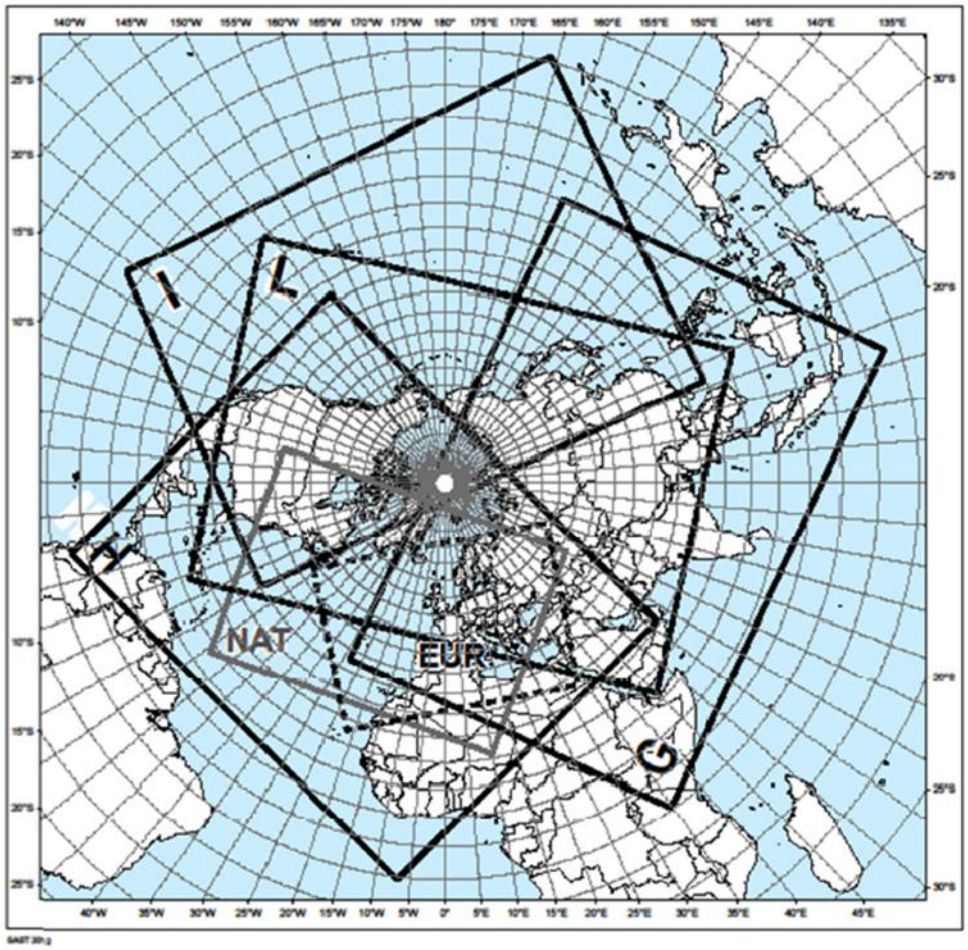


CHART	LATITUDE	LONGITUDE	CHART	LATITUDE	LONGITUDE
EUR	N4633	W05634	I	N1912	E11130
EUR	N5842	E06824	I	N3330	W06012
EUR	N2621	E03325	I	N0126	W12327
EUR	N2123	W02136	I	S0647	E16601
G	N3552	W02822	L	N1205	E11449
G	N1341	E15711	L	N1518	E04500
G	S0916	E10651	L	N2020	W06900
G	S0048	E03447	L	N1413	W14338
H	N3127	W14836	NAT	N4439	W10143
H	N2411	E05645	NAT	N5042	E06017
H	S0127	W00651	NAT	N1938	E00957
H	N0133	W07902	NAT	N1711	W05406

Fixed areas of coverage of WAFS forecasts in chart form — Polar stereographic projection (northern hemisphere)

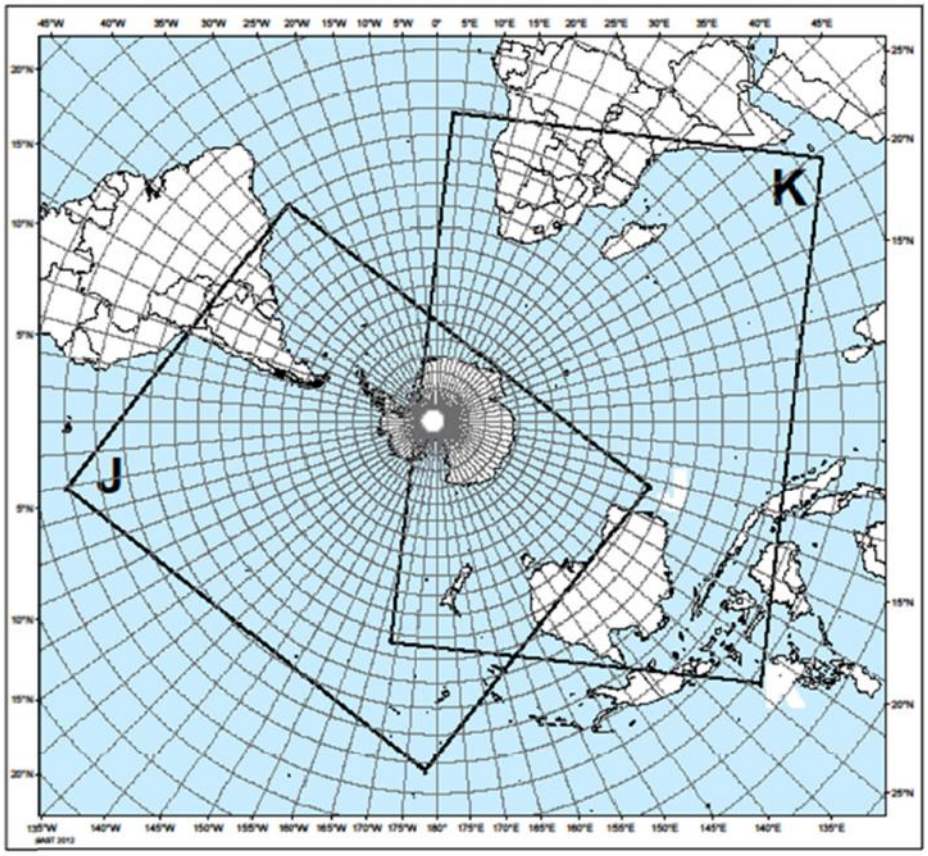


CHART	LATITUDE	LONGITUDE
J	S0318	W17812
J	N0037	W10032
J	S2000	W03400
J	S2806	E10717
K	N1255	E05549
K	N0642	E12905
K	S2744	W16841
K	S1105	E00317

Fixed areas of coverage of WAFS forecasts in chart form — Polar stereographic projection (southern hemisphere)

Table 3 - Template for TAF

Key: M = inclusion mandatory, part of every message;

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

O = inclusion optional.

Note 1.— The ranges and resolutions for the numerical elements included in TAF are shown in Table 3a of this appendix.

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

Element as specified in Chapter 6	*Detailed content*	*Template(s)*		*Examples*
Identification of the type of forecast (M)	Type of forecast (M)	TAF *or* TAF AMD *or* TAF COR		TAF TAF AMD
Location indicator (M)	ICAO location indicator (M)	nnnn		YUDO
Time of issue of forecast (M)	Day and time of issue of the forecast in UTC (M)	nnnnnnZ		160000Z
Identification of a missing forecast (C)	Missing forecast identifier (C)	NIL		NIL
END OF TAF IF THE FORECAST IS MISSING.				
Days and period of validity of forecast (M)	Days and period of the validity of the forecast in UTC (M)	nnnn/nnnn		1606/1624 0812/0918
Identification of a cancelled forecast (C)	Cancelled forecast identifier (C)	CNL		CNL
END OF TAF IF THE FORECAST IS CANCELLED.				
Surface wind (M)	Wind direction (M)	nnn *or* VRB		24004MPS; VRB01MPS (24008KT); (VRB02KT) 19005MPS (19010KT)
	Wind speed (M)	[P]nn[n]		00000MPS (00000KT) 140P49MPS (140P99KT)
	Significant speed variations (C)	G[P]nn[n]		12003G09MPS (12006G18KT) 24008G14MPS (24016G28KT)
	Units of measurement (M)	MPS (*or* KT)		
Visibility (M)	Prevailing visibility (M)	nnnn	C A V O K	0350 CAVOK 7000 9000 9999
Weather (C)	Intensity of weather phenomena (C)	– *or* +	—	
	Characteristics and type of weather phenomena (C)	DZ *or* RA *or* SN *or* SG *or* PL *or* DS *or* SS *or* FZDZ *or* FZRA *or* SHGR *or* SHGS *or*	FG *or* BR *or* SA *or* DU *or* HZ *or* FU *or* VA *or* SQ *or* PO *or* FC *or* TS *or*	RA HZ +TSRA FG –FZDZ PRFG +TSRASN SNRA FG

Element as specified in Chapter 6	*Detailed content*	*Template(s)*				*Examples*
		SHRA *or* SHSN *or* TSGR *or* TSGS *or* TSRA *or* TSSN		BCFG *or* BLDU *or* BLSA *or* BLSN *or* DRDU *or* DRSA *or* DRSN *or* FZFG *or* MIFG *or* PRFG		
Cloud (M)	Cloud amount and height of base or vertical visibility (M)	FEWnnn *or* SCTnnn *or* BKNnnn *or* OVCnnn	VVnnn *or* VV///	NSC		FEW010 VV005 OVC020 VV/// NSC SCT005 BKN012
	Cloud type (C)	CB *or* TCU	—			SCT008 BKN025CB
Temperature (O)	Name of the element (M)	TX				TX25/1013Z TN09/1005Z TX05/2112Z TNM02/2103Z
	Maximum temperature (M)	[M]nn/				
	Day and time of occurrence of the maximum temperature (M)	nnnnZ				
	Name of the element (M)	TN				
	Minimum temperature (M)	[M]nn/				
	Day and time of occurrence of the minimum temperature (M)	nnnnZ				
Expected significant changes to one or more of the above elements during the period of validity (C)	Change or probability indicator (M)	PROB30 [TEMPO] *or* PROB40 [TEMPO] *or* BECMG *or* TEMPO *or* FM				
	Period of occurrence or change (M)	nnnn/nnnn *or* nnnnnn				
	Wind (C)	nnn[P]nn[n][G[P]nn[n]]MPS *or* VRBnnMPS (*or* nnn[P]nn[G[P]nn]KT *or* VRBnnKT)				TEMPO 0815/0818 25017G25MPS (TEMPO 0815/0818 25034G50KT) TEMPO 2212/2214 17006G13MPS 1000 TSRA SCT010CB BKN020 (TEMPO 2212/2214 17012G26KT 1000 TSRA SCT010CB BKN020)
	Prevailing visibility (C)	nnnn			C A V O K	BECMG 3010/3011 00000MPS 2400 OVC010 (BECMG 3010/3011 00000KT 2400 OVC010) PROB30 1412/1414 0800 FG BECMG 1412/1414 RA TEMPO 2503/2504 FZRA
	Weather phenomenon: intensity (C)	– or +	—	NSW		

Element as specified in Chapter 6	*Detailed content*	*Template(s)*				*Examples*
						TEMPO 0612/0615 BLSN PROB40 TEMPO 2923/3001 0500 FG
	Weather phenomenon: characteristics and type (C)	DZ *or* RA *or* SN *or* SG *or* PL *or* DS *or* SS *or* FZDZ *or* FZRA *or* SHGR *or* SHGS *or* SHRA *or* SHSN *or* TSGR *or* TSGS *or* TSRA *or* TSSN	FG *or* BR *or* SA *or* DU *or* HZ *or* FU *or* VA *or* SQ *or* PO *or* FC *or* TS *or* BCFG *or* BLDU *or* BLSA *or* BLSN *or* DRDU *or* DRSA *or* DRSN *or* FZFG *or* MIFG *or* PRFG			
	Cloud amount and height of base or vertical visibility (C)	FEWnnn *or* SCTnnn *or* BKNnnn *or* OVCnnn	VVnnn *or* VV///	NSC		FM051230 15015KMH 9999 BKN020 (FM051230 15008KT 9999 BKN020) BECMG 1618/1620 8000 NSW NSC
	Cloud type (C)	CB *or* TCU	—			BECMG 2306/2308 SCT015CB BKN020

Table 3a — Ranges and resolutions for the numerical elements included in TAF

*Element as specified in Section **Error! Reference ource not found.***		*Range*	*Resolution*
Wind direction:	° true	000 – 360	10
Wind speed:	MPS	00 – 99*	1
	KT*	0-199	1
Visibility:	M	0000 – 0750	50
	M	0800 – 4 900	100
	M	5 000 – 9 000	1 000
	M	10 000 –	0 (fixed value: 9 999)
Vertical visibility:	30's M (100's FT)	000 – 020	1
Cloud: height of cloud base:	30's M (100's FT)	000 – 100	1
Air temperature (maximum and minimum):	°C	–80 – +60	1
* There is no aeronautical requirement to report surface wind speeds of 50 m/s (100 kt) or more; however, provision has been made for reporting wind speeds up to 99 m/s (199 kt) for non-aeronautical purposes, as necessary.			

Table 4 — 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 4a of this appendix.

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

Element as specified in Chapter 4	*Detailed content*	*Template(s)*			*Examples*
Identification of the type of report (M)	Type of report	MET REPORT *or* SPECIAL			MET REPORT SPECIAL
Location indicator (M)	ICAO location indicator (M)	nnnn			YUDO
Time of the observation (M)	Day and actual time of the observation in UTC	nnnnnnZ			221630Z
Identification of an automated report (C)	Automated report identifier (C)	AUTO			AUTO
Surface wind (M)	Name of the element (M)	WIND			WIND 240/4MPS (WIND 240/8KT)
	Runway (O)	RWY nn[L] *or* RWY nn[C] *or* RWY nn[R]			WIND RWY 18 TDZ 190/6MPS (WIND RWY 18 TDZ 190/12KT)
	Runway section (O)	TDZ			
	Wind direction (M)	nnn/	VRB BTN nnn/ AND nnn/ *or* VRB	CALM	WIND VRB1MPS WIND CALM (WIND VRB2KT) WIND VRB BTN 350/ AND 050/1MPS (WIND VRB BTN 350/ AND 050/2KT)
	Wind speed (M)	[ABV]n[n][n]MPS (*or* [ABV]n[n]KT)			WIND 270/ABV49MPS (WIND 270/ABV99KT)
	Significant speed variations (C)	MAX[ABV]nn[n] MNMn[n]			WIND 120/3MPS MAX9 MNM2 (WIND 120/6KT MAX18 MNM4)
	Significant directional variations (C)	VRB BTN nnn/ AND nnn/	—		WIND 020/5MPS VRB BTN 350/ AND 070/ (WIND 020/10KT VRB BTN 350/ AND 070/)
	Runway section (O)	MID			WIND RWY 14R MID 140/6MPS (WIND RWY 14R MID 140/12KT)
	Wind direction (O)	nnn/	VRB BTN nnn/ AND nnn/ *or* VRB	CALM	
	Wind speed (O)	[ABV]n[n][n]MPS (*or* [ABV]n[n]KT)			
	Significant speed variations (C)	MAX[ABV]nn[n] MNMn[n]			
	Significant directional variations (C)	VRB BTN nnn/ AND nnn/	—		
	Runway section (O)	END			WIND RWY 27 TDZ 240/8MPS

Element as specified in Chapter 4	*Detailed content*	*Template(s)*			*Examples*
	Wind direction (O)	nnn/	VRB BTN nnn/ AND nnn/ *or* VRB	CALM	MAX14 MNM5 END 250/7MPS (WIND RWY 27 TDZ 240/16KT MAX28 MNM10 END 250/14KT)
	Wind speed (O)	[ABV]n[n][n]MPS (*or* [ABV]n[n]KT)			
	Significant speed variations (C)	MAX[ABV]nn[n] MNMn[n]			
	Significant directional variations (C)	VRB BTN nnn/ AND nnn/	—		
Visibility (M)	Name of the element (M)	VIS		CAVOK	VIS 350M CAVOK VIS 7KM VIS 10KM
	Runway (O)	RWY nn[L] *or* RWY nn[C] *or* RWY nn[R]			VIS RWY 09 TDZ 800M END 1200M
	Runway section (O)	TDZ			
	Visibility (M)	n[n][n][n]M or n[n]KM			
	Runway section (O)	MID			
	Visibility (O)	n[n][n][n]M *or* n[n]KM			
	Runway section (O)	END			VIS RWY 18C TDZ 6KM RWY 27 TDZ 4000M
	Visibility (O)	n[n][n][n]M *or* n[n]KM			
Runway visual range (C)	Name of the element (M)	RVR			RVR RWY 32 400M RVR RWY 20 1600M
	Runway (C)	RWY nn[L] *or* RWY nn[C] *or* RWY nn[R]			
	Runway section (C)	TDZ			
	RVR (M)	[ABV *or* BLW] nn[n][n]M			RVR RWY 10L BLW 50M RVR RWY 14 ABV 2000M RVR RWY 10 BLW 150M RVR RWY 12 ABV 1200M
	Runway section (C)	MID			RVR RWY 12 TDZ 1100M MID ABV 1400M
	RVR (C)	[ABV *or* BLW] nn[n][n]M			
	Runway section (C)	END			RVR RWY 16 TDZ 600M MID 500M END 400M RVR RWY 26 500M RWY 20 800M
	RVR (C)	[ABV *or* BLW] nn[n][n]M			
Present weather (C)	Intensity of present weather (C)	FBL *or* MOD *or* HVY	—		

Element as specified in Chapter 4	*Detailed content*	*Template(s)*			*Examples*
	Characteristics and type of present weather (C)	DZ *or* RA *or* SN *or* SG *or* PL *or* DS *or* SS *or* FZDZ *or* FZUP *or* FC *or* FZRA *or* SHGR *or* SHGS *or* SHRA *or* SHSN *or* SHUP *or* TSGR *or* TSGS *or* TSRA *or* TSSN *or* TSUP *or* UP	FG *or* BR *or* SA *or* DU *or* HZ *or* FU *or* VA *or* SQ *or* PO *or* FC *or* TS *or* BCFG *or* BLDU *or* BLSA *or* BLSN *or* DRDU *or* DRSA *or* DRSN *or* FZFG *or* MIFG *or* PRFG *or* //		MOD RA HVY TSRA HVY DZ FBL SN HZ FG VA MIFG HVY TSRASN FBL SNRA FBL DZ FG HVY SHSN BLSN HVY TSUP //

Element as specified in Chapter 4	*Detailed content*	*Template(s)*				*Examples*
Cloud (M)	Name of the element (M)	CLD				
	Runway (O)	RWY nn[L] *or* RWY nn[C] *or* RWY nn[R]				CLD NSC
	Cloud amount (M) *or* vertical visibility (O)	FEW *or* SCT *or* BKN *or* OVC *or* ///	OBSC	NSC *or* NCD		CLD SCT 300M OVC 600M (CLD SCT 1000FT OVC 2000FT) CLD OBSC VER VIS 150M (CLD OBSC VER VIS 500FT)
	Cloud type (C)	CB *or* TCU *or* ///	—			CLD BKN TCU 270M (CLD BKN TCU 900FT)
	Height of cloud base *or* the value of vertical visibility (C)	n (*or* n[n][n][n]FT) *or* ///M (*or* ///FT)	[*or* VER VIS ///M (*or* VER VIS ///FT)			CLD RWY 08R BKN 60M RWY 26 BKN 90M (CLD RWY 08R BKN 200FT RWY 26 BKN 300FT) CLD /// CB ///M (CLD /// CB ///FT) CLD /// CB 400M (CLD /// CB 1200FT) CLD NCD

Element as specified in Chapter 4	*Detailed content*	*Template(s)*	*Examples*
Air temperature (M)	Name of the element (M)	T	T17 TMS08
	Air temperature (M)	[MS]nn	
Dew-point temperature (M)	Name of the element (M)	DP	DP15 DPMS18
	Dew-point temperature (M)	[MS]nn	
Pressure values (M)	Name of the element (M)	QNH	QNH 0995HPA QNH 1009HPA
	QNH (M)	nnnnHPA	
	Name of the element (O)	QFE	
	QFE (O)	[RWY nn[L] *or* RWY nn[C] *or* RWY nn[R]] nnnnHPA [RWY nn[L] *or* RWY nn[C] *or* RWY nn[R] nnnnHPA]	QNH 1022HPA QFE 1001HPA QNH 0987HPA QFE RWY 18 0956HPA RWY 24 0955HPA
Supplementary information (C)	Significant meteorological phenomena (C)	CB *or* TS *or* MOD TURB *or* SEV TURB *or* WS *or* GR *or* SEV SQL *or* MOD ICE *or* SEV ICE *or* FZDZ *or* FZRA *or* SEV MTW *or* SS *or* DS *or* BLSN *or* FC	FC IN APCH WS IN APCH 60M-WIND 360/13MPS WS RWY 12
	Location of the phenomena (C)	IN APCH [n[n][n][n]M-WIND nnn/n[n]MPS] *or* IN CLIMB-OUT [n[n][n][n]M-WIND nnn/n[n]MPS] (IN APCH [n[n][n][n]FT-WIND nnn/n[n]KT] *or* IN CLIMB-OUT [n[n][n][n]FT-WIND nnn/n[n]KT]) *or* RWY nn[L] *or* RWY nn[C] *or* RWY nn[R]	
	Recent weather (C)	REFZDZ *or* REFZRA *or* REDZ *or* RE[SH]RA *or* RERASN *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* REFC *or* REPL or REUP *or* REFZUP *or* RETSUP *or* RESHUP *or* REVA *or* RETS	REFZRA CB IN CLIMB-OUT RETSRA
Trend forecast (O)	Name of the element (M)	TREND	
	Change indicator (M)	NOSIG / BECMG *or* TEMPO	TREND NOSIG TREND BECMG FEW 600M (TREND BECMG FEW 2000FT)
	Period of change (C)	FMnnnn *and/or* TLnnnn *or* ATnnnn	
	Wind (C)	nnn/[ABV]n[n][n]MPS [MAX[ABV]nn[n]] (*or* nnn/[ABV]n[n]KT [MAX[ABV]nn])	TREND TEMPO 250/18 MPS MAX25 (TREND TEMPO 250/36KT MAX50)

	Visibility (C)		VIS n[n][n][n]M *or* VIS n[n]KM			C A V O K	TREND BECMG AT1800 VIS 10KM NSW TREND BECMG TL1700 VIS 800M FG TREND BECMG FM1030 TL1130 CAVOK
	Weather phenomenon: intensity (C)		FBL *or* MOD *or* HVY	—	NSW		TREND TEMPO TL1200 VIS 600M BECMG AT1230 VIS 8KM NSW CLD NSC
	Weather phenomenon: characteristics and type (C)		DZ *or* RA *or* SN *or* SG *or* PL *or* DS *or* SS *or* FZDZ *or* FZRA *or* SHGR *or* SHGS *or* SHRA *or* SHSN *or* TSGR *or* TSGS *or* TSRA *or* TSSN	FG *or* BR *or* SA *or* DU *or* HZ *or* FU *or* VA *or* SQ *or* PO *or* FC *or* TS *or* BCFG *or* BLDU *or* BLSA *or* BLSN *or* DRDU *or* DRSA *or* DRSN *or* FZFG *or* MIFG *or* PRFG			TREND TEMPO FM0300 TL0430 MOD FZRA TREND BECMG FM1900 VIS 500M HVY SNRA TREND BECMG FM1100 MOD SN TEMPO FM1130 BLSN
	Name of the element (C)		CLD				
	Cloud amount and vertical visibility (C)		FEW *or* SCT *or* BKN *or* OVC	OBSC	NSC		TREND BECMG AT1130 CLD OVC 300M (TREND BECMG AT1130 CLD OVC 1000FT)
	Cloud type (C)		CB *or* TCU	—			TREND TEMPO TL1530 HVY SHRA CLD BKN CB

	Height of cloud base *or* the value of vertical visibility (C)		n	[			360M (TREND TEMPO TL1530 HVY SHRA CLD BKN CB 1200FT)

Table 4a — Ranges and resolutions for the numerical elements included in local reports

Element as specified in Chapter 4**Error! Reference ource not found.**		Range	Resolution
Runway:		01 – 36	1
Wind direction:	°true	010 – 360	10
Wind speed:	MPS	1 – 99*	1
KT		1 – 199*	1
Visibility:	M	0 – 750	50
	M	800 – 4 900	100
	KM	5 – 9	1
	KM	10 –	0 (fixed value: 10 KM)
Runway visual range:	M	0 – 375	25
	M	400 – 750	50
	M	800 – 2 000	100
Vertical visibility:	M	0 – 75	15
	M	90 – 600	30
	FT	0 – 250	50
	FT	300 – 2 000	100
Clouds: height of cloud base:	M	0 – 75	15
	M	90 – 3 000	30
	FT	0 – 250	50
	FT	300 – 10 000	100
Air temperature;	°C	–80 – +60	1
Dew-point temperature:			
QNH; QFE:	hPa	0500 – 1 100	1

Table 5 - Template for METAR

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 5a of this appendix.

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

Element as specified in Chapter 4	*Detailed content*	*Template(s)*			*Examples*
Identification of the type of report (M)	Type of report (M)	METAR, METAR COR, SPECI *or* SPECI COR			METAR METAR COR SPECI
Location indicator (M)	ICAO location indicator (M)	nnnn			YUDO
Time of the observation (M)	Day and actual time of the observation in UTC (M)	nnnnnnZ			221630Z
Identification of an automated or missing report (C)	Automated *or* missing report identifier (C)	AUTO *or* NIL			AUTO NIL
END OF METAR IF THE REPORT IS MISSING.					
Surface wind (M)	Wind direction (M)	nnn	VRB		24004MPS (24008KT) VRB01MPS (RB02KT) 19006MPS (19012KT) 00000MPS (00000KT) 140P149MPS (140P99KT)
	Wind speed (M)	[P]nn[n]			
	Significant speed variations (C)	G[P]nn[n]			12003G09MPS (12006G18KT) 24008G14MPS (24016G28KT)
	Units of measurement (M)	MPS (*or* KT)			
	Significant directional variations (C)	nnnVnnn	—		02005MPS 350V070 (02010KT 350V070)
Visibility (M)	Prevailing *or* minimum visibility (M)	nnnn		C A V O K	0350 CAVOK 7000 9999 0800
	Minimum visibility and direction of the minimum visibility (C)	nnnn[N] *or* nnnn[NE] *or* nnnn[E] *or* nnnn[SE] *or* nnnn[S] *or* nnnn[SW] *or* nnnn[W] *or* nnnn[NW]			2000 1200NW 6000 2800E 6000 2800
Runway visual range (C)	Name of the element (M)	R			R32/0400 R12R/1700 R10/M0050 R14L/P2000
	Runway (M)	nn[L]/*or* nn[C]/*or* nn[R]/			
	Runway visual range (M)	[P *or* M]nnnn			R16L/0650 R16C/0500 R16R/0450 R17L/0450
	Runway visual range past tendency (C)	U, D *or* N			R12/1100U R26/0550N R20/0800D R12/0700

Present weather (C)	Intensity *or* proximity of present weather (C)		– *or* +	—	VC		
	Characteristics and type of present weather (M)		DZ *or* RA *or* SN *or* SG *or* PL *or* DS *or* SS *or* FZDZ *or* FZRA *or* FZUP *or* FC *or* SHGR *or* SHGS *or* SHRA *or* SHSN *or* SHUP *or* TSGR *or* TSGS *or* TSRA *or* TSSN *or* TSUP *or* UP	FG *or* BR *or* SA *or* DU *or* HZ *or* FU *or* VA *or* SQ *or* PO *or* TS *or* BCFG *or* BLDU *or* BLSA *or* BLSN *or* DRDU *or* DRSA *or* DRSN *or* FZFG *or* MIFG *or* PRFG *or* //	FG *or* PO *or* FC *or* DS *or* SS *or* TS *or* SH *or* BLSN *or* BLSA *or* BLDU *or* VA		RA HZ VCFG +TSRA FG VCSH +DZ VA VCTS –SN MIFG VCBLSA +TSRASN –SNRA DZ FG +SHSN BLSN UP FZUP TSUP FZUP //
Cloud (M)	Cloud amount and height of cloud base *or* vertical visibility (M)		FEWnnn *or* SCTnnn *or* BKNnnn *or* OVCnnn *or* FEW/// *or* SCT/// *or* BKN/// *or* OVC/// *or* ///nnn *or* //////	VVnnn *or* VV///	NSC *or* NCD		FEW015 VV005 OVC030 VV/// NSC SCT010 OVC020 BKN/// ///015
	Cloud type (C)		CB *or* TCU *or* ///	—			BKN009TCU NCD SCT008 BKN025CB BKN025/// ///CB
Air and dew-point temperature (M)	Air and dew-point temperature (M)		[M]nn/[M]nn				17/10 02/M08 M01/M10
Pressure values (M)	Name of the element (M)		Q				Q0995 Q1009 Q1022 Q0987
	QNH (M)		nnnn				
Supplementary information (C)	Recent weather (C)		REFZDZ *or* REFZRA *or* REDZ *or* RE[SH]RA *or* RERASN *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 *or* REFZUP *or* RETSUP *or* RESHUP				REFZRA RETSRA
	Wind shear (C)		WS Rnn[L] *or* WS Rnn[C] *or* WS Rnn[R] *or* WS ALL RWY				WS R03 WS ALL RWY WS R18C
	Sea-surface temperature and state of the sea or significant wave height (C)		W[M]nn/Sn *or* W[M]nn/Hn[n][n]				W15/S2 W12/H75
	State of the runway (C)	Runway designator (M)	R nn[L]/ *or* Rnn[C]/ *or* Rnn[R]/			R/SNOCLO	R99/421594
		Runway deposits (M)	n *or* /		CLRD//		R/SNOCLO R14L/CLRD//

		Extent of runway contamination (M)	n *or* /				
		Depth of deposit (M)	nn *or* //				
		Friction coefficient or braking action (M)	nn *or* //				
Trend forecast (O)	Change indicator (M)		NOSIG	BECMG *or* TEMPO			NOSIG BECMG FEW020
	Period of change (C)			FMnnnn *and/or* TLnnnn *or* ATnnnn			
	Wind (C)			nnn[P]nn[n][G[P]nn[n]] MPS (*or* nnn[P]nn[G[P]nn]KT)			TEMPO 25018G25MPS (TEMPO 25036G50KT) BECMG FM1030 TL1130 CAVOK
	Prevailing visibility (C)			nnnn		C A V O K	BECMG TL1700 0800 FG BECMG AT1800 9000 NSW BECMG FM1900 0500 +SNRA BECMG FM1100 SN TEMPO FM1130 BLSN TEMPO FM0330 TL0430 FZRA
	Weather phenomenon: intensity (C)			– *or* +	—	N S W	
	Weather phenomenon: characteristics and type (C)			DZ *or* RA *or* SN *or* SG *or* PL *or* DS *or* SS *or* FZDZ *or* FZRA *or* SHGR *or* SHGS *or* SHRA *or* SHSN *or* TSGR *or* TSGS *or* TSRA *or* TSSN	FG *or* BR *or* SA *or* DU *or* HZ *or* FU *or* VA *or* SQ *or* PO *or* FC *or* TS *or* BCFG *or* BLDU *or* BLSA *or* BLSN *or* DRDU *or* DRSA *or* DRSN *or* FZFG *or* MIFG *or* PRFG		
	Cloud amount and height of cloud base *or* vertical visibility (C)			FEWnnn *or* SCTnnn *or* BKNnnn *or* OVCnnn	VVnnn *or* VV///	N S C	TEMPO TL1200 0600 BECMG AT1200 8000 NSW NSC BECMG AT1130 OVC010
	Cloud type (C)			CB *or* TCU	—		TEMPO TL1530 +SHRA BKN012CB

Table 5a — Ranges and resolutions for the numerical elements included in METAR

Element as specified in Chapter 4 **Error! eference source not found.**			*Range*	*Resolution*
Runway:		(no units)	01 – 36	1
Wind direction:		°true	000 – 360	10
Wind speed:		MPS	00 – 99	1
		KT	00 – 199	1
Visibility:		M	0000 – 0750	50
		M	0800 – 4 900	100
		M	5 000 – 9 000	1 000
		M	10 000 –	0 (fixed value: 9 999)
Runway visual range:		M	0000 – 0375	25
		M	0400 – 0750	50
		M	0800 – 2 000	100
Vertical visibility:		30's M (100's FT)	000 – 020	1
Clouds: height of cloud base:		30's M (100's FT)	000 – 100	1
Air temperature; Dew-point temperature:		°C	–80 – +60	1
QNH:		hPa	0850 – 1 100	1
Sea-surface temperature:		°C	–10 – +40	1
State of the sea:		(no units)	0 – 9	1
Significant wave height		M	0 – 999	0.1
State of the runway	Runway designator:	(no units)	01 – 36; 88; 99	1
	Runway deposits:	(no units)	0 – 9	1
	Extent of runway contamination:	(no units)	1; 2; 5; 9	—
	Depth of deposit:	(no units)	00 – 90; 92 – 99	1
	Friction coefficient/braking action:	(no units)	00 – 95; 99	1

Table 6 - Template for aerodrome warnings

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

Note 1.— The ranges and resolutions for the numerical elements included in aerodrome warnings are shown in Table 1a of this Appendix 1.

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

Element	*Detailed content*	*Templates*	*Examples*
Location indicator of the aerodrome (M)	Location indicator of the aerodrome	nnnn	YUCC
Identification of the type of message (M)	Type of message and sequence number	AD WRNG [n]n	AD WRNG 2
Validity period (M)	Day and time of validity period in UTC	VALID nnnnnn/nnnnnn	VALID 211230/211530
IF THE AERODROME WARNING IS TO BE CANCELLED, SEE DETAILS AT THE END OF THE TEMPLATE.			
Phenomenon (M)	Description of phenomenon causing the issuance of the aerodrome warning	TC nnnnnnnnnn *or* [HVY] TS *or* GR *or* [HVY] SN [nnCM] *or* [HVY] FZRA *or* [HVY] FZDZ *or* RIME *or* [HVY] SS *or* [HVY] DS *or* SA *or* DU *or* SFC WSPD nn[n]MPS MAX nn[n] (SFC WSPD nn[n]KT MAX nn[n]) *or* SFC WIND nnn/nn[n]MPS MAX nn[n] (SFC WIND nnn/nn[n]KT MAX nn[n]) *or* SQ *or* FROST *or* TSUNAMI *or* VA[DEPO] *or* TOX CHEM *or* *Free text up to 32 characters*	TC ANDREW HVY SN 25CM SFC WSPD 20MPS MAX 30 VA TSUNAMI
Observed or forecast phenomenon (M)	Indication whether the information is observed and expected to continue, *or* forecast	OBS [AT nnnnZ] *or* FCST	OBS AT 1200Z OBS
Changes in intensity (C)	Expected changes in intensity	INTSF *or* WKN *or* NC	WKN
OR			
Cancellation of aerodrome warning	Cancellation of aerodrome warning referring to its identification	CNL AD WRNG [n]n nnnnnn/nnnnnn	CNL AD WRNG 2 211230/211530

Table 7 — Template for wind shear warnings

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

Note 1.— The ranges and resolutions for the numerical elements included in wind shear warnings are shown in Table 1a of this Appendix 1.

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

Element	*Detailed content*	*Template(s)*	*Example*
Location indicator of the aerodrome (M)	Location indicator of the aerodrome	nnnn	YUCC
Identification of the type of message (M)	Type of message and sequence number	WS WRNG [n]n	WS WRNG 1
Time of origin and validity period (M)	Day and time of issue and, where applicable, validity period in UTC	nnnnnn [VALID TL nnnnnn] *or* [VALID nnnnnn/nnnnnn]	211230 VALID TL 211330 221200 VALID 221215/221315
IF THE WIND SHEAR WARNING IS TO BE CANCELLED, SEE DETAILS AT THE END OF THE TEMPLATE.			
Phenomenon (M)	Identification of the phenomenon and its location	[MOD] *or* [SEV] WS IN APCH *or* [MOD] *or* [SEV] WS [APCH] RWYnnn *or* [MOD] *or* [SEV] WS IN CLIMB-OUT *or* [MOD] *or* [SEV] WS CLIMB-OUT RWYnnn *or* MBST IN APCH *or* MBST [APCH] RWYnnn *or* MBST IN CLIMB-OUT *or* MBST CLIMB-OUT RWYnnn	WS APCH RWY12 MOD WS RWY34 WS IN CLIMB-OUT MBST APCH RWY26 MBST IN CLIMB-OUT
Observed, reported or forecast phenomenon (M)	Identification whether the phenomenon is observed or reported and expected to continue or forecast	REP AT nnnn nnnnnnnn *or* OBS [AT nnnn] *or* FCST	REP AT 1510 B747 OBS AT 1205 FCST
Details of the phenomenon (C)	Description of phenomenon causing the issuance of the wind shear warning	SFC WIND: nnn/nnMPS (*or* nnn/nnKT) nnnM (nnnFT)-WIND: nnn/nnMPS (*or* nnn/nnKT) *or* nnKMH (*or* nnKT) LOSS nnKM (*or* nnNM) FNA RWYnn *or* nnKMH (*or* nnKT) GAIN nnKM (*or* nnNM) FNA RWYnn	SFC WIND: 320/5MPS 60M-WIND: 360/13MPS (SFC WIND: 320/10KT 200FT-WIND: 360/26KT) 60KMH LOSS 4KM FNA RWY13 (30KT LOSS 2NM FNA RWY13)
OR			
Cancellation of wind shear warning	Cancellation of wind shear warning referring to its identification	CNL WS WRNG [n]n nnnnnn/nnnnnn	CNL WS WRNG 1 211230/211330

Table 8 - Template for advisory message for volcanic ash

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

Note 1.— The ranges and resolutions for the numerical elements included in advisory messages for volcanic ash are shown in Table 1a of this Appendix 1.

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

Note 3.— Inclusion of a 'colon' after each element heading is mandatory.

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

	Element	*Detailed content*	*Template(s)*		*Examples*	
1	Identification of the type of message (M)	Type of message	VA ADVISORY		VA ADVISORY	
2	Time of origin (M)	Year, month, day, time in UTC	DTG:	nnnnnnnn/nnnnZ	DTG:	20080923/0130Z
3	Name of VAAC (M)	Name of VAAC	VAAC:	nnnnnnnnnnnn	VAAC:	TOKYO
4	Name of volcano (M)	Name and IAVCEI number of volcano	VOLCANO:	nnnnnnnnnnnnnnnnnnnnn [nnnnnn] *or* UNKNOWN *or* UNNAMED	VOLCANO: VOLCANO:	KARYMSKY 1000-13 UNNAMED
5	Location of volcano (M)	Location of volcano in degrees and minutes	PSN:	Nnnnn *or* Snnnn Wnnnnn *or* Ennnnn *or* UNKNOWN	PSN: PSN:	N5403 E15927 UNKNOWN
6	State *or* region (M)	State, *or* region if ash is not reported over a State	AREA:	nnnnnnnnnnnnnnn	AREA:	RUSSIA
7	Summit elevation (M)	Summit elevation in m (*or* ft)	SUMMIT ELEV:	nnnnM (*or* nnnnnFT)	SUMMIT ELEV:	1536M
8	Advisory number (M)	Advisory number: year in full and message number (separate sequence for each volcano)	ADVISORY NR:	nnnn/nnnn	ADVISORY NR:	2008/4
9	Information source (M)	Information source using free text	INFO SOURCE:	*Free text up to 32 characters*	INFO SOURCE:	MTSAT-1R KVERT KEMSD
10	Colour code (O)	Aviation colour code	AVIATION COLOUR CODE:	RED *or* ORANGE *or* YELLOW *or* GREEN *or* UNKNOWN *or* NOT GIVEN *or* NIL	AVIATION COLOUR CODE:	RED
11	Eruption details (M)	Eruption details (including date/time of eruption(s))	ERUPTION DETAILS:	*Free text up to 64 characters* *or* UNKNOWN	ERUPTION DETAILS:	ERUPTION AT 20080923/0000Z FL300 REPORTED

Element		*Detailed content*	*Template(s)*		*Examples*	
12	Time of observation (*or* estimation) of ash (M)	Day and time (in UTC) of observation (*or* estimation) of volcanic ash	OBS (*or* EST) VA DTG:	nn/nnnnZ	OBS VA DTG:	23/0100Z
13	Observed *or* estimated ash cloud (M)	Horizontal (in degrees and minutes) and vertical extent at the time of observation of the observed *or* estimated ash cloud *or*, if the base is unknown, the top of the observed *or* estimated ash cloud; Movement of the observed *or* estimated ash cloud	OBS VA CLD *or* EST VA CLD:	TOP FLnnn *or* SFC/FLnnn *or* FLnnn/nnn [nnKM WID LINE BTN (nnNM WID LINE BTN)] Nnn[nn] or Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn][– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] MOV N nnKMH (*or* KT) *or* MOV NE nnKMH (*or* KT) *or* MOV E nnKMH (*or* KT) *or* MOV SE nnKMH (*or* KT) *or* MOV S nnKMH (*or* KT) *or* MOV SW nnKMH (*or* KT) *or* MOV W nnKMH (*or* KT) *or* MOV NW nnKMH (*or* KT) *or* VA NOT IDENTIFIABLE FM SATELLITE DATA WIND FLnnn/nnn nnn/nn[n]MPS (*or* KT) *or* WIND FLnnn/nnn VRBnnMPS (*or* KT) *or* WIND SFC/FLnnn nnn/nn[n]MPS (*or* KT) *or* WIND SFC/FLnnn VRBnnMPS (*or* KT)	OBS VA CLD:	FL250/300 N5400 E15930 – N5400 E16100 – N5300 E15945 MOV SE 20KT SFC/FL200 N5130 E16130 – N5130 E16230 – N5230 E16230 – N5230 E16130 MOV SE 15KT TOP FL240 MOV W 40KMH VA NOT IDENTIFIABLE FM SATELLITE DATA WIND FL050/070 180/12MPS
14	Forecast height and position of the ash clouds (+6 HR) (M)	Day and time (in UTC) (6 hours from the 'Time of observation (*or* estimation) of ash' given in Item 12); Forecast height and position (in degrees and minutes) for each cloud mass for that fixed valid time	FCST VA CLD +6 HR:	nn/nnnnZ SFC *or* FLnnn/[FL]nnn [nnKM WID LINE BTN (nnNM WID LINE BTN)] Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn][– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] *or* NO VA EXP *or* NOT AVBL *or* NOT PROVIDED	FCST VA CLD +6 HR:	23/0700Z FL250/350 N5130 E16030 – N5130 E16230 – N5330 E16230 – N5330 E16030 SFC/FL180 N4830 E16330 – N4830 E16630 – N5130 E16630 – N5130 E16330 NO VA EXP NOT AVBL NOT PROVIDED

Element		*Detailed content*	*Template(s)*		*Examples*	
15	Forecast height and position of the ash clouds (+12 HR) (M)	Day and time (in UTC) (12 hours from the 'Time of observation (*or* estimation) of ash' given in Item 12); Forecast height and position (in degrees and minutes) for each cloud mass for that fixed valid time	FCST VA CLD +12 HR:	nn/nnnnZ SFC *or* FLnnn/[FL]nnn [nnKM WID LINE BTN (nnNM WID LINE BTN)] Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn][– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] *or* NO VA EXP *or* NOT AVBL *or* NOT PROVIDED	FCST VA CLD +12 HR:	23/1300Z SFC/FL270 N4830 E16130 – N4830 E16600 – N5300 E16600 – N5300 E16130 NO VA EXP NOT AVBL NOT PROVIDED
16	Forecast height and position of the ash clouds (+18 HR) (M)	Day and time (in UTC) (18 hours from the 'Time of observation (*or* estimation) of ash' given in Item 12); Forecast height and position (in degrees and minutes) for each cloud mass for that fixed valid time	FCST VA CLD +18 HR:	nn/nnnnZ SFC *or* FLnnn/[FL]nnn [nnKM WID LINE BTN (nnNM WID LINE BTN)] Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn][– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] *or* NO VA EXP *or* NOT AVBL *or* NOT PROVIDED	FCST VA CLD +18 HR:	23/1900Z NO VA EXP NOT AVBL NOT PROVIDED
17	Remarks (M)	Remarks, as necessary	RMK:	*Free text up to 256 characters* *or* NIL	RMK:	LATEST REP FM KVERT (0120Z) INDICATES ERUPTION HAS CEASED. TWO DISPERSING VA CLD ARE EVIDENT ON SATELLITE IMAGERY NIL
18	Next advisory (M)	Year, month, day and time in UTC	NXT ADVISORY:	nnnnnnnn/nnnnZ *or* NO LATER THAN nnnnnnnn/nnnnZ *or* NO FURTHER ADVISORIES *or* WILL BE ISSUED BY nnnnnnnn/nnnnZ	NXT ADVISORY:	20080923/0730Z NO LATER THAN nnnnnnnn/nnnnZ NO FURTHER ADVISORIES WILL BE ISSUED BY nnnnnnnn/nnnnZ

Table 9 - Template for advisory message for tropical cyclones

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

Note 1.— The ranges and resolutions for the numerical elements included in advisory messages for tropical cyclones are shown in Table 1a of this Appendix 1.

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

Note 3.— All the elements are mandatory.

Note 4.— Inclusion of a 'colon' after each element heading is mandatory.

	Element	*Detailed content*	*Template(s)*		*Examples*	
1	Identification of the type of message	Type of message	TC ADVISORY		TC ADVISORY	
2	Time of origin	Year, month, day and time in UTC of issue	DTG:	nnnnnnnn/nnnnZ	DTG:	20040925/1600Z
3	Name of TCAC	Name of TCAC (location indicator *or* full name)	TCAC:	nnnn *or* nnnnnnnnnn	TCAC: TCAC:	YUFO MIAMI
4	Name of tropical cyclone	Name of tropical cyclone *or* 'NN' for unnamed tropical cyclone	TC:	nnnnnnnnnnnn *or* NN	TC:	GLORIA
5	Advisory number	Advisory number (starting with '01' for each cyclone)	NR:	nn	NR:	01
6	Position of the centre	Position of the centre of the tropical cyclone (in degrees and minutes)	PSN:	Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]	PSN:	N2706 W07306
7	Direction and speed of movement	Direction and speed of movement given in sixteen compass points and km/h (*or* kt), respectively, *or* moving slowly (< 6 km/h (3 kt)) *or* stationary (< 2 km/h (1 kt))	MOV:	N nnKMH (*or* KT) *or* NNE nnKMH (*or* KT) *or* NE nnKMH (*or* KT) *or* ENE nnKMH (*or* KT) *or* E nnKMH (*or* KT) *or* ESE nnKMH (*or* KT) *or* SE nnKMH (*or* KT) *or* SSE nnKMH (*or* KT) *or* S nnKMH (*or* KT) *or* SSW nnKMH (*or* KT) *or* SW nnKMH (*or* KT) *or* WSW nnKMH (*or* KT) *or* W nnKMH (*or* KT) *or* WNW nnKMH (*or* KT) *or* NW nnKMH (*or* KT) *or* NNW nnKMH (*or* KT) *or* SLW *or* STNR	MOV:	NW 20KMH
8	Central pressure	Central pressure (in hPa)	C:	nnnHPA	C:	965HPA

Element		*Detailed content*	*Template(s)*		*Examples*	
9	Maximum surface wind	Maximum surface wind near the centre (mean over 10 minutes, in m/s (*or* kt))	MAX WIND:	nn[n]MPS (*or* nn[n]KT)	MAX WIND:	22MPS
10	Forecast of centre position (+6 HR)	Day and time (in UTC) (6 hours from the 'DTG' given in Item 2); Forecast position (in degrees and minutes) of the centre of the tropical cyclone	FCST PSN +6 HR:	nn/nnnnZ Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]	FCST PSN +6 HR:	25/2200Z N2748 W07350
11	Forecast of maximum surface wind (+6 HR)	Forecast of maximum surface wind (6 hours after the 'DTG' given in Item 2)	FCST MAX WIND +6 HR:	nn[n]MPS (*or* nn[n]KT)	FCST MAX WIND +6 HR:	22MPS
12	Forecast of centre position (+12 HR)	Day and time (in UTC) (12 hours from the 'DTG' given in Item 2); Forecast position (in degrees and minutes) of the centre of the tropical cyclone	FCST PSN +12 HR:	nn/nnnnZ Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]	FCST PSN +12 HR:	26/0400Z N2830 W07430
13	Forecast of maximum surface wind (+12 HR)	Forecast of maximum surface wind (12 hours after the 'DTG' given in Item 2)	FCST MAX WIND +12 HR:	nn[n]MPS (*or* nn[n]KT)	FCST MAX WIND +12 HR:	22MPS
14	Forecast of centre position (+18 HR)	Day and time (in UTC) (18 hours from the 'DTG' given in Item 2); Forecast position (in degrees and minutes) of the centre of the tropical cyclone	FCST PSN +18 HR:	nn/nnnnZ Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]	FCST PSN +18 HR:	26/1000Z N2852 W07500
15	Forecast of maximum surface wind (+18 HR)	Forecast of maximum surface wind (18 hours after the 'DTG' given in Item 2)	FCST MAX WIND +18 HR:	nn[n]MPS (*or* nn[n]KT)	FCST MAX WIND +18 HR:	21MPS
16	Forecast of centre position (+24 HR)	Day and time (in UTC) (24 hours from the 'DTG' given in Item 2); Forecast position (in degrees and minutes) of the centre of the tropical cyclone	FCST PSN +24 HR:	nn/nnnnZ Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]	FCST PSN +24 HR:	26/1600Z N2912 W07530

Element		*Detailed content*	*Template(s)*		*Examples*	
17	Forecast of maximum surface wind (+24 HR)	Forecast of maximum surface wind (24 hours after the 'DTG' given in Item 2)	FCST MAX WIND +24 HR:	nn[n]MPS (*or* nn[n]KT)	FCST MAX WIND +24 HR:	20MPS
18	Remarks	Remarks, as necessary	RMK:	*Free text up to 256 characters* *or* NIL	RMK:	NIL
19	Expected time of issuance of next advisory	Expected year, month, day and time (in UTC) of issuance of next advisory	NXT MSG:	[BFR] nnnnnnnn/nnnnZ *or* NO MSG EXP	NXT MSG:	20040925/2000Z

II. Drafting document

The drafting document can be found in NPA 2014-07 (B)

III. Cross-reference table

The below cross-reference table shows the proposed EASA rules versus ICAO Annex 3, Part II.

Implementing Rules

NPA IR	NPA rule Reference	NPA rule title	ICAO S, RP Note	ICAO rule reference	ICAO rule title
IR	MET.TR.115(a)	Meteorological bulletins	S	2.1.3	Heading of bulletins
IR	MET.TR.115(b)	Meteorological bulletins	S	2.1.4	Structure of bulletins
IR	MET.TR.205(a)	SIGMET messages	S	1.1.1	Format of SIGMET messages
IR	MET.TR.205(b)	SIGMET messages	S	1.1.3	Format of SIGMET messages
IR	MET.TR.205(c)	SIGMET messages	S	1.1.4	Format of SIGMET messages
IR	MET.TR.205(d)	SIGMET messages	S	1.1.7 & 1.18	Format of SIGMET messages
IR	MET.TR.210(a)	AIRMET messages	S	2.1.1	Format of SIGMET messages
IR	MET.TR.210(b)	AIRMET messages	S	2.1.2	Format of SIGMET messages
IR	MET.TR.210(c)	AIRMET messages	S	2.1.4	Format of SIGMET messages
IR	MET.TR.215(a)(5)	Forecast and other meteorological information	S	App. 8, 1.1	Means of supply and format of meteorological information
IR	MET.TR.215(b)	Forecast and other meteorological information	S	App. 9, 2.1	Information to be provided for search and rescue services units - List of information
IR	MET.TR.215(d)(1)-(4)	Forecast and other meteorological information	S	App 8, 4.2.1.2	Characteristics of charts

NPA IR	NPA rule Reference	NPA rule title	ICAO S, RP Note	ICAO rule reference	ICAO rule title
IR	MET.TR.215(d)(5)	Forecast and other meteorological information	S	App 8, 4.2.3 b)	Height indications
IR	MET.TR.215(e)	Forecast and other meteorological information -	S	Ch. 9.3.1	Services for operators and flight crew members - General provisions
IR	MET.TR.215(f)	Forecast and other meteorological information	S	Ch. 9.1.6	Services for operators and flight crew members - General provisions
IR	MET.TR.215(g)	Forecast and other meteorological information	S	Ch. 9.1.7	Services for operators and flight crew members - General provisions
IR	MET.TR.215(h)	Forecast and other meteorological information	S	Ch. 9.1.8	Services for operators and flight crew members - General provisions
IR	MET.TR.215(i)	Forecast and other meteorological information - General	S	Ch. 8.1.1	Aeronautical climatological Information - General provisions
IR	MET.TR.220(a)	Aerodrome forecasts (TAF)	S	Ch. 6.2.3	Aerodrome forecasts
IR	MET.TR.220(b)	Aerodrome forecasts (TAF)	S	App. 5, 1.1.1	TAF format
IR	MET.TR.220(c)	Aerodrome forecasts (TAF)	S	EUR ANP, 13	Forecasts
IR	MET.TR.220(d)(1) &(2)	Aerodrome forecasts (TAF)	S	App. 5, 1.1.3	TAF format
IR	MET.TR.220(d)(3)	Aerodrome forecasts (TAF)	S	App. 5, 1.1.4	TAF format
IR	MET.TR.220(e)	Aerodrome forecasts (TAF)	RP	App. 5, 1.2	Inclusion of meteorological elements in TAF
IR	MET.TR.220(f)	Aerodrome forecasts (TAF)	S	App. 5, 1.3.1	Use of change groups
IR	MET.TR.220(g)	Aerodrome forecasts (TAF)	RP	App. 5, 1.4	Use of probability groups
IR	MET.TR.225(a)	Aerodrome forecasts - Landing (TREND)	S	App. 5, 2.1 first sentence	Format of trend forecasts
IR	MET.TR.225(b)	Aerodrome forecasts - Landing (TREND)	S	App. 5, 2.1 2nd sentence	Format of trend forecasts
IR	MET.TR.225(c)	Aerodrome forecasts - Landing (TREND)	S	App. 5, 2.2.1	Inclusion of meteorological elements in trend forecasts
IR	MET.TR.225(c)(1)	Aerodrome forecasts - Landing (TREND)	S	App. 5, 2.2.2	Surface wind
IR	MET.TR.225(c)(2)	Aerodrome forecasts - Landing (TREND)	S	App. 5, 2.2.3	Visibility
IR	MET.TR.225(c)(3)	Aerodrome forecasts - Landing (TREND)	S	App. 5, 2.2.4	Weather phenomena

NPA IR	NPA rule Reference	NPA rule title	ICAO S, RP Note	ICAO rule reference	ICAO rule title
IR	MET.TR.225(c)(4)	Aerodrome forecasts - Landing (TREND)	S	App. 5, 2.2.5	Clouds
IR	MET.TR.225(c)(5)	Aerodrome forecasts - Landing (TREND)	S	App. 5, 2.2.6	Vertical visibility
IR	MET.TR.225(c)(6)	Aerodrome forecasts - Landing (TREND)	S	App. 5, 2.2.7	Additional criteria
IR	MET.TR.225(c)(7)	Aerodrome forecasts - Landing (TREND)	S	App. 5, 2.3	Use of change groups
IR	MET.TR.225(c)(8)	Aerodrome forecasts - Landing (TREND)	S	App. 5, 2.4	Use of the probability indicator
IR	MET.TR.226(a)	Forecasts – take-off	RP	Ch. 6.4.2	Forecasts for take-off
IR	MET.TR.226(b)	Forecasts – take-off	RP	App. 5, 3.1	Format of forecasts for take-off
IR	MET.TR.230(a)	Area forecasts for low-level flights	S	App. 5, 4.3.1	Content of area forecasts for low-level flights in chart form
IR	MET.TR.230(b)	Area forecasts for low-level flights	S	App. 5, 4.3.2	Content of area forecasts for low-level flights in chart form
IR	MET.TR.230(c)	Area forecasts for low-level flights	S	Ch. 6.5.2	Area forecasts for low-level flights
IR	MET.TR.235(a)	Warnings and alerts	S	App. 6, 5.1.1	Format and dissemination of aerodrome warnings
IR	MET.TR.235(b)	Warnings and alerts	S	App. 6, 5.1.2	Format and dissemination of aerodrome warnings
IR	MET.TR.235(c)	Warnings and alerts	S	App. 6, 6.2.1	Format and dissemination of wind shear warnings and alerts
IR	MET.TR.235(d)	Warnings and alerts	S	App. 6, 6.2.2	Format and dissemination of wind shear warnings and alerts
IR	MET.TR.235(e)	Warnings and alerts	S	App. 7, 7.4.1	Wind shear warnings and alerts
IR	MET.TR.235(f)	Warnings and alerts	S	App. 7, 7.4.3	Wind shear warnings and alerts
IR	MET.TR.235(g)	Warnings and alerts	S	App. 6, 6.2.7	Format and dissemination of wind shear warnings and alerts
IR	MET.TR.250(a)	Meteorological reports and other information	S	Ch. 4.5.1	Contents of reports
IR	MET.TR.250(b)(1)	Meteorological reports and other information	S	App. 3, 2.1.1	Format of meteorological reports

NPA IR	NPA rule Reference	NPA rule title	ICAO S, RP Note	ICAO rule reference	ICAO rule title
IR	MET.TR.250(b)(2)	Meteorological reports and other information	S	App. 3, 4.1.5.3	Reporting
IR	MET.TR.250(c)(1)	Meteorological reports and other information	S	App. 3, 2.1.2	Format of meteorological reports
IR	MET.TR.250(c)(2)	Meteorological reports and other information	S	App. 3, 2.1.4	Format of meteorological reports
IR	MET.TR.250(c)(3)	Meteorological reports and other information	S	App. 3, 2.1.5	Format of meteorological reports
IR	MET.TR.250(c)(4)	Meteorological reports and other information	S	App. 3, 2.2	Use of CAVOK
IR	MET.TR.250(c)(5)	Meteorological reports and other information	RP	App. 10, 2.1.2	Filing times of bulletins
IR	MET.TR.250(d)(1)	Meteorological reports and other information	S	App. 3, 2.3.1	Criteria for issuance of local special reports and SPECI
IR	MET.TR.250(d)(2)	Meteorological reports and other information	S	App. 3, 2.3.1	Criteria for issuance of local special reports and SPECI
IR	MET.TR.250(d)(3)	Meteorological reports and other information	S	App. 3, 2.3.1	Criteria for issuance of local special reports and SPECI
IR	MET.TR.250(d)(4)	Meteorological reports and other information	S	App. 3, 2.3.1	Criteria for issuance of local special reports and SPECI
IR	MET.TR.250(d)(5)	Meteorological reports and other information	S	App. 3, 2.3.1	Criteria for issuance of local special reports and SPECI
IR	MET.TR.250(d)(6)	Meteorological reports and other information	S	App. 3, 2.3.2	Criteria for issuance of local special reports and SPECI
IR	MET.TR.250(d)(7)	Meteorological reports and other information	S	App. 3, 2.3.2	Criteria for issuance of local special reports and SPECI
IR	MET.TR.250(d)(8)	Meteorological reports and other information	S	App. 3, 2.3.2	Criteria for issuance of local special reports and SPECI
IR	MET.TR.250(d)(9)	Meteorological reports and other information	S	App. 3, 2.3.2	Criteria for issuance of local special reports and SPECI
IR	MET.TR.250(d)(10)	Meteorological reports and other information	S	App. 3, 2.3.2	Criteria for issuance of local special reports and SPECI
IR	MET.TR.250(d)(11)	Meteorological reports and other information	S	App. 3, 2.3.2	Criteria for issuance of local special reports and SPECI
IR	MET.TR.250(d)(12)	Meteorological reports and other information	RP	App. 3, 2.3.3	Criteria for issuance of local special reports and SPECI
IR	MET.TR.250(d)(13)	Meteorological reports and other information	RP	App. 3, 2.3.3	Criteria for issuance of local special reports and SPECI
IR	MET.TR.250(d)(14)	Meteorological reports and	RP	App. 3, 2.3.3	Criteria for issuance of local

NPA IR	NPA rule Reference	NPA rule title	ICAO S, RP Note	ICAO rule reference	ICAO rule title
		other information			special reports and SPECI
IR	MET.TR.250(d)(15)	Meteorological reports and other information	RP	App. 3, 2.3.3	Criteria for issuance of local special reports and SPECI
IR	MET.TR.250(d)(16)	Meteorological reports and other information	RP	App. 3, 2.3.3	Criteria for issuance of local special reports and SPECI
IR	MET.TR.250(d)(17)	Meteorological reports and other information	RP	App. 3, 2.3.3	Criteria for issuance of local special reports and SPECI
IR	MET.TR.250(d)(18)	Meteorological reports and other information	RP	App. 3, 2.3.3	Criteria for issuance of local special reports and SPECI
IR	MET.TR.250(d)(19)	Meteorological reports and other information	RP	App. 3, 2.3.3	Criteria for issuance of local special reports and SPECI
IR	MET.TR.250(d)(20)	Meteorological reports and other information	Note	App. 3, 2.3.3	Criteria for issuance of local special reports and SPECI
IR	MET.TR.252(a)(1)	Reporting of meteorological elements	S	App. 3, 4.1.5.1	Reporting
IR	MET.TR.252(a)(2)	Reporting of meteorological elements	S	App. 3, 4.1.5.1	Reporting
IR	MET.TR.252(a)(3)(i) to (v)	Reporting of meteorological elements	S	App. 3, 4.1.5.1	Reporting
IR	MET.TR.252(a)(3)(vii)	Reporting of meteorological elements	S	App. 3, 4.1.5.3	Reporting
IR	MET.TR.252(b)(1)	Reporting of meteorological elements	S	App. 3, 4.2.4.1	Reporting
IR	MET.TR.252(b)(2)	Reporting of meteorological elements	S	App. 3, 4.2.4.1	Reporting
IR	MET.TR.252(b)(3)	Reporting of meteorological elements	S	App. 3, 4.2.4.2	Reporting
IR	MET.TR.252(c)(1)	Reporting of meteorological elements	S	App. 3, 4.3.6.1	Reporting
IR	MET.TR.252(c)(2)	Reporting of meteorological elements	S	App. 3, 4.3.6.1	Reporting
IR	MET.TR.252(c)(3)	Reporting of meteorological elements	S	App. 3, 4.3.6.3	Reporting
IR	MET.TR.252(c)(4)	Reporting of meteorological elements	S	App. 3, 4.3.6.4	Reporting
IR	MET.TR.252(d)(1)	Reporting of meteorological elements	S	App. 3, 4.4.2.1	Reporting
IR	MET.TR.252(d)(2)	Reporting of meteorological elements	S	App. 3, 4.4.2.2	Reporting

NPA IR	NPA rule Reference	NPA rule title	ICAO S, RP Note	ICAO rule reference	ICAO rule title
IR	MET.TR.252(d)(3)	Reporting of meteorological elements	S	App. 3, 4.4.2.5	Reporting
IR	MET.TR.252(d)(4)	Reporting of meteorological elements	S	App. 3, 4.4.2.8	Reporting
IR	MET.TR.252(e)(1)	Reporting of meteorological elements	S	App. 3, 4.5.4.1	Reporting
IR	MET.TR.252(e)(2)	Reporting of meteorological elements	S	App. 3, 4.5.4.1	Reporting
IR	MET.TR.252(e)(3)	Reporting of meteorological elements	S	App. 3, 4.5.4.4	Reporting
IR	MET.TR.252(f)(1)	Reporting of meteorological elements	S	App. 3, 4.6.2.1	Reporting
IR	MET.TR.252(f)(2)	Reporting of meteorological elements	S	App. 3, 4.6.2.1	Reporting
IR	MET.TR.252(f)(3)	Reporting of meteorological elements	S	App. 3, 4.6.2.2	Reporting
IR	MET.TR.252(g)(1)	Reporting of meteorological elements	S	App. 3, 4.7.3.1	Reporting
IR	MET.TR.252(g)(2)	Reporting of meteorological elements	S	App. 3, 4.7.3.1	Reporting
IR	MET.TR.252(g)(3)	Reporting of meteorological elements	S	App. 3, 4.7.3.2	Reporting
IR	MET.TR.252(g)(4)	Reporting of meteorological elements	S	App. 3, 4.7.3.3	Reporting
IR	MET.TR.255(a)	Observing meteorological elements	S	Ch. 4, 4.6.1.1	Surface wind
IR	MET.TR.255(a)(1)	Observing meteorological elements	RP	App. 3, 1.1	General provisions related to meteorological observations
IR	MET.TR.255(a)(2)	Observing meteorological elements	S	App. 3, 4.1.3.1	Averaging
IR	MET.TR.255(a)(3)	Observing meteorological elements	--	---	---
IR	MET.TR.255(b)(1)	Observing meteorological elements	--	---	---
IR	MET.TR.255(b)(2)	Observing meteorological elements	--	---	---
IR	MET.TR.255(b)(3)	Observing meteorological elements	--	---	---
IR	MET.TR.255(b)(4)	Observing meteorological	RP	App. 3, 4.2.3	Averaging

NPA IR	NPA rule Reference	NPA rule title	ICAO S, RP Note	ICAO rule reference	ICAO rule title
		elements			
IR	MET.TR.255(c)(1)	Observing meteorological elements	--	---	---
IR	MET.TR.255(c)(2)	Observing meteorological elements	S	App. 3, 4.3.2.1	Instrumented systems
IR	MET.TR.255(c)(3)	Observing meteorological elements	S	App. 3, 4.3.3.1	Display
IR	MET.TR.255(c)(4)	Observing meteorological elements	S	App. 3, 4.3.4	Averaging
IR	MET.TR.255(d)(1)	Observing meteorological elements	--	---	---
IR	MET.TR.255(d)(2)	Observing meteorological elements	--	---	---
IR	MET.TR.255(e)(1)	Observing meteorological elements	S	Ch. 4, 4.6.5.1	Clouds
IR	MET.TR.255(e)(2)	Observing meteorological elements	--	---	---
IR	MET.TR.255(e)(3)	Observing meteorological elements	RP	App.3, 4.5.2	Display
IR	MET.TR.255(e)(4)	Observing meteorological elements	S	App. 3, 4.5.3	Reference level
IR	MET.TR.255(f)	Observing meteorological elements	--	---	---
IR	MET.TR.255(g)(1)	Observing meteorological elements	S	Ch. 4, 4.6.7	Atmospheric pressure
IR	MET.TR.255(g)(2)	Observing meteorological elements	S	App. 3, 4.7.1	Display
IR	MET.TR.255(g)(3)	Observing meteorological elements	--	---	---
IR	MET.TR.260(a)	Volcanic Ash Advisory Centre responsibilities	S	App. 2, 3.1.1	Volcanic ash advisory information
IR	MET.TR.260(b)	Volcanic Ash Advisory Centre responsibilities	S	App. 2, 3.1.2	Volcanic ash advisory information
IR	MET.TR.265(a)	World Area Forecast Centre responsibilities	S	App. 2, 1.1	Formats and codes
IR	MET.TR.265(b)(1)	World Area Forecast Centre responsibilities	S	App. 2, 1.2.1	Upper-air gridded forecasts
IR	MET.TR.265(b)(2)	World Area Forecast Centre responsibilities	S	App. 2, 1.2.1	Upper-air gridded forecasts

NPA IR	NPA rule Reference	NPA rule title	ICAO S, RP Note	ICAO rule reference	ICAO rule title
IR	MET.TR.265(b)(3)	World Area Forecast Centre responsibilities	S	App. 2, 1.2.2 & 1.2.4	Upper-air gridded forecasts
IR	MET.TR.265(c)(1)	World Area Forecast Centre responsibilities	S	App. 2, 1.3.1.1	General provisions
IR	MET.TR.265(c)(2)	World Area Forecast Centre responsibilities	S	App. 2, 1.3.2	Types of SIGWX forecasts
IR	MET.TR.265(c)(3)	World Area Forecast Centre responsibilities	S	App. 2, 1.3.3	Items included in SIGWX forecasts
IR	MET.TR.265(c)(4)	World Area Forecast Centre responsibilities	S	App. 2, 1.3.3	Criteria for including items in SIGWX forecasts
IR	MET.TR.265(d)	World Area Forecast Centre responsibilities	Note to	App. 2, 1.3.2	Types of SIGWX forecasts
IR	MET.TR.270(a)	Tropical Cyclone Advisory Centre responsibilities	S	App. 2, 5.1.1	Tropical cyclone advisory information
IR	MET.TR.270(b)	Tropical Cyclone Advisory Centre responsibilities	S	App. 2, 5.1.1	Tropical cyclone advisory information

Acceptable Means of Compliance (AMC) & Guidance Material (GM)

NPA AMC GM	NPA Rule Reference	NPA Rule title	ICAO S, RP Note	ICAO Rule reference	ICAO Rule title
GM1	MET.TR.115(a)	Meteorological bulletins	Note 1	App. 10, 2.1.3	Heading of Bulletins
GM1	MET.TR.115(a)(2)	Meteorological bulletins	Note 2	App. 10, 2.1.3	Heading of Bulletins
AMC1	MET.TR.205(a)	SIGMET message	RP	App. 6, 1.1.9	Format of SIGMET messages
GM1	MET.TR.205(a) & MET.TR.210(a)	SIGMET message AIRMET message	Table	App. 6, Example A6-1	SIGMET and AIRMET message and the corresponding cancellations
GM2	MET.TR.205(a)	SIGMET message	Table	App. 6, Example A6-2	SIGMET message for tropical cyclone
GM3	MET.TR.205(a)	SIGMET message	Table	App. 6, Example A6-3	SIGMET message for volcanic ash
GM4	MET.TR.205(a)	SIGMET message	Table	App. 6, Example A6-4	SIGMET message for radioactive cloud
GM5	MET.TR.205(a)	SIGMET message	Table	App. 6, Example A6-5	SIGMET message for severe turbulence
GM6	MET.TR.205(a)	SIGMET message	Table	App. 6, Example A6-6	AIRMET message for moderate mountain wave

NPA AMC GM	NPA Rule Reference	NPA Rule title	ICAO S, RP Note	ICAO Rule reference	ICAO Rule title
AMC1	MET.TR.205(b)	SIGMET message	RP	App. 6, 4.1	Identification of the flight information region
GM1	MET.TR.205(b)	SIGMET message	Note	App. 6, 4.1	Identification of the flight information region
AMC1	MET.TR.205(c) MET.TR.210(c)	SIGMET message AIRMET message	RP	App. 6, 4.2.9	Criteria related to phenomena included in SIGMET and AIRMET messages and special air-reports (uplink)
GM1	MET.TR.205(c) MET.TR.210(c)	SIGMET message AIRMET message	RP	App. 6, 4.2.1	Criteria related to phenomena included in SIGMET and AIRMET messages and special air-reports (uplink)
AMC1	MET.TR.205(d)	SIGMET message	RP	App. 6, 1.1.6	Format of SIGMET messages
GM1	MET.TR.205(d)	SIGMET message	Note	App. 6, 1.1.8	Format of SIGMET messages
GM1	MET.TR.210(b)	AIRMET message			
AMC1	MET.TR.215(a)	SIGMET message	S	1.1.8	Format of SIGMET messages
AMC2	MET.TR.215(a)	Forecasts and other meteorological information	RP	App. 8, 2.3	Specific needs of helicopter operations
GM1	MET.TR.215(a)(5)(iii) ,(iv) & (v)	Forecasts and other meteorological information	S	Ch. 9.2.1	Briefing, consultation and display
AMC1	MET.TR.215(a)(5)(vi)	Forecasts and other meteorological information	RP	App. 8, 5.2	Detailed specifications of the systems
GM1	MET.TR.215(a)(5)(vi)	Forecasts and other meteorological information	Note	App. 8, 5.2	Detailed specifications of the systems
GM1	MET.TR.215(b)(a)	Forecasts and other meteorological information	S	App. 9, 2.1 (e-g)	List of information
GM1	MET.TR.215(b)(b)	Forecasts and other meteorological information	S	App. 9, 2.2.1	Information to be provided on request
AMC1	MET.TR.215(d)(5)	Forecasts and other meteorological information	S	App. 8, 4.2.3 a) (first sentence)	Height indications
GM1	MET.TR.215(d)(5)	Forecasts and other meteorological information	S	App. 8, 4.2.3 a) (2nd sentence)	Height indications
AMC1	MET.TR.215(e)(a)	Forecasts and other meteorological information	RP	App. 8, 4.3.1	In chart form
AMC1	MET.TR.215(e)(b)	Forecasts and other meteorological information	RP	App. 8, 4.3.2	In abbreviated plain language
AMC1	MET.TR.215(e)(1)& (2)	Forecasts and other meteorological information	RP	App. 8, 4.1.1 & Note to 4.1.1	Presentation of information
AMC2	MET.TR.215(e)(1)&	Forecasts and other	RP	App. 8, 4.1.4	Presentation of information

NPA AMC GM	NPA Rule Reference	NPA Rule title	ICAO S, RP Note	ICAO Rule reference	ICAO Rule title
	(2)	meteorological information			
AMC1	MET.TR.215(f)	Forecasts and other meteorological information	RP	App. 8, 4.2.1.1	Characteristics of charts
AMC2	MET.TR.215(f)	Forecasts and other meteorological information	S	App. 8, 4.2.2.1	Set of charts to be provided
GM1	MET.TR.215(f)	Forecasts and other meteorological information	RP	App. 8, 4.2.1.3	Characteristics of charts
GM1	MET.TR.215(g)	Forecasts and other meteorological information	RP Note	App. 8, 4.1.2	Presentation of information
AMC1	MET.TR.215(i)	Forecasts and other meteorological information	RP	Ch. 8.1.2	General provisions
AMC2	MET.TR.215(i)	Forecasts and other meteorological information	RP	Ch. 8.1.3	General provisions
AMC3	MET.TR.215(i)	Forecasts and other meteorological information	RP	Ch. 8.3	Aerodrome climatological summaries
AMC4	MET.TR.215(i)	Forecasts and other meteorological information	RP	App. 7, 3.1.1	Aerodrome climatological tables
AMC5	MET.TR.215(i)	Forecasts and other meteorological information	RP	App. 7, 3.1.2	Aerodrome climatological tables
AMC6	MET.TR.215(i)	Forecasts and other meteorological information	RP	App. 7, 3.2	Aerodrome climatological summaries
GM1	MET.TR.215(i)	Forecasts and other meteorological information	Note	Ch. 8.1	General provisions
GM2	MET.TR.215(i)	Forecasts and other meteorological information	Note	App. 7, 3.2	Aerodrome climatological summaries
GM3	MET.TR.215(i)	Forecasts and other meteorological information	Note	Ch. 8.1.1	General provisions
GM1	MET.TR.220(a)(8)	Aerodrome forecasts (TAF)	Note	Ch. 6.2.3	Aerodrome forecasts
AMC1	MET.TR.220(b)(a)	Aerodrome forecasts (TAF)	RP	EUR ANP, Ch.14	Forecasts
AMC1	MET.TR.220(b)(b)	Aerodrome forecasts (TAF)	RP	EUR ANP, Ch.14	Forecasts
AMC1	MET.TR.220(b)(c)	Aerodrome forecasts (TAF)	RP	EUR ANP, Ch.9	Meteorological observations and reports
AMC1	MET.TR.220(b)(d)	Aerodrome forecasts (TAF)	RP	Ch. 6.2.6	Aerodrome forecasts
AMC1	MET.TR.220(b)(e)	Aerodrome forecasts (TAF)	RP	Ch. 6.2.6	Aerodrome forecasts
GM1	MET.TR.220(c)	Aerodrome forecasts (TAF)	Table	App. 5, Example A5-1	TAF
GM2	MET.TR.220(c)	Aerodrome forecasts (TAF)	Table	App. 5, Example A5-2	Cancellation of TAF

NPA AMC GM	NPA Rule Reference	NPA Rule title	ICAO S, RP Note	ICAO Rule reference	ICAO Rule title
GM3	MET.TR.220(c)	Aerodrome forecasts (TAF)	Note	App. 5, 1.1.1	TAF format
GM1	MET.TR.220(d)	Aerodrome forecasts (TAF)	Note	App. 5, 1.1.3	TAF format
GM1	MET.TR.220(e)	Aerodrome forecasts (TAF)	Note	App. 5, 1.2	Inclusion of meteorological elements in TAF
AMC1	MET.TR.220(f)	Aerodrome forecasts (TAF)	S	App. 5, 1.3.2	Use of change groups
GM1	MET.TR.220(f)(1)	Aerodrome forecasts (TAF)	Note	App. 5, 1.3 Table A5-2	Use of change groups Use of change and time indicators in TAF
AMC1	MET.TR.220(f)(2)(iv) MET.TR.225(c)(1)(iii)	Aerodrome forecasts (TAF) Aerodrome forecasts - Landing (TREND)	RP	App. 3, 2.3.3	Criteria for issuance of local special reports and SPECI
AMC1 1	MET.TR.220(g)	Aerodrome forecasts (TAF)	RP	App. 5, 1.5	Numbers of change and probability groups
GM1	MET.TR.220(g)	Aerodrome forecasts (TAF)	RP	App. 5, 1.4	Use of probability groups
AMC1	MET.TR.225(c)(1)	Aerodrome forecasts - Landing (TREND)	S	App. 5, 2.2.2	Surface wind
AMC1	MET.TR.225(c)(7)(ii)	Aerodrome forecasts - Landing (TREND)	RP	App. 5, 2.3.2	Use of change groups
GM1	MET.TR.225(c)(7)(ii)	Aerodrome forecasts - Landing (TREND)	RP	App. 5, 2.3.2 Table A3-3	Use of change groups Use of change indicators in trend forecasts
AMC1	MET.TR.225(c)(7)(iii)	Aerodrome forecasts - Landing (TREND)	RP	App. 5, 2.3.3	Use of change groups
AMC1	MET.TR.226(a)	Forecasts – take-off	RP	App. 5, 3.2	Amendments to forecasts for take-off
AMC1	MET.TR.230	Area forecasts for low level flights	RP	EUR ANP, Ch.22 & Ch. 23	Forecasts
GM1	MET.TR.230	Area forecasts for low-level flights	Note	4.3	Content of area forecasts for low-level flights in chart form
AMC1	MET.TR.235(a)	Aerodrome warnings and wind shear warnings and alerts	RP	App. 6, 5.1.4 & 5.2	Format and dissemination of aerodrome warnings & Quantitative criteria for aerodrome warnings
AMC2	MET.TR.235(a)	Aerodrome warnings and wind shear warnings and alerts	Note	App. 6, 6.2	Format and dissemination of wind shear warnings and alerts
AMC1	MET.TR.235(c)	Aerodrome warnings and wind shear warnings and alerts	RP	App. 6, 6.2.3 & 6.2.4	Format and dissemination of aerodrome warnings

NPA AMC GM	NPA Rule Reference	NPA Rule title	ICAO S, RP Note	ICAO Rule reference	ICAO Rule title
GM1	MET.TR.235(c)	Aerodrome warnings and wind shear warnings and alerts	Note 1	App. 6, 6.2.3 & 6.2.4	Format and dissemination of wind shear warnings and alerts
GM2	MET.TR.235(c)	Aerodrome warnings and wind shear warnings and alerts	Note 2	App. 6, 6.2.3 & 6.2.4	Format and dissemination of wind shear warnings and alerts
AMC1	MET.TR.235(e)	Aerodrome warnings and wind shear warnings and alerts	RP	App. 6, 6.2.6	Format and dissemination of wind shear warnings and alerts
GM1	MET.TR.235(f)	Aerodrome warnings and wind shear warnings and alerts	Note	App. 6, 6.1	Detection of wind shear
GM1	MET.TR.250(a)(2)	Meteorological reports and other information	Note	Ch. 4.5	Contents of reports
AMC1	MET.TR.250(a)(4)	Meteorological reports and other information	S	Ch. 4.7.3	Reporting meteorological information from automatic observing systems
AMC1	MET.TR.250(a)(12)	Meteorological reports and other information	RP	App. 3, 4.8.1.1	Supplementary information
AMC2	MET.TR.250(a)(12)	Meteorological reports and other information	RP	App. 3, 4.8.1.2	Supplementary information
AMC3	MET.TR.250(a)(12)	Meteorological reports and other information	Note	App. 6, 6.2	Format and dissemination of wind shear warnings and alerts
AMC4	MET.TR.250(a)(12)	Meteorological reports and other information	RP	App. 3, 4.8.1.5	Supplementary information
AMC5	MET.TR.250(a)(12)	Meteorological reports and other information	RP	Ch. 4.6.8	Supplementary information
GM1	AMC1 & 2 MET.TR.250(a)(12)	Meteorological reports and other information	RP	App. 3, 4.8.1.1	Reporting
GM2	MET.TR.250(a)(12)	Meteorological reports and other information	Note	App. 3, 4.8.1.4	Reporting
GM1	MET.TR.250(b) & (c)	Meteorological reports and other information	Table	App. 3 Example A3-1	Routine report
GM2	MET.TR.250(b)(1)	Meteorological reports and other information	Table	App. 3 Example A3-2	Special report
GM3	MET.TR.250(b)(1)	Meteorological reports and other information	Table	App. 3 Example A3-3	Volcanic activity report
GM1	MET.TR.250(c)(1)	Meteorological reports and other information	Note	App. 3, 2.1	Format of meteorological reports
AMC1	MET.TR.250(c)(2)	Meteorological reports and other information		App. 3, 2.1.3	Format of meteorological reports

NPA AMC GM	NPA Rule Reference	NPA Rule title	ICAO S, RP Note	ICAO Rule reference	ICAO Rule title
GM1	MET.TR.250(c)(2)	Meteorological reports and other information	Note	App. 3, 2.1	Format of meteorological reports
GM1	MET.TR.250(d)(5)	Meteorological reports and other information	S	App. 3, 2.3.1 e)	Criteria for issuance of local special reports and SPECI
AMC1	MET.TR.250(d)(12)	Meteorological reports and other information	RP	App. 5, 1.3.2 d)	Use of change groups
GM1	MET.TR.250(d)(13)	Meteorological reports and other information	RP	App. 3, 4.2.4.4 b)	Reporting
AMC1	MET.TR.252(a)(1)(a)	Reporting of meteorological elements	RP	Ch. 4.6.1.2	Observing and reporting meteorological elements
AMC1	MET.TR.252(a)(1)(b)	Reporting of meteorological elements	RP	Ch. 4.6.1.3	Observing and reporting meteorological elements
GM1	MET.TR.252(a)(3)(iii)	Reporting of meteorological elements	S	App. 3, 4.1.5	Reporting
AMC1	MET.TR.252(b)(1)	Reporting of meteorological elements	RP	App. 3, 4.2.4.3	Reporting
AMC2	MET.TR.252(b)(1)	Reporting of meteorological elements	RP	App. 3, 4.2.4.3	Reporting
AMC1	MET.TR.252(c)(1)	Reporting of meteorological elements	RP	App. 3, 4.3.6.2	Reporting
AMC1	MET.TR.252(c)(3)	Reporting of meteorological elements	RP	App. 3, 4.3.6.6	Reporting
AMC1	MET.TR.252(c)(4)	Reporting of meteorological elements	RP	App. 3, 4.3.6.5	Reporting
AMC1	MET.TR.252(c)(4)(iii)	Reporting of meteorological elements	S	Ch. 4.6.3.4	Runway visual range
AMC1	MET.TR.252(d)(1)	Reporting of meteorological elements	RP	App. 3, 4.4.2.3	Reporting
AMC2	MET.TR.252(d)(1)	Reporting of meteorological elements	RP	App. 3, 4.4.2.4	Reporting
AMC1	MET.TR.252(d)(3)	Reporting of meteorological elements	RP	App. 3, 4.4.2.6	Reporting
AMC2	MET.TR.252(d)(3)	Reporting of meteorological elements	RP	App. 3, 4.4.2.7	Reporting
AMC1	MET.TR.252(d)(3)(i)	Reporting of meteorological elements	S	App. 3, 4.4.2.5	Reporting
GM1	MET.TR.252(d)(3)(i)	Reporting of meteorological elements	Note	App. 3, 4.4.2.5	Reporting
AMC1	MET.TR.252(e)(1)	Reporting of meteorological elements	RP	App. 3, 4.5.4.2	Reporting

NPA AMC GM	NPA Rule Reference	NPA Rule title	ICAO S, RP Note	ICAO Rule reference	ICAO Rule title
AMC2	MET.TR.252(e)(1)	Reporting of meteorological elements	RP	App. 3, 4.5.4.3	Reporting
AMC1	MET.TR.252(e)(3)	Reporting of meteorological elements	RP	App. 3, 4.5.4.5	Reporting
GM1	MET.TR.255	Observing meteorological elements	RP	App. 3, 1.2	General provisions related to meteorological observations
AMC1	MET.TR.255(a)	Observing meteorological elements	RP	App. 3, 4.1.2.2	Displays
GM1	MET.TR.255(a)	Observing meteorological elements	RP	App. 3, 4 & Attachment C	Observing and reporting of meteorological elements
GM2	MET.TR.255(a)	Observing meteorological elements	Note	App. 3, 4.1.1	Siting
AMC1	MET.TR.255(a)(1)	Observing meteorological elements	RP	App. 3, 4.1.1.1	Siting
AMC2	MET.TR.255(a)(1)	Observing meteorological elements	RP	App. 3, 4.1.1.2	Siting
GM1	MET.TR.255(a)(1)	Observing meteorological elements	Note	App. 3, 1.1	General provisions related to meteorological observations
AMC1	MET.TR.255(a)(2)	Observing meteorological elements	RP	App. 3, 4.1.3.2	Averaging
GM1	MET.TR.255(a)(2)(ii)	Observing meteorological elements	Note	App. 3, 4.1.3.1	Averaging
AMC1	MET.TR.255(a)(3)	Observing meteorological elements	RP	App. 3, 4.1.4	Accuracy of measurement
AMC1	MET.TR.255(b)(1)	Observing meteorological elements	RP	Ch. 4.6.2.2 & 4.6.2.3 & App. 3, 4.2.1.1	Visibility
AMC1	MET.TR.255(b)(2)	Observing meteorological elements	RP	App. 3, 4.2.1.2	Visibility
AMC1	MET.TR.255(b)(3)	Observing meteorological elements	RP	App. 3, 4.2.2	Visibility
AMC1	MET.TR.255(b)(4)	Observing meteorological elements	RP	App. 3, 4.2.3	Averaging
AMC1	MET.TR.255(c)	Observing meteorological elements	RP	App. 3, 4.3.1.1 & 4.3.1.2 (first)	Siting
AMC1	MET.TR.255(c)(1)	Observing meteorological elements	RP	App. 3, 4.3.1.2	Siting
GM1	MET.TR.255(c)(1)	Observing meteorological elements	Note 1	Attachment D	Conversion of instrumented readings into runway visual range and visibility

NPA AMC GM	NPA Rule Reference	NPA Rule title	ICAO S, RP Note	ICAO Rule reference	ICAO Rule title
AMC1	MET.TR.255(c)(2)	Observing meteorological elements	RP	App. 3, 4.3.5	Runway light intensity
GM1	MET.TR.255(c)(2)	Observing meteorological elements	Note	App. 3, 4.3.2	Instrumented systems
AMC1	MET.TR.255(c)(3)	Observing meteorological elements	RP	App. 3, 4.3.3.2	Display
GM1	MET.TR.255(c)(4)(ii)(b)	Observing meteorological elements	Note	App. 3, 4.3.4	Averaging
AMC1	MET.TR.255(d)(1)	Observing meteorological elements	RP	Ch. 4.6.4.2 & 4.6.4.3	Present weather
AMC1	MET.TR.255(d)(2)	Observing meteorological elements	RP	App. 3, 4.4.1	Siting
AMC1	MET.TR.255(e)	Observing meteorological elements	RP	Ch. 4.6.5.2 & 4.6.5.3	Clouds
AMC1	MET.TR.255(e)(2)	Observing meteorological elements	RP	App. 3, 4.5.1	Siting
GM1	MET.TR.255(e)(2)	Observing meteorological elements	Note	App. 3, 4.5.1	Siting
AMC1	MET.TR.255(e)(3)	Observing meteorological elements	RP	App. 3, 4.5.2	Display
AMC1	MET.TR.255(f)(a)	Observing meteorological elements	RP	Ch. 4.6.6.2	Air temperature and dew-point temperature
AMC1	MET.TR.255(f)(b)-(c)	Observing meteorological elements	RP	App. 3, 4.6.1	Display
AMC1	MET.TR.255(g)(3)	Observing meteorological elements	RP	App. 3, 4.7.2	Reference level
GM1	MET.TR.260(a)	Volcanic Ash Advisory Centre responsibilities	Table	App. 2, Example A2-1	Advisory message for volcanic ash
GM1	MET.TR.260(b)(2)	Volcanic Ash Advisory Centre responsibilities	Note	App. 2, 3.1.2	Volcanic ash advisory information
AMC1	MET.TR.265(a)	World Area Forecast Centre responsibilities	RP	App. 10, 2.2.1	Telecommunications for the supply of WAFS products
AMC2	MET.TR.265(a)	World Area Forecast Centre responsibilities	RP	App. 10, 2.2.3	Quality requirements for transmissions
GM1	MET.TR.265(a)	World Area Forecast Centre responsibilities	Note	App. 2, 1.2.3	Upper-air gridded forecasts
GM2	MET.TR.265(a)	World Area Forecast Centre responsibilities	Note	App. 2, 1.3.1.2	General provisions
GM1	MET.TR.265(b)(3)	World Area Forecast Centre responsibilities	Note1 Note 2	App. 2, 1.2.2	Upper-air gridded forecasts

NPA AMC GM	NPA Rule Reference	NPA Rule title	ICAO S, RP Note	ICAO Rule reference	ICAO Rule title
AMC1	MET.TR.265(d)	World Area Forecast Centre responsibilities	Note 1	App. 2, 1.3.3	Items included in SIGWX forecasts
AMC1	MET.TR.270(b)	Tropical Cyclone Advisory Centre responsibilities	RP	App. 2, 5.1.3	Tropical cyclone advisory information
GM1	MET.TR.270(b)	Tropical Cyclone Advisory Centre responsibilities	Note	App. 2, 5.1.3	Tropical cyclone advisory information
GM2	MET.TR.270(b)	Tropical Cyclone Advisory Centre responsibilities	Table	App. 2, Example A2-2	Advisory message for tropical cyclones

IV. MET rules of Annex IV — Subpart A of NPA 2013-08 (B)

For information, the rules of Annex IV of NPA 2013-08 *'Requirements for ATM/ANS providers and the safety thereof' with regard to the provision of meteorological services'* — Subpart A (MET.OR) are included below.

(Please note that the below rule text is the one currently proposed in NPA 2013-08 and does not contain the possible changes stemming from the current revision under the CRD process.)

Implementing rules

ANNEX IV

SPECIFIC REQUIREMENTS FOR THE PROVISION OF METEOROLOGICAL SERVICES (Part-MET)

SUBPART A — ADDITIONAL ORGANISATION REQUIREMENTS FOR THE PROVISION OF METEOROLOGICAL SERVICES (MET.OR)

Section 1 — General requirements

MET.OR.005 Scope and objective of meteorological services

(a) This subpart establishes additional requirements to those in Annex II to be met by meteorological services providers.

(b) The objective of meteorological services shall be achieved by supplying the following users: operators, flight crew members, air traffic services units, search and rescue services units, aerodrome operators, accident and incident investigation bodies, and other entities in scope of ATM/ANS with the meteorological information necessary for the performance of their respective functions.

MET.OR.100 Quality of the data & information

Meteorological services providers shall confirm the accuracy of the information distributed for operations, including the source of such information, whilst also ensuring that such information is distributed in a timely manner, and updated as required.

MET.OR.105 Retention of information

(a) Meteorological services providers shall retain information issued for a period of at least 30 days from the date of issue.
(b) This information shall be made available, on request, for inquiries or investigations and, for these purposes, shall be retained until the inquiry or investigation is completed.

MET.OR.110 Information exchange requirements

Meteorological services providers shall ensure they have systems and processes in place, as well as access to suitable telecommunications facilities to:

(a) enable the exchange of operational meteorological information with other meteorological offices; and
(b) provide the required meteorological information to the users in a timely manner.

Section 2 — Specific requirements

Chapter 1 — Requirements for meteorological watch offices

MET.OR.200 Watch and other meteorological information

Within its area of responsibility, a meteorological watch office shall:

(a) maintain continuous watch over meteorological conditions affecting flight operations;

(b) coordinate with the organisation responsible for the provision of NOTAM and/or ASHTAM to ensure that information on volcanic ash included in SIGMET and NOTAM and/or ASHTAM messages is consistent;

(c) coordinate with volcano observatories to ensure that information on volcanic activity is received in an efficient and timely manner;

(d) provide its associated area control center/flight information centre (ACC/FIC), and its associated VAAC with information received on pre-eruption volcanic activity, a volcanic eruption and volcanic ash cloud for which a SIGMET has not already been issued; and

(e) provide its associated ACC/FIC with information received on the accidental release of radioactive materials into the atmosphere in the area for which it maintains watch or adjacent areas and for which a SIGMET has not already been issued.

MET.OR.205 SIGMET

The meteorological watch office shall:

(a) provide and disseminate SIGMET messages;

(b) give a concise description in abbreviated plain language concerning the occurrence and/or expected occurrence of specified en route weather phenomena which may affect the safety of aircraft operations, and of the development of those phenomena in time and space;

(c) ensure that SIGMET information is cancelled when the phenomena are no longer occurring or are no longer expected to occur in the area covered by the SIGMET;

(d) ensure that the period of validity of a SIGMET message is not more than 4 hours. In the special case of SIGMET messages for volcanic ash cloud and tropical cyclones, the period of validity shall be extended up to 6 hours; and

(e) ensure that SIGMET messages are issued not more than 4 hours before the commencement of the period of validity. In the special case of SIGMET messages for volcanic ash cloud and tropical cyclones, these messages shall be issued as soon as practicable, but not more than 12 hours before the commencement of the period of validity and be updated at least every 6 hours.

MET.OR.210 AIRMET

The meteorological watch office shall:

(a) provide and disseminate AIRMET information to associated air traffic services units, as determined by the competent authority, taking into account the density of air traffic operating below flight level 100;

(b) give a concise description in abbreviated plain language concerning the occurrence and/or expected occurrence of specified en route weather phenomena, which have not been included in MET.OR.230 and which may affect the safety of low-level flights, and of the development of those phenomena in time and space;

(c) cancel AIRMET information when the phenomena are no longer occurring or are no longer expected to occur in the area; and

(d) ensure that the period of validity of an AIRMET message is not more than 4 hours.

Chapter 2 — Requirements for aerodrome meteorological offices

MET.OR.215 Forecasts and other meteorological information — General

An aerodrome meteorological office shall:

(a) prepare and/or obtain forecasts and other relevant information necessary for the performance of its respective functions for flights with which it is concerned, as determined by the competent authority;

(b) provide forecasts and/or warnings for local meteorological conditions on aerodromes for which it is responsible;

(c) keep the forecasts and warnings under continuous review and issue amendments promptly when necessary, and cancel the forecasts that cannot be kept under continuous review;

(d) provide briefing, consultation, and flight documentation to flight crew members and/or other flight operations personnel;

(e) provide other meteorological information necessary for the performance of their respective functions;

(f) provide its associated air traffic services unit, aeronautical information service unit and meteorological watch office with information received on pre-eruption volcanic activity, a volcanic eruption, or volcanic ash cloud;

(g) provide, if applicable, meteorological information to search and rescue services units and maintain liaison with the search and rescue services unit throughout a search and rescue operation; and

(h) provide meteorological information to relevant aeronautical information services units, as necessary, for the conduct of their functions.

MET.OR.220 Aerodrome forecasts (TAF)

(a) An aerodrome meteorological office shall issue aerodrome forecasts (TAF) at a specified time, and shall provide a concise statement of the expected meteorological conditions at an aerodrome for a specified period.

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

MET.OR.225 Aerodrome forecasts — Landing (TREND)

(a) The aerodrome meteorological office shall prepare forecasts for landing as determined by the competent authority;

(b) This forecast shall be issued in the form of a TREND forecast.

MET.OR.226 Forecasts — Take-off

The aerodrome meteorological office shall:

(a) prepare forecasts for take-off as determined by the competent authority; and

(b) supply forecasts for take-off to operators and flight crew members on request within the 3 hours before the expected time of departure.

MET.OR.230 Area forecasts for low-level flights

The aerodrome meteorological office shall:

(a) provide area forecast for low-level flights, when the density of traffic operating below flight level 100, or up to flight level 150 in mountainous areas, or higher, where necessary, warrants the routine issue and dissemination of area forecasts for such operations, as determined by the competent authority;

(b) ensure that the frequency of issue, the form, and the fixed time or period of validity of area forecast for low-level flights and the criteria for amendments thereto, are based on the agreement in (a); and

(c) ensure that area forecasts for low-level flights prepared in support of the issuance of AIRMET information are issued every 6 hours for a period of validity of 6 hours and transmitted to meteorological watch offices concerned not later than 1 hour prior to the beginning of their validity period.

MET.OR.235 Warnings and alerts

An aerodrome meteorological office shall:

(a) give concise aerodrome warnings information of meteorological conditions which could adversely affect aircraft on the ground, including parked aircraft, and the aerodrome facilities and services;

(b) prepare wind shear warnings for aerodromes where wind shear is considered a factor, in accordance with local arrangements with the appropriate ATS unit and operators concerned;

(c) give concise information on the observed or expected existence of wind shear which could adversely affect aircraft on the approach path or take-off path or during circling approach between runway level and 500 m (1 600 ft) above that level and aircraft on the runway during the landing roll or take-off run. Where local topography has been shown to produce significant wind shears at heights in excess of 500 m (1 600 ft) above runway level, then 500 m (1 600 ft) shall not be considered restrictive;

(d) issue, at aerodromes where wind shear is detected by automated, ground-based, wind shear remote-sensing or detection equipment, wind shear alerts generated by these systems; and

(e) cancel warnings when the conditions are no longer occurring and/or no longer expected to occur at the aerodrome.

MET.OR.240 Information for use by operator or flight crew

(a) An aerodrome meteorological office shall provide meteorological information:

  (1) to its associated air traffic services unit for use in their flight information service; and

  (2) to operators for in-flight replanning on request.

(b) Whenever the meteorological information to be included in the flight documentation will differ materially from that made available for flight planning, the aerodrome meteorological office shall:

  (1) advise immediately the operator or flight crew concerned; and

(2) if practicable, provide with the revised information in agreement with the operator.

MET.OR.245 Notification of discrepancies to the World Area Forecast Centres (WAFC)

Meteorological services providers using WAFS Binary Universal Form for the Representation (BUFR) data shall notify the WAFC concerned immediately if significant discrepancies are detected or meteorological reported in respect of WAFS Significant Weather (SIGWX) forecasts concerning:

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

(b) volcanic eruptions or an accidental release of radioactive materials into the atmosphere, of significance to aircraft operations.

Chapter 3 — Requirements for meteorological stations

MET.OR.250 Meteorological reports and other information

(a) Meteorological stations shall disseminate to the appropriate entities specified in MET.OR.005(b):

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

(2) METAR at half-hourly intervals for dissemination beyond the aerodrome of origin.

(b) The meteorological station shall:

(1) assess the runway visual range, using instrumented systems, on all runways intended for Category II and III instrument approach and landing operations;

(2) without delay inform the air traffic service units and aeronautical information service of an aerodrome of changes in the serviceability status of the automated equipment used for assessing runway visual range;

(3) without delay report to the associated air traffic services unit, aeronautical information services unit, and meteorological watch office the occurrence of pre-eruption volcanic activity, volcanic eruptions, and volcanic ash cloud; and

(4) establish a list of criteria to provide local special reports in consultation with the appropriate ATS units, operators and others concerned.

MET.OR.255 Observation of meteorological elements

The meteorological station shall observe and/or measure the following elements:

(a) surface, wind, direction, and speed;

(b) visibility;

(c) present weather at the aerodrome and its vicinity;

(d) clouds;

(e) air temperature and dew-point temperature; and

(f) atmospheric pressure.

Chapter 4 — Requirements for Volcanic Ash Advisory Centre (VAAC)

MET.OR.260 Volcanic Ash Advisory Centre (VAAC) responsibilities

In its area of responsibility, the VAAC shall:

(a) when a volcano has erupted, or is expected to erupt, or volcanic ash is reported, provide advisory information regarding the extent and forecast movement of the volcanic ash cloud to:

(1) the European aviation crisis coordination cell;

(2) meteorological watch offices serving flight information regions in its area of responsibility which may be affected;

(3) operators, area control centres, and flight information centres serving flight information regions in its area of responsibility which may be affected;

(4) world area forecast centres, international OPMET databanks, international NOTAM offices, and centres designated by regional air navigation agreement for the operation of aeronautical fixed service satellite distribution systems; and

(5) other VAACs whose areas of responsibility may be affected.

(b) coordinate with volcano observatories to ensure that information on volcanic activity is received in an efficient and timely manner;

(c) provide the advisory information in (a) at least every 6 hours until such time as the volcanic ash cloud is no longer identifiable from satellite data, no further meteorological reports of volcanic ash are received from the area, and no further eruptions of the volcano are reported; and

(d) maintain a 24-hour watch.

Chapter 5 — Requirements for World Area Forecast Centre (WAFC)

MET.OR.265 World Area Forecast Centre (WAFC) responsibilities

(a) The World Area Forecast Centre shall, in a digital form, provide users with:

(1) gridded global forecasts of:

(i) upper wind;

(ii) upper-air temperature and humidity;

(iii) geopotential altitude of flight levels;

(iv) flight level and temperature of tropopause;

(v) direction, speed, and flight level of maximum wind;

(vi) cumulonimbus clouds;

(vii) icing; and

(viii) turbulence; and

(2) global forecasts of significant weather (SIGWX) phenomena, including volcanic activity and accidental release of radioactive materials.

(b) The World Area Forecast Centre shall ensure that world area forecast system products in digital form are transmitted using binary data communications techniques.

Chapter 6 — Requirements for Tropical Cyclone Advisory Centre (TCAC)

MET.OR.270 Tropical Cyclone Advisory Centre (TCAC) responsibilities

A tropical cyclone advisory centre shall:

(a) 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:

(1) meteorological watch offices in its area of responsibility;

(2) other TCACs whose areas of responsibility may be affected; and

(b) world area forecast centres, international OPMET databanks, and centres responsible for the operation of aeronautical fixed service satellite distribution systems; and

(c) issue updated advisory information to meteorological watch offices for each tropical cyclone, as necessary, but at least every six hours.

Acceptable Means of Compliance & Guidance Material

AMC/GM to ANNEX IV

Specific requirements for the provision of meteorological services (Part-MET)

SUBPART A — ADDITIONAL ORGANISATION REQUIREMENTS FOR THE PROVISION OF METEOROLOGICAL SERVICES (MET.OR)

GM1 MET.OR.005(b) Scope and objective of meteorological services
OTHER ENTITIES IN SCOPE OF ATM/ANS

The requirement in MET.OR.005(b) foresees the case where other entities must also be considered as users entitled to receive meteorological information. It is important to include these organisations in the list of users because they contribute to ensure safe, efficient, continuous, and sustainable ATM/ANS. However, these users are not considered providers of meteorological information.

Section 1 — General requirements

GM1 MET.OR.100 Quality of the data and information
DATA AND INFORMATION RELIABILITY

Owing to the variability of meteorological elements in space and time, to limitations of observing and forecasting techniques, and to limitations caused by the definitions of some of the elements, the specific value of any of the elements given in an observation or forecast report provides the best approximation to the actual conditions at the time of observation or the most probable value which the element is likely to assume during the period of the forecast. Similarly, when the time of occurrence or change of an element is given in a forecast, this time indicates the most probable time.

Section 2 — Specific requirements

Chapter 1 — Requirements for meteorological watch offices

GM1 MET.OR.200(a) Watch and other meteorological information
BOUNDARIES

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

GM1 MET.OR.200(e) Watch and other meteorological information
INFORMATION RECEIVED ON ACCIDENTAL RELEASE OF RADIOACTIVE MATERIALS

The information is provided by regional specialized meteorological centres (RSMCs) of the World Meteorological Organisation (WMO) for the provision of transport model products for radiological environmental emergency response, at the request of the Member 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 provider of meteorological service in each Member State. This contact point has the responsibility of redistributing the RSMC products within the Member State concerned. Furthermore, the information is provided by the IAEA to RSMCs co-located with the London Volcanic Ash Advisory Centre (VAAC), designated as the focal point, which in turn notifies the Area Control Centres (ACCs) concerned about the release.

AMC1 MET.OR.205(a) SIGMET
MULTIPLE FLIGHT INFORMATION REGIONS (FIR) OR CONTROL AREA (CTA)

Meteorological watch offices whose area of responsibility encompasses more than one FIR and/or CTA should provide separate SIGMET messages for each FIR and/or CTA.

AMC1 MET.OR.205(d) SIGMET
SOURCE OF SIGMET MESSAGES

SIGMET messages concerning volcanic ash clouds and tropical cyclones should be based on advisory information provided by VAACs and Tropical Cyclone Advisory Centres (TCACs), respectively.

Chapter 2 — Requirements for aerodrome meteorological offices

AMC1 MET.OR.215(a) Forecasts and other meteorological information — General
USE OF WAFC FORECASTS

Meteorological offices should use forecasts issued by WAFCs in the preparation of flight documentation, whenever these forecasts cover the intended flight path in respect of time, altitude and geographical extent.

GM1 MET.OR.215(a) Forecasts and other meteorological information — General
PREPARATION OF FORECASTS

The extent of the aerodrome meteorological office responsibilities to prepare forecasts may relate to the local availability and use of en-route and aerodrome forecast material received from other offices.

GM1 MET.OR.215(c) Forecasts and other meteorological information — General
AUTOMATIC CANCELLATION

The issue of a new forecast by an aerodrome meteorological office, such as a routine aerodrome forecast, automatically cancels any forecast of the same type previously issued for the same place and for the same period of validity or part thereof.

GM1 MET.OR.215(c) Forecasts and other meteorological information — General
TAF CONTINUOUS REVIEW GUIDANCE

Guidance on methods to keep TAF under continuous review is given in chapter 3 of the Manual of Aeronautical Meteorological Practice (ICAO Doc 8896).

GM1 MET.OR.215(d) Forecasts and other meteorological information — General
BRIEFING AND CONSULTATION,

(a) Briefing should be understood as being a preparatory information on existing and/or expected meteorological conditions.

(b) Consultation should be understood as discussion, including answers to questions with a meteorologist or another qualified person of existing and/or expected meteorological conditions relating to flight operations.

GM1 MET.OR.225 Aerodrome forecasts — landing (TREND)
RANGE OF LANDING FORECASTS

Landing forecasts are intended to meet the requirements of local users and of aircraft within about one hour's flying time from the aerodrome.

GM2 MET.OR.225 Aerodrome forecasts — landing (TREND)

TREND FORECAST

A trend forecast is understood as being a concise statement of the expected significant changes in the meteorological conditions at that aerodrome to be appended to a local routine or local special report, or a METAR or SPECI. The period of validity of a trend forecast shall be two hours from the time of the report which forms part of the landing forecast.

AMC1 MET.OR.235(b) Warnings and alerts
WIND SHEAR FOLLOW-UP

Wind shear alerts should be updated at least every minute. They should be cancelled as soon as the headwind/tailwind change falls below 7.5 m/s (15 kt).

GM1 MET.OR.235(d) Warnings and alerts
WIND SHEAR ALERTS

Wind shear alerts are expected to complement wind shear warnings and together are intended to enhance situational awareness of wind shear.

GM1 MET.OR.235(e) Warnings and alerts
CANCELLATION OF WARNINGS

The criteria for the cancellation of a wind shear warning are defined locally for each aerodrome, as agreed between the aerodrome meteorological office, the appropriate ATS units, and the operators concerned.

GM1 MET.OR.245 Notification of discrepancies to the World Area Forecast Centre (WAFC)
GUIDANCE ON REPORTING SIGNIFICANT DISCREPANCIES

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

Chapter 3 — Requirements for meteorological stations

AMC1 MET.OR.250(a)(1) Reports and other information
ROUTINE OBSERVATIONS

Meteorological stations should make routine observations throughout the 24 hours each day.

AMC1 MET.OR.250(a)(2) Reports and other information
METAR AT AERODROMES NOT CONTINUOUSLY OPERATIONAL

At aerodromes that are not operational throughout the 24 hours, the issuance of a METAR should commence at least two hours prior to the aerodrome resuming operations, or as agreed between the Member State and the operator, to meet pre-flight and in-flight planning requirements for flights due to arrive at the aerodrome as soon as it is opened for use.

GM1 MET.OR.250(a) Reports and other information
TYPES OF METEOROLOGICAL STATIONS

(a) A meteorological station may be a separate station or may be combined with a synoptic station.

METEOROLOGICAL INSTRUMENTS

(a) Meteorological stations may include sensors installed outside the aerodrome.

AMC1 MET.OR.250(b) Reports and other information
RUNWAY VISUAL RANGE (RVR) ASSESSMENTS

RVR assessments should be representative of:

(a) the touchdown zone and the mid-point of the runway intended for Category II instrument approach and landing operations; and

(b) the touchdown zone, the mid-point, and stop-end of the runway intended for Category III instrument approach and landing operations.

AMC1 MET.OR.250(b)(3) Reports and other information
CONTENT OF THE VOLCANIC ACTIVITY REPORT

The report of occurrence of pre-eruption volcanic activity, volcanic eruptions, and volcanic ash clouds should be made in the form of a volcanic activity report comprising the following information in the order indicated:

(a) message type, VOLCANIC ACTIVITY REPORT,

(b) station identifier, location indicator or name of station,

(c) date/time of message,

(d) location of volcano and name if known, and

(e) concise description of event including, as appropriate, level of intensity of volcanic activity, occurrence of an eruption and its date and time, and the existence of a volcanic ash cloud in the area together with direction of ash cloud movement and height.

Chapter 5 — Requirements for World Area Forecast Centres

AMC1 MET.OR.265(a)(1) WAFC responsibilities
FREQUENCY OF GRIDDED GLOBAL FORECASTS

Gridded global forecasts should be prepared four times a day.

GM1 MET.OR.265(a)(1) WAFC responsibilities
GENERAL

Gridded global forecasts of cumulonimbus clouds, icing, and turbulence are currently of an experimental nature, labelled as 'trial forecasts' and only distributed through the Internet based file transfer protocol (FTP) services.

V. No differences to be filed by the European Union Member States

According to Article 38 of the Chicago Convention, ICAO contracting States are obliged to notify ICAO of any differences between their national regulations or practices and those prescribed in ICAO Standards. Although the EU is not an ICAO contracting party, it has acquired competence in areas covered by the ICAO Convention, inter alia following the adoption of the Basic Regulation. When the Commission — assisted by the Agency — adopts new regulations, there is a need to identify any differences between the new regulations and the ICAO SARPs so that European Member States can then notify ICAO of the differences.

In the proposed rule text, the Agency has not identified any differences to ICAO Annex 3. Although some ICAO Standards have been transposed into AMC or GM (downgrade) and some Recommendations have been transposed into implementing rules (upgrade), the content remains the same with the same objective. Indeed, when the Agency assesses the EU rules against ICAO provisions, it follows a purposive approach, meaning that the purpose and objective of the EU rule should be assessed against the purpose and objectives of the ICAO provision. It is not necessary for the EU rule and the ICAO provision to be literally the same — using exactly the same words — although in this NPA the ICAO recommendations listed in the table below have been transposed with no changes. As long as the purpose and objective are essentially similar, it will be assumed that the EU rule is in compliance with the ICAO provision and no non-compliance or difference need be recorded.

The table below shows all those ICAO Annex 3 recommendations that have been transposed in implementing rules as well as those ICAO Annex 3 Standards that have been transposed in EASA AMCs. When assessing compliance with an ICAO Recommendation or Standard, although an EU rule may be in the form of an implementing rule or AMC, if the EU regulatory system makes it essential to comply with the recommendation or standard in order to achieve the same safety objective as the ICAO provision, it is to be considered as essentially similar and no non-compliance or difference should be recorded.

ICAO Annex 3 — Recommendations	NPA — Implementing Rules
App. 5, 1.4 Recommendation - Use of probability groups	MET.TR.220(g) Aerodrome forecasts (TAF)
Ch. 6.4.2 Recommendation - Forecasts for take-off	MET.TR.226(a) Forecasts – take-off
App. 5, 3.1 Recommendation - Format of forecasts for take-off	MET.TR.226(b) Forecasts – take-off
App. 10, 2.1.2 Recommendation - Filing times of bulletins (second sentence)	MET.TR.250(c)(5) Meteorological reports and other information
App. 3, 2.3.3 a) Recommendation - Criteria for issuance of local special reports and SPECI	MET.TR.250(d)(12) Meteorological reports and other information
App. 3, 2.3.3 b) Recommendation - Criteria for issuance of local special reports and SPECI	MET.TR.250(d)(13) Meteorological reports and other information
App. 3, 2.3.3 c) Recommendation - Criteria for issuance of local special reports and SPECI	MET.TR.250(d)(14) Meteorological reports and other information
App. 3, 2.3.3 d) Recommendation - Criteria for issuance of local special reports and SPECI	MET.TR.250(d)(15) Meteorological reports and other information
App. 3, 2.3.3 e) Recommendation - Criteria for issuance of local special reports and SPECI	MET.TR.250(d)(16) Meteorological reports and other information
App. 3, 2.3.3 f) Recommendation - Criteria for issuance of local special reports and SPECI	MET.TR.250(d)(17) Meteorological reports and other information
App. 3, 2.3.3 g) Recommendation - Criteria for issuance of local special reports and SPECI	MET.TR.250(d)(18) Meteorological reports and other information
App. 3, 2.3.3 h) Recommendation - Criteria for issuance of local special reports and SPECI	MET.TR.250(d)(19) Meteorological reports and other information
App. 3, 1.1 Recommendation - General	MET.TR.255(a)(1) Observing meteorological

ICAO Annex 3 — Recommendations	NPA — Implementing Rules
provisions related to meteorological observations	elements
App. 3, 4.2.3 Recommendation - Averaging	MET.TR.255(b)(4) Observing meteorological elements
App.3, 4.5.2 Recommendation - Display	MET.TR.255(e)(3) Observing meteorological elements
App. 3, 2.3.3 Note - Criteria for issuance of local special reports and SPECI	MET.TR.250(d)(20) Meteorological reports and other information
App. 2, 1.3.2 Note - Types of SIGWX forecasts	MET.TR.265(d) World Area Forecast Centre responsibilities
App. 8, 4.2.3 a) (first sentence) Height indications	AMC1 MET.TR.215(d)(5) Forecasts and other meteorological information
App. 8, 4.2.2.1 Set of charts to be provided	AMC2 MET.TR.215(f) Forecasts and other meteorological information
Ch. 4.7.3 Reporting meteorological information from automatic observing systems	AMC1 MET.TR.250(a)(4) Meteorological reports and other information
Ch. 4.6.3.4 Runway visual range	AMC1 MET.TR.252(c)(4)(iii) Reporting of meteorological elements
App. 3, 4.4.2.5 Reporting	AMC1 MET.TR.252(d)(3)(i) Reporting of meteorological elements

The table below shows all those ICAO Annex 3 Standards that have been transposed in guidance material. In all these cases, it was identified that the affected standards contain material that are of explanatory nature and, therefore, appropriate to transpose only at level of GM. Therefore, no non-compliance or difference need be recorded.

ICAO Standards	NPA GM	Explanation
Ch. 9.2.1 (second sentence) Briefing, consultation and display	GM1 MET.TR.215(a)(5)(iii),(iv) & (v) Forecasts and other meteorological information	The standard is considered as being of explanatory nature
App. 9, 2.1 (e-g) List of information	GM1 MET.TR.215(b)(a) Forecasts and other meteorological information	The standard is only taken as a reference basis to develop the GM
App. 8, 4.2.3 a) (second sentence) Height indications	GM1 MET.TR.215(d)(5) Forecasts and other meteorological information	The standard uses the tverb 'may' and is then considered as not being of a mandatory nature
App. 3, 2.3.1 e) Criteria for issuance of local special reports and SPECI	GM1 MET.TR.250(d)(5) Meteorological reports and other information	This point e) is not a requirement as such but of explanatory nature

VI. List of acronyms and abbreviations — for reference only

AAD	assigned altitude deviation
ABV	above
AFTN	Aeronautical Fixed Telecommunication Network
AIRMET	Airman's Meteorological Information
AIS	Aeronautical Information Service
AMC	acceptable means of compliance
ASHTAM	Ash NOTAM
AT	associated time
ATC	air traffic control
ATS	air traffic services
BC	patches
BECMG	becoming
BKN	broken (5-7 octas)
BLSN	blowing snow
BL	blowing
BLW	below
BR	mist
BUFR	Binary Universal Form for the Representation of meteorological data
CAVOK	cloud and visibility OK
CB	cumulonimbus
DZ	drizzle
DR	low drifting
DS	Dust Storm
DU	dust
EMBD	embedded
ETOPS	extended range operations with two-engined aeroplanes

EUR ANP	European air navigation plan
FBL	feeblelight
FC	funnel cloud
FEW	few (1-2 octas)
FG	fog
FIR	flight information region
FM	from
FRQ	frequent
ft	feet
FU	smoke
FZ	freezing
FZRA	freezing rain
GM	guidance material
GML	Geography Markup Language
GR	hail
GRIB	Gridded Binary Data
GS	small hail and/or snow pellets
hPa	hectopascal
HVY	heavy
HZ	haze
ICAO	International Civil Aviation Organisation
ICE	icing
ILS	instrument landing system
ISOL	isolated
km	kilometres
kt	knot
m	metres
METAR	meteorological aerodrome report

MI	shallow
MOD	moderate
MSL	mean sea level
MTW	mountain waves
NCD	no clouds detected
NOSIG	no significant changes
NOTAM	notice to Airmen
NSC	no significant cloud
NSW	nil significant weather
OBSC	obscured
OCNL	occasional
OVC	overcast (8 octas)
PANS	procedure for air navigation services
PL	ice pellets
PNG	portable network graphics
PR	partial
PROB	probability
QFE	Question Field Elevation - atmospheric pressure at aerodrome elevation (or at runway threshold)
QNH	question nil height - (barometric pressure) actual height above sea level
RA	rain
RCC	rescue coordination centre
RVR	runway visual range
SA	sand
SG	snow grains
SCT	scattered (3-4 octas)
SEV	severe
SH	shower

SIGMET	Significant Meteorological Information
SIGWX	Significant Weather
SN	snow
SPECI	aviation selected SPECIal aviation report (special weather report)
SQ	squall
SQL	squall line
SS	Sand Storm
TAF	terminal aerdrome forecast
TCAC	tropical cyclone advisory centre
TCU	towering cumulus
TEMPO	temporary
TL	Till or transition level
TREND	Trend type forecast
TS	thunderstorm
UIR	upper information region
UP	unidentified precipitation
UTC	universal time coordinated
VAAC	volcanic ash advisory centre
VC	vicinity
VFR	visual flight rules
VIS	visibility
VRB	variable
VV	vertical visibility
WAFC	world area forecast centre
WAFS	world area forecast system
WMO	world meteorological organisation
WS	wind shear