International Civil Aviation Organization | Organisation de l'aviation civile internationale | Organización de Aviación Civil Internacional | Международная организация гражданской авиации | منظمة الطيران المدني الدولي | 国际民用航空组织

Ref.: 09545/2018-L.0 OBS-WIS/DRMM

Tel.: +1 514-954-8219 ext. 6717

Ref.: AN 10/1.1-18/32

3 April 2018

Subject: Adoption of Amendment 78 to Annex 3

Action required: a) Notify any disapproval before 16 July 2018; b) Notify any differences and compliance before 8 October 2018[1] c) Consider the use of the Electronic Filing of Differences (EFOD) System for notification of differences and compliance

Sir/Madam,

1. I have the honour to inform you that Amendment 78 to the *International Standards and Recommended Practices, Meteorological Service for International Air Navigation* (Annex 3 to the Convention on International Civil Aviation) was adopted by the Council at the fifth meeting of its 213rd Session on 7 March 2018. Copies of the Amendment and the Resolution of Adoption are available as attachments to the electronic version of this State letter on the ICAO-NET (http://portal.icao.int) where you can access all other relevant documentation.

2. When adopting the amendment, the Council prescribed 16 July 2018 as the date on which it will become effective, except for any part concerning which a majority of Contracting States have registered their disapproval before that date. In addition, the Council resolved that Amendment 78, to the extent it becomes effective, will become applicable on 8 November 2018 unless otherwise indicated.

3. Amendment 78 arises from:

a) recommendations developed by the second meeting of the Meteorology Panel (METP/2) concerning the introduction of space weather advisory information services, improvement of the provision of SIGMET information by meteorological watch offices (MWOs), information on the release of radioactive material into the atmosphere, SIGMET and AIRMET information, modifications of IWXXM representations of information, aeronautical meteorological personnel qualification and competency, education and training; and

[1] 7 October 2019 for provisions indicating applicable as of 7 November 2019; and
5 October 2020 for provisions indicating applicable as of 5 November 2020.

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b) recommendations developed by the twelfth meeting of the AIS-AIM Study Group (AIS-AIMSG/12) concerning change of references related to the provision of aeronautical information service.

4. The introduction of Standards and Recommended Practices (SARPs) for a space weather information service will be supported by the *Manual on Space Weather Information in Support of International Air Navigation* (Doc 10100) which is being developed.

5. The provisions in Annex 3 that extend the use of the ICAO Meteorological Information Exchange Model (IWXXM) will facilitate the exchange of meteorological observations and reports (METAR/SPECI), aerodrome forecasts (TAF), SIGMETs, AIRMETs, and volcanic ash and tropical cyclone advisory information, in a system-wide information management (SWIM)-compliant environment.

6. The subjects are given in the amendment to the Foreword of Annex 3, a copy of which is in Attachment A.

7. In conformity with the Resolution of Adoption, may I request:

a) that before 16 July 2018 you inform me if there is any part of the adopted Standards and Recommended Practices (SARPs) amendments in Amendment 78 concerning which your Government wishes to register disapproval, using the form in Attachment B for this purpose. Please note that only statements of disapproval need be registered and if you do not reply it will be assumed that you do not disapprove of the amendment;

b) that before 8 October 2018[2] you inform me of the following, using the Electronic Filing of Differences (EFOD) System or the form in Attachment C for this purpose:

1) any differences that will exist on 8 November 2018 between the national regulations or practices of your Government and the provisions of the whole of Annex 3, as amended by all amendments up to and including Amendment 78, and thereafter of any further differences that may arise; and

2) the date or dates by which your Government will have complied with the provisions of the whole of Annex 3, as amended by all amendments up to and including Amendment 78.

8. With reference to the request in paragraph 7 a) above, it should be noted that a registration of disapproval of Amendment 78 or any part of it in accordance with Article 90 of the Convention does not constitute a notification of differences under Article 38 of the Convention. To comply with the latter provision, a separate statement is necessary if any differences do exist, as requested in paragraph 7 b) 1). It is recalled in this respect that international Standards in Annexes have a conditional binding force, to the extent that the State or States concerned have not notified any difference thereto under Article 38 of the Convention.

9. With reference to the request in paragraph 7 b) above, it should be also noted that the ICAO Assembly, at its 38th Session (24 September to 4 October 2013), resolved that Member States should be encouraged to use the EFOD System when notifying differences (Resolution A38-11, refers).

[2] 7 October 2019 for provisions indicating applicable as of 7 November 2019; and
5 October 2020 for provisions indicating applicable as of 5 November 2020.

The EFOD System is currently available on the Universal Safety Oversight Audit Programme (USOAP) restricted website (http://www.icao.int/usoap) which is accessible by all Member States. You are invited to consider using this for notification of compliance and differences.

10. Guidance on the determination and reporting of differences is given in the Note on the Notification of Differences in Attachment D. Please note that a detailed repetition of previously notified differences, if they continue to apply, may be avoided by stating the current validity of such differences.

11. I would appreciate it if you would also send a copy of your notifications, referred to in paragraph 7 b) above, to the ICAO Regional Office accredited to your Government.

12. At the fifth meeting of its 204th Session, the Council requested that States, when being advised of the adoption of an Annex amendment, be provided with information on implementation and available guidance material, as well as an impact assessment. This is presented for your information in Attachments E and F, respectively.

Editorial adjustment and Comprehensive new edition of Annex 3

13. In order to maintain a comprehensive edition of Annex 3, provisions that will become applicable on a date after 8 November 2018 are identified with an italicized paragraph number and feature the date at the beginning of each provision. Texts in tables related to those provisions are identified by a table note or footnote indicating the date of applicability.

14. In addition, the adopted Amendment 77-B (adopted by the Council on 22 February 2016 and applicable 5 November 2020) with delayed applicability dates will be consolidated with Amendment 78 in a new edition of the Annex and will feature the 2019 and 2020 applicability dates at the beginning of each affected provision.

Further information relating to the new editorial adjustment is available at https://www.icao.int/2018-amendments.

15. As soon as practicable after the amendment becomes effective, on 16 July 2018, a new edition of Annex 3 incorporating Amendment 78 as well as Amendment 77-B will be forwarded to you.

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

Fang Liu
Secretary General

Enclosures:

A — Amendment to the Foreword of Annex 3
B — Form on notification of disapproval of all or part of Amendment 78 to Annex 3
C — Form on notification of compliance with or differences from Annex 3, Amendment 78
D — Note on the Notification of Differences
E — Implementation task list and outline of guidance material in relation to Amendment 78 to Annex 3
F — Impact assessment in relation to Amendment 78 to Annex 3

ATTACHMENT A to State letter AN 10/1.1-18/32

AMENDMENT TO THE FOREWORD OF ANNEX 3

Add the following at the end of Table A:

Amendment	***Source(s)***	***Subject***	***Adopted/Approved Effective Applicable***
78	Second meeting of the Meteorology Panel (METP/2)	a) Introduction of space weather advisory information services; improvement of the provision of SIGMET information by meteorological watch offices (MWOs); information on the release of radioactive material into the atmosphere; SIGMET and AIRMET information; modifications of IWXXM representations of information; and aeronautical meteorological personnel qualification and competency, education and training	7 March 2018 16 July 2018 8 November 2018
	Twelfth meeting of the AIS-AIM Study Group (AIS-AIMSG/12)	b) Consequential amendment concerning change of references related to the provision of aeronautical information service	

— — — — — — — —

ATTACHMENT B to State letter AN 10/1.1-18/32

NOTIFICATION OF DISAPPROVAL OF ALL OR PART OF AMENDMENT 78 TO ANNEX 3

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

(State) _____ hereby wishes to disapprove the following parts of Amendment 78 to Annex 3:

Signature _____ Date _____

NOTES

1) If you wish to disapprove all or part of Amendment 78 to Annex 3, please dispatch this notification of disapproval to reach ICAO Headquarters by 16 July 2018. If it has not been received by that date it will be assumed that you do not disapprove of the amendment. **If you approve of all parts of Amendment 78, it is not necessary to return this notification of disapproval.**

2) This notification should not be considered a notification of compliance with or differences from Annex 3. Separate notifications on this are necessary. (See Attachment C.)

3) Please use extra sheets as required.

— — — — — — — —

ATTACHMENT C to State letter AN 10/1.1-18/32

NOTIFICATION OF COMPLIANCE WITH OR DIFFERENCES FROM ANNEX 3

(including all amendments up to and including Amendment 78)

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

1. No differences will exist on _____ between the national regulations and/or practices of **(State)** _____ and the provisions of Annex 3, including all amendments up to and including Amendment 78.

2. The following differences will exist on _____ between the regulations and/or practices of **(State)** _____ and the provisions of Annex 3, including Amendment 78 (Please see Note 2) below.)

a) Annex Provision (Please give exact paragraph reference)	**b) Details of Difference** (Please describe the difference clearly and concisely)	**c) Remarks** (Please indicate reasons for the difference)

(Please use extra sheets as required)

3. By the dates indicated below, **(State)** _____ will have complied with the provisions of Annex 3, including all amendments up to and including Amendment 78 for which differences have been notified in 2 above.

a) **Annex Provision** (Please give exact paragraph reference)	**b)** **Date**	**c)** **Comments**

(Please use extra sheets as required)

Signature _____ Date _____

NOTES

1) If paragraph 1 above is applicable to your State, please complete paragraph 1 and return this form to ICAO Headquarters. If paragraph 2 is applicable to you, please complete paragraphs 2 and 3 and return the form to ICAO Headquarters.

2) A detailed repetition of previously notified differences, if they continue to apply, may be avoided by stating the current validity of such differences.

3) Guidance on the notification of differences is provided in the Note on the Notification of Differences and in the *Manual on Notification and Publication of Differences* (Doc 10055).

4) Please send a copy of this notification to the ICAO Regional Office accredited to your Government.

ATTACHMENT D to State letter AN 10/1.1-18/32

NOTE ON THE NOTIFICATION OF DIFFERENCES
(*Prepared and issued in accordance with instructions of the Council)*

1. *Introduction*

1.1 Article 38 of the *Convention on International Civil Aviation* ("Convention") requires that a Contracting State notify ICAO any time it does not comply with a Standard in all respects, it does not bring its regulations or practices into full accord with any Standard, or it adopts regulations or practices differing in any particular respect from the Standard.

1.2 The Assembly and the Council, when reviewing the notification of differences by Contracting States in compliance with Article 38 of the Convention, have repeatedly noted that the timeliness and currency of such notifications is not entirely satisfactory. Therefore, this note is issued to reiterate the primary purpose of Article 38 of the Convention and to facilitate the determination and notification of differences.

1.3 The primary purpose of the notification of differences is to promote safety, regularity and efficiency in air navigation by ensuring that governmental and other agencies, including operators and service providers, concerned with international civil aviation are made aware of all national regulations and practices in so far as they differ from those prescribed in the Standards contained in Annexes to the Convention.

1.4 Contracting States are, therefore, requested to give particular attention to the notification of differences with respect to Standards in all Annexes, as described in paragraph 4 b) 1) of the Resolution of Adoption.

1.5 Although differences from Recommended Practices are not notifiable under Article 38 of the Convention, the Assembly has urged Contracting States to extend the above considerations to Recommended Practices contained in Annexes to the Convention, as well.

2. *Notification of differences from Standards and Recommended Practices (SARPs)*

2. 1 Guidance to Contracting States in the notification of differences to Standards and Recommended Practices (SARPs) can only be given in very general terms. Contracting States are further reminded that compliance with SARPs generally extends beyond the issuance of national regulations and requires establishment of practical arrangements for implementation, such as the provision of facilities, personnel and equipment and effective enforcement mechanisms. Contracting States should take those elements into account when determining their compliance and differences. The following categories of differences are provided as a guide in determining whether a notifiable difference exists:

a) ***A Contracting State's requirement is more exacting or exceeds a SARP (Category A)***. This category applies when the national regulation and practices are more demanding than the corresponding SARP, or impose an obligation within the scope of the Annex which is not covered by the SARP. This is of particular importance where a Contracting State requires a higher standard which affects the operation of aircraft of other Contracting States in and above its territory;

b) ***A Contracting State's requirement is different in character or the Contracting State has established other means of compliance (Category B)****. This category applies, in particular, when the national regulation and practices are different in character from the corresponding SARP, or when the national regulation and practices differ in principle, type or system from the corresponding SARP, without necessarily imposing an additional obligation; and

c) ***A Contracting State's requirement is less protective, partially implemented or not implemented (Category C)***. This category applies when the national regulation and practices are less protective than the corresponding SARP; when no national regulation has been promulgated to address the corresponding SARP, in whole or in part; or when the Contracting State has not brought its practices into full accord with the corresponding SARP.

These categories do not apply to Not Applicable SARP. Please see the paragraph below.

2.2 **Not Applicable SARP.** When a Contracting State deems a SARP concerning aircraft, operations, equipment, personnel, or air navigation facilities or services to be not applicable to the existing aviation activities of the State, notification of a difference is not required. For example, a Contracting State that is not a State of Design or Manufacture and that does not have any national regulations on the subject, would not be required to notify differences from Annex 8 provisions related to the design and construction of an aircraft.

2.3 **Differences from appendices, tables and figures.** The material comprising a SARP includes not only the SARP itself, but also the appendices, tables and figures associated with the SARP. Therefore, differences from appendices, tables and figures are notifiable under Article 38. In order to file a difference against an appendix, table or figure, States should file a difference against the SARP that makes reference to the appendix, table or figure.

2.4 **Differences from definitions.** Contracting States should notify differences from definitions. The definition of a term used in a SARP does not have independent status but is an essential part of each SARP in which the term is used. Therefore, a difference from the definition of the term may result in there being a difference from any SARP in which the term is used. To this end, Contracting States should take into consideration differences from definitions when determining compliance or differences to SARPs in which the terms are used.

2.5 The notification of differences should be not only to the latest amendment but to the whole Annex, including the amendment. In other words, Contracting States that have already notified differences are requested to provide regular updates of the differences previously notified until the difference no longer exists.

2.6 Further guidance on the identification and notification of differences, examples of well-defined differences and examples of model processes and procedures for management of the notification of differences can be found in the *Manual on Notification and Publication of Differences* (Doc 10055).

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* The expression "different in character or other means of compliance" in b) would be applied to a national regulation and practice which achieve, by other means, the same objective as that of the corresponding SARPs or for other substantive reasons so cannot be classified under a) or c).

3. *Form of notification of differences*

3.1 Differences can be notified:

a) by sending to ICAO Headquarters a form on notification of compliance or differences; or

b) through the Electronic Filing of Differences (EFOD) System at www.icao.int/usoap.

3.2 When notifying differences, the following information should be provided:

a) the number of the paragraph or subparagraph which contains the SARP to which the difference relates*;

b) the reasons why the State does not comply with the SARP, or considers it necessary to adopt different regulations or practices;

c) a clear and concise description of the difference; and

d) intentions for future compliance and any date by which your Government plans to confirm compliance with and remove its difference from the SARP for which the difference has been notified.

3.3 The differences notified will be made available to other Contracting States, normally in the terms used by the Contracting State when making the notification. In the interest of making the information as useful as possible, Contracting States are requested to ensure that:

a) statements be as clear and concise as possible and be confined to essential points;

b) the provision of extracts from national regulations not be considered as sufficient to satisfy the obligation to notify differences; and

c) general comments, unclear acronyms and references be avoided.

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* This applies only when the notification is made under 3.1 a).

ATTACHMENT E to State letter AN 10/1.1-18/32

IMPLEMENTATION TASK LIST AND OUTLINE OF GUIDANCE MATERIAL IN RELATION TO AMENDMENT 78 TO ANNEX 3

1. IMPLEMENTATION TASK LIST

1.1 Essential steps to be followed by a State in order to implement the amendment to Annex 3:

a) identification of the rule-making process necessary to transpose the new and modified ICAO provisions into the national regulation;

b) establishment of a national implementation plan that takes into consideration the new and modified provisions;

c) drafting of the amendment(s) to the national requirements and means of compliance;

d) filing of State differences with ICAO, if necessary;

e) establishment of Space Weather Centres and backup centres (another Space Weather Centre or another centre, as designated by the Space Weather Centre Provider State concerned) by those selected States;

f) development of software modifications for disseminating METAR/SPECI, TAF, SIGMET, AIRMET, volcanic ash advisories and tropical cyclone advisories in digital form;

g) training of operational staff in the provision and use of new information;

h) testing of software encoding, decoding and the communications infrastructure for the exchange of digital information both nationally and as part of the global exchange within regional requirements; and

i) operational acceptance of software changes.

2. STANDARDIZATION PROCESS

2.1 Effective date: 16 July 2018

2.2 Applicability date: 8 November 2018

2.3 Embedded applicability dates: 7 November 2019 for the provisions concerning modifications of IWXXM representations of information and information on the release of radioactive material into the atmosphere; and 5 November 2020 for the provision concerning the IWXXM as a Standard.

3. SUPPORTING DOCUMENTATION

3.1 ICAO documentation

Title	Type (PANS/TI/Manual/Circ)	Planned publication date
Manual on Aeronautical Meteorological Practice (Doc 8896)	Manual	October 2018
Manual on the Digital Exchange of Aeronautical Meteorological Information (Doc 10003)	Manual	October 2018
Manual on Space Weather Information in Support of International Air Navigation (Doc 10100)	Manual	October 2018

3.2 External documentation

Title	External Organization	Publication date
Manual on Codes (WMO-No. 306)	WMO	May 2018
Supporting documentation to No. 306	WMO	May to July 2018

4. IMPLEMENTATION ASSISTANCE TASKS

Type	Global	Regional
Workshops		IWXXM and Space Weather for all the ICAO Regions.

5. UNIVERSAL SAFETY OVERSIGHT AUDIT PROGRAMME (USOAP)

5.1 The content of this paper may require an amendment of the USOAP continuous monitoring approach (CMA) protocol questions in the area of air navigation services (ANS) to assess effective implementation by States. Existing protocol questions may need amendment or new protocol questions may be required. This will be assessed during the next amendment cycle of the protocol questions.

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ATTACHMENT F to State letter AN 10/1.1-18/32

IMPACT ASSESSMENT IN RELATION TO AMENDMENT 78 TO ANNEX 3

1. INTRODUCTION

1.1 Amendment 78 to Annex 3 is intended to:

a) introduce basic initial provisions for space weather advisory information services in response to user needs expressed by IATA as no information of any kind is currently available to assist operators in assessing the risks associated with space weather events;

b) extend the use of the ICAO Meteorological Information Exchange Model (IWXXM) to facilitate the exchange of meteorological observations and reports (METAR/SPECI), aerodrome forecasts (TAF), SIGMETs, AIRMETs, and volcanic ash and tropical cyclone advisory information, in a system wide information management (SWIM) compliant environments; and

c) introduce improvement of the provision of SIGMET information by meteorological watch offices (MWOs), information on the release of radioactive material into the atmosphere, SIGMET and AIRMET information and aeronautical meteorological personnel qualification and competency, education and training; and b) consequential amendment concerning change of references related to the provision of meteorological service.

2. IMPACT ASSESSMENT

2.1 *Safety impact*: The safety of aircraft operations is enhanced with access to improved information on current and expected atmospheric conditions. Improved information about space weather events that may affect communications, navigation and surveillance systems utilized by the aviation industry will lead to improved decision-making, particularly in the planning phase, to mitigate the potential impacts of space weather events on aircraft operations.

2.2 *Financial impact*: The space weather provider States will have significant costs in the establishment and subsequent provision of space weather services, at least over the initial three years where there may not be a regional cost recovery mechanism. The cost to States to implement IWXXM will increase to various extents, depending on prevailing State capabilities. The other components of this proposal do not have significant financial implications.

2.3 *Financial impact*: Industry — Some limited costs associated with software changes can be expected to accommodate new and modified information requirements. However, significant efficiencies would be expected through the operational use of the new information provided on space weather and through the integration of meteorological information to the system-wide information management environment.

2.4 *Security impact*: No security impact with the implementation of this proposal.

2.5 *Environmental impact*: Implementation of these provisions has no environmental impact.

2.6 *Efficiency impact*: The efficiency of aircraft operations is enhanced with more timely access to and incorporation of digital meteorological information in flight planning, flow management and aircraft management. Improved information about space weather events will improve route selection and fuel-loading decisions and minimize the need for rerouting flights due to the potential impacts of space weather events.

2.7 *Expected implementation time*: The expected implementation dates of 7 November 2019 for the provisions concerning modifications of IWXXM representations of information and information on the release of radioactive material into the atmosphere; and 5 November 2020 for the provision concerning IWXXM as a Standard are intended to enable WMO to develop the supporting data models and to allow sufficient time for full implementation by States.

— END —

AMENDMENT No. 78

TO THE

INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES

METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION

ANNEX 3

TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

The amendment to Annex 3 contained in this document was adopted by the Council of ICAO on **7 March 2018**. Such parts of this amendment as have not been disapproved by more than half of the total number of Contracting States on or before **16 July 2018** will become effective on that date and will become applicable on **8 November 2018** as specified in the Resolution of Adoption. (State letter AN 10/1.1-18/32 refers.)

March 2018

INTERNATIONAL CIVIL AVIATION ORGANIZATION

AMENDMENT 78 TO THE INTERNATIONAL STANDARDS AND RECOMMENDED PRACTICES

ANNEX 3 — *METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION*

RESOLUTION OF ADOPTION

Acting in accordance with the Convention on International Civil Aviation, and particularly with the provisions of Articles 37, 54 and 90 thereof,

1. *Hereby adopts* on 7 March 2018 Amendment 78 to the International Standards and Recommended Practices contained in the document entitled *International Standards and Recommended Practices, Meteorological Service for International Air Navigation* which for convenience is designated Annex 3 to the Convention;

2. *Prescribes* 16 July 2018 as the date upon which the said amendment shall become effective, except for any part thereof in respect of which a majority of the Contracting States have registered their disapproval with the council before that date;

3. *Resolves* that the said amendment or such parts thereof as have become effective shall become applicable on 8 November 2018 unless otherwise indicated;

4. *Requests the Secretary General*:

a) to notify each Contracting State immediately of the above action and immediately after 16 July 2018 of those parts of the amendment which have become effective;

b) to request each Contracting State:

1) to notify the Organization (in accordance with the obligation imposed by Article 38 of the Convention) of the differences that will exist on 8 November 2018 between its national regulations or practices and the provisions of the Standards in the Annex as hereby amended, such notification to be made before 8 October 2018[1], and thereafter to notify the Organization of any further differences that arise;

2) to notify the Organization before 8 October 2018[1] of the date or dates by which it will have complied with the provisions of the Standards in the Annex as hereby amended;

c) to invite each Contracting State to notify additionally any differences between its own practices and those established by the Recommended Practices, when the notification of such differences is important for the safety of air navigation, following the procedure specified in subparagraph b) above with respect to differences from Standards.

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[1] 7 October 2019 for provisions indicating applicable as of 7 November 2019; and
5 October 2020 for provisions indicating applicable as of 5 November 2020.

NOTES ON THE PRESENTATION OF THE AMENDMENT 78 TO ANNEX 3

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

1.	~~Text to be deleted is shown with a line through it.~~	text to be deleted
2.	New text to be inserted is highlighted with grey shading.	new text to be inserted
3.	~~Text to be deleted is shown with a line through it~~ followed by the replacement text which is highlighted with grey shading.	new text to replace existing text

TEXT OF AMENDMENT 78

TO THE

INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES

METEOROLOGICAL SERVICE
FOR INTERNATIONAL AIR NAVIGATION

ANNEX 3
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

. . .

PART I. CORE SARPs

CHAPTER 1. DEFINITIONS

1.1 Definitions

…

ICAO meteorological information exchange model (IWXXM). A data model for representing aeronautical meteorological information.

…

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

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

. . .

CHAPTER 2. GENERAL PROVISIONS

. . .

2.1 Objective, determination and provision of meteorological service

. . .

2.1.4 Each Contracting State shall designate the authority, hereinafter referred to as the meteorological authority, to provide or to arrange for the provision of meteorological service for international air navigation on its behalf. Details of the meteorological authority so designated shall be included in the State aeronautical information publication, in accordance with Annex 15, Chapter 5 ~~Appendix 1, GEN 1.1~~.

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

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

Note.— Requirements concerning the qualifications, ~~and~~ competencies, education and training of meteorological personnel in aeronautical meteorology are given in the Technical Regulations *(WMO-No. 49), Volume I —* General Meteorological Standards and Recommended Practices, *Part V —* Qualifications and Competencies of Personnel Involved in the Provision of Meteorological (Weather and Climate) and Hydrological Services, *Part VI — Education and Training of Meteorological Personnel, and Appendix A —* Basic Instruction Packages.

. . .

CHAPTER 3. ~~WORLD AREA FORECAST SYSTEM AND METEOROLOGICAL OFFICES~~ GLOBAL SYSTEMS, SUPPORTING CENTRES AND METEOROLOGICAL OFFICES

. . .

3.4 Meteorological watch offices

3.4.1 A Contracting State, having accepted the responsibility for providing air traffic services within a flight information region (FIR) or a control area (CTA), shall establish, in accordance with regional air navigation agreement, one or more MWOs, or arrange for another Contracting State to do so.

Note.— Guidance on the bilateral or multilateral arrangements between Contracting States for the provision of meteorological watch office services, including for cooperation and delegation, can be found in the Manual of Aeronautical Meteorological Practice (*Doc 8896*).

. . .

3.8 Space weather centres (SWXC)

3.8.1 A Contracting State, having accepted the responsibility for providing a SWXC, shall arrange for that centre to monitor and provide advisory information on space weather phenomena in its area of responsibility by arranging for that centre to:

a) monitor relevant ground-based, airborne and space-based observations to detect, and predict when possible, the existence of space weather phenomena that have an impact in the following areas:

1) high frequency (HF) radio communications;

2) communications via satellite;

3) GNSS-based navigation and surveillance; and

4) radiation exposure at flight levels;

b) issue advisory information regarding the extent, severity and duration of the space weather phenomena that have an impact referred to in a);

c) supply the advisory information referred to in b) to:

1) area control centres, flight information centres and aerodrome meteorological offices in its area of responsibility which may be affected;

2) other SWXCs; and

3) international OPMET databanks, international NOTAM offices and aeronautical fixed service Internet-based services.

3.8.2 SWXC shall maintain a 24-hour watch.

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

Note.— Guidance on the provision of space weather advisory information, including the ICAO-designated provider(s) of space weather advisory information, is provided in the Manual on Space Weather Information in Support of International Air Navigation *(Doc 10100).*

. . .

CHAPTER 9. SERVICE FOR OPERATORS AND FLIGHT CREW MEMBERS

9.1 General provisions

. . .

9.1.3 Meteorological information supplied to operators and flight crew members shall be up to date and include the following information, as agreed between the meteorological authority and the operators concerned:

. . .

i) meteorological satellite images; ~~and~~

j) ground-based weather radar information~~.~~; and

k) space weather advisory information relevant to the whole route.

. . .

9.3 Flight documentation

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

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

. . .

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

. . .

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

Note.— The meteorological and aeronautical information services information concerned is specified in 9.1 to 9.3 and Appendix 8 and in ~~Annex 15, 8.1 and 8.2~~PANS-AIM, 5.5, respectively.

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PART II. APPENDICES AND ATTACHMENTS

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APPENDIX 2. TECHNICAL SPECIFICATIONS RELATED TO ~~WORLD AREA FORECAST SYSTEM~~ GLOBAL SYSTEMS, SUPPORTING CENTRES AND METEOROLOGICAL OFFICES

(See Chapter 3 of this Annex)

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3. VOLCANIC ASH ADVISORY CENTRES

3.1 Volcanic Ash Advisory Information

…

3.1.2 **Recommendation.**—*Until 4 November 2020, ~~Volcanic ash advisory centres (VAACs) should issue~~ volcanic ash advisory information should be disseminated in ~~digital~~ IWXXM GML form in addition to the issuance of this advisory information in ~~abbreviated plain language in~~ accordance with 3.1.1.*

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

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

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

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

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

. . .

5. TROPICAL CYCLONE ADVISORY CENTRES

5.1 Tropical Cyclone Advisory Centres

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5.1.2 The advisory information on tropical cyclones disseminated in abbreviated plain language, using approved ICAO abbreviations and numerical values of self-explanatory nature, shall be in accordance with the template shown in Table A2-2.

5.1.3 **Recommendation.—** *Until 4 November 2020, ~~Tropical cyclone advisory centres should issue~~ tropical cyclone advisory information should be disseminated in ~~digital~~ IWXXM GML form in addition to the issuance of this advisory information in ~~abbreviated plain language in~~ accordance with 5.1.2.*

5.1.3 As of 5 November 2020, tropical cyclone advisory centres shall disseminate tropical cyclone advisory information in IWXXM GML form in addition to the dissemination of this advisory information in abbreviated plain language in accordance with 5.1.2.

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

~~5.1.4 Tropical cyclone advisory information, if disseminated in digital form, shall be formatted in accordance with a globally interoperable information exchange model and shall use XML/GML.~~

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

~~*Note. — Guidance on the information exchange model XML/GML and the metadata profile is provided in (Doc 10003).*~~

. . .

Editorial note.— Insert new Section 6 as follows:

6. SPACE WEATHER CENTRES

6.1 Space weather advisory information

6.1.1 **Recommendation.—** *Advisory information on space weather should be issued in abbreviated plain language, using approved ICAO abbreviations and numerical values of self-explanatory nature, and should be in accordance with the template shown in Table A2-3. When no approved ICAO abbreviations are available, English plain language text, to be kept to a minimum, should be used.*

6.1.2 **Recommendation.—** *As of 7 November 2019 until 4 November 2020, space weather advisory information should be made available in IWXXM GML form, in addition to the dissemination of space weather advisory information in abbreviated plain language in accordance with 6.1.1.*

6.1.2 As of 5 November 2020, space weather advisory information shall be disseminated in IWXXM GML form, in addition to the dissemination of this advisory information in abbreviated plain language in accordance with 6.1.1.

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

6.1.3 **Recommendation.—** *One or more of the following space weather effects should be included in the space weather advisory information, using their respective abbreviations as indicated below:*

- HF communications (propagation, absorption)	*HF COM*
- Communications via satellite (propagation, absorption)	*SATCOM*
- GNSS-based navigation and surveillance (degradation)	*GNSS*
- Radiation at flight levels (increased exposure)	*RADIATION*

6.1.4 **Recommendation.—** *The following intensities should be included in space weather advisory information, using their respective abbreviations as indicated below:*

- moderate	*MOD*
- severe	*SEV*

Note.— Guidance on the use of these intensities is provided in the Manual on Space Weather Information in Support of International Air Navigation *(Doc 10100).*

6.1.5 **Recommendation.—** *Updated advisory information on space weather phenomena should be issued as necessary but at least every six hours until such time as the space weather phenomena are no longer detected and/or are no longer expected to have an impact.*

End of new section.

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

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

. . .

Note 4.— The numbers 1 to 1~~8~~9 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	Status indicator (C)[1]	Indicator of test or exercise	STATUS:	TEST *or* EXER	STATUS: STATUS:	TEST EXER
2~~3~~	Time of origin (M)	Year, month, day, time in UTC	DTG:	nnnnnnnn/nnnnZ	DTG:	20080923/0130Z
3~~4~~	Name of VAAC (M)	Name of VAAC	VAAC:	nnnnnnnnnnn	VAAC:	TOKYO
4~~5~~	Name of volcano	Name and IAVCEI[1~~2~~]	VOLCANO:	nnnnnnnnnnnnnnnnnnnn [nnnnnn]	VOLCANO:	KARYMSKY 1000-13

Element		Detailed content	Template(s)	Examples
	(M)	number of volcano	*or* UNKNOWN *or* UNNAMED	VOLCANO: UNNAMED
	…	…	…	… …

EDITORIAL NOTE.— RENUMBER SUBSEQUENT FOOTNOTES IN TABLE A2-1.

Notes.—

1. Used only when the message issued to indicate that a test or an exercise is taking place. When the word "TEST" or the abbreviation "EXER" is included, the message may contain information that should not be used operationally or will otherwise end immediately after the word "TEST". *[Applicable 7 November 2019]*
~~1~~2. International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI).
~~2~~3. A straight line between two points drawn on a map in the Mercator projection or a straight line between two points which crosses lines of longitude at a constant angle.
~~3~~4. Up to 4 selected layers.
~~4~~5. If ash reported (e.g. AIREP) but not identifiable from satellite data.

. . .

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

Key: M = inclusion mandatory, part of every message;
C = inclusion conditional, included whenever applicable;
= = a double line indicates that the text following it should be placed on the subsequent line.

Note 1.— The ranges and resolutions for the numerical elements included in advisory messages for tropical cyclones are shown in Appendix 6, Table A6-4.

Note 2.— The explanations for the abbreviations can be found in the PANS-ABC (Doc 8400).

~~*Note 3.— All the elements are mandatory.*~~

Note ~~4~~3.— Inclusion of a "colon" after each element heading is mandatory.

Note ~~5~~4.— The numbers 1 to ~~19~~21 are included only for clarity and they are not part of the advisory message, as shown in the example.

Element		Detailed content	Template(s)	Examples
1	Identification of the type of message (M)	Type of message	TC ADVISORY	TC ADVISORY
2	Status indicator (C)[1]	Indicator of test or exercise	STATUS: TEST *or* EXER	STATUS: TEST STATUS: EXER
~~2~~3	Time of origin (M)	Year, month, day and time in UTC of issue	DTG: nnnnnnnn/nnnnZ	DTG: 20040925/19~~6~~00Z
~~3~~4	Name of TCAC (M)	Name of TCAC (location indicator *or* full name)	TCAC: nnnn *or* nnnnnnnnnn	TCAC: YUFO[~~1~~2] TCAC: MIAMI
~~4~~5	Name of tropical cyclone (M)	Name of tropical cyclone *or* "NN" for unnamed tropical cyclone	TC: nnnnnnnnnnn *or* NN	TC: GLORIA
~~5~~6	Advisory number (M)	Advisory number: Year in full and message number	ADVISORY NR: nnnn/[n][n]nn	ADVISORY NR: 2004/13~~0~~1

	Element	*Detailed content*	*Template(s)*		*Examples*	
		(separate sequence ~~starting with "01"~~ for each cyclone)				
~~6~~7	Observed p~~P~~osition of the centre (M)	Day and time (in UTC) and p~~P~~osition of the centre of the tropical cyclone (in degrees and minutes)	OBS PSN::	nn/nnnnZ Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]	OBS PSN:	25/1800Z N2706 W07306
8	Observed CB cloud[3] (C)	Location of CB cloud (referring to latitude and longitude (in degrees and minutes)) and vertical extent (flight level)	CB:	WI nnnKM (*or* nnnNM) OF TC CENTRE *or* WI[4] 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]] TOP [ABV *or* BLW] FLnnn	CB:	WI 250NM OF TC CENTRE TOP FL500
~~7~~9	Direction and speed of movement (M)	Direction and speed of movement given in sixteen compass points and km/h (*or* kt), respectively, ~~*or* moving slowly (< 6 km/h (3 kt))~~ *or* stationary (< 2 km/h (1 kt))	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~~10	Central pressure (M)	Central pressure (in hPa)	C:	nnnHPA	C:	965HPA
~~9~~11	Maximum surface wind (M)	Maximum surface wind near the centre (mean over 10 minutes, in m/s (or kt))	MAX WIND:	nn[n]MPS (or nn[n]KT)	MAX WIND:	22MPS
~~10~~12	Forecast of centre position (+6 HR) (M)	Day and time (in UTC) (6 hours from the "DTG" given in Item 2); Forecast position (in degrees and minutes) of the centre of the tropical cyclone	FCST PSN +6 HR:	nn/nnnnZ Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]	FCST PSN +6 HR:	25/2200Z N2748 W07350
~~11~~13	Forecast of maximum surface wind (+6 HR) (M)	Forecast of maximum surface wind (6 hours after the "DTG" given in Item 2)	FCST MAX WIND +6 HR:	nn[n]MPS (or nn[n]KT)	FCST MAX WIND +6 HR:	22MPS
~~12~~14	Forecast of centre position (+12 HR) (M)	Day and time (in UTC) (12 hours from the "DTG" given in Item 2);	FCST PSN +12 HR:	nn/nnnnZ Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]	FCST PSN +12 HR:	26/0400Z N2830 W07430

	Element	*Detailed content*	*Template(s)*		*Examples*	
		Forecast position (in degrees and minutes) of the centre of the tropical cyclone				
~~13~~15	Forecast of maximum surface wind (+12 HR) (M)	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~~16	Forecast of centre position (+18 HR) (M)	Day and time (in UTC) (18 hours from the "DTG" given in Item 2); Forecast position (in degrees and minutes) of the centre of the tropical cyclone	FCST PSN +18 HR:	nn/nnnnZ Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]	FCST PSN +18 HR:	26/1000Z N2852 W07500
~~15~~17	Forecast of maximum surface wind (+18 HR) (M)	Forecast of maximum surface wind (18 hours after the "DTG" given in Item 2)	FCST MAX WIND +18 HR:	nn[n]MPS (or nn[n]KT)	FCST MAX WIND +18 HR:	21MPS
~~16~~18	Forecast of centre position (+24 HR) (M)	Day and time (in UTC) (24 hours from the "DTG" given in Item 2); Forecast position (in degrees and minutes) of the centre of the tropical cyclone	FCST PSN +24 HR:	nn/nnnnZ Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]	FCST PSN +24 HR:	26/1600Z N2912 W07530
~~17~~19	Forecast of maximum surface wind (+24 HR) (M)	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~~20	Remarks (M)	Remarks, as necessary	RMK:	Free text up to 256 characters or NIL	RMK:	NIL
~~19~~21	Expected time of issuance of next advisory (M)	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

Notes.—

1. Used only when the message issued to indicate that a test or an exercise is taking place. When the word "TEST" or the abbreviation "EXER" is included, the message may contain information that should not be used operationally or will otherwise end immediately after the word "TEST". *[Applicable 7 November 2019]*
~~1.~~2. Fictitious location.
3. In the case of CB clouds associated with a tropical cyclone covering more than one area within the area of responsibility, this element can be repeated, as necessary..
4. The number of coordinates should be kept to a minimum and should not normally exceed seven.

. . .

Example A2-2. Advisory message for tropical cyclones

TC ADVISORY

DTG: 20040925/1~~9~~600Z
TCAC: YUFO

TC:	GLORIA
ADVISORY NR:	2004/13~~01~~
OBS PSN:	25/1800Z N2706 W07306
CB:	WI 250NM OF TC CENTRE
C:	965HPA
MAX WIND:	22MPS
FCST PSN +6 HR:	25/2200Z N2748 W07350
FCST MAX WIND +6 HR:	22MPS
FCST PSN +12 HR:	26/0400Z N2830 W07430
FCST MAX WIND +12 HR:	22MPS
FCST PSN +18 HR:	26/1000Z N2852 W07500
FCST MAX WIND +18 HR:	21MPS
FCST PSN +24 HR:	26/1600Z N2912 W07530
FCST MAX WIND +24 HR:	20MPS
RMK:	NIL
NXT MSG:	20040925/2000Z

Insert new Table A2-3, Examples A2-3, A2-4 and A2-5 as follows:

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

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

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

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

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

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

Element		*Detailed content*	*Template(s)*		*Examples*	
1	Identification of the type of message (M)	Type of message	SWX ADVISORY		SWX ADVISORY	
2	Status indicator (C)[1]	Indicator of test or exercise	STATUS:	TEST *or* EXER	STATUS: STATUS:	TEST EXER
3	Time of origin (M)	Year, month, day, time in UTC	DTG:	nnnnnnnn/nnnnZ	DTG:	20161108/0100Z
4	Name of SWXC (M)	Name of SWXC	SWXC:	Nnnnnnnnnnn	SWXC:	DONLON
5	Advisory number (M)	Advisory number: year in full and unique message number	ADVISORY NR:	nnnn/[n][n][n]n	ADVISORY NR:	2016/1
6	Number of advisory being replaced (C)	Number of the previously issued advisory being replaced	NR RPLC:	nnnn/[n][n][n]n	NR RPLC:	2016/1

Element		*Detailed content*	*Template(s)*		*Examples*	
7	Space weather effect and intensity (M)	Effect and intensity-of the space weather phenomena	SWX EFFECT:	HF COM MOD *or* SEV *or* SATCOM MOD *or* SEV *or* GNSS MOD *or* SEV *or* HF COM MOD *or* SEV AND GNSS MOD *or* SEV *or* RADIATION MOD *or* SEV	SWX EFFECT: SWX EFFECT: SWX EFFECT: SWX EFFECT: SWX EFFECT: SWX EFFECT:	HF COM MOD GNSS SEV HF COM MOD AND GNSS MOD RADIATION MOD SATCOM SEV
8	Observed or expected extent of space weather phenomena (M)	Time: day, time in UTC; Observed (or forecast if phenomena have yet to occur); horizontal extent [2] (latitude bands and longitude in degrees) and/or altitude of space weather phenomena	OBS *or* FCST SWX:	nn/nnnnZ DAYLIGHT SIDE *or* HNH *and/or* MNH *and/or* EQN *and/or* EQS *and/or* MSH *and/or* HSH *and* Wnnn(nn) *or* Ennn(nn) – Wnnn(nn) *or* Ennn(nn) *and/or* ABV FLnnn *or FLnnn–nnn* *or* Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – [Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] *or* NO SWX EXP	OBS SWX: FCST SWX: OBS SWX:	08/0100Z DAYLIGHT SIDE 08/0100Z HNH HSH W18000 — W09000 ABV FL350 08/0100Z HNH HSH E18000-W18000
9	Forecast of the phenomena for the next 6 hours (M)	Day, time (in UTC) (6 hours from time given in item 8, rounded to the next full hour); Forecast extent and/or altitude of the space weather phenomena for the fixed valid time	FCST SWX +6 HR:	nn/nnnnZ DAYLIGHT SIDE *or* HNH *and/or* MNH *and/or* EQN *and/or* EQS *and/or* MSH *and/or* HSH *and* Wnnn(nn) *or* Ennn(nn) – Wnnn(nn) *or* Ennn(nn) *and/or* ABV FLnnn *or FLnnn–nnn* *or* Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – [Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] *or* NO SWX EXP *or*	FCST SWX +6 HR: FCST SWX +6 HR: FCST SWX +6 HR:	08/0700Z DAYLIGHT SIDE 08/0700Z HNH HSH W18000 — W09000 ABV FL350 08/0700Z HNH HSH E18000-W18000

Element		*Detailed content*	*Template(s)*		*Examples*	
			NOT AVBL			
10	Forecast of the phenomena for the next 12 hours (M)	Day, time (in UTC) (12 hours from time given in item 8, rounded to the next full hour); Forecast extent and/or altitude of the space weather phenomena for the fixed valid time	FCST SWX +12 HR:	nn/nnnnZ DAYLIGHT SIDE *or* HNH *and/or* MNH *and/or* EQN *and/or* EQS *and/or* MSH *and/or* HSH *and* Wnnn(nn) *or* Ennn(nn) – Wnnn(nn) *or* Ennn(nn) *and/or* ABV FLnnn *or FLnnn–nnn* *or* Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – [Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] *or* NO SWX EXP *or* NOT AVBL	FCST SWX +12 HR: FCST SWX +12 HR: FCST SWX +12 HR:	08/1300Z DAYLIGHT SIDE 08/1300Z HNH HSH W18000 — W09000 ABV FL350 08/1300Z HNH HSH E18000-W18000
11	Forecast of the phenomena for the next 18 hours (M)	Day, time (in UTC) (18 hours from time given in item 8, rounded to the next full hour); Forecast extent and/or altitude of the space weather phenomena for the fixed valid time	FCST SWX +18 HR:	nn/nnnnZ DAYLIGHT SIDE *or* HNH *and/or* MNH *and/or* EQN *and/or* EQS *and/or* MSH *and/or* HSH *and* Wnnn(nn) *or* Ennn(nn) – Wnnn(nn) *or* Ennn(nn) *and/or* ABV FLnnn *or FLnnn–nnn* *or* Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – [Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] *or* NO SWX EXP *or* NOT AVBL	FCST SWX +18 HR: FCST SWX +18 HR: FCST SWX +18 HR:	08/1900Z DAYLIGHT SIDE 08/1900Z HNH HSH W18000 — W09000 ABV FL350 08/1900Z HNH HSH E18000-W18000
12	Forecast of the phenomena for the next 24 hours (M)	Day, time (in UTC) (24 hours from time given in item 8, rounded to the next full hour); Forecast extent and/or altitude of the space weather phenomena for	FCST SWX +24 HR:	nn/nnnnZ DAYLIGHT SIDE *or* HNH *and/or* MNH *and/or*	FCST SWX +24 HR: FCST SWX +24 HR:	09/0100Z DAYLIGHT SIDE 09/0100Z HNH HSH W18000 — W09000 ABV

	Element	*Detailed content*	*Template(s)*		*Examples*	
		the fixed valid time		EQN *and/or* EQS *and/or* MSH *and/or* HSH *and* Wnnn(nn) *or* Ennn(nn) – Wnnn(nn) *or* Ennn(nn) *and/or* ABV FLnnn *or FLnnn–nnn* *or* Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – [Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] *or* NO SWX EXP *or* NOT AVBL	FCST SWX +24 HR:	FL350 09/0100Z HNH HSH E18000-W18000
13	Remarks (M)	Remarks, as necessary	RMK :	*Free text up to 256 characters* *or* NIL	RMK: RMK: RMK:	SWX EVENT HAS CEASED WWW.SPACEWEATHER PROVIDER.GOV NIL
14	Next advisory (M)	Year, month, day and time in UTC	NXT ADVISORY:	nnnnnnnn/nnnnZ *or* NO FURTHER ADVISORIES *or* WILL BE ISSUED BY	NXT ADVISORY: NXT ADVISORY:	20161108/0700Z NO FURTHER ADVISORIES

Notes.—

1. Used only when the message issued to indicate that a test or an exercise is taking place. When the word “TEST” or the abbreviation “EXER” is included, the message may contain information that should not be used operationally or will otherwise end immediately after the word "TEST". *[Applicable 7 November 2019].*
2. One or more latitude ranges should be included in the space weather advisory information for “GNSS” and “RADIATION”.

Example A2-3: Space weather advisory message (GNSS and HF COM effects)

SWX ADVISORY	
DTG:	20161108/0100Z
SWXC:	DONLON*
SWX EFFECT:	HF COM MOD AND GNSS MOD
ADVISORY NR:	2016/2
NR RPLC :	2016/1
OBS SWX:	20161108/0100Z HNH HSH E18000 – W18000
FCST SWX +6 HR:	20121108/0700Z HNH HSH E18000 – W18000
FCST SWX +12 HR:	20161108/1300Z HNH HSH E18000 – W18000
FCST SWX +18 HR:	20161108/1900Z HNH HSH E18000 – W18000
FCST SWX +24 HR:	20161109/0100Z NO SWX EXP
RMK:	LOW LVL GEOMAGNETIC STORMING CAUSING INCREASED AURORAL ACT AND SUBSEQUENT MOD DEGRADATION OF GNSS AND HF COM AVBL IN THE AURORAL ZONE. THIS STORMING EXP TO SUBSIDE IN THE FCST PERIOD. SEE WWW.SPACEWEATHERPROVIDER.WEB

NXT ADVISORY:	NO FURTHER ADVISORIES

* Fictitious location

Example A2-4: Space weather advisory message (RADIATION effects)

SWX ADVISORY	
DTG:	20161108/0000Z
SWXC:	DONLON*
SWX EFFECT:	RADIATION MOD
ADVISORY NR:	2016/2
NR RPLC :	2016/1
FCST SWX:	20161108/0100Z HNH HSH E18000 – W18000 ABV FL350
FCST SWX +6 HR:	20121108/0700Z HNH HSH E18000 – W18000 ABV FL350
FCST SWX +12 HR:	20161108/1300Z HNH HSH E18000 – W18000 ABV FL350
FCST SWX +18 HR:	20161108/1900Z HNH HSH E18000 – W18000 ABV FL350
FCST SWX +24 HR:	20161109/0100Z NO SWX EXP
RMK:	RADIATION LVL EXCEEDED 100 PCT OF BACKGROUND LVL AT FL350 AND ABV. THE CURRENT EVENT HAS PEAKED AND LVL SLW RTN TO BACKGROUND LVL. SEE WWW.SPACEWEATHERPROVIDER.WEB
NXT ADVISORY:	NO FURTHER ADVISORIES

* Fictitious location

Example A2-5: Space weather advisory message (HF COM effects)

SWX ADVISORY	
DTG:	20161108/0100Z
SWXC:	DONLON*
SWX EFFECT:	HF COM SEV
ADVISORY NR:	2016/1
OBS SWX:	20161108/0100Z DAYLIGHT SIDE
FCST SWX +6 HR:	20121108/0700Z DAYLIGHT SIDE
FCST SWX +12 HR:	20161108/1300Z DAYLIGHT SIDE
FCST SWX +18 HR:	20161108/1900Z DAYLIGHT SIDE
FCST SWX +24 HR:	20161109/0100Z DAYLIGHT SIDE
RMK:	PERIODIC HF COM ABSORPTION OBS AND LIKELY TO CONT IN THE NEAR TERM. CMPL AND PERIODIC LOSS OF HF ON THE SUNLIT SIDE OF THE EARTH EXP. CONT HF COM DEGRADATION LIKELY OVER THE NXT 7 DAYS. SEE WWW.SPACEWEATHERPROVIDER.WEB
NXT ADVISORY:	20161108/0700Z

* Fictitious location

…

End of new text.

…

APPENDIX 3. TECHNICAL SPECIFICATIONS RELATED TO METEOROLOGICAL OBSERVATIONS AND REPORTS

(See Chapter 4 of this Annex)

. . .

2. GENERAL CRITERIA RELATED TO METEOROLOGICAL REPORTS

2.1 Format of meteorological reports

. . .

2.1.3 **Recommendation**.— *Until 4 November 2020, METAR and SPECI should be disseminated in ~~digital~~ IWXXM GML form in addition to the dissemination of the METAR and SPECI in accordance with 2.1.2.*

2.1.3 As of 5 November 2020, METAR and SPECI shall be disseminated in IWXXM GML form in addition to the dissemination of the METAR and SPECI in accordance with 2.1.2.

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

~~2.1.4 METAR and SPECI if disseminated in digital form shall be formatted in accordance with a globally interoperable information exchange model and shall use extensible markup language (XML)/geography markup language (GML).~~

~~2.1.5 METAR and SPECI if disseminated in digital form shall be accompanied by the appropriate metadata.~~

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

. . .

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APPENDIX 5. TECHNICAL SPECIFICATIONS RELATED TO FORECASTS

(See Chapter 6 of this Annex)

1. CRITERIA RELATED TO TAF

1.1 TAF format

. . .

1.1.2 **Recommendation**.— *Until 4 November 2020, TAF should be disseminated in ~~digital~~ IWXXM GML form in addition to the dissemination of the TAF in accordance with 1.1.1.*

1.1.2 As of 5 November 2020, TAF shall be disseminated in IWXXM GML form in addition to the dissemination of the TAF in accordance with 1.1.1.

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

~~1.1.3 TAF if disseminated in digital form shall be formatted in accordance with a globally interoperable information exchange model and shall use extensible markup language (XML)/geography markup language (GML).~~

~~1.1.4 TAF if disseminated in digital form shall be accompanied by the appropriate metadata.~~

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

. . .

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

(See Chapter 7 of this Annex.)

1. SPECIFICATIONS RELATED TO SIGMET INFORMATION

1.1 Format of SIGMET messages

. . .

1.1.6 **Recommendation.**— *Until 4 November 2020, ~~Meteorological watch offices should issue~~ SIGMET information should be disseminated in ~~digital~~ IWXXM GML form~~,~~ in addition to the ~~issuance~~ dissemination of ~~this~~ SIGMET information in ~~abbreviated plain language in~~ accordance with 1.1.1.*

1.1.6 As of 5 November 2020, SIGMET information shall be disseminated in IWXXM GML form in addition to the dissemination of SIGMET information in accordance with 1.1.1.

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

~~1.1.7 SIGMET if disseminated in digital form shall be formatted in accordance with a globally interoperable information exchange model and shall use extensible markup language (XML)/geography markup language (GML).~~

~~1.1.8 SIGMET if disseminated in digital form shall be accompanied by the appropriate metadata.~~

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

. . .

2. SPECIFICATIONS RELATED TO AIRMET INFORMATION

2.1 Format of AIRMET messages

. . .

2.1.6 **Recommendation.**— *Until 4 November 2020, ~~Meteorological offices should issue~~ AIRMET information should be disseminated in ~~digital~~ IWXXM GML form~~,~~ in addition to the ~~issuance~~ dissemination of ~~this~~ AIRMET information in ~~abbreviated plain language in~~ accordance with 2.1.1.*

2.1.6 As of 5 November 2020, AIRMET information shall be disseminated in IWXXM GML form in addition to the dissemination of AIRMET information in accordance with 2.1.1.

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

~~2.1.7 AIRMET if disseminated in digital form shall be formatted in accordance with a globally interoperable information exchange model and shall use XML/GML.~~

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

~~*Note. — Guidance on the information exchange model XML/GML and the metadata profile is provided in Doc 10003.*~~

. . .

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

…

Element	*Detailed content*	*SIGMET template*	*AIRMET template*	*SIGMET message examples*	*AIRMET message examples*
Location indicator of FIR/CTA (M)[1]	ICAO location indicator of the ATS unit serving the FIR or CTA to which the SIGMET/AIRMET refers	nnnn		YUCC[2] YUDD[2]	
Identification (M)	Message identification and sequence number[3]	SIGMET [n][n]n	AIRMET [n][n]n	SIGMET 1 SIGMET 01 SIGMET A01	AIRMET 9 AIRMET 19 AIRMET B19
Validity period (M)	Day-time groups indicating the period of validity in UTC	VALID nnnnnn/nnnnnn		VALID 010000/010400 VALID 221215/221600 VALID 101520/101800 VALID 251600/252200 VALID 152000/160000 VALID 192300/200300	
Location indicator of MWO (M)	Location indicator of MWO originating the message with a separating hyphen	nnnn–		YUDO–[2] YUSO–[2]	
Name of the FIR/CTA (M)	Location indicator and name of the FIR/CTA[4] for which the SIGMET/AIRMET is issued	nnnn nnnnnnnnnn FIR~~[/UIR]~~ *or* UIR *or* FIR/UIR *or* nnnn nnnnnnnnnn CTA	nnnn nnnnnnnnnn FIR[/n]	YUCC AMSWELL FIR[2] YUDD SHANLON[2] FIR/UIR[2] UIR FIR/UIR YUDD SHANLON CTA[2]	YUCC AMSWELL FIR/2[2] YUDD SHANLON FIR[2]
IF THE SIGMET OR AIRMET MESSAGE IS TO BE CANCELLED, SEE DETAILS AT THE END OF THE TEMPLATE.					
Status indicator (C)[5]	Indicator of test or exercise	TEST *or* EXER	TEST *or* EXER	TEST EXER	TEST EXER
Phenomenon (M)[5][6]	Description of phenomenon causing the issuance of SIGMET/AIRMET	OBSC[6][7] TS[GR[7][8]] EMBD[8][9] TS[GR[7][8]] FRQ[9][10] TS[GR[7][8]] SQL[10][11] TS[GR[7][8]] TC nnnnnnnnnn PSN Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] CB *or* TC NN[11][12] PSN Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] CB SEV TURB[12][13] SEV ICE[13][14] SEV ICE (FZRA)[13][14] SEV MTW[14][15] HVY DS HVY SS [VA ERUPTION] [MT nnnnnnnnnn] [PSN Nnn[nn] *or* Snn[nn] Ennn[nn] *or* Wnnn[nn]] VA CLD RDOACT CLD	SFC WIND nnn/nn[n]MPS (*or* SFC WIND nnn/nn[n]KT) SFC VIS [n][n]nnM (nn)[15][16] ISOL[16][17] TS[GR[7][8]] OCNL[17][18] TS[GR[7][8]] MT OBSC BKN CLD nnn/[ABV] [n]nnnM (*or* BKN CLD [n]nnn/[ABV] [n]nnnnFT) *or* BKN CLD SFC/[ABV] [n]nnnM (*or* BKN CLD SFC/[ABV][n]nnnnFT) OVC CLD nnn/[ABV] [n]nnnM (*or* OVC CLD [n]nnn/[ABV] [n]nnnnFT) *or* OVC CLD SFC/[ABV] [n]nnnM (*or* OVC CLD SFC/[ABV][n]nnnnFT)	OBSC TS OBSC TSGR EMBD TS EMBD TSGR FRQ TS FRQ TSGR SQL TS SQL TSGR TC GLORIA PSN N10 W060 CB TC NN PSN S2030 E06030 CB SEV TURB SEV ICE SEV ICE (FZRA) SEV MTW HVY DS HVY SS VA ERUPTION MT ASHVAL[2] PSN S15 E073 VA CLD RDOACT CLD	SFC WIND 040/40MPS SFC WIND 310/20KT SFC VIS 1500M (BR) ISOL TS ISOL TSGR OCNL TS OCNL TSGR MT OBSC BKN CLD 120/900M BKN CLD 400/3000FT BKN CLD 1000/5000FT BKN CLD SFC/3000M BKN CLD SFC/ABV 10000FT OVC CLD 270/ABV3000M OVC CLD 900/ABV10000FT OVC CLD 1000/5000FT OVC CLD SFC/3000M OVC CLD SFC/ABV 10000FT ISOL CB

Element	*Detailed content*	*SIGMET template*	*AIRMET template*	*SIGMET message examples*	*AIRMET message examples*
			ISOL[1617] CB[1819] OCNL[1718] CB[1819] FRQ[910] CB[1819] ISOL[1617] TCU[1819] OCNL[1718] TCU[1819] FRQ[910] TCU[1819] MOD TURB[1213] MOD ICE[1314] MOD MTW[1415]		OCNL CB FRQ CB ISOL TCU OCNL TCU FRQ TCU MOD TURB MOD ICE MOD MTW
Observed or forecast phenomenon (M)	Indication whether the information is observed and expected to continue, *or* forecast	OBS [AT nnnnZ] *or* FCST [AT nnnnZ]		OBS OBS AT 1210Z FCST FCST AT 1815Z	
Location (C)[1920]	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] [AND] W OF Wnnn[nn] *or* E OF Wnnn[nn] *or* W OF Ennn[nn] *or* E OF Ennn[nn] *or* N OF Nnn[nn] *or* N OF Snn[nn] AND S OF Nnn[nn] *or* S OF Snn[nn] *or* W OF Wnnn[nn] *or* W OF Ennn[nn] AND E OF Wnnn[nn] *or* E OF Ennn[nn] *or* N OF LINE[2021] *or* NE OF LINE[2021] *or* E OF LINE[2021] *or* SE OF LINE[2021] *or* S OF LINE[2021] *or* SW OF LINE[2021] *or* W OF LINE[2021] *or* NW OF LINE[2021] 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 N OF LINE[2021] *or* NE OF LINE[2021] *or* E OF LINE[2021] *or* SE OF LINE[2021] *or* S OF LINE[2021] *or* SW OF LINE[2021] *or* W OF LINE[2021] *or* NW OF LINE[2021] 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* WI[2021, 2122] 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* APRX nnKM WID LINE[2021] BTN (*or* nnNM WID LINE[2021]	N2020 W07005 N48 E010 S60 W160 S0530 E16530 N OF N50 S OF N5430 N OF S10 S OF S4530 W OF W155 E OF W45 W OF E15540 E OF E09015 N OF N1515 AND W OF E13530 S OF N45 AND N OF N40 N OF LINE S2520 W11510 – S2520 W12010 SW OF LINE N50 W005 – N60 W020 SW OF LINE N50 W020 – N45 E010 AND NE OF LINE N45 W020 – N40 E010 WI N6030 E02550 – N6055 E02500 – N6050 E02630 – N6030 E02550 APRX 50KM WID LINE BTN N64 W017 – N60 W010 – N57 E010 ENTIRE FIR ENTIRE UIR ENTIRE FIR/UIR ENTIRE CTA WI 400KM OF TC CENTRE WI 250NM OF TC CENTRE	

Element	*Detailed content*	*SIGMET template*	*AIRMET template*	*SIGMET message examples*	*AIRMET message examples*
		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* ENTIRE ~~FIR[/]~~UIR *or* ENTIRE FIR *or* ENTIRE FIR/UIR *or* ENTIRE CTA *or*[~~22~~23] WI nnnKM (*or* nnnNM) OF TC CENTRE *or*[29] WI nnKM (*or* nnNM) OF Nnn[nn] *or* Snn[nn] Wnnn[nn] or Ennn[nn]		WI 30KM OF N6030 E02550[†]	
Level (C)[~~19~~20, 29]	Flight level *or* altitude[~~23~~]	[SFC/]FLnnn *or* [SFC/]nnnnM (*or* [SFC/][n]nnnnFT) *or* FLnnn/nnn *or* TOP FLnnn *or* [TOP] ABV FLnnn *or* (or [TOP] ABV [n]nnnnFT) [nnnn/]nnnnM (*or* [[n]nnnn/][n]nnnnFT) *or* [nnnnM/]FLnnn (*or* [[n]nnnnFT/]FLnnn) *or*[~~22~~23] TOP [ABV *or* BLW] FLnnn		FL180 SFC/FL070 SFC/3000M SFC/10000FT FL050/080 TOP FL390 ABV FL250 TOP ABV FL100 ABV 7000FT TOP ABV 9000FT TOP ABV 10000FT 3000M 2000/3000M 8000FT 6000/12000FT 2000M/FL150 10000FT/FL250 TOP FL500 TOP ABV FL500 TOP BLW FL450	
Movement or expected movement (C)[~~19~~20, 24]	Movement *or* expected movement (direction and speed) with reference to one of the sixteen points of compass, *or* stationary	MOV N [nnKMH] *or* MOV NNE [nnKMH] *or* MOV NE [nnKMH] *or* MOV ENE [nnKMH] *or* MOV E [nnKMH] *or* MOV ESE [nnKMH] *or* MOV SE [nnKMH] *or* MOV SSE [nnKMH] *or* MOV S [nnKMH] *or* MOV SSW [nnKMH] *or* MOV SW [nnKMH] *or* MOV WSW [nnKMH] *or* MOV W [nnKMH] *or* MOV WNW [nnKMH] *or* MOV NW [nnKMH] *or* MOV NNW [nnKMH] (*or* MOV N [nnKT] *or* MOV NNE [nnKT] *or* MOV NE [nnKT] *or* MOV ENE [nnKT] *or* MOV E [nnKT] *or* MOV ESE [nnKT] *or* MOV SE [nnKT] *or* MOV SSE [nnKT] *or* MOV S [nnKT] *or* MOV SSW [nnKT] *or* MOV SW [nnKT] *or* MOV WSW [nnKT] *or* MOV W [nnKT] *or* MOV WNW [nnKT] *or* MOV NW [nnKT] *or* MOV NNW [nnKT])		MOV SE MOV NNW MOV E 40KMH MOV E 20KT MOV WSW 20KT STNR	

[†] Applicable 7 November 2019.

Element	*Detailed content*	*SIGMET template*	*AIRMET template*	*SIGMET message examples*	*AIRMET message examples*
		or STNR			
Changes in intensity (C)~~19~~20	Expected changes in intensity	INTSF *or* WKN *or* NC		INTSF WKN NC	
Forecast time (C)[24]	Indication of the forecast time of phenomenon	FCST AT nnnnZ	—	FCST AT 2200Z	—
TC forecast position (C)[23]	Forecast position of TC centre at the end of the validity period of the SIGMET message	TC CENTRE PSN Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]	—	TC CENTRE PSN N1030 E1600015	—
Forecast position (C)~~19~~20, 24, 25	Forecast position of phenomenon at the end of the validity period of the SIGMET message	Nnn[nn] Wnnn[nn] *or* Nnn[nn] Ennn[nn] *or* Snn[nn] Wnnn[nn] *or* Snn[nn] Ennn[nn] *or* N OF Nnn[nn] *or* S OF Nnn[nn] *or* N OF Snn[nn] *or* S OF Snn[nn] [AND] W OF Wnnn[nn] *or* E OF Wnnn[nn] *or* W OF Ennn[nn] *or* E OF Ennn[nn] *or* N OF Nnn[nn] *or* N OF Snn[nn] AND S OF Nnn[nn] *or* S OF Snn[nn] *or* W OF Wnnn[nn] *or* W OF Ennn[nn] AND E OF Wnnn[nn] *or* E OF Ennn[nn] *or* N OF LINE~~20~~21 *or* NE OF LINE~~20~~21 *or* E OF LINE~~20~~21 *or* SE OF LINE~~20~~21 *or* S OF LINE~~20~~21 *or* SW OF LINE~~20~~21 *or* W OF LINE~~20~~21 *or* NW OF LINE~~20~~21 Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] [– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] [AND N OF LINE~~20~~21 *or* NE OF LINE~~20~~21 *or*	—	N30 W170 N OF N30 S OF S50 AND W OF E170 S OF N46 AND N OF N39 NE OF LINE N35 W020 – N45 W040 SW OF LINE N48 W020 – N43 E010 AND NE OF LINE N43 W020 – N38 E010 WI N20 W090 – N05 W090 – N10 W100 – N20 W100 – N20 W090 APRX 50KM WID LINE BTN N64 W017 – N57 W005 – N55 E010 – N55 E030 ENTIRE FIR ENTIRE UIR ENTIRE FIR/UIR ENTIRE CTA ~~TC CENTRE PSN N2740 W07345~~ NO VA EXP WI 30KM OF N6030 E02550 †	—

† Applicable 7 November 2019.

Element	*Detailed content*	*SIGMET template*	*AIRMET template*	*SIGMET message examples*	*AIRMET message examples*
		E OF LINE[2021] *or* SE OF LINE[2021] *or* S OF LINE[2021] *or* SW OF LINE[2021] *or* W OF LINE[2021] *or* NW OF LINE[2021] 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* WI[2021, ~~2122~~] 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* APRX nnKM WID LINE[2021] BTN (nnNM WID LINE[2021] 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* ENTIRE FIR~~[/UIR]~~ *or* ENTIRE UIR *or* ENTIRE FIR/UIR *or* ENTIRE CTA ~~*or*[22]~~ ~~TC CENTRE PSN Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]~~ *or*[26] NO VA EXP *or*[29] WI nnKM (*or* nnNM) OF Nnn[nn] *or* Snn[nn] Wnnn[nn] or Ennn[nn]			

Element	*Detailed content*	*SIGMET template*	*AIRMET template*	*SIGMET message examples*	*AIRMET message examples*
Repetition of elements (C)[27]	Repetition of elements included in a SIGMET message for volcanic ash cloud or tropical cyclone	[AND][27]	—	AND	—

OR

Cancellation of SIGMET/ AIRMET (C)[28]	Cancellation of SIGMET/AIRMET referring to its identification	CNL SIGMET [n][n]n nnnnnn/nnnnnn *or*[26] CNL SIGMET [n][n]n nnnnnn/nnnnnn VA MOV TO nnnn FIR	CNL AIRMET [n][n]n nnnnnn/nnnnnn	CNL SIGMET 2 101200/101600 CNL SIGMET A13 251030/251430 VA MOV TO YUDO FIR[2]	CNL AIRMET 05 151520/151800

Notes.—

1. See 4.1.
2. Fictitious location.
3. In accordance with 1.1.3 and 2.1.2.
4. See 2.1.3.
5. Used only when the message issued to indicate that a test or an exercise is taking place. When the word “TEST” or the abbreviation “EXER” is included, the message may contain information that should not be used operationally or will otherwise end immediately after the word "TEST". *[Applicable 7 November 2019]*

~~5~~6. In accordance with 1.1.4 and 2.1.4.
~~6~~7. In accordance with 4.2.1 a).
~~7~~8. In accordance with 4.2.4.
~~8~~9. In accordance with 4.2.1 b).
~~9~~10. In accordance with 4.2.2.
~~10~~11. In accordance with 4.2.3.
~~11~~12. Used for unnamed tropical cyclones.
~~12~~13. In accordance with 4.2.5 and 4.2.6.
~~13~~14. In accordance with 4.2.7.
~~14~~15. In accordance with 4.2.8.
~~15~~16. In accordance with 2.1.4.
~~16~~17. In accordance with 4.2.1 c).
~~17~~18. In accordance with 4.2.1 d).
~~18~~19. The use of cumulonimbus (CB) and towering cumulus (TCU) is restricted to AIRMETs in accordance with 2.1.4.
~~19~~20. In the case of volcanic ash cloud or cumulonimbus clouds associated with a tropical cyclone covering more than one area within the FIR, these elements can be repeated, as necessary.
~~20~~21. A straight line is to be used between two points drawn on a map in the Mercator projection or between two points which crosses lines of longitude at a constant angle.
~~21~~22. The number of coordinates should be kept to a minimum and should not normally exceed seven.
~~22~~23. Only for SIGMET messages for tropical cyclones.
~~23. Only for SIGMET messages for volcanic ash cloud and tropical cyclones.~~
24. The elements “forecast time” and “forecast position” are not to be used in conjunction with the element “movement or expected movement”.
25. The levels of the phenomena remain fixed throughout the forecast period.
26. Only for SIGMET messages for volcanic ash.
27. To be used for two volcanic ash clouds or two centres of tropical cyclones simultaneously affecting the FIR concerned..
28. End of the message (as the SIGMET/AIRMET message is being cancelled).
29. Only for SIGMET messages for radioactive cloud. When detailed information on the release is not available, a radius of up to 30 kilometres (or 16 nautical miles) from the source may be applied; and a vertical extent from surface (SFC) to the upper limit of the flight information region/upper flight information region (FIR/UIR) or control area (CTA) is to be applied. *[Applicable 7 November 2019].*

…

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

(See Chapter 9 of this Annex)

…

4. SPECIFICATIONS RELATED TO FLIGHT DOCUMENTATION

4.1 Presentation of information

…

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

…

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

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3. INFORMATION TO BE PROVIDED FOR AERONAUTICAL INFORMATION SERVICES UNITS

3.1 List of information

The following information shall be supplied, as necessary, to an aeronautical information services unit:

a) information on meteorological service for international air navigation, intended for inclusion in the aeronautical information publication(s) concerned;

Note.— Details of this information are given in ~~Annex 15~~PANS-AIM, Appendix ~~1~~3, Part 1, GEN 3.5 and Part 3, AD 2.2, 2.11, 3.2 and 3.11.

b) information necessary for the preparation of NOTAM or ASHTAM including, in particular, information on:

1) the establishment, withdrawal and significant changes in operation of aeronautical meteorological services. This information is required to be provided to the aeronautical information services unit sufficiently in advance of the effective date to permit issuance of NOTAM in compliance with Annex 15, ~~5.1.1~~6.3.2.2 and ~~5.1.1.1~~6.3.2.3;

. . .

Insert new Attachment E as follows.

. . .

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

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

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

End of new Attachment E.

— END —