

International Civil Aviation Organization



**THE TWELFTH MEETING OF ASIA/PACIFIC ROBEX
WORKING GROUP (ROBEX WG/12) and
FOURTH MEETING OF METEOROLOGICAL HAZARDS TASK
FORCE (MET/H TF/4)**

ICAO Regional Sub-Office, Beijing, China

19 March 2014

Agenda Item (conjoint session) 2: SIGMET and advisory information

c) Review SIGMET Guide

REVIEW OF THE ASIA/PACIFIC REGIONAL SIGMET GUIDE

(Presented by the Secretariat)

SUMMARY

This paper describes the update process for the Asia/Pacific Regional SIGMET Guide, provides a summary of the last amendments to the Fourth Edition of the guide published in November 2013 and presents a generic, Regional SIGMET Guide template, provided by the Meteorological Warnings Study Group (METWSG), for review by the meeting and possible adoption as the basis for an updated, Fifth Edition of the Asia/Pacific Regional SIGMET Guide.

1. INTRODUCTION

1.1 The Asia/Pacific Regional SIGMET Guide (referred to hereafter as the Regional SIGMET Guide) is intended to provide regional guidance for the standardization and harmonization of procedures and formats related SIGMET information. As such, it is considered as complementary guidance to the SIGMET-related Standards and Recommended Practices (SARPs) and provisions in the ICAO Annex 3 – *Meteorological Services for International Air Navigation* and Asia/Pacific Regional Air Navigation Plan (Doc 9673). The Regional SIGMET Guide – 4th Edition – September 2007 – Amendment 10 (November 2013), is available at the following website: http://www.icao.int/APAC/Documents/edocs/sigmet_guide4.pdf.

1.2 The Regional SIGMET Guide is maintained by the ICAO Asia/Pacific Regional Office. It is reviewed and updated regularly, under the auspices of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG), to maintain alignment with the relevant SIGMET-related ICAO SARPs, provisions and regional air navigation procedures. The meeting is reminded that the development of guidance materials aimed at improving MET services is within the purview of the Meteorology Sub-Group (MET SG) of APANPIRG and, specifically, the contribution to regular reviews and updates of the Regional SIGMET Guide is included in the work plans of its

contributory bodies: the Regional OPMET Bulletins Exchange Working Group (ROBEX WG) and the Meteorological Hazards Task Force (MET/H TF).

2. DISCUSSION

2.1 The meeting may recall that latest amendment to the Regional SIGMET Guide was published in November 2013 (Amendment 10), which incorporated the updates proposed by the conjoint session of ROBEX WG/11 and MET/H TF/3, held in Bangkok, Thailand, on 13 March 2013, and MET SG/17, held in Bangkok, Thailand, from 13 to 16 May 2013.

2.2 A summary of updates incorporated in Amendment 10 to the Regional SIGMET Guide is provided below:

- Consequential amendments to Amendment 76 to Annex 3, including: terminology for aerodrome meteorological offices; description of geographical location of phenomenon in SIGMET; and provisions for volcanic ash cloud forecast at the end of the period of validity and the location, level and extent of the volcanic ash cloud in SIGMET, including when no volcanic ash cloud is forecast to affect the flight information region
- Re-alignment of the references with respect to the Internet-based services and satellite services used for the global dissemination of SIGMET information
- Re-alignment of the Internet address for the Regional SIGMET Guide
- Re-alignment of the focal point information relating to SIGMET tests
- Adoption of the regional procedures related to the back-up arrangements for Volcanic Ash Advisory Centres

2.3 A full listing of the updates to the Regional SIGMET Guide in Amendment 10 was distributed in ICAO State letter Ref: T 4/7.5:AP159/13 (MET), a copy of which is included in **Attachment 1** to this paper for ease of reference.

2.4 The meeting may recall some additional, significant updates to the Regional SIGMET Guide, such as the provision of new examples of SIGMET messages, were envisaged for inclusion in Amendment 10; depending on the outcome of a global review and realignment of all the ICAO Regional SIGMET Guides by the METWSG. Those proposed changes have been incorporated in a generic Regional SIGMET Guide template produced by the METWSG, which is discussed further, below, in view of its possible utilization as the basis for a new/updated Regional SIGMET Guide.

2.5 The meeting is reminded that the METWSG had tasked an ad-hoc group to comprehensively review all the Regional SIGMET Guides in existence in ICAO Regions, resolve the regional inconsistencies with respect to the generic content of the guides and develop a comprehensive, generic document, aligned with Amendment 76 to Annex 3, for use by Regions as a Regional SIGMET Guide template (METWSG Actions Agreed 4/3 and 5/4 refer). The template developed by the METWSG ad-hoc group became available in October 2013 (Inter-Office Memorandum Ref: AN 10/22 refers). The template has been reviewed and adapted in draft form (for the Asia/Pacific Region) by the Secretariat and is included in **Attachment 2** to this paper for review by the meeting and consideration for possible adoption as the replacement (Asia/Pacific) Regional SIGMET Guide (5th Edition).

2.6 The most significant changes proposed in the Regional SIGMET Guide template, with respect to the Asia/Pacific Regional SIGMET Guide (4th Edition), are summarized below:

- Removal of redundant references to Region-specific information, meetings and practices
- Replacement of redundant, duplicate guidance material (copied from other sources) with references to the source documents
- Consolidation of the lists of SIGMET-related documents and sources of information to support SIGMET provision
- Addition or revision of guidance related to: special air-reports; coordination between meteorological watch office (MWO) and air traffic services (ATS); volcano observatory notice for aviation (VONA); location and forecast position of phenomenon in SIGMET; multiple instances of phenomena in SIGMET; amendments to SIGMET; use of code elements (including SIGMET examples and figures); and extended validity period of TEST SIGMET

2.7 A more comprehensive list of the specific changes proposed in the Regional SIGMET Guide template, with respect to the Asia/Pacific Regional SIGMET Guide (4th Edition), is provided for additional reference in the table in **Attachment 3** to this paper.

2.8 When considering the changes that would result from adoption of an updated Regional SIGMET Guide (5th Edition) based on the Regional SIGMET Guide template, as provided in **Attachment 2**, the meeting may determine that consequential, region-specific guidance would be required such as: (a) documentation of AFTN addresses for use in SIGMET tests; and (b) documentation to replace the VAAC back-up related procedures currently appended to the Regional SIGMET Guide (4th Edition).

2.9 Given that the Regional SIGMET Guide template was developed to provide global consistency with respect to the generic aspects of SIGMET provision, including full alignment with Amendment 76 to Annex 3, it is to be expected that the introduction of a new or updated Regional SIGMET guide based on the template will improve the consistency of regional SIGMET guidance across all ICAO Regions and, by extension, improve the level of effective implementation of SIGMET by States with MWO responsibilities. It is also to be expected that the template will be periodically reviewed and, as necessary, updated to ensure consistency with Annex 3 provisions.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) Review the draft Asia/Pacific Regional SIGMET Guide – 5th Edition in **Attachment 2** and provide comments, suggestions and any required changes with respect to its suitability for adoption in the Asia/Pacific Region;
- b) Consider any consequential requirements for additional or revised regional guidance material stemming from the adoption of the Regional SIGMET Guide – 5th Edition based on the Regional SIGMET Guide template; and
- c) Forward a draft version of the Regional SIGMET Guide – 5th Edition, based on the Regional SIGMET Guide template, to the MET Sub-Group for consideration for adoption by APANPIRG.



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12 November 2013

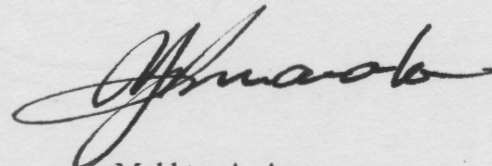
Subject: Asia/Pacific Regional SIGMET Guide – Amendment

Sir/Madam,

I have the honour to draw your attention to 10th amendment, November 2013, to the Asia/Pacific Regional SIGMET Guide (4th edition – September 2007). This amendment is based on inputs provided by States through the Third Meeting of the Meteorological Hazards Task Force (MET/H TF/3), the Eleventh Meeting of the Regional OPMET Bulletins Exchange Working Group (ROBEX WG/11) and the Seventeenth Meeting of the Meteorology Sub-Group (MET SG/17). Input is also provided by the Meteorological Warnings Study Group (METWSG) through the development of a Regional SIGMET Guide Template.

These amendments to the Asia/Pacific Regional SIGMET Guide are mainly to align with Amendment 76 to ICAO Annex 3 – *Meteorological Service for International Air Navigation*, which becomes applicable on 14 November 2013, and to remove references to the discontinued ISCS (International Satellite Communications System). The list of amendments is provided in **the Attachment** to this letter. Please note that the full version of the 10th amendment to the Asia/Pacific Regional SIGMET Guide (4th edition) can be accessed at the following website: <http://www.icao.int/APAC/Pages/edocs.aspx>, under the heading “MET”.

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



Mokhtar A. Awan
Regional Director

Enclosure:

List of amendments to the Asia/Pacific Regional
SIGMET Guide (4th edition) – 14 November 2013 (Am. 10)



List of amendments to the Asia/Pacific Regional SIGMET Guide (4th edition) – 14 November 2013 (Am. 10)

Section	Paragraph	Details of changes	Purpose of changes	References
PART 1.	1.1.4	“... in Amendment 74 76 to Annex 3, which was approved adopted by ICAO Council at the fifth meeting of its 198 th Session on 21 27 February 2007 2013 and become applicable on 14 November 2013.”	Update the reference to changes due to Amendment 76 to Annex 3.	MET SG/17; WP/14
PART 2.	2.1.5	“...satellite broadcasts: ISCS and SADIS 2G, and availability of SIGMET via the Internet-based systems Secure SADIS FTP and WIFS ...”	Include reference to Internet-based systems and delete reference to the discontinued ISCS.	MET SG/17; WP/14 (text revised by sec.)
PART 2.	2.2.9	“... Aeronautical Aerodrome MET offices ...”	Alignment of terminology with Amendment 76 to Annex 3.	MET SG/17; WP/14
PART 2.	2.2.9	“...SADIS 2G/Secure SADIS FTP and ISCS WIFS providers ...”	Include reference to Internet-based systems and delete reference to the discontinued ISCS.	MET SG/17; WP/14
PART 2.	2.5.4	“... the satellite distribution systems, SADIS 2G/Secure SADIS FTP and ISCS WIFS ...”	Include reference to Internet-based systems and delete reference to the discontinued ISCS.	MET SG/17; WP/14
PART 3.	3.1.1	“...non-abbreviated words, geographical names and numerical values ...”	Alignment of SIGMET provisions with Amendment 76 to Annex 3.	MET SG/17; WP/14
PART 3.	3.4.3.1	Column 4 of the table: “Geographical location of the phenomenon given by coordinates, or geographical objects, or location indicators ”	Alignment of SIGMET provisions with Amendment 76 to Annex 3.	MET SG/17; WP/14



List of amendments to the Asia/Pacific Regional SIGMET Guide (4th edition) – 14 November 2013 (Am. 10)

Section	Paragraph	Details of changes	Purpose of changes	References
PART 3.	3.4.3.1.4	<p>“... (latitude and longitude in degrees and minutes) or with reference to geographical features well known internationally ... or perceive. The number of coordinates should be kept to a minimum and should not normally exceed seven ... The following are the most common ways to describe the location of the phenomenon: ... - Location with reference to a LINE described with lat/lon of two points; With reference to a location with ICAO location abbreviation CCCC (normally, this should be the case of SIGMET based on special air-report in which the reported phenomenon is given with reference to an airport or another object with ICAO location indicator CCCC); With reference to geographical features well known internationally”</p>	Alignment of SIGMET provisions with Amendment 76 to Annex 3.	MET SG/17; WP/14
PART 3.	3.4.4.1	<p>Column 6, ‘Position’, in the table: “VA CLD APRX <lat,lon> - <lat,lon> - ... ENTIRE FIR ENTIRE CTA NO VA EXP”</p>	Alignment of SIGMET provisions with Amendment 76 to Annex 3.	MET SG/17; WP/14



List of amendments to the Asia/Pacific Regional SIGMET Guide (4th edition) – 14 November 2013 (Am. 10)

Section	Paragraph	Details of changes	Purpose of changes	References
PART 3.	3.4.4.4	<p>“Location, level and extent of the volcanic ash cloud</p> <p>Option 1 – location-level WI <P1(lat,lon) - P2(lat,lon) - ... > SFC/FL<nnn> or FL<nnn/nnn> or ENTIRE FIR or ENTIRE CTA</p> <p>Option 2 – level-extent FL<nnn/nnn> [APRX <nnn>KM BY <nnn>KM] [<P1(lat,lon) - P2(lat,lon) - ... >] or FL<nnn/nnn> [APRX <nnn>NM BY <nnn>NM] [<P1(lat,lon) - P2(lat,lon) - ... >] or FL<nnn/nnn> nnKM WID LINE BTN <P1(lat,lon) - P2(lat,lon) - ... > or FL<nnn/nnn> nnNM WID LINE BTN <P1(lat,lon) - P2(lat,lon) - ... ></p> <p>noting that two points would suffice in using APRX and two or more points used for WID LINE BTN”</p>	Alignment of SIGMET provisions with Amendment 76 to Annex 3.	MET SG/17; WP/14 (text revised by sec.)



List of amendments to the Asia/Pacific Regional SIGMET Guide (4th edition) – 14 November 2013 (Am. 10)

Section	Paragraph	Details of changes	Purpose of changes	References												
PART 3.	3.4.4.4	<p>Table:</p> <table border="1"> <tr> <td>WI<P1(lat,lon) – P2(lat,lon) - ... ></td> <td>Approximate description of the VA cloud by a number of points given with their geographical coordinates¹; the points should be separated by hyphen</td> </tr> <tr> <td>ENTIRE FIR</td> <td>Indicating the VA cloud is present in the entire FIR</td> </tr> <tr> <td>ENTIRE CTA</td> <td>Indicating the VA cloud is present in the entire CTA</td> </tr> <tr> <td>SFC/FL<nnn> or FL<nnn/nnn></td> <td>The layer of the atmosphere where the VA cloud is situated, given by two flight levels from the lower to the upper boundary of the cloud</td> </tr> <tr> <td>[APRX <nnn>KM BY <nnn>KM] or [APRX <nnn>NM BY <nnn>NM] or [nnKM WID LINE BTN] or ([nnNM WID LINE BTN]</td> <td>Approximate horizontal extent of the VA cloud in KM or NM; or along line with defined width (WID)</td> </tr> <tr> <td>{<P1(lat,lon) – P2(lat,lon) – ... >}</td> <td>Approximate description of the VA cloud by a number of points given with their geographical coordinates; the points should be separated by hyphen</td> </tr> </table> <p>¹The format of geographical coordinates reporting in SIGMET is given in Appendix F.</p>	WI<P1(lat,lon) – P2(lat,lon) - ... >	Approximate description of the VA cloud by a number of points given with their geographical coordinates ¹ ; the points should be separated by hyphen	ENTIRE FIR	Indicating the VA cloud is present in the entire FIR	ENTIRE CTA	Indicating the VA cloud is present in the entire CTA	SFC/FL<nnn> or FL<nnn/nnn>	The layer of the atmosphere where the VA cloud is situated, given by two flight levels from the lower to the upper boundary of the cloud	[APRX <nnn>KM BY <nnn>KM] or [APRX <nnn>NM BY <nnn>NM] or [nnKM WID LINE BTN] or ([nnNM WID LINE BTN]	Approximate horizontal extent of the VA cloud in KM or NM; or along line with defined width (WID)	{<P1(lat,lon) – P2(lat,lon) – ... >}	Approximate description of the VA cloud by a number of points given with their geographical coordinates; the points should be separated by hyphen	Alignment of SIGMET provisions with Amendment 76 to Annex 3.	MET SG/17; WP/14
WI<P1(lat,lon) – P2(lat,lon) - ... >	Approximate description of the VA cloud by a number of points given with their geographical coordinates ¹ ; the points should be separated by hyphen															
ENTIRE FIR	Indicating the VA cloud is present in the entire FIR															
ENTIRE CTA	Indicating the VA cloud is present in the entire CTA															
SFC/FL<nnn> or FL<nnn/nnn>	The layer of the atmosphere where the VA cloud is situated, given by two flight levels from the lower to the upper boundary of the cloud															
[APRX <nnn>KM BY <nnn>KM] or [APRX <nnn>NM BY <nnn>NM] or [nnKM WID LINE BTN] or ([nnNM WID LINE BTN]	Approximate horizontal extent of the VA cloud in KM or NM; or along line with defined width (WID)															
{<P1(lat,lon) – P2(lat,lon) – ... >}	Approximate description of the VA cloud by a number of points given with their geographical coordinates; the points should be separated by hyphen															



List of amendments to the Asia/Pacific Regional SIGMET Guide (4th edition) – 14 November 2013 (Am. 10)

Section	Paragraph	Details of changes	Purpose of changes	References
PART 3.	3.4.4.6	<p>“... approximation of the cloud. In addition, the levels of the phenomena remain fixed throughout the forecast period.</p> <p>Examples:</p> <p>FCST nnnnZ ENTIRE FIR</p> <p>FCST nnnnZ ENTIRE CTA</p> <p>The description of the expected position of the volcanic ash cloud when the volcanic ash cloud is expected to extend over the entire FIR or CTA.</p> <p>FCST nnnnZ NO VA EXP</p> <p>The description of the expected position of the volcanic ash cloud when the volcanic ash cloud is expected to be completely out of the FIR.”</p>	Alignment of SIGMET provisions with Amendment 76 to Annex 3.	MET SG/17; WP/14
PART 3.	3.5.2	<p>“... the SADIS and ISCS satellite broadcasts provided by the UK and the USA respectively.”</p>	Delete reference to the discontinued ISCS.	MET SG/17; WP/14
PART 3.	3.5.3	<p>“... It should be arranged that SIGMET is relayed to the SADIS and ISCS providers for satellite dissemination and the Secure SADIS FTP and WIFS providers for provision of the data via the public Internet ...”</p>	Include reference to Internet-based systems and delete reference to the discontinued ISCS.	MET SG/17; WP/14 (text revised by sec.)
PART 3.	3.5.4	<p>“...SADIS 2G/Secure SADIS FTP and ISCS WIFS, SIGMET ...”</p>	Include reference to Internet-based systems and delete reference to the discontinued ISCS.	MET SG/17; WP/14



List of amendments to the Asia/Pacific Regional SIGMET Guide (4th edition) – 14 November 2013 (Am. 10)

Section	Paragraph	Details of changes	Purpose of changes	References
Appendix G	2.5	<p>Insert new example: “SIGMET when no VA CLD forecast to affect the FIR (e.g., eruption ceasing, ash dispersing)</p> <p>YUDD SIGMET 2 VALID 101200/101800 YUSO – YUDD SHANLON FIR/UIR VA ERUPTION MT ASHVAL PSN N4315 E02115 VA CLD OBS AT 1200Z WI N4315 E02115 - N4345 E02145 – N4330 E02215 – N4245 E02130 - N4230 E02145 N4315 E02115 FL250/370 MOV ESE 20KT WKN FCST 1800Z NO VA EXP=”</p>	Alignment of SIGMET provisions with Amendment 76 to Annex 3.	MET SG/17; WP/14, METWSG/5
Appendix J	1.4, 3.1.1.4, 3.2.1.2	<p>“... http://www.bangkok.icao.int/edocs/sigmet_guide4.pdf http://www.icao.int/APAC/Documents/edocs/sigmet_guide4.pdf”</p>	Align with updated web address	ICAO 2013
Appendix J	3.4.3	<p>“Junichi Ishida (Mr) Mr. Yuichi Yamakoshi ... e-mail: j-ishida@met.kishou.go.jp y-yamakoshi@met.kishou.go.jp ... e-mail: icao_apac@bangkok.icao.int apac@icao.int”</p>	Align with personnel change in Japan and updated e-mail addresses.	Email from Japan 15/05/2013; ICAO 2013
Appendix K	Heading	“ DRAFT ASIA/PAC VAAC BACK-UP PROCEDURES”	Procedures no longer considered “draft”	MET SG/17; WP/14
Appendix L	Heading	“ DRAFT TOKYO/DARWIN VAAC BACK-UP TEST PROCEDURES”	Procedures no longer considered “draft”	MET SG/17; WP/14

INTERNATIONAL CIVIL AVIATION ORGANIZATION



ASIA/PACIFIC REGIONAL SIGMET GUIDE

FIFTH EDITION — <<INSERT MONTH AND YEAR>>

RECORD OF AMENDMENTS AND CORRIGENDA

Amendments			
No.	Date of issue	Date entered	Entered by

Corrigenda			
No.	Date of issue	Date entered	Entered by

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1. INTRODUCTION

1.1. General

- 1.1.1. The main purpose of this regional SIGMET guide is to provide guidance for standardization and harmonization of the procedures and formats related to the preparation and issuance of aeronautical meteorological information pertaining to specified en-route hazardous weather phenomena, known as SIGMET. The guidance is complementary to Annex 3 to the Convention on International Civil Aviation – *Meteorological Services for International Air Navigation*, the Standards and Recommended Practices (SARPs) contained therein regarding SIGMET, and to the SIGMET-related provisions in ICAO Regional Air Navigation Plans (ANPs).
- 1.1.2. ICAO provisions concerning the preparation and issuance of SIGMET information are primarily contained in:
- *Annex 3 - Meteorological Service for International Air Navigation*, Part I, Chapters 3 and 7 and Part II, Appendix 6;
 - *Annex 11 - Air Traffic Services*, Chapter 4, 4.2.1 and Chapter 7, 7.1;
 - *Regional Air Navigation Plans*, Basic ANP, Part VI - Meteorology (MET);
 - *Regional Air Navigation Plans*, Volume II, FASID, Part VI – Meteorology (MET) FASID, Tables MET 1B, MET 3A and MET 3B;
 - *Procedures for Air Navigation Services – Air Traffic Management (PANS-MET*, Doc 4444), Chapter 9, 9.1.3.2;
 - *Regional Supplementary Procedures* (Doc 7030), Part 1, 11.2;
 - *ICAO Abbreviations and Codes* (Doc 8400);
 - *Handbook on the International Airways Volcano Watch (IAVW) – Operational Procedures and Contact List* (Doc 9766);
 - *Manual of Aeronautical Meteorological Practice* (Doc 8896), Chapters 1 and 4;
 - *Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services* (Doc 9377).
- 1.1.3. This regional SIGMET guide is primarily intended to assist meteorological watch offices (MWOs) in preparing and disseminating SIGMET information in conformance with the format prescribed in Annex 3. The explanations of the format to be used are accompanied by examples. The regional SIGMET guide also provides information regarding the necessary coordination between the MWOs, air traffic services (ATS), volcanic ash advisory centres (VAACs), tropical cyclone advisory centres (TCACs) and pilots, and their respective responsibilities.

2. RESPONSIBILITIES AND COORDINATION

2.1. General

- 2.1.1. SIGMET messages provide information on hazardous meteorological phenomena; hence they are considered a high priority among other types of meteorological information provided to the aviation users. The primary purpose of SIGMET is for in-flight service, which requires timely transmission of the SIGMET messages to pilots by the ATS units and/or through VOLMET and D-VOLMET. Further information on the responsibilities of each party involved in the SIGMET process can be found in the *Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services* (Doc 9377).
- 2.1.2. Airlines are the main users of the SIGMET information. They contribute to the effectiveness of the SIGMET service through issuance of special air-reports reported by pilots to the ATS units. Special air-reports are among the most valuable sources of information for the MWOs in the preparation of SIGMET. The ATS units receiving special air-reports should forward them to their associated MWOs without delay.
- 2.1.3. In view of the foregoing, it should be well understood that the effectiveness of the SIGMET service depends strongly on the level of collaboration between the MWOs, ATS units, pilots, TCACs, VAACs and State volcano observatories. That is why, close coordination between these parties, as well as mutual understanding of their needs and responsibilities are essential for the successful implementation of the SIGMET service.
- 2.1.4. For the special cases of SIGMET for volcanic ash and tropical cyclones, the MWOs are provided with advisories from VAACs and TCACs respectively, as designated in the regional ANPs.
- 2.1.5. SIGMET is also used for flight planning. This requires global dissemination of SIGMET through the regional OPMET data banks (RODBs), the aeronautical fixed service (AFS) satellite distribution system (SADIS 2G), the Internet-based Secure SADIS FTP service and the WAFS Internet File Service (WIFS). SIGMET should also be distributed to the World Area Forecast Centres (WAFCs) London and Washington for use in the preparation of the significant weather (SIGWX) forecasts.

2.2. Meteorological watch office (MWO) responsibilities

- 2.2.1. SIGMET is to be issued by the MWO in order to provide timely information on the occurrence or expected occurrence of specified en-route weather phenomena affecting the safety of the flight operations in the MWO's area of responsibility. SIGMET provides information concerning the location, extent, intensity and expected evolution of the specified phenomena.
- 2.2.2. Information about the provision of the SIGMET service, including details on the designated MWO(s), is to be included in the State's Aeronautical Information Publication (AIP) as required by Annex 15 – *Aeronautical Information Service*, Appendix 1, GEN 3.5.8.
- 2.2.3. If a State is temporarily unable to meet its obligations for establishing MWO(s) and for provision of SIGMET, arrangements have to be made for another State to assume this responsibility. Such delegation of responsibilities is to be agreed by the meteorological authority of each State concerned and should be notified by a NOTAM, within the State's AIP and in a letter to the ICAO Regional Office concerned.

- 2.2.4. The meteorological authority concerned should ensure that the MWO obligations and responsibilities are clearly defined and assigned to the unit designated to serve the MWO. Corresponding operational procedures should be established and the meteorological staff should be trained accordingly.
- 2.2.5. In preparing SIGMET information MWOs should follow the format prescribed in Annex 3, Appendix 6, Table A6-1. Whilst Table A6-1 is the authoritative source, this regional SIGMET guide provides more specific instructions on how SIGMET should be compiled. The aim is to ensure that SIGMET is produced reliably and consistently worldwide.
- 2.2.6. SIGMET must be issued only for those weather phenomena listed in Annex 3, Appendix 6, 1.1.4 and only when specified criteria for their intensity and spatial extent are met.
- 2.2.7. The MWOs should be adequately equipped in order to be able to identify, analyze and forecast those phenomena for which SIGMET is required. The MWO should make use of all available sources of information including:
- special air-reports passed to the MWO from ATS (voice communication);
 - special air-reports received from automated downlink;
 - numerical Weather Prediction (NWP) data, especially high resolution models where available;
 - meteorological observations, including those from automatic weather stations and human observers;
 - upper wind information;
 - information from meteorological satellites;
 - weather radar (including Doppler radar);
 - State volcano observatories;
 - International Atomic Energy Agency (IAEA) through the relevant World Meteorological Organization (WMO) Regional Specializes Meteorological Centre (RSMC) for radioactive cloud;
 - local knowledge;
 - volcanic ash or tropical cyclone advisory messages.
- 2.2.8. On receipt of a special air-report from the associated ACC or FIC, the MWO should:
- a) issue SIGMET information based on the special-air report; or
 - b) send the special air-report for onward transmission in the case that the issuance of SIGMET information is not warranted (e.g., the phenomenon concerned is of transient nature).
- 2.2.9. Appropriate telecommunication means should be available at the MWO in order to ensure timely dissemination of SIGMET according to a dissemination scheme, which should include transmission to:
- local ATS users;
 - aerodrome MET offices within its area of responsibility, where SIGMET is required for briefing and/or flight documentation;
 - other MWOs in accordance with regional air navigation plans;
 - Centres designated for transmission of VOLMET or D-VOLMET where SIGMET is required for those transmissions;
 - responsible ROBEX centres and regional OPMET data bank (RODB). It should be arranged that, through the ROBEX scheme, SIGMETs are sent to

the designated RODB in the other ICAO regions, to the WAFCs and to the SADIS and WIFS providers;

- 2.2.10. In issuing SIGMET for tropical cyclones or volcanic ash, the MWOs should include as appropriate the advisory information received from the responsible TCAC or VAAC. In addition to the information received from the TCAC and VAAC, the MWOs may use the available complementary information from other reliable sources.

2.3. Air traffic service (ATS) unit responsibilities

- 2.3.1. Close coordination should be established between the MWO and the corresponding ATS unit (ACC or FIC) and arrangements should be in place to ensure:
- receipt without delay and display at the relevant ATS units of SIGMET issued by the associated MWO;
 - receipt and display at the ATS unit of SIGMETs issued by MWOs responsible for the adjacent FIRs/ACCs if these SIGMETs are required according to 2.3.4 below; and
 - transmission without delay by the ATS unit of special air-reports received through voice communication to the associated MWO.
- 2.3.2. SIGMET information should be transmitted to aircraft with the least possible delay on the initiative of the responsible ATS unit, by the preferred method of direct transmission followed by acknowledgement or by a general call when the number of aircraft would render the preferred method impracticable.
- 2.3.3. SIGMET information transmitted to aircraft-in-flight should cover a portion of the route up to two hours flying time ahead of the aircraft. SIGMET should be transmitted only during the time corresponding to their period of validity.
- 2.3.4. Air traffic controllers should ascertain whether any of the currently valid SIGMETs may affect any of the aircraft they are controlling, either within or outside the FIR/CTA boundary, up to two hours flying time ahead of the current position of the aircraft. If this is the case, the controllers should at their own initiative transmit the SIGMET promptly to the aircraft-in-flight likely to be affected. If necessary, the controller should pass to the aircraft available SIGMETs issued for the adjacent FIR/CTA, which the aircraft will be entering, if relevant to the expected flight route.
- 2.3.5. The ATS units concerned should also transmit to aircraft-in-flight the special air reports received, for which SIGMET has not been issued. Once a SIGMET for the weather phenomenon reported in the special air report is made available this obligation of the ATS unit expires.

2.4. Pilot responsibilities

- 2.4.1. Timely issuance of SIGMET information is largely dependent on the prompt receipt by MWOs of special air-reports. It is essential that pilots prepare and transmit such reports to the ATS units whenever any of the specified en-route meteorological conditions are encountered or observed.
- 2.4.2. It should be emphasized that, even when automatic dependent surveillance (ADS) is being used for routine air-reports, pilots should continue to make special air-reports.
- 2.4.3. Pilots should compile special air-reports and disseminate to ATS by air-ground data link as per Annex 3, Appendix 4, 1.2 and *Procedures for Air Navigation Services – Air Traffic Management* (PANS-ATM, Doc 4444), 4.12.3.2, or by voice communication as per Annex 3, Appendix 4, 1.3 and PANS-ATM (Doc 4444), 4.12.3.3.

Note. — The MWO will compile special air-reports for uplink as per Annex 3, Appendix 6, and as reported using the instructions given PANS-ATM, Appendix 1.

2.5. Coordination between MWOs and ATS units

- 2.5.1. To achieve the best service to aviation and as part of the collaborative decision-making process, close coordination between the MWO and the ATS units is required. This is of particular importance for the avoidance of hazardous weather.
- 2.5.2. A Letter of Agreement between the ATS authority and the meteorological authority is also recommended (as per Annex 3, 4.2) to outline the responsibilities and coordination processes between the MWOs and ATS units.

2.6. Coordination between MWOs, VAACs, TCACs and State volcano observatories

- 2.6.1. Amongst the phenomena for which SIGMET information is required, volcanic ash and tropical cyclones are of particular importance.
 - 2.6.2. Since the identification, analysis and forecasting of volcanic ash and tropical cyclones requires considerable scientific and technical resources, normally not available at each MWO, VAACs and TCACs have been designated to provide volcanic ash advisories and tropical cyclone advisories respectively to the users and assist the MWOs in the preparation of SIGMETs for those phenomena. Close coordination should be established between the MWO and its responsible VAAC and/or TCAC.
 - 2.6.3. Information regarding the VAACs and TCACs areas of responsibility and lists of MWOs and ACC/FICs to which advisories are to be sent is provided in the regional ANPs FASID Tables MET 3A and MET 3B. Volcanic ash advisories and tropical cyclone advisories are required for global exchange through SADIS and WIFS as they are used by the operators during the pre-flight planning. Nevertheless, it should be emphasized that SIGMET information is still required especially for in-flight re-planning. SIGMETs should be transmitted to aircraft-in-flight through voice communication, VOLMET or D-VOLMET, thus providing vital information for making in-flight decisions regarding large-scale route deviations due to volcanic ash clouds or tropical cyclones.
 - 2.6.4. Information from State volcano observatories is an important part of the process for issuance of volcanic ash advisories and SIGMETs. Information from a State volcano observatory should be in the form of a Volcano Observatory Notification for Aviation (VONA) and include information on significant pre-eruption volcanic activity, volcanic eruptions or the presence of volcanic ash clouds. The format of the VONA is given in the *Handbook on the International Airways Volcano Watch (IAVW) – Operational Procedures and Contact List* (Doc 9766), Appendix E.
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3. PROCEDURES FOR PREPARATION OF SIGMET INFORMATION

3.1. General

- 3.1.1. SIGMET is intended for transmission to aircraft in flight either by ATC or by VOLMET or D-VOLMET, and therefore, SIGMET messages should be kept concise. To this end, SIGMET information is prepared using approved ICAO abbreviations, a limited number of non-abbreviated words and, numerical values of a self-explanatory nature.
- 3.1.2. The increasing use of automated systems for handling the aeronautical meteorological information by the users makes it essential that all types of OPMET information, including SIGMET messages, are prepared and issued in the prescribed standardized format. Therefore, the format of the SIGMET message, as specified in Annex 3, Appendix 6, should be strictly followed by the MWOs.
- 3.1.3. The MWO should maintain watch over the evolution of the phenomenon for which a SIGMET has been issued. If the phenomenon persists or is expected to persist beyond the period of validity of the SIGMET, another SIGMET message for a further period of validity should be issued with updated information. SIGMETs for volcanic ash and tropical cyclone should be updated at least every 6 hours, while SIGMET for all other phenomena should be updated at least every 4 hours.
- 3.1.4. SIGMET should be promptly cancelled when the phenomenon is no longer occurring or no longer expected to occur in the MWO's area of responsibility.
- 3.1.5. Some SIGMET are generated using information from special air-reports (received by voice communications or data link (downlink)). The reporting of turbulence and icing used in special air-reports includes both moderate and severe categories (as per Doc 4444, Appendix 1).

Note. — Although the categories for the reporting, by pilots, of moderate and severe turbulence in special air-reports is provided in PANS-ATM (Doc 4444), some pilots report turbulence as “moderate to severe”. A MWO is then faced with determining which category to use in a special air-report (uplink) or in a SIGMET message for severe turbulence. Some States elect to treat such “moderate to severe” observations as ‘severe’ in the context of using the report to prompt the issuance of a special air-report (uplink) or a SIGMET message.

3.2. SIGMET phenomena

- 3.2.1. SIGMET shall only be issued for the phenomena listed in Table 1 below and only using the abbreviations as indicated.

Phenomena Abbreviation	Description
OBSC TS	Thunderstorms that are obscured by haze or smoke or cannot be readily seen due to darkness.
EMBD TS	Thunderstorms that are embedded within cloud layers and cannot be readily recognized.
FRQ TS	Frequent thunderstorms where, within the area of thunderstorms, there is little no separation between adjacent thunderstorms with a maximum spatial coverage greater than 75%.
SQL TS	A squall line indicating that a line of thunderstorms with little or no space between clouds.
OBSC TSGR	Thunderstorms with hail that are obscured by haze or smoke or cannot be readily seen due to darkness.
EMBD TSGR	Thunderstorms with hail that are embedded within cloud layers

Phenomena Abbreviation	Description
	and cannot be readily recognized.
FRQ TSGR	Frequent thunderstorms with hail, within the area of thunderstorms, there is little or no separation between adjacent thunderstorms with a maximum spatial coverage greater than 75%.
SQL TSGR	A squall line indicating that a line of thunderstorms with hail with little or no space between clouds.
TC	A tropical cyclone with a 10 minute mean surface wind speed of 17m/s (34 kt) or more.
SEV TURB	Severe turbulence referring to: <ul style="list-style-type: none"> • low-level turbulence associated with strong surface winds; • rotor streaming; or • clear air turbulence, whether in cloud or not in cloud. <i>Note. — Turbulence should not be used in connection with convective clouds. Severe turbulence shall be considered whenever the peak value of the cube root of EDR exceeds 0.7.</i>
SEV ICE	Severe icing not associated with convective cloud.
SEV ICE (FZRA)	Severe icing caused by freezing rain and not associated with convective cloud.
SEV MTW	Severe mountain wave the accompanying downdraft is 3 m/s (600 ft/min) or more or when severe turbulence is observed or forecast.
HVY DS	Heavy duststorm where the visibility is below 200 m and the sky is obscured.
HVY SS	Heavy sandstorm where the visibility is below 200 m and the sky is obscured.
VA	Volcanic ash
RDOACT CLD	Radioactive cloud

Table 1: SIGMET phenomena abbreviations and descriptions

3.3. Allowable abbreviations

3.3.1. Abbreviations that can be used in the meteorological section of SIGMET include are given in Table 1 above and in Table 2 below.

Abbreviation	Meaning	Abbreviation	Meaning
ABV	Above	NE	North-east
APRX	Approximate or approximately	NNE	North-north-east
AT	At (followed by time)	NNW	North-north-west
BLW	Below	NM	Nautical miles
BTN	Between	NO	No
CB	Cumulonimbus cloud	NW	North-west
CLD	Cloud	OBS	Observe or observed or observation
CNL	Cancel or cancelled	PSN	Position
E	East or eastern longitude	S	South or southern latitude
ENE	East-north-east	SE	South-east
ESE	East-south-east	SFC	Surface
EXP	Expect or expected or expecting	SSE	South-south-east

Abbreviation	Meaning	Abbreviation	Meaning
FCST	Forecast	SSW	South-south-west
FIR	Flight information region	STNR	Stationary
FL	Flight level	SW	South-west
FT	Feet	TO	To
INTSF	Intensify or intensifying	TOP	Cumulonimbus cloud top (height)
KM	Kilometres	W	West or western longitude
KT	Knots	WI	Within (area)
LCA	Location	WID	Width or wide
M	Metres	WKN	Weaken or weakening
MOV	Move or moving or movement	WNW	West-north-west
MT	Mountain	WSW	West-south-west
N	North or northern latitude	Z	Coordinated Universal Time
NC	No change		

Table 2: SIGMET phenomena abbreviations and descriptions.

3.4. SIGMET structure

3.4.1. A SIGMET message consists of:

- **WMO Abbreviated Heading Line (WMO AHL)** – all SIGMETs are preceded by an appropriate WMO AHL;
- **First line**, containing location indicators of the respective ATS unit and MWO, sequential number and period of validity;
- **SIGMET main body**, containing information concerning the observed or forecast weather phenomenon for which the SIGMET is issued together with its expected evolution within the period of validity;

3.4.2. The first two parts of the SIGMET message are common for all types of SIGMET. The format and content of the third part is different; that is why, in the following paragraphs the meteorological part of the SIGMET message is described separately for the three types of SIGMET.

3.4.3. Inclusion of more than one instance of a phenomenon in a SIGMET.

Footnote 21 to Table A6-1 permits the inclusion of more than one instance of a phenomenon within a single SIGMET, but footnote 26 to Table A6-1 restricts the use of the conjunction 'AND' to volcanic ash and tropical cyclone SIGMETs only. In both these cases only two 'instances' are permitted. As such, some States have determined that multiple instances of the same phenomena for SIGMET other than for volcanic ash and tropical cyclones should not be used.

3.5. SIGMET format

Note. — In the following text, square brackets - [] - are used to indicate an optional or conditional element, and angled brackets - < > - for symbolic representation of a variable element, which in a real SIGMET accepts a discrete numerical value.

3.5.1. WMO header

T₁T₂A₁A₂ii CCCC YYGGgg [BBB]

3.5.1.1. The group **T₁T₂A₁A₂ii** is the bulletin identification (WMO AHL) for the SIGMET message. It is constructed in the following way:

T₁T₂	Data type designator	WS – for SIGMET for meteorological phenomena other than volcanic ash cloud or tropical cyclone WC – for SIGMET for tropical cyclone WV – for SIGMET for volcanic ash
A₁A₂	Country or territory designators	Assigned according to Table C1, Part II of <i>Manual on the Global Telecommunication System, Volume I – Global Aspects</i> (WMO Publication No. 386)
ii	Bulletin number	Assigned on national level according to p 2.3.2.2, Part II of <i>Manual on the Global Telecommunication System, Volume I – Global Aspects</i> (WMO Publication No. 386)

Table 3: Specification of the WMO Abbreviated Header Line for SIGMET

3.5.1.2. **CCCC** is the ICAO location indicator of the communication centre disseminating the message (this may be the same as the MWO location indicator).

3.5.1.3. **YYGGgg** is the date/time group; where **YY** is the day of the month and **GGgg** is the time of transmission of the SIGMET in hours and minutes UTC (normally this time is assigned by the disseminating (AFTN) centre).

3.5.2. First line of SIGMET

CCCC SIGMET [nn]n VALID YYGGgg/YYGGgg CCCC-

3.5.2.1. The meaning of the groups in the first line of the SIGMET is as follows:

CCCC	ICAO location indicator of the ATS unit serving the FIR or CTA to which the SIGMET refers
SIGMET	Message identifier
[nn]n	Daily sequence number (see 3.5.2.2)
VALID	Period of validity indicator
YYGGgg/YYGGgg	Validity period of the SIGMET given by date/time group of the beginning and date/time group of the end of the period (see 3.5.2.3)
CCCC	ICAO location indicator of the issuing MWO
-	Mandatory hyphen to separate the preamble from the text

Table 4: Elements making up the first line of SIGMET

3.5.2.2. The numbering of SIGMETs starts every day at 0001 UTC. The sequence number should consist of up to three symbols and may be a combination of letters and numbers, such as:

- **1, 2, ...**
- **01, 02, ...**
- **A01, A02, ...**

Examples:

RPM SIGMET 3 VALID 121100/121700 RPLL-

WSJC SIGMET A04 VALID 202230/210430 WSSS-

Note 1. — No other combinations should be used, like “**CHARLIE 05**” or “**NR7**”.

Note 2. — Correct numbering of SIGMET is very important since the number is used for reference in communication between ATC and pilots and in VOLMET and D-VOLMET.

Note 3. — In accordance with Annex 5 – Units of Measurement to be Used in Air and Ground Operations, when the validity period ends at midnight, YY should be set for the following day and GGgg should be '0000'. i.e. SIGMET validity ending at midnight on the 23rd day of the month should be expressed as '240000'.

3.5.2.3. The following regulations apply when determining the validity period:

- The period of validity of a **WS** SIGMET should be not more than 4 hours;
- The period of validity of a **WC** or **WV** SIGMET should not be more than 6 hours;
- In case of a SIGMET for an observed phenomenon, the filing time (date/time group in the WMO header) should be the same or very close to the time in the date/time group indicating the start of the SIGMET validity period;
- When the SIGMET is issued for a forecast phenomenon:
 - o the beginning of validity period should be the time of the expected commencement (occurrence) of the phenomenon in the MWO area of responsibility;
 - o the time of issuance of a **WS** SIGMET should be not more than 4 hours before the start of validity period (i.e., expected time of occurrence of the phenomenon); and for **WC** (tropical cyclone) and **WV** (volcanic ash) SIGMET the lead time should be not more than 12 hours.

3.5.2.4. The period of validity is that period during which the SIGMET information is valid for transmission to aircraft in flight.

Examples:

1) First two lines of a SIGMET for an observed phenomenon:

**WSTH31 VTBS 241120
VTBB SIGMET 3 VALID 241120/241500 VTBS-**

2) First two lines of a SIGMET for a forecast phenomenon (expected time of occurrence 1530)

**WSSR20 WSSS 311130
WSJC SIGMET 1 VALID 311530/311930 WSSS-**

3.5.3. Structure of the meteorological part of SIGMET for weather phenomena other than for volcanic ash and tropical cyclone

3.5.3.1. The meteorological part of a SIGMET for weather phenomena consists of elements as shown in the table below.

Start of the second line of the message

1	2	3	4	5	6	7	8
Name of the FIR/UIR or CTA	Description of the phenomenon	Observed or forecast	Location	Level	Movement or expected movement	Changes in intensity	Forecast position
See 3.5.3.2	See 3.5.3.3	See 3.5.3.4	See 3.5.3.5	See 3.5.3.6	See 3.5.3.7	See 3.5.3.8	See 3.5.3.9

Table 5: Elements making up the meteorological part of SIGMET

3.5.3.2. Name of the FIR/UIR or CTA

CCCC <name> FIR[/UIR]

or

CCCC <name> CTA

The ICAO location indicator and the name of the FIR/CTA are given followed by the appropriate abbreviation: FIR, FIR/UIR or CTA. The name may consist of up to 10 characters.

Examples:

VTBB BANGKOK FIR

3.5.3.3. Phenomenon

The phenomenon description consists of a qualifier and a phenomenon abbreviation. SIGMET should be issued only for the following phenomena observed or forecast at cruising levels (irrespective of altitude):

- thunderstorms – if they are **OBSC**, **EMBD**, **FRQ** or **SQL** with or without hail (**GR**);
- turbulence – only **SEV**
- icing – only **SEV** with or without **FZRA**
- mountain waves – only **SEV**
- dust storm – only **HVY**
- sand storm – only **HVY**
- radioactive cloud – **RDOACT CLD**

The appropriate abbreviations and combinations, and their meaning are given in Table 1.

3.5.3.4. Indication whether the phenomenon is observed or forecast

OBS

or

OBS AT GGggZ

or

FCST

or

FCST AT GGggZ

The indication whether the phenomenon is observed or forecast is given by using the abbreviations **OBS** or **FCST**. **OBS AT** and **FCST AT** may be used, in which case they are followed by a time group in the form **GGggZ**. If the phenomenon is observed, **GGgg** is the time of the observation in hours and minutes UTC. If the exact time of the observation is not known the time is not included. When the

phenomenon is based on a forecast without a reported observation, the time given for **GGggZ** represents the time of commencement of the phenomenon.

Examples:

OBS

OBS AT 0140Z

FCST

FCST AT 0200Z

3.5.3.5. Location of the phenomenon

The location of the phenomenon is given with reference to geographical coordinates (latitude and longitude). Latitude and longitude may be reported in degrees, or in degrees and minutes. When reporting in degrees the format will be **Nnn** or **Snn** for latitude, and **Ennn** or **Wnnn** for longitude. When reporting in degrees and minutes the format will be **Nnnnn** or **Snnnn** for latitude, and **Ennnnn** or **Wnnnnn** for longitude. The MWOs should try to be as specific as possible in reporting the location of the phenomenon and, at the same time, to avoid overwhelming the SIGMET with too many coordinates, which may be difficult to process or follow when transmitted by voice radio.

The following are the possible ways to describe the location of the phenomenon:

- 1) An area of the FIR defined by a polygon. . Minimum 4 coordinates¹, and not normally more than 7 coordinates. This is the format preferred operationally by users.

Symbolically, this is indicated as:

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]> -
<Nnn[nn]> or <Snn[nn]> <Wnnn[nn]> or <Ennn[nn]> -
<Nnn[nn]> or <Snn[nn]> <Wnnn[nn]> or <Ennn[nn]>

For example:

**WI N6030 E02550 - N6055 E02500 - N6050 E02630 -
N6030 E02550**

WI N60 E025 - N62 E27 - N58 E030 - N59 E26 - N60 E025

Note. — The points of a polygon should be provided in a clockwise order, and the end point should be a repeat of the start point.

¹ Including the last point as a repeat of the first point to explicitly close the polygon

Use of polygons with complex FIR boundaries.

*Annex 3 (18th Edition, July 2013) specifies that the points of a polygon '... should be kept to a minimum and should not normally exceed seven'. However, some FIR boundaries are complex, and it would be unrealistic to expect that a polygon would be defined that followed such boundaries exactly. As such, some States have determined that the polygon points be chosen in relation to the complex boundary such that the FIR boundary approximates, but is wholly encompassed by, the polygon, and that any additional area beyond the FIR boundary be the minimum that can be reasonably and practically described. Caution should however be exercised in those instances where international aerodromes are located in close proximity to such a complex FIR boundary. **Appendix B** provides examples and advice with regard to describing such areas.*

- 2a) In a sector of the FIR defined relative to a specified line joining two points on the FIR boundary².

Symbolically this is indicated as:

<N OF> or <NE OF> or <E OF> or <SE OF> or <S OF> or
<SW OF> or <W OF> or <NW OF> LINE <Nnn[nn]> or
<Snn[nn]> <Wnnn[nn]> or <Ennn[nn]> - <Nnn[nn]> or
<Snn[nn]> <Wnnn[nn]> or <Ennn[nn]>

For example:

NE OF LINE N2500 W08700 - N2000 W08300

W OF LINE N20 E042 - N35 E045

- 2b) In a sector of the FIR defined relative to a line of latitude and a line of longitude (effectively a quadrant);

Symbolically this is indicated as:

<N OF> or <S OF> or <Nnn[nn]> or <Snn[nn]> AND
<E OF> or <W OF> <Wnnn[nn]> or <Ennn[nn]>

For example:

N OF N1200 AND E OF W02530

S OF N60 W OF E120

- 2c) In a sector of the FIR defined relative to a line of latitude or longitude (effectively a segment), where a coordinate of latitude (or longitude) defines a line, and the preceding descriptor defines on which side of the line the phenomena is expected

Symbolically, this is indicated as:

<N OF> or <S OF> <Nnn[nn]> or <Snn[nn]> or
<E OF> or <W OF> <Wnnn[nn]> or <Ennn[nn]>

² or so close to the FIR boundary so as to leave no doubt that the intent is for the line to connect to the FIR boundary at that point (this is to allow for some small margin of error when judging the coordinates where the specified line would intersect the FIR boundary).

For example:

N OF S2230

W OF E080

- 3) At a specific point within the FIR, indicated by a single coordinate of latitude and longitude.

Symbolically, this is indicated as:

<Nnn [nn]> or <Snn [nn]> <Wnnn [nn]> or <Ennn [nn]> -
<Nnn [nn]> or <Snn [nn]> <Wnnn [nn]> or <Ennn [nn]>

For example:

N5530 W02230

S23 E107

More detail on reporting the location of the phenomena is given in the examples provided in **Appendix B** to this guide.

3.5.3.6. Flight level

Symbolically, the options permitted are:

FLnnn
or
SFC/FLnnn
or
SFC/nnnnM
or
SFC/nnnnFT
or
FLnnn/nnn
or
TOP FLnnn
or
ABV FLnnn
or
TOP ABV FLnnn

In more detail, the location or extent of the phenomenon in the vertical is given by one or more of the above methods, as follows:

- 1) reporting at a single flight level

For example: **FL320**

- 2) reporting a layer extending from the surface to a given height in meters or feet

For example: **SFC/3000M or SFC/9900FT**

3) reporting a layer extending from a given FL to a higher flight level

For example: **FL250/FL290**

4) reporting a layer where the base is unknown, but the top is given:

For example: **TOP FL350**

5) reporting a layer where the top is unknown, but the base is given:

For example: **ABV FL350**

Additional examples:

EMBD TS ... TOP ABV FL340
SEV TURB ... FL180/210
SEV ICE ... SFC/FL150
SEV MTW ... FL090

3.5.3.7. Movement

Rate of movement is indicated in the following way:

MOV <direction> <speed>KMH [KT]

or

STNR

Direction of movement is given with reference to one of the sixteen points of compass (**N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW**). Speed is given in **KMH** or **KT**. The abbreviation **STNR** is used if no significant movement is expected.

Examples:

MOV NNW 30KMH

MOV E 25KT

STNR

Note. — When also including a forecast position, care should be taken to ensure that the rate of movement and forecast position are consistent.

3.5.3.8. Expected changes in intensity

The expected evolution of the phenomenon's intensity is indicated by one of the following abbreviations:

INTSF

or

WKN

or

NC

3.5.3.9. Forecast position of the hazardous phenomena at the end of the validity period of the SIGMET message

Note. — Annex 3 (18th Edition, July 2013) enables SIGMET to contain explicit forecast position information relating to hazardous phenomena other than volcanic ash or tropical cyclone.

FCST <GGgg>Z

FCST is mandatory for this section. The **GGggZ** group should indicate the end of validity period as given in the first line of the SIGMET message.

Note. — In accordance with Annex 5 – Units of Measurement to be Used in Air and Ground Operations, when the validity period ends at midnight, YY should be set for the following day and GGgg should be '0000'. i.e. SIGMET validity ending at midnight on the 23rd day of the month should be expressed as '240000'.

The forecast position of the phenomenon is given with reference to geographical coordinates (latitude and longitude). Latitude and longitude may be reported in degrees, or in degrees and minutes. When reporting in degrees the format will be **Nnn** or **Snn** for latitude, and **Ennn** or **Wnnn** for longitude. When reporting in degrees and minutes the format will be **Nnnnn** or **Snnnn** for latitude, and **Ennnnn** or **Wnnnnn** for longitude. The MWOs should try to be as specific as possible in reporting the location of the phenomenon and, at the same time, to avoid overwhelming the SIGMET with too many coordinates, which may be difficult to process or follow when transmitted via voice radio.

The following are the possible ways to describe the forecast position of the phenomenon:

- 1) An area of the FIR defined by a polygon. Minimum 4³ coordinates, and not normally more than 7 coordinates. This is the format preferred operationally by users.

Symbolically, this is indicated as:

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]> -
<Nnn[nn]> or <Snn[nn]> <Wnnn[nn]> or <Ennn[nn]> -
<Nnn[nn]> or <Snn[nn]> <Wnnn[nn]> or <Ennn[nn]> -

For example:

**WI N6030 E02550 - N6055 E02500 - N6050 E02630 -
N6030 E02550**

WI N60 E025 - N62 E27 - N58 E030 - N59 E26 - N60 E025

Note. — The points of a polygon should be provided in a clockwise order, and the end point should be a repeat of the start point.

³ Including the last point as a repeat of the first point to explicitly close the polygon

- 2a) In a sector of the FIR defined relative to specified line joining two points on the FIR boundary⁴.

Symbolically, this is indicated as:

<N OF> or <NE OF> or <E OF> or <SE OF> or <S OF> or
<SW OF> or <W OF> or <NW OF> LINE <Nnn[nn]> or
<Snn[nn]> <Wnnn[nn]> or <Ennn[nn]> - <Nnn[nn]> or
<Snn[nn]> <Wnnn[nn]> or <Ennn[nn]>

For example:

NE OF LINE N2500 W08700 - N2000 W08300

W OF LINE N20 E042 - N35 E045

- 2b) In a sector of the FIR defined relative to a line of latitude and a line of longitude (effectively a quadrant);

Symbolically this is indicated as:

<N OF> or <S OF> or <Nnn[nn]> or <Snn[nn]> AND <E OF>
or <W OF> <Wnnn[nn]> or <Ennn[nn]>

For example:

N OF N1200 AND E OF W02530

S OF N60 W OF E120

- 2b) In a sector of the FIR defined relative to a line of latitude or longitude (effectively a segment), where a coordinate of latitude (or longitude) defines a line, and the preceding descriptor defines on which side of the line the phenomena is expected

Symbolically, this is indicated as:

<N OF> or <S OF> <Nnn[nn]> or <Snn[nn]> or
<E OF> or <W OF> <Wnnn[nn]> or <Ennn[nn]>

For example:

N OF S2230

W OF E080

- 3) At a specific point within the FIR, indicated by a single coordinate of latitude and longitude.

Symbolically this is indicated as:

⁴ or so close to the FIR boundary so as to leave no doubt that the intent is for the line to connect to the FIR boundary at that point (this is to allow for some small margin of error when judging the coordinates where the specified line would intersect the FIR boundary.

<Nnn [nn]> or <Snn [nn]> <Wnnn [nn]> or <Ennn [nn]> -
 <Nnn [nn]> or <Snn [nn]> <Wnnn [nn]> or <Ennn [nn]>

For example:

N5530 W02230

S23 E107

More details on reporting the location of the phenomenon are given in the examples in **Appendix B** to this guide.

Note. — Currently, there is no provision for indicating changes to the levels affected by phenomena between the initial position and the forecast position. As such, and as per footnote 31 to Table A6-1 of Annex 3 (18th Edition, July 2013), it should be assumed that the levels affected remain the same for both initial and forecast positions.

3.5.4. Structure of the meteorological part of SIGMET for volcanic ash

3.5.4.1. The general structure of the meteorological part of the SIGMET message for volcanic ash is given in the table below.

1	2	3	4	5	6	7	8
Name of the FIR/UIR or CTA	Name and location of the volcano and/or indicator for VA cloud	Time of observation or forecast	Location	Level and extent of the volcanic ash cloud	Movement or expected movement	Changes in intensity	Forecast position
See 3.5.4.2	See 3.5.4.3	See 3.5.4.4	See 3.5.4.5	See 3.5.4.6	See 3.5.4.7	See 3.5.4.8	See 3.5.4.9

Table 6: Elements making up the meteorological part of VA SIGMET

3.5.4.2. Name of the FIR/UIR or CTA

CCCC <name> FIR[/UIR]

or

CCCC <name> CTA

The ICAO location indicator and the name of the FIR/CTA are given followed by the appropriate abbreviation: FIR, FIR/UIR or CTA. The name may consist of up to 10 characters.

Examples:

VTBB BANGKOK FIR

3.5.4.3. Name and location of the volcano and/or indicator for VA cloud

There are three combinations that may be used in this section.

1) If the location of the eruption is known but is un-named then the following format is appropriate:

VA ERUPTION PSN <lat,lon> VA CLD

Where 'VA ERUPTION' is mandatory. 'PSN' is an abbreviation for 'position', followed by the latitude and longitude, followed by the mandatory 'VA CLD'.

- 2) If the erupting volcano is known and named then the following format is appropriate:

VA ERUPTION MT ASHVAL PSN <lat,lon> VA CLD

Where 'VA ERUPTION' is mandatory. 'MT' is an abbreviation for 'mountain' to be followed by the volcano's name. 'PSN' is an abbreviation for 'position', followed by the latitude and longitude, followed by the mandatory 'VA CLD'.

- 3) If the source of the volcanic ash is uncertain, then the following format is appropriate:

VA CLD

The location (latitude and longitude) of the volcano, when known and reported, may be reported in degrees, or in degrees and minutes. When reporting in degrees the format will be **Nnn** or **Snn** for latitude, and **Ennn** or **Wnnn** for longitude. When reporting in degrees and minutes the format will be **Nnnnn** or **Snnnn** for latitude, and **Ennnnn** or **Wnnnnn** for longitude.

For example:

VA ERUPTION PSN N27 W017 VA CLD

VA ERUPTION MT ASHVAL PSN S1530 E07315 VA CLD

3.5.4.4. Time of observation or forecast

OBS AT <GGgg>Z

or

FCST AT <GGgg>Z

The time of observation is taken from the source of the observation – satellite image, special air-report, report from a volcano observing station, etc. If the VA cloud is not yet observed over the FIR but the volcanic ash advisory received from the responsible VAAC indicates that the cloud is going to affect the FIR within the next 12 hours, SIGMET should be issued according as above and the abbreviation **FCST AT <GGgg>Z** should be used.

Examples:

OBS AT 0100Z

FCST AT 1200Z

3.5.4.5. Location of the phenomenon

The location of the phenomenon is given with reference to geographical coordinates (latitude and longitude). Latitude and longitude may be reported in degrees, or in degrees and minutes. When reporting in degrees the format will be **Nnn** or **Snn** for latitude, and **Ennn** or **Wnnn** for longitude. When reporting in degrees and minutes the format will be **Nnnnn** or **Snnnn** for latitude, and

Ennnnn or **Wnnnnn** for longitude. The MWOs should try to be as specific as possible in reporting the location of the phenomenon and, at the same time, to avoid overwhelming the SIGMET with too many coordinates, which may be difficult to process or follow when transmitted by voice communication.

The following are the possible ways to describe the location of the VA phenomenon:

- 1) An area of the FIR defined by a polygon. Minimum 4 coordinates⁵, and not normally more than 7 coordinates. This is the format preferred operationally by users.

Symbolically, this is indicated as:

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]> -
 <Nnn[nn]> or <Snn[nn]> <Wnnn[nn]> or <Ennn[nn]> -
 <Nnn[nn]> or <Snn[nn]> <Wnnn[nn]> or <Ennn[nn]>

For example:

**WI N6030 E02550 - N6055 E02500 - N6050 E02630 -
 N6030 E02550**

WI N60 E025 - N62 E27 - N58 E030 - N59 E26 - N60 E025

Note. — The points of a polygon should be provided in a clockwise order, and the end point should be a repeat of the start point.

Use of polygons with complex FIR boundaries.

Annex 3 (18th Edition, July 2013) specifies that the points of a polygon '... should be kept to a minimum and should not normally exceed seven'. However, some FIR boundaries are complex, and it would be unrealistic to expect that a polygon would be defined that followed such boundaries exactly. As such, some States have determined that the polygon points be chosen in relation to the complex boundary such that the FIR boundary approximates, but is wholly encompassed by, the polygon, and that any additional area beyond the FIR boundary be the minimum that can be reasonably and practically described. Caution should however be exercised in those instances where international aerodromes are located in close proximity to such a complex FIR boundary. Appendix B provides examples and advice with regard to describing such areas.

- 2) Covering the entire FIR or CTA (this is only permitted for volcanic ash)

ENTIRE FIR

or

ENTIRE CTA

For describing an area of volcanic ash by reference to a zone defined by line of specified width, see the 'Level and extent' section that follows.

⁵ Including the last point as a repeat of the first point to explicitly close the polygon

3.5.4.6. Level and extent of the volcanic ash cloud

When the Location of volcanic ash is described using the available descriptors in the 'Location section', the Level of the volcanic ash may be described using descriptors used for other phenomena, i.e.

FLnnn
or
SFC/FLnnn
or
SFC/nnnnM
or
SFC/nnnnFT
or
FLnnn/nnn
or
TOP FLnnn
or
ABV FLnnn
or
TOP ABV FLnnn

In more detail, the location or extent of the phenomenon in the vertical is given by one or more of the above methods, as follows:

- 1) reporting at a single flight level

For example:

FL320

- 2) reporting a layer extending from the surface to a given height in meters or feet

For example:

SFC/3000M

SFC/9900FT

- 3) reporting a layer extending from a given FL to a higher flight level

For example:

FL250/FL290

- 4) reporting a layer where the base is unknown, but the top is given:

For example:

TOP FL350

- 5) reporting a layer where the top is unknown, but the base is given:

For example:

ABV FL350

Where it is preferred to describe the area affected by volcanic ash by describing a zone defined by a line of specified width (rather than a polygon), the following level/extent combination should be used:

FL<nnn/nnn> <nnn>KM WID LINE BTN [<(lat,lon)^{P1} - (lat,lon)^{P2} - ... >]

or

FL<nnn/nnn> <nnn>NM WID LINE BTN [<(lat,lon)^{P1} - (lat,lon)^{P2} - ... >]

Example:

FL150/210 50KM WID LINE BTN S0530 E09300 - N0100 E09530 - N1215 E11045 - N1530 E01330

If the VA cloud spreads over more than one FIR, separate SIGMETs should be issued by all MWOs whose FIRs are affected. In such a case, the description of the volcanic ash cloud by each MWO should encompass the part of the cloud, which lies over the MWO's area of responsibility. The MWOs should try and keep the description of the volcanic ash clouds consistent by checking the SIGMET messages received from the neighbouring MWOs.

3.5.4.7. Movement or expected movement of the VA cloud

MOV <direction> <speed>KMH [KT]

or

STNR

The direction of movement is given by the abbreviation **MOV** (moving), followed by one of the sixteen points of compass: **N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, and NNW**. The speed of movement is given in **KMH** or **KT**.

Examples:

MOV E 35KMH

MOV SSW 20KT

STNR

Note. — When also including a forecast position, care should be taken to ensure that the rate of movement and forecast position are consistent

3.5.4.8. Expected changes in intensity

The expected evolution of the phenomenon's intensity is indicated by one of the following abbreviations:

INTSF

or

WKN

or

NC

3.5.4.9. Forecast position of the Volcanic Ash cloud at the end of the validity period of the SIGMET message

The area affected by a volcanic ash cloud at the end of the validity period can be described in the following ways.

As a polygon, using the following format:

FCST <GGgg>Z VA CLD APRX <(lat,lon)^{P1} - (lat,lon)^{P2} - ... >

Example:

FCST 1800Z VA CLD APRX N6300 W02000 - N6030 W01700 - N5815 W02230 - N6100 W02400 - N6300 W02000...

or, as a line of ash (of specified width in KM) defined by a sequence of coordinates

FCST <GGgg>Z VA CLD APRX nnKM WID LINE BTN <(lat,lon)^{P1} - (lat,lon)^{P2} - ... >

Example:

FCST 1800Z VA CLD APRX 90KM WID LINE BTN S4000 W09000 - S4300 W08500 - S3800 W07500 - S4500 W06000...

or, as a line of ash (of specified width in NM) defined by a sequence of coordinates

FCST <GGgg>Z VA CLD APRX nnNM WID LINE BTN <(lat,lon)^{P1} - (lat,lon)^{P2} - ... >

Example:

FCST 1800Z VA CLD APRX 55NM WID LINE BTN S4000 W09000 - S4300 W08500 - S3800 W07500 - S4500 W06000...

The **GGggZ** group should indicate the end of validity period as given in the first line of the SIGMET message. The description of the expected position of the volcanic ash cloud is given by a number of points forming a simplified geometrical approximation of the cloud.

Note. — Currently, there is no provision for indicating changes to the levels affected by volcanic ash between the initial position and the forecast position. As such, as per footnote 31 to Table A6-1 of Annex 3 (18th Edition, July 2013), it should be assumed that the levels affected remain the same for both initial and forecast positions.

Inclusion of multiple instances of volcanic ash phenomena.

Footnote 26 of Table A6-1 permits the word 'AND' in the 'Forecast position' section "*To be used for [describing] two volcanic ash clouds or two centres of tropical cyclones simultaneously affecting the FIR concerned*".

With regard to the portrayal of complex volcanic ash events (which implies multiple areas of volcanic ash at multiple levels) basic guidance in this regard is provided in Appendix B.

3.5.5. Structure of the meteorological part of SIGMET for tropical cyclone

3.5.5.1. The general structure of the meteorological part of the SIGMET messages for tropical cyclone is given in the table below.

1	2	3	4	5	6	7	8
Name of the FIR/UIR or CTA	Name of the tropical cyclone	Time of observation or forecast	Location of the TC centre	Vertical and horizontal extent of the CB cloud formation around TC centre	Movement or expected movement	Changes in intensity	Forecast position
See 3.5.5.2	See 3.5.5.3	See 3.5.5.4	See 3.5.5.5	See 3.5.5.6	See 3.5.5.7	See 3.5.5.8	See 3.5.5.9

Table 7: Elements making up the meteorological part of TC SIGMET

3.5.5.2. Name of the FIR/UIR or CTA

CCCC <name> FIR[/UIR]

or

CCCC <name> CTA

The ICAO location indicator and the name of the FIR/CTA are given followed by the appropriate abbreviation: FIR, FIR/UIR or CTA. The name may consist of up to 10 characters.

Example:

VTBB BANGKOK FIR

3.5.5.3. Name of the tropical cyclone

TC <name> (up to 10 characters, or 'NN' if not named)

The description of the tropical cyclone consists of the abbreviation **TC** followed by the international name of the tropical cyclone given by the corresponding WMO RSMC. If disturbance is expected to become a TC, but is not named at the time the forecast is issued, 'NN' is used for the TC name. .

Examples:

TC GLORIA

TC 04B

TC NN

3.5.5.4. Time of observation or forecast

OBS AT <GGgg>Z

or

FCST AT <GGgg>Z

The time in UTC is given in hours and minutes, followed by the indicator **Z**. Normally, time is taken from the MWO's own observations or from a TC advisory received from the responsible TCAC. If the TC is not yet observed in the FIR but the tropical cyclone advisory received from the responsible TCAC, or any other TC forecast used by the MWO, indicates that the TC is going to affect the FIR within the next 12 hours, SIGMET should be issued and the abbreviation **FCST AT <GGgg>Z** should be used.

Examples:

OBS AT 2330Z

FCST AT 0900Z

3.5.5.5. Location of the TC centre

<location>

The location of the TC centre is given by its lat/long coordinates in degrees or degrees and minutes.

Example:

N1535 E14230

3.5.5.6. Vertical and horizontal extent of the CB cloud formation around TC centre

CB TOP [ABV or BLW] <FLnnn> WI <nnnKM or nnnNM> OF CENTRE

Examples:

CB TOP ABV FL450 WI 200NM OF CENTRE

CB TOP FL500 WI 250KM OF CENTRE

CB TOP BLW FL550 WI 250NM OF CENTRE

3.5.5.7. Movement or expected movement

MOV <direction> <speed>KMH [KT]

or

STNR

The direction of movement is given by the abbreviation **MOV** (moving), followed by one of the sixteen points of compass: **N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, and NNW**. The speed of movement is given in **KMH** or **KT**.

Examples:

MOV NNW 30KMH

MOV E 25KT

3.5.5.8. Intensity change

The expected change of the intensity of the tropical cyclone is indicated by one of the following abbreviations:

INTSF
or
WKN
or
NC

3.5.5.9. Forecast Position of the TC centre at the end of the validity period of the SIGMET message

FCST <GGgg>Z TC CENTRE <location>

The time given by **GGggZ** should be the same as the end of validity period indicated in the first line of the SIGMET message. Since the period of validity is up to 6 hours (normally, 6 hours), this is a 6-hour forecast of the position of the TC centre.

The forecast position of the TC centre is given by its lat/long coordinates following the general rules of reporting lat/long information provided in the examples in **Appendix B** to this Guide.

Example:

FCST 1200Z TC CENTRE N1430 E12800

Inclusion of multiple instances of Tropical Cyclone phenomena.

Footnote 26 of Table A6-1 permits the word 'AND' in the 'Forecast position' section "*To be used for [describing] two volcanic ash clouds or two centres of tropical cyclones simultaneously affecting the FIR concerned*".

With regard to the portrayal of two tropical cyclones, simple guidance is provided in **Appendix B**.

3.5.6. Cancellation of SIGMET

3.5.6.1. Annex 3, 7.1.2 requires that "*SIGMET information shall be cancelled when the phenomena are no longer occurring or are no longer expected to occur in the area*".

3.5.6.2. As such, it is mandatory for an MWO to cancel any SIGMET that is currently valid but for which the specified phenomena no longer exists or is expected to exist.

3.5.6.3. The cancellation is done by issuing the same type of SIGMET (i.e. WS, WV or WC) with the following structure:

- WMO heading with the same data type designator;
- First line that contains as period of validity the remaining time of the original period of validity;
- Second line, which contains the name of the FIR or CTA, the combination CNL SIGMET, followed by the sequence number of the original SIGMET and its original validity period.

3.5.6.4. A cancellation SIGMET should have a unique sequence number, and should follow the format below.

For a SIGMET that is cancelled during its period of validity, the cancellation SIGMET will be of the form:

As an example, an original SIGMET of:

```
YMMM SIGMET A01 VALID 260300/260700 YPRF-  
YMMM MELBOURNE FIR EMBD TS FCST WI 120NM OF S1542 E9530 TOP  
FL450 MOV SW 5KT INTSF=
```

If it were to be cancelled early (i.e. prior to 0700 UTC), then the following would be appropriate:

```
YMMM SIGMET A02 VALID 260600/260700 YPRF-  
YMMM MELBOURNE FIR CNL SIGMET A01 260300/260700=
```

Where:

- the sequence number will be the next incrementing, unique sequence number.
- the validity time will be the time remaining between issuance and the end time of the original SIGMET.
- the sequence number of the original (and to be cancelled) SIGMET shall follow 'CNL SIGMET '.
- the original validity time of the original (and to be cancelled) SIGMET shall be included in the message after the reference to the original SIGMET's sequence number.

For SIGMET for volcanic ash only, the following is permitted:

```
WSAU21 ADRM 202155  
YBBB SIGMET E03 VALID 202155/210000 YPDM-  
YBBB BRISBANE FIR CNL SIGMET E01 202000/210000 VA MOV TO WXYX  
FIR=
```

Where the FIR (WXYX in the example) into which the volcanic ash has moved is indicated.

3.5.7. Amendment of SIGMET

3.5.7.1. If it is known that an existing SIGMET no longer accurately describes the existing or expected future evolution of the phenomena a new SIGMET, correctly describing the hazard should be issued, followed immediately by a cancellation of the original, erroneous SIGMET. The new SIGMET should be issued before the cancellation in order to ensure there is always a SIGMET in force and that the cancellation is not mistakenly understood to mean that the hazard has completely dissipated.

Originally issued SIGMET, later determined to no longer be accurate (bold text identifies points that will be changed):

```
WSAU21 ADRM 201855  
YBBB SIGMET E01 VALID 202000/210000 YPDM-  
YBBB BRISBANE FIR SEV TURB FCST WI S1530 E13700 - S1900 E13730  
- S2000 E13130 - S1600 E13500 - S1530 E13700 SFC/FL120 MOV SE  
12KT WKN=
```


Updated SIGMET (bold text identifies points that have been changed):

```
WSAU21 ADRM 202155
YBBB SIGMET E02 VALID 202200/210000 YPDM-
YBBB BRISBANE FIR SEV TURB FCST WI S1530 E13700 - S2000 E13750
- S2045 E13245 - S1600 E13500 - S1530 E13700 SFC/FL120 MOV SE
12KT WKN=
```

Cancellation SIGMET (this cancels the original SIGMET):

```
WSAU21 ADRM 202155
YBBB SIGMET E03 VALID 202155/210000 YPDM-
YBBB BRISBANE FIR CNL SIGMET E01 202000/210000=
```

3.6. Dissemination of SIGMET

- 3.6.1. SIGMET is part of operational meteorological (OPMET) information. According to Annex 3, the telecommunication facilities used for the exchange of the operational meteorological information should be the aeronautical fixed service (AFS).
- 3.6.2. The AFS consists of a terrestrial segment, AFTN or ATN (AMHS), and a satellite segment which comprises the SADIS provided by WAFC London, as well as the Internet-based Secure SADIS FTP and WIFS services provided by WAFC London and WAFC Washington respectively. Note that SIGMET priority indicator is **FF** for flight safety messages (Annex 10, Volume II, 4.4.1.1.3 refers).
- 3.6.3. Currently, AFTN links should be used by the MWOs to send the SIGMET, as follows:
- to the adjacent MWOs and ACCs⁶ using direct AFTN addressing;
 - when required for VOLMET or D-VOLMET, SIGMET should be sent to the relevant centre providing the VOLMET service;
 - SIGMET should be sent to all regional OPMET Data Banks (RODB);
 - it should be arranged that SIGMET is relayed to the SADIS and WIFS providers for satellite/public internet dissemination, as well as to the WAFCs London and Washington, either through the ROBEX scheme, or directly by the issuing MWO;
 - SIGMET for volcanic ash should be disseminated to the responsible VAAC.
- 3.6.4. Through SADIS and WIFS, SIGMET is disseminated to all authorised users. In this way, SIGMET is available on a global basis, meeting the aeronautical requirements.

— — — — —

⁶ For this dissemination it is required that SIGMET is available at the ACCs for transmission to aircraft in flight for the route ahead up to a distance corresponding to two hours flying time.

APPENDIX A

SIGMET GUIDANCE TABLE: SIMPLIFIED FROM ANNEX 3 TABLE A6-1

Note. — The table below seeks to provide more explicit guidance than that given in Table A6-1 of Annex 3 (18th Edition, July 2013). It does this by removing all references to the AIRMET message and special air-report message elements contained in Table A6-1. The table below simplifies the available options and provides more specific expansion of the symbolic structure of SIGMET messages, with guidance sub-titles where appropriate. It should be noted that Annex 3, Appendix 6, Table A6-1 remains the authoritative reference.

Ref No.	Element as specified in Chapter 5 and Appendix 6	Detailed Content	Expanded symbolic - These 'expanded' symbolic representations of the various SIGMET code elements represent the interpretation of Table A6-1 of Annex 3. MWOs are encouraged to align their SIGMETs with the guidelines below.	Examples. These examples of various SIGMET code elements represent the interpretation A6-1 of Annex 3. MWOs are encouraged to align their SIGMETs with the examples below.
1.1	Location indicator of FIR/CTA (M) ¹	ICAO location indicator of the ATS unit serving the FIR or CTA to which the SIGMET refers (M)	nnnn	YUCC ² YUDD ²
1.2	Identification	Message identification and sequence number (M) ³	n nn nnn	SIGMET 5 SIGMET A3 SIGMET B10
1.3	Validity period	Day-time groups indicating the period of validity in UTC (M)	VALID nnnnnn/nnnnnn	VALID 221215/221600 VALID 101520/101800 VALID 252000/260000 VALID 122000/130400 (6 hour validity applicable to TC or VA only)
1.4	Location indicator of MWO (M)	Location indicator of MWO originating the message with a separating hyphen (M)	nnnn-	YUDO- ² YUSO- ²
1.5	Name of the FIR/CTA or aircraft identification (M)	Location indicator and name of the FIR/CTA for which the SIGMET is issued (M)	nnnn nnnnnnnnnn FIR nnnn nnnnnnnnnn FIR/UIR nnnn nnnnnnnnnn CTA	YUCC AMSWELL FIR ² YUDD SHANLON FIR/UIR ² YUDD SHANLON FIR ² YUCC AMSWELL CTA
2.1	Phenomenon (M) ⁴	Description of phenomenon causing the issuance of SIGMET	OBSC ⁵ TS OBSC ⁵ TSGR ⁶ EMBD ⁷ TS	OBSC TS OBSC TSGR EMBD TS EMBD TSGR

Ref No.	Element as specified in Chapter 5 and Appendix 6	Detailed Content	Expanded symbolic - These 'expanded' symbolic representations of the various SIGMET code elements represent the interpretation of Table A6-1 of Annex 3. MWOs are encouraged to align their SIGMETs with the guidelines below.	Examples. These examples of various SIGMET code elements represent the interpretation A6-1 of Annex 3. MWOs are encouraged to align their SIGMETs with the examples below.
		(C)	<p>EMBD⁷ TSGR⁶ FRQ⁸ TS FRQ⁸ TSGR⁶ SQL⁹ TS SQL⁹ TSGR⁶ TC nnnnnnnnnn TC NN¹⁰ SEV TURB¹¹ SEV ICE¹² SEV ICE (FZRA)¹² SEV MTW¹² HVY DS HVY SS</p> <p>VA ERUPTION PSN Nnn[nn] or Snn[nn] Ennn[nn] or Wnnn[nn] VA CLD</p> <p>VA ERUPTION MT nnnnnnnnnn PSN Nnn[nn] or Snn[nn] Ennn[nn] or Wnnn[nn] VA CLD</p> <p>VA CLD</p> <p>RDOACT CLD</p>	<p>FRQ TS FRQ TSGR SQL TS SQL TSGR TC GLORIA TC NN SEV TURB SEV ICE SEV ICE (FZRA) SEV MTW HVY DS HVY SS</p> <p>VA ERUPTION PSN N27 W017 VA CLD VA ERUPTION PSN S1200 E01730 VA CLD</p> <p>VA ERUPTION MT ASHVAL PSN S15 E073 VA CLD VA ERUPTION MT VALASH PSN N2030 E02015 VA CLD</p> <p>VA CLD</p> <p>RDOACT CLD</p>
2.2	Observed or forecast phenomenon (M)	Indication whether the information is observed and expected to continue, or forecast (M)	<p>OBS OBS AT nnnnZ FCST FCST AT nnnnZ</p>	<p>OBS AT 1210Z OBS FCST AT 1815Z FCST</p>

Ref No.	Element as specified in Chapter 5 and Appendix 6	Detailed Content	Expanded symbolic - These 'expanded' symbolic representations of the various SIGMET code elements represent the interpretation of Table A6-1 of Annex 3. MWOs are encouraged to align their SIGMETs with the guidelines below.	Examples. These examples of various SIGMET code elements represent the interpretation A6-1 of Annex 3. MWOs are encouraged to align their SIGMETs with the examples below.
2.3	Location (C) ¹⁸	Location (referring to latitude and longitude (in degrees and minutes))	<p>1) An area of the FIR defined by a polygon. The end point shall be a repeat of the start point. Minimum 4 coordinates and not normally more than 7 coordinates.</p> <p>WI²⁴ Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] - Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] - Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] [- Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] - Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]]</p> <p><i>or</i></p> <p>2a) In a sector of the FIR defined relative to a specified line joining two points on the FIR boundary (or so close to the FIR boundary so as to leave no doubt that the intent is for the line to connect to the FIR boundary at that point).</p> <p>[N][NE][E][SE][S][SW][W][NW] OF [LINE] Nnn[nn] <i>or</i> Snn[nn] Wnnn[nn] <i>or</i> Ennn[nn] - Nnn[nn] <i>or</i> Snn[nn] Wnnn[nn] <i>or</i> Ennn[nn]</p> <p><i>or</i></p> <p>2b) In a sector of the FIR defined relative to a line of latitude and a line of longitude (effectively a quadrant);</p> <p>N OF Nnn[nn] AND W OF Wnnn[nn] <i>or</i> N OF Nnn[nn] AND E OF Wnnn[nn] <i>or</i> S OF Nnn[nn] AND W OF Wnnn[nn] <i>or</i> S OF Nnn[nn] AND E OF Wnnn[nn] <i>or</i> N OF Nnn[nn] AND W OF Ennn[nn] <i>or</i> N OF Nnn[nn] AND E OF Ennn[nn] <i>or</i> S OF Nnn[nn] AND W OF Ennn[nn] <i>or</i> S OF Nnn[nn] AND E OF Ennn[nn] <i>or</i></p> <p><i>or</i></p> <p>2c) In a sector of the FIR defined relative to a line of latitude or longitude (effectively a segment);</p> <p>N OF Nnn[nn] <i>or</i> S OF Nnn[nn] <i>or</i></p>	<p>1) An area of the FIR defined by a polygon. The end point shall be a repeat of the start point. Minimum 4 coordinates (including the last point as a repeat of the first), and not normally more than 7 coordinates.</p> <p>WI N6030 E02550 - N6055 E02500 - N6050 E02630 - N6030 E02550</p> <p>WI N30 W067 - N32 W070 - N35 W068 - N30 W067</p> <p><i>or</i></p> <p>2a) In a sector of the FIR defined relative to a specified line joining two points on the FIR boundary (or so close to the FIR boundary so as to leave no doubt that the intent is for the line to connect to the FIR boundary at that point).</p> <p>NE OF LINE N2515 W08700 - N2000 W08330 S OF LINE S14 E150 - S14 E155</p> <p><i>or</i></p> <p>2b) In a sector of the FIR defined relative to a line of latitude and a line of longitude (effectively a quadrant);</p> <p>S OF N3200 AND E OF E02000 S OF S3215 AND W OF E10130 S OF N12 AND W OF E040 N OF N35 AND E OF E078</p> <p><i>or</i></p> <p>2c) In a sector of the FIR defined relative to a line of latitude or longitude (effectively a segment);</p> <p>N OF S2230 S OF S43</p>

Ref No.	Element as specified in Chapter 5 and Appendix 6	Detailed Content	Expanded symbolic - These 'expanded' symbolic representations of the various SIGMET code elements represent the interpretation of Table A6-1 of Annex 3. MWOs are encouraged to align their SIGMETs with the guidelines below.	Examples. These examples of various SIGMET code elements represent the interpretation A6-1 of Annex 3. MWOs are encouraged to align their SIGMETs with the examples below.
			<p>N OF Snn[nn] <i>or</i> S OF Snn[nn] <i>or</i> W OF Wnnn[nn] <i>or</i> E OF Wnnn[nn] <i>or</i> W OF Ennn[nn] <i>or</i> E OF Ennn[nn]</p> <p><i>or</i></p> <p>3) At a specific point within the FIR;</p> <p>Nnn[nn] Wnnn[nn] <i>or</i> Nnn[nn] Ennn[nn] <i>or</i> Snn[nn] Wnnn[nn] <i>or</i> Snn[nn] Ennn[nn]</p> <p><i>or</i></p> <p>4) A reference to the whole FIR/CTA</p> <p>ENTIRE FIR²¹</p> <p>ENTIRE CTA²¹</p>	<p>E OF E01700 E OF W005</p> <p><i>or</i></p> <p>3) At a specific point within the FIR;</p> <p>N5530 W02230 S12 E177</p> <p><i>or</i></p> <p>4) A reference to the whole FIR/CTA</p> <p>ENTIRE FIR</p> <p>ENTIRE CTA</p>
2.4	Level (C) ¹⁸	Flight level or altitude and extent (C) ¹⁹	<p>1) Generic height/range descriptors to be used when 'Location' descriptors above are used.</p> <p>FLnnn SFC/FLnnn SFC/nnnnM SFC/nnnnFT FLnnn/nnn TOP FLnnn ABV FLnnn TOP ABV FLnnn</p> <p><i>or</i>²⁰</p> <p>2) Radius from TC centre from which CB related to Tropical Cyclone ONLY may be expected.</p> <p>CB TOP FLnnn WI nnn{KM/NM} OF CENTRE CB TOP ABV FLnnn WI nnn{KM/NM} OF CENTRE</p>	<p>1) Generic height/range descriptors.</p> <p>FL180 SFC/FL070 SFC/9000FT FL050/080 FL310/450 TOP FL390 ABV FL280 TOP ABV FL100</p> <p><i>or</i>²⁰</p> <p>2) Radius from TC centre from which CB related to Tropical Cyclone ONLY may be expected.</p> <p>CB TOP FL500 WI 270KM OF CENTRE CB TOP FL500 WI 150NM OF CENTRE</p>

Ref No.	Element as specified in Chapter 5 and Appendix 6	Detailed Content	Expanded symbolic - These 'expanded' symbolic representations of the various SIGMET code elements represent the interpretation of Table A6-1 of Annex 3. MWOs are encouraged to align their SIGMETs with the guidelines below.	Examples. These examples of various SIGMET code elements represent the interpretation A6-1 of Annex 3. MWOs are encouraged to align their SIGMETs with the examples below.
			<p>CB TOP BLW FLnnn WI nnn{KM/NM} OF CENTRE</p> <p><i>or</i>²¹</p> <p>3) Zone defined by a line of specified width within which volcanic ash is expected.</p> <p>FLnnn/nnn nnKM WID LINE²² 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]]</p> <p><i>or</i></p> <p>FLnnn/nnn nnNM WID LINE²² 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]]</p>	<p>CB TOP ABV FL450 WI 250KM OF CENTRE CB TOP BLW FL530 WI 150NM OF CENTRE</p> <p><i>or</i>²¹</p> <p>3c) Zone defined by a line of specified width within which volcanic ash is expected.</p> <p>FL310/450 100KM WID LIN BTN S4330 E02200 - N4315 E02230 - N4230 E02300 - N4145 E02230 - N4130 E02145</p> <p><i>or</i></p> <p>FL310/450 60NM WID LIN BTN S4330 E02200 - N4315 E02230 - N4230 E02300 - N4145 E02230 - N4130 E02145</p>
2.5	Movement <i>or</i> expected movement (C) ¹⁸	Movement <i>or</i> expected movement (direction and speed) with reference to one of the sixteen points of compass, <i>or</i> stationary (C)	<p>MOV[N][NNE][NE][ENE][E][ESE][SE][SSE][S][SSW][SW][WSW]][W][WNW][NW][NNW] nnKMH</p> <p><i>or</i></p> <p>MOV[N][NNE][NE][ENE][E][ESE][SE][SSE][S][SSW][SW][WSW]][W][WNW][NW][NNW] nnKT</p> <p><i>or</i></p> <p>STNR</p>	<p>MOV E 40KMH MOV E 20KT MOV SE STNR</p>
2.6	Changes in intensity (C) ¹⁸	Expected changes in intensity (C)	<p>INTSF</p> <p><i>or</i></p> <p>WKN</p> <p><i>or</i></p> <p>NC</p>	<p>WKN INTSF NC</p>

Ref No.	Element as specified in Chapter 5 and Appendix 6	Detailed Content	Expanded symbolic - These 'expanded' symbolic representations of the various SIGMET code elements represent the interpretation of Table A6-1 of Annex 3. MWOs are encouraged to align their SIGMETs with the guidelines below.	Examples. These examples of various SIGMET code elements represent the interpretation A6-1 of Annex 3. MWOs are encouraged to align their SIGMETs with the examples below.
2.7	Forecast position (C) ^{18, 19, 28}	Forecast position of volcanic ash cloud or the centre of the TC or other hazardous phenomena ²⁵ at the end of the validity period of the SIGMET message (C)	<p>1a) Specific to Tropical Cyclone only.</p> <p>FCST nnnnZ TC CENTRE Nnnnn or Snnnn Ennnnn or Wnnnnn FCST nnnnZ TC CENTRE Nnn or Snn Ennn or Wnnn</p> <p>[AND]²³</p> <p>or</p> <p>2a) Specific to Volcanic Ash only: A polygon defining an ash cloud. The end point shall be a repeat of the start point. Minimum 4 coordinates and not normally more than 7 coordinates.</p> <p>FCST nnnnZ VA CLD APRX Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]- Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] [- Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]] [- Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]]</p> <p>or</p> <p>2b) Specific to VA only: A zone, defined by a line of specified width, defining an ash cloud.</p> <p>FCST nnnnZ VA CLD APRX nnKM (nnNM) WID LINE²² 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]]</p> <p>[AND]²³</p> <p>or</p> <p>2c) affecting entire FIR or CTA</p> <p>FCST nnnnZ ENTIRE FIR²¹</p> <p>or</p> <p>FCST nnnnZ ENTIRE CTA²¹</p>	<p>1a) Specific to Tropical Cyclone only.</p> <p>FCST 2200Z TC CENTRE N2740 W07345 FCST 1600Z TC CENTRE S15 W110</p> <p>or</p> <p>2a) Specific to Volcanic Ash only: A polygon defining an ash cloud. The end point shall be a repeat of the start point. Minimum 4 coordinates and not normally more than 7 coordinates.</p> <p>FCST 1700Z VA CLD APRX S15 E075 - S15 E081 - S17 E083 - S18 E079 - S15 E075</p> <p>or</p> <p>2b) Specific to VA only: A zone defined by a line of specified width, defining an ash cloud.</p> <p>FCST 1700Z VA CLD APRX 180KM WID LINE BTN S15 E075 - S15 E081 - S17 E083 - S18 E079</p> <p>FCST 1700Z VA CLD APRX 90NM WID LINE BTN S15 E075 - S15 E081 - S17 E083 - S18 E079</p> <p>or</p> <p>2c) affecting entire FIR or CTA</p> <p>FCST 1400Z ENTIRE FIR²¹</p> <p>or</p> <p>FCST 0300Z ENTIRE CTA²¹</p> <p>or</p>

Ref No.	Element as specified in Chapter 5 and Appendix 6	Detailed Content	Expanded symbolic - These 'expanded' symbolic representations of the various SIGMET code elements represent the interpretation of Table A6-1 of Annex 3. MWOs are encouraged to align their SIGMETs with the guidelines below.	Examples. These examples of various SIGMET code elements represent the interpretation A6-1 of Annex 3. MWOs are encouraged to align their SIGMETs with the examples below.
			<p><i>or</i></p> <p>3a) Specific to hazards other than TC or VA, an area of the FIR defined by a polygon. The end point shall be a repeat of the start point. Minimum 4 (including the last point being a repeat of the first point) coordinates, and not normally more than 7 coordinates.</p> <p>FCST nnnnZ WI²⁴ Nnn[nn] <i>or</i> Snn[nn] Wnnn[nn] <i>or</i> Ennn[nn] - Nnn[nn] <i>or</i> Snn[nn] Wnnn[nn] <i>or</i> Ennn[nn] - Nnn[nn] <i>or</i> Snn[nn] Wnnn[nn] <i>or</i> Ennn[nn] [- Nnn[nn] <i>or</i> Snn[nn] Wnnn[nn] <i>or</i> Ennn[nn] - Nnn[nn] <i>or</i> Snn[nn] Wnnn[nn] <i>or</i> Ennn[nn]]</p> <p><i>or</i></p> <p>3b) Specific to hazards other than TC or VA, in a sector of the FIR defined relative to specified line joining two points on the FIR boundary (or so close to the FIR boundary so as to leave no doubt that the intent is for the line to connect to the FIR boundary at that point).</p> <p>FCST nnnnZ [N][NE][E][SE][S][SW][W][NW] OF [LINE] Nnn[nn] <i>or</i> Snn[nn] Wnnn[nn] <i>or</i> Ennn[nn] - Nnn[nn] <i>or</i> Snn[nn] Wnnn[nn] <i>or</i> Ennn[nn]</p> <p><i>or</i></p> <p>3c) Specific to hazards other than TC or VA, in a sector of the FIR defined relative to a line of latitude and a line of longitude (effectively a quadrant);</p> <p>FCST nnnnZ N OF Nnn[nn] AND W OF Wnnn[nn] <i>or</i> FCST nnnnZ N OF Nnn[nn] AND E OF Wnnn[nn] <i>or</i> FCST nnnnZ S OF Nnn[nn] AND W OF Wnnn[nn] <i>or</i> FCST nnnnZ S OF Nnn[nn] AND E OF Wnnn[nn] <i>or</i> FCST nnnnZ N OF Nnn[nn] AND W OF Ennn[nn] <i>or</i> FCST nnnnZ N OF Nnn[nn] AND E OF Ennn[nn] <i>or</i> FCST nnnnZ S OF Nnn[nn] AND W OF Ennn[nn] <i>or</i> FCST nnnnZ S OF Nnn[nn] AND E OF Ennn[nn] <i>or</i></p>	<p>3a) Specific to hazards other than TC or VA, an area of the FIR defined by a polygon. The end point shall be a repeat of the start point. Minimum 4 coordinates (including the last point being a repeat of the first point), and not normally more than 7 coordinates.</p> <p>FCST 1600Z WI N6030 E02550 - N6055 E02500 - N6050 E02630 - N6030 E02550</p> <p>FCST 0800Z WI N30 W067 - N32 W070 - N35 W068 - N30 W067</p> <p><i>or</i></p> <p>3b) Specific to hazards other than TC or VA, in a sector of the FIR defined relative to specified line joining two points on the FIR boundary (or so close to the FIR boundary so as to leave no doubt that the intent is for the line to connect to the FIR boundary at that point).</p> <p>FCST 2100Z NE OF N2500 W08700 - N2000 W08300 FCST 1200Z NE OF LINE N2500 W08700 - N2000 W08300 FCST 1600Z S OF S14 E150 - S14 E155 FCST 2000Z S OF LINE S14 E150 - S14 E155</p> <p><i>or</i></p> <p>3c) Specific to hazards other than TC or VA, in a sector of the FIR defined relative to a line of latitude and a line of longitude (effectively a quadrant);</p> <p>FCST 1600Z S OF N3200 AND E OF E02000 FCST 0600Z S OF S3215 AND W OF E10130 FCST 1230Z S OF N12 AND W OF E040 FCST 0300Z N OF N35 AND E OF E078</p>

Ref No.	Element as specified in Chapter 5 and Appendix 6	Detailed Content	Expanded symbolic - These 'expanded' symbolic representations of the various SIGMET code elements represent the interpretation of Table A6-1 of Annex 3. MWOs are encouraged to align their SIGMETs with the guidelines below.	Examples. These examples of various SIGMET code elements represent the interpretation A6-1 of Annex 3. MWOs are encouraged to align their SIGMETs with the examples below.
			<p><i>or</i></p> <p>3d) Specific to hazards other than TC or VA, in a sector of the FIR defined relative to a line of latitude or longitude (effectively a segment);</p> <p>FCST nnnnZ N OF Nnn[nn] <i>or</i> FCST nnnnZ S OF Nnn[nn] <i>or</i> FCST nnnnZ N OF Snn[nn] <i>or</i> FCST nnnnZ S OF Snn[nn] <i>or</i> FCST nnnnZ W OF Wnnn[nn] <i>or</i> FCST nnnnZ E OF Wnnn[nn] <i>or</i> FCST nnnnZ W OF Ennn[nn] <i>or</i> FCST nnnnZ E OF Ennn[nn]</p> <p><i>or</i></p> <p>3e) Specific to hazards other than TC or VA, at a point:</p> <p>FCST nnnnZ Nnn[nn] Wnnn[nn] <i>or</i> FCST nnnnZ Nnn[nn] Ennn[nn] <i>or</i> FCST nnnnZ Snn[nn] Wnnn[nn] <i>or</i> FCST nnnnZ Snn[nn] Ennn[nn]</p>	<p><i>or</i></p> <p>3d) Specific to hazards other than TC or VA, in a sector of the FIR defined relative to a line of latitude or longitude (effectively a segment);</p> <p>FCST 1600Z N OF S2230 FCST 1130Z S OF S43 FCST 0800Z E OF E01700 FCST 1200Z E OF W005</p> <p><i>or</i></p> <p>3e) Specific to hazards other than TC or VA, at a point:</p> <p>FCST 0800Z N5530 W02230 FCST 1500Z S12 E177</p>
	Cancellation of SIGMET (C) ²⁷	Cancellation of SIGMET referring to its identification	<p>CNL SIGMET n nnnnnn/nnnnnn</p> <p>CNL SIGMET nn nnnnnn/nnnnnn</p> <p>CNL SIGMET nnn nnnnnn/nnnnnn</p> <p><i>or</i></p> <p>CNL SIGMET n nnnnnn/nnnnnn VA MOV TO nnnn FIR²¹</p>	<p>CNL SIGMET 2 102000/110000²⁷</p> <p>CNL SIGMET 12 101200/101600²⁷</p> <p>CNL SIGMET A12 031600/032000²⁷</p> <p>CNL SIGMET 3 251030/251630 VA MOV TO YUDO FIR²⁷</p>

Ref No.	Element as specified in Chapter 5 and Appendix 6	Detailed Content	Expanded symbolic - These 'expanded' symbolic representations of the various SIGMET code elements represent the interpretation of Table A6-1 of Annex 3. MWOs are encouraged to align their SIGMETs with the guidelines below.	Examples. These examples of various SIGMET code elements represent the interpretation A6-1 of Annex 3. MWOs are encouraged to align their SIGMETs with the examples below.
			CNL SIGMET nn nnnnnn/nnnnnn VA MOV TO nnnn FIR ²¹ CNL SIGMET nnn 251030/251430 VA MOV TO YUDO FIR ²⁷	CNL SIGMET 06 191200/191800 VA MOV TO YUDO FIR ²⁷ CNL SIGMET B10 030600/031200 VA MOV TO YUDO FIR ²⁷

Table A-1: Expanded SIGMET template

Footnotes to table: (note: the number in brackets at the end of each footnote refers to the footnote reference in Table A6-1 of Annex 3, 18th Edition, July 2013).

1. See 4.1. “**Recommendation.**— *In cases where the airspace is divided into a flight information region (FIR) and an upper flight information region (UIR), the SIGMET should be identified by the location indicator of the air traffic services unit serving the FIR. Note.— 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 are given in the text of the message.*” (2)
2. Fictitious location. (3)
3. In accordance with 1.1.3 “The sequence number referred to in the template in Table A6-1 shall correspond with the number of SIGMET messages issued for the flight information region since 0001 UTC on the day concerned. The meteorological watch offices whose area of responsibility encompasses more than one FIR and/or CTA shall issue separate SIGMET messages for each FIR and/or CTA within their area of responsibility.” (4)
4. As per 1.1.4 “In accordance with the template in Table A6-1, only one of the following phenomena shall be included in a SIGMET message, using the abbreviations as indicated below [list of SIGMET phenomena follows]” (7)
5. In accordance with 4.2.1 a) “*obscured (OBSC) if it is obscured by haze or smoke or cannot be readily seen due to darkness.*” (8)
6. In accordance with 4.2.4 “*Hail (GR) should be used as a further description of the thunderstorm, as necessary*” (9)
7. In accordance with 4.2.1 b) “*embedded (EMBD) if it is embedded within cloud layers and cannot be readily recognized*” (10)
8. In accordance with 4.2.2 “An area of thunderstorms should be 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)” (11)
9. In accordance with 4.2.3 “Squall line (SQL) should indicate a thunderstorm along a line with little or no space between individual clouds.” (12)
10. Used for unnamed tropical cyclones. (13)
11. In accordance with 4.2.5 and 4.2.6 “Severe turbulence (TURB) should refer only to: low-level turbulence associated with strong surface winds; rotor streaming; or turbulence whether in cloud or not in cloud (CAT). Turbulence should not be used in connection with convective clouds.” and “Turbulence shall be considered: a) severe whenever the peak value of the cube root of EDR exceeds 0.7” (14)
12. In accordance with 4.2.7 “Severe icing (ICE) should refer to icing in other than convective clouds. Freezing rain (FZRA) should refer to severe icing conditions caused by freezing rain”. (15)
13. In accordance with 4.2.8 “A mountain wave (MTW) should be considered: a) severe whenever an accompanying downdraft of 3.0 m/s (600 ft/min) or more and/or severe turbulence is observed or forecast; and b) moderate whenever an accompanying downdraft of 1.75–3.0 m/s (350–600 ft/min) and/or moderate turbulence is observed or forecast.” (16)
14. In accordance with 2.1.4. (17)
15. In accordance with 4.2.1 c). (18)
16. In accordance with 4.2.1 d). (19)

17. The use of cumulonimbus, CB, and towering cumulus, TCU, is restricted to AIRMETs in accordance with 2.1.4. (20).
18. In the case of the same phenomenon covering more than one area within the FIR, these elements can be repeated, as necessary. (21)
19. Only for SIGMET messages for volcanic ash cloud and tropical cyclones. (22)
20. Only for SIGMET messages for tropical cyclones. (23)
21. Only for SIGMET messages for volcanic ash. (24)
22. 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. (25)
23. To be used for two volcanic ash clouds or two centres of tropical cyclones simultaneously affecting the FIR concerned. (26)
24. The number of coordinates should be kept to a minimum and should not normally exceed seven. (27)
25. Optionally can be used in addition to Movement or Expected Movement. (28)
26. To be used for hazardous phenomena other than volcanic ash cloud and tropical cyclones. (29)
27. End of the message (as the SIGMET/AIRMET message is being cancelled). (30)
28. The levels of the phenomena remain fixed throughout the forecast period. (31)
29. During any SIGMET test message, no other information should be included after the specified text. (N/A)

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APPENDIX B

SIGMET EXAMPLES

Note. — The figures used in this appendix are intended simply to clarify the intent of the SIGMET message in abbreviated plain language, and therefore how each SIGMET should be constructed by MWOs and also interpreted by users. The figures used are not intended to give guidance on how a SIGMET in graphical format should be produced.

Examples of ‘**WS**’ SIGMET. See the sections for SIGMET for volcanic ash only (WV) and SIGMET for tropical cyclone only (WC) for examples specific to those phenomena.

Contents

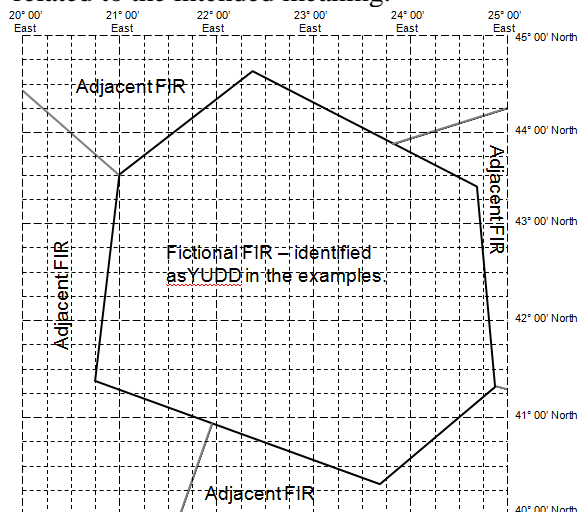
General

- 1) An area of the FIR defined by a polygon.
Use of polygons with complex FIR boundaries.
- 2a) In a sector of the FIR defined relative to specified line joining two points on the FIR boundary
- 2b) In a sector of the FIR defined relative to a line of latitude and a line of longitude (effectively a quadrant)
- 2c) In a sector of the FIR defined relative to a line of latitude or longitude (effectively a segment)
- 3) At a specific point within the FIR
- 4) Volcanic Ash SIGMET only
Multiple areas of in SIGMET for volcanic ash
Covering entire FIR/CTA
Multiple areas in SIGMET for tropical cyclone
- 5) Tropical Cyclone SIGMET only

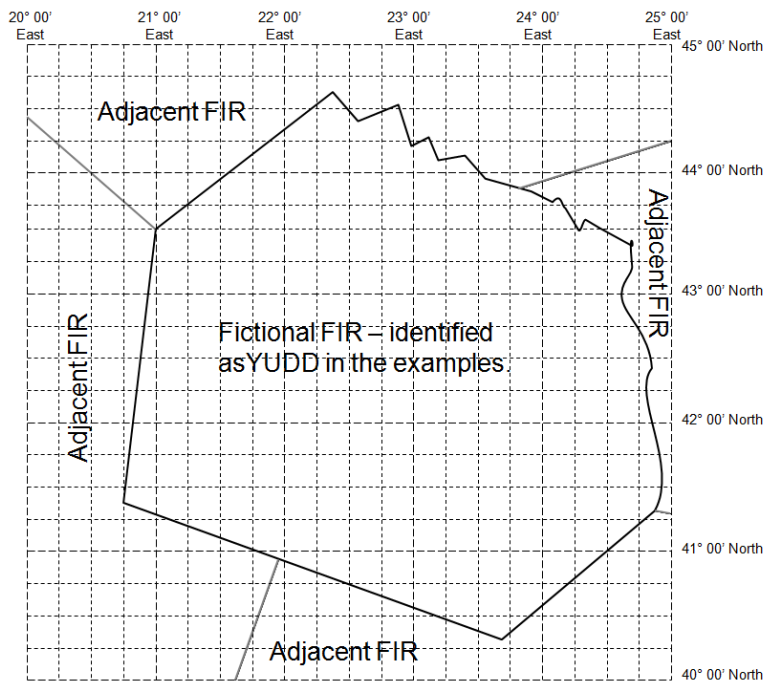
General

Explanation of fictional FIR.

In each of the examples below, a fictional FIR area is indicated, with portions of adjacent FIRs also indicated. The FIR areas are overlaid on a coordinate grid, in order that the example plain language SIGMETs can be explicitly related to the intended meaning.



For some cases, examples are given where the FIR has boundaries that are complex (country borders for example, especially when defined by rivers)



Fictional FIR is used for the examples.

Repetition of start point as last coordinate.

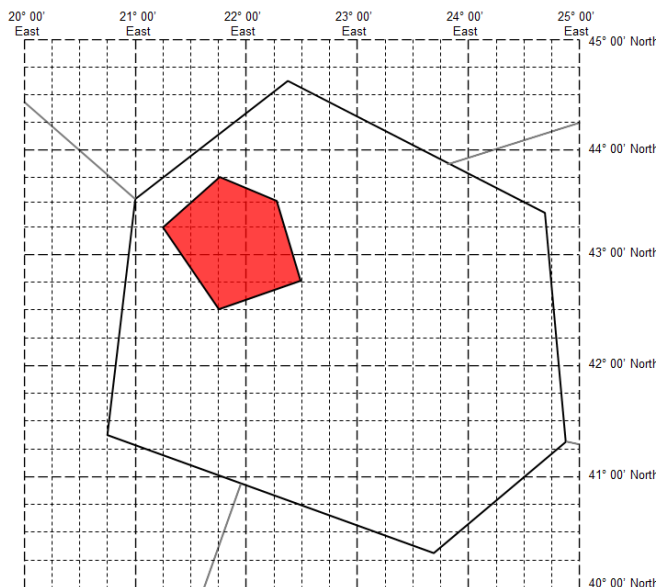
In accordance with practices and procedures laid down for other aeronautical bulletins (i.e. NOTAM), it is recommended that the last point of a polygon is a repeat of the first point of the polygon. This will ensure that the polygon has been closed, and that no points have been omitted.

'Direction' of encoding of the points of a polygon

In accordance with practices and procedures laid down for other aeronautical bulletins and international practice (e.g. BUFR encoding of WAFS significant weather (SIGWX) forecasts), it is recommended that the points of a polygon are provided in a 'clockwise' sense. This assists automated systems in determining the 'inside' of polygons.

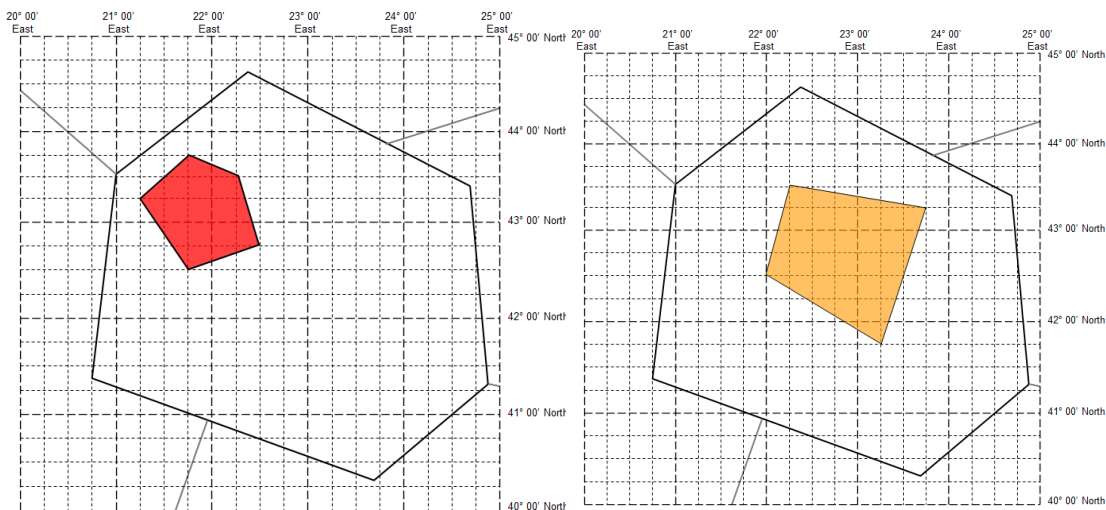
1) An area of the FIR defined by a polygon. The end point should be a repeat of the start point.

When the SIGMET does not include a 'forecast position' section.



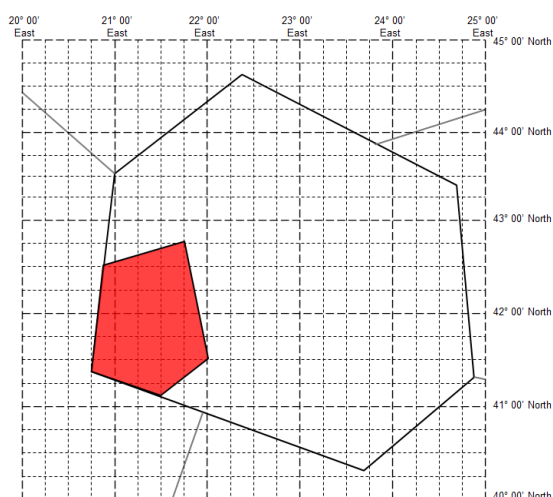
YUDD SIGMET 2 VALID 101200/101600 YUSO -
 YUDD SHANLON FIR/UIR SEV TURB FCST WI N4230 E02145 - N4315 E02115 -
 N4345 E02145 - N4330 E02215 - N4245 E02230 - N4230 E02145 FL250/370
 MOV ESE 20KT INTSF=

With an explicit forecast position:



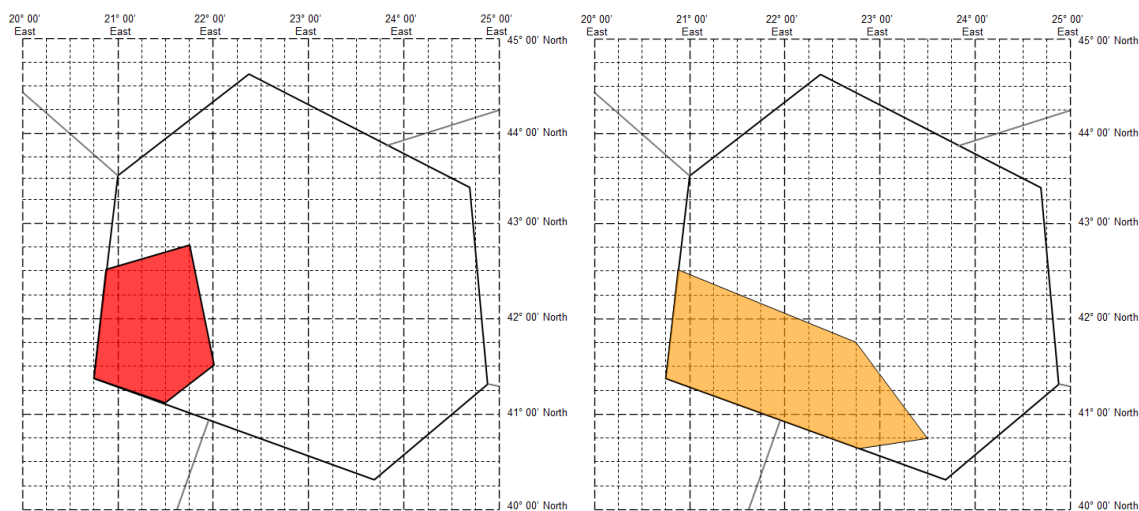
YUDD SIGMET 2 VALID 101200/101600 YUSO -
 YUDD SHANLON FIR/UIR SEV TURB FCST WI N4230 E02145 - N4315 E02115 -
 N4345 E02145 - N4330 E02215 - N4245 E02230 - N4230 E02145 FL250/370
 MOV ESE 20KT INTSF FCST 1600Z WI N4145 E02315 - N4230 E02200 - N4330
 E02215 - N4315 E02345 - N4145 E02315=

When the SIGMET does not include a 'forecast position' section.



YUDD SIGMET 2 VALID 101200/101600 YUSO -
YUDD SHANLON FIR/UIR SEV TURB FCST WI N4230 E02052 - N4245 E02145 -
N4130 E02200 - N4107 E02130 - N4123 E2045 - N4230 E02052 FL250/370
MOV SE 30KT WKN=

With an explicit forecast position:



YUDD SIGMET 2 VALID 101200/101600 YUSO -
YUDD SHANLON FIR/UIR SEV TURB FCST WI N4230 E02052 - N4245 E02145 -
N4130 E02200 - N4107 E02130 - N4123 E02045- N4230 E02052 FL250/370
MOV SE 30KT WKN FCST 1600Z WI N4230 E02052 - N4145 E02245 - N4045
E02330 - N4040 E02248 - N4123 E02045- N4230 E02052 =

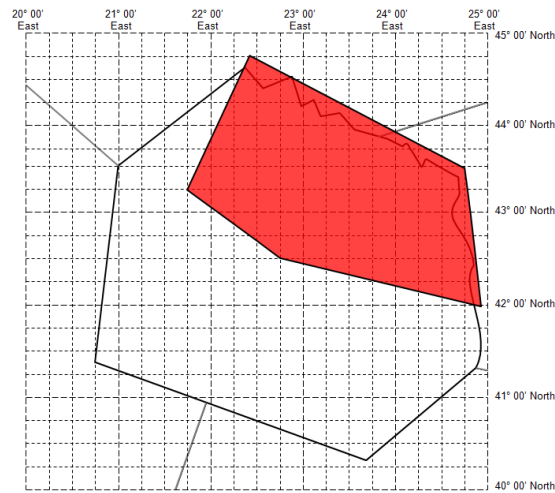
Use of polygons with complex FIR boundaries.

Annex 3 (18th Edition, July 2013) specifies that the points of a polygon '... should be kept to a minimum and should not normally exceed seven'. However, some FIR boundaries are complex, and it would be unrealistic to expect that a polygon would be defined that followed such boundaries exactly. As such, some States have determined that the polygon points be chosen in relation to the complex boundary such that the FIR boundary approximates, but is wholly encompassed by, the polygon, and

that any additional area beyond the FIR boundary be the minimum that can be reasonably and practically described. Caution should however be exercised in those instances where international aerodromes are located in close proximity to such a complex FIR boundary.

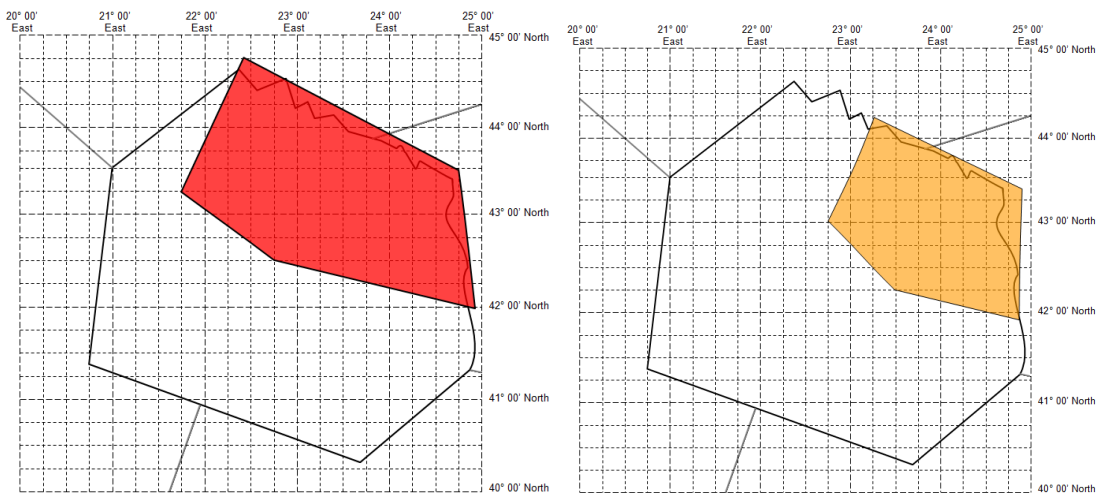
In the examples below, it would not be practical to follow the NE boundaries exactly. The point close to N4330 E02245 is obviously a 'major' turning point along the FIR boundary, but the other, numerous and complex turning points can only be approximated when constrained to seven points.

When the SIGMET does not include a 'forecast position' section.



YUDD SIGMET 2 VALID 101200/101600 YUSO -
 YUDD SHANLON FIR/UIR SEV TURB FCST WI N4315 E02145 - N4445 E02245 -
 N4330 E02445 - N4200 E02455 - N4230 E02245- N4315 E02145 FL250/370
 MOV SE 20KT WKN=

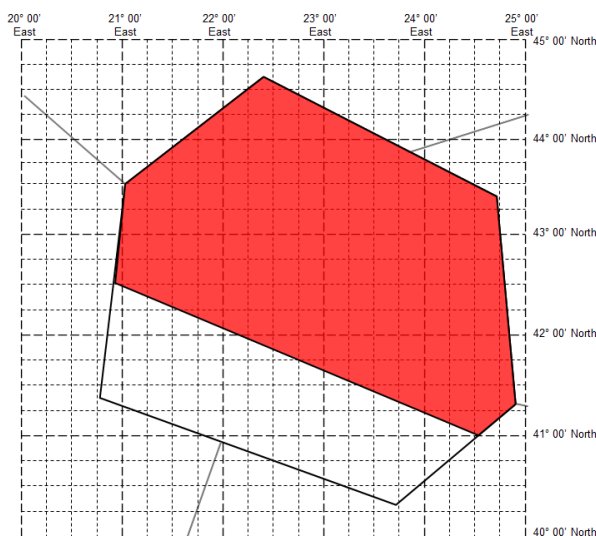
With an explicit forecast position:



YUDD SIGMET 2 VALID 101200/101600 YUSO -
 YUDD SHANLON FIR/UIR SEV TURB FCST WI N4315 E02145 - N4445 E02245 -
 N4330 E02445 - N4200 E02455 - N4230 E02245- N4315 E02145 FL250/370
 MOV SE 20KT WKN FCST 1600Z WI N4300 E02245 - N4415 E02315 - N4322
 E02452 - N4155 E02445 - N4215 E02330- N4300 E02245=

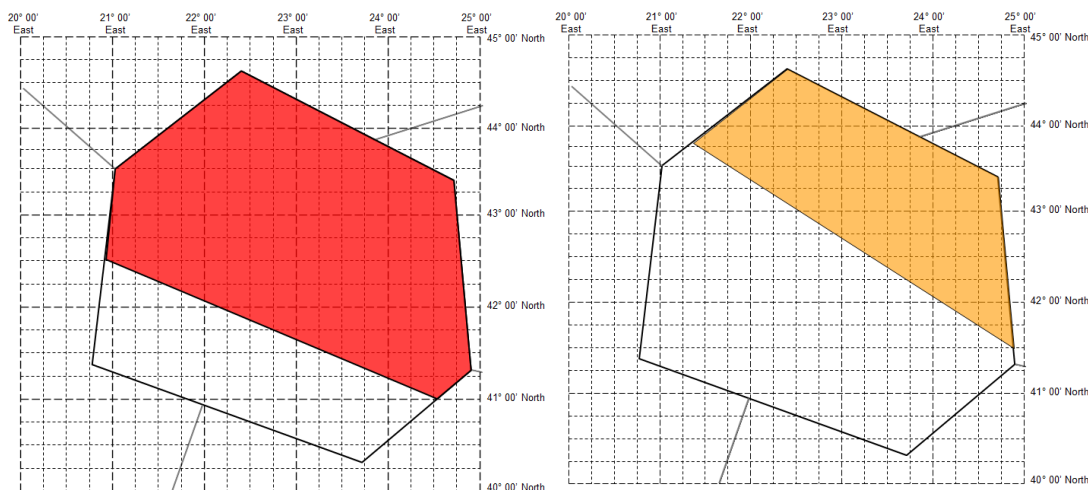
2a) In a sector of the FIR defined relative to specified line joining two points on the FIR boundary.

When the SIGMET does not include a 'forecast position' section.

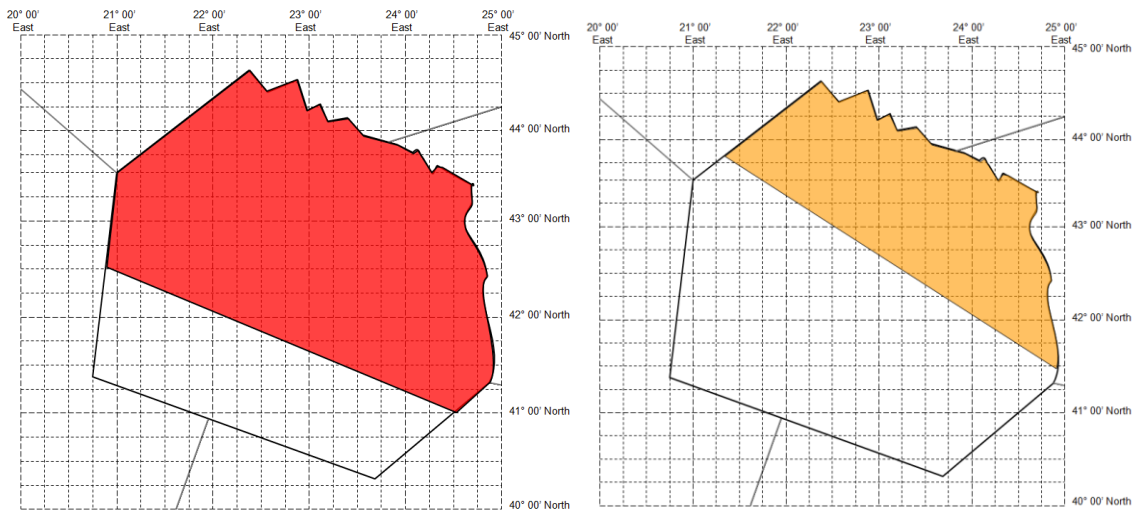


YUDD SIGMET 2 VALID 101200/101600 YUSO -
YUDD SHANLON FIR/UIR SEV TURB FCST NE OF LINE N4230 E02052 - N4100
E02430 FL250/370 MOV NE 15KT WKN=

With an explicit forecast position:



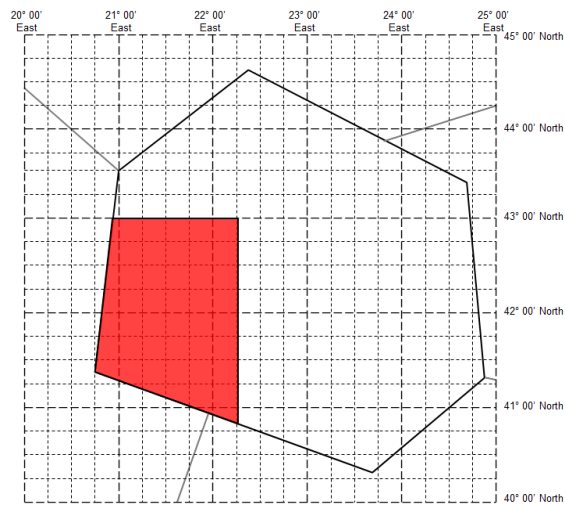
YUDD SIGMET 2 VALID 101200/101600 YUSO -
YUDD SHANLON FIR/UIR SEV TURB FCST NE OF LINE N4230 E02052 - N4100
E02430 FL250/370 MOV NE 15KT WKN FCST 1600Z NE OF LINE N4346 E02122 -
N4130 E02452=



YUDD SIGMET 2 VALID 101200/101600 YUSO -
 YUDD SHANLON FIR/UIR SEV TURB FCST NE OF LINE N4230 E02052 - N4100
 E02430 FL250/370 MOV NE 15KT WKN FCST 1600Z NE OF LINE N4346 E02122 -
 N4130 E02457=

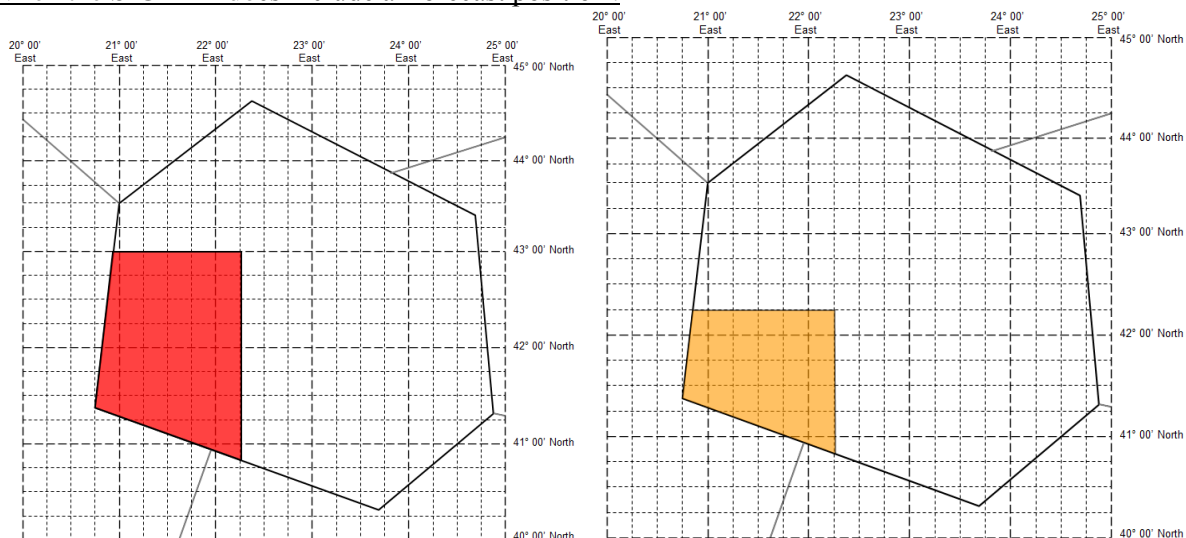
2b) In a sector of the FIR defined relative to a line of latitude and a line of longitude (effectively a quadrant)

When the SIGMET does not include a 'forecast position' section.



YUDD SIGMET 2 VALID 101200/101600 YUSO -
 YUDD SHANLON FIR/UIR SEV TURB FCST S OF N4300 AND W OF E02215
 FL250/370 MOV S 12KT WKN=

When the SIGMET does include a 'forecast position'.

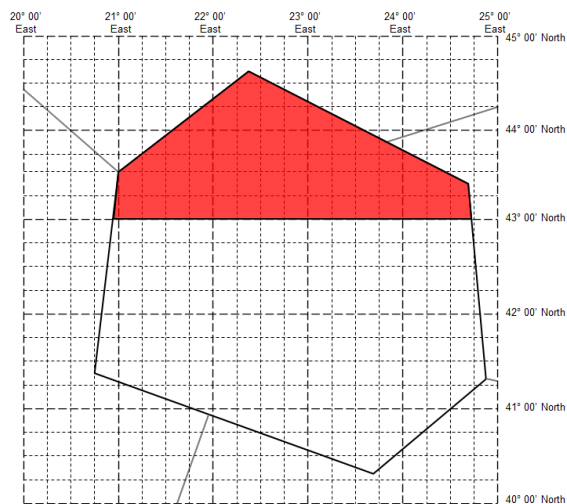


With an explicit forecast position:

YUDD SIGMET 2 VALID 101200/101600 YUSO -
 YUDD SHANLON FIR/UIR SEV TURB FCST S OF N4300 AND W OF E02215
 FL250/370 MOV S 12KT WKN FCST 1600Z S OF 4215 AND W OF E02215=

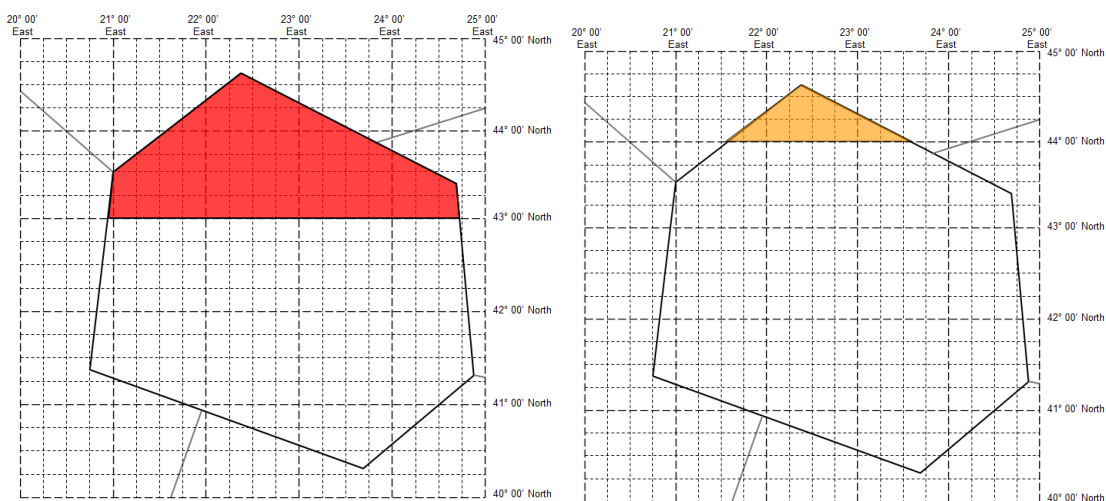
2d) In a sector of the FIR defined relative to a line of latitude or longitude (effectively a segment)

When the SIGMET does not include a 'forecast position' section.

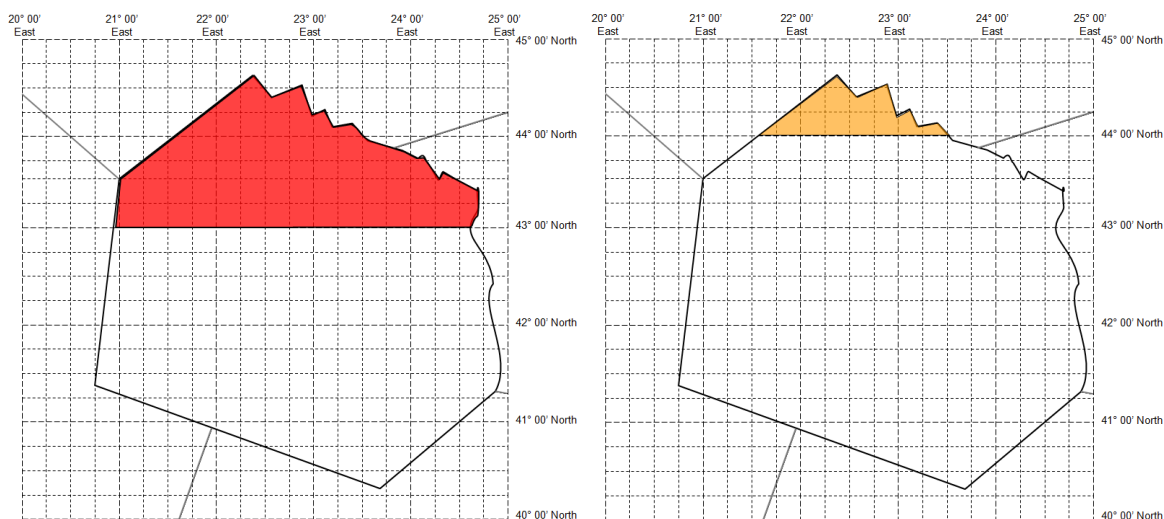


YUDD SIGMET 2 VALID 101200/101600 YUSO -
 YUDD SHANLON FIR/UIR SEV TURB FCST N OF N43 FL250/370 MOV N 15KT WKN=

When the SIGMET does include a 'forecast position' section.



YUDD SIGMET 2 VALID 101200/101600 YUSO -
 YUDD SHANLON FIR/UIR SEV TURB FCST N OF N43⁷ FL250/370 MOV N 15KT WKN
 FCST 1600Z N OF N44=



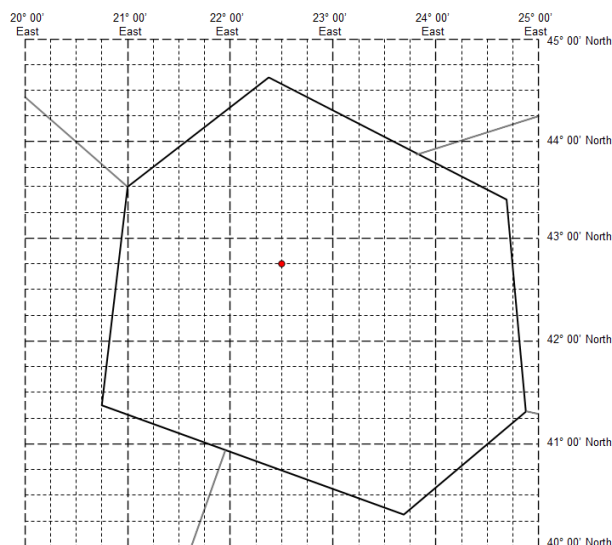
YUDD SIGMET 2 VALID 101200/101600 YUSO -
 YUDD SHANLON FIR/UIR SEV TURB FCST N OF N43⁸ FL250/370 MOV N 15KT WKN
 FCST 1600Z N OF N44=

⁷ It would be equally valid to use 'N4300'.

⁸ It would be equally valid to use 'N4300'.

3) At a specific point within the FIR;

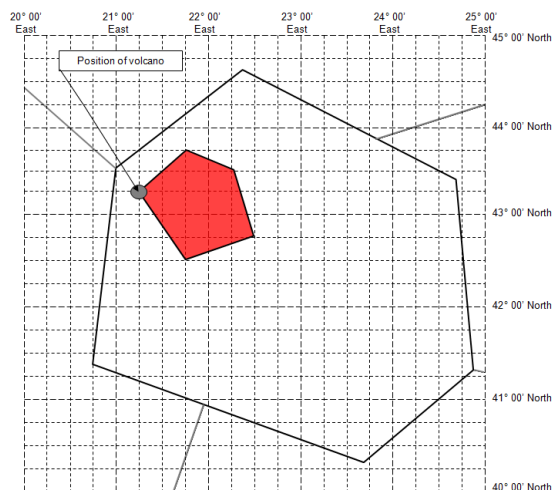
When the SIGMET does not include a 'forecast position' section.



YUDD SIGMET 2 VALID 101200/101600 YUSO -
YUDD SHANLON FIR/UIR SEV TURB OBS N4245 E02230 FL250/370 STNR WKN=

4) Volcanic Ash SIGMET Only

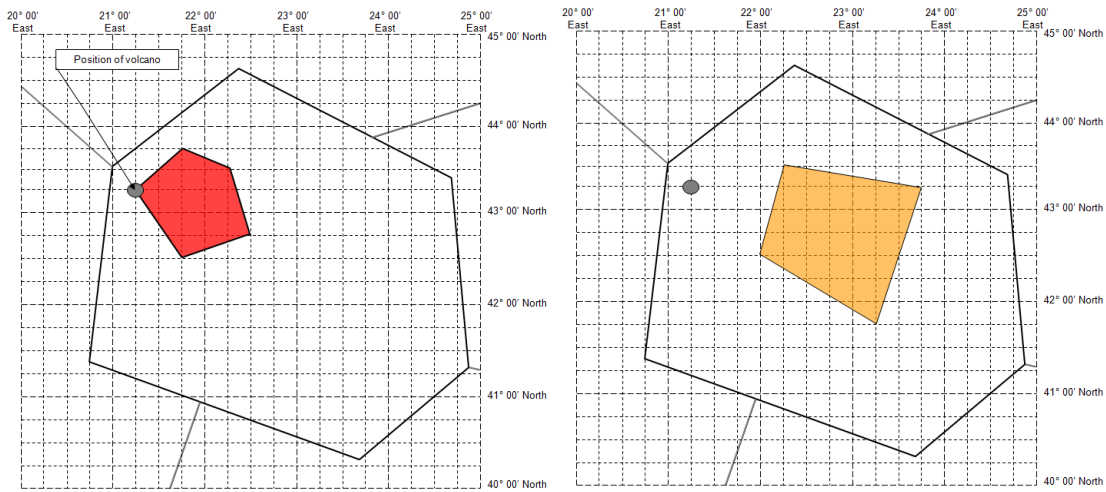
When the VA SIGMET does not include a 'forecast position' section.



YUDD SIGMET 2 VALID 101200/101600 YUSO -
YUDD SHANLON FIR/UIR VA ERUPTION MT ASHVAL PSN N4315 E02115 VA CLD
OBS AT 1200Z WI N4315 E02145 - N4345 E02145 - N4230 E02215 - N4245
E02230 - N4230 E02145 - N4315 E02115 FL250/370 MOV ESE 20KT NC=

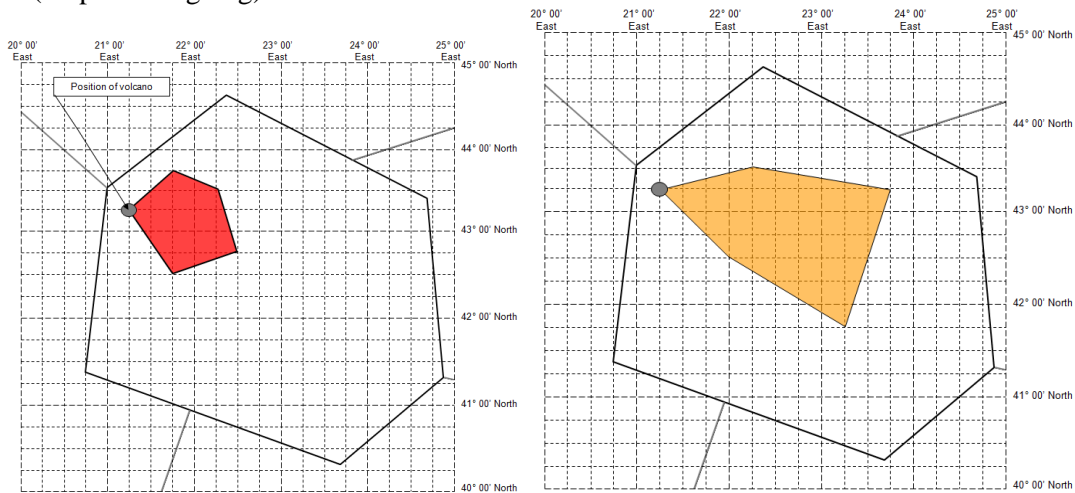
When the SIGMET does include a ‘forecast position’ section (no rate of movement).

For VA (eruption ceased, ash cloud persists downwind):



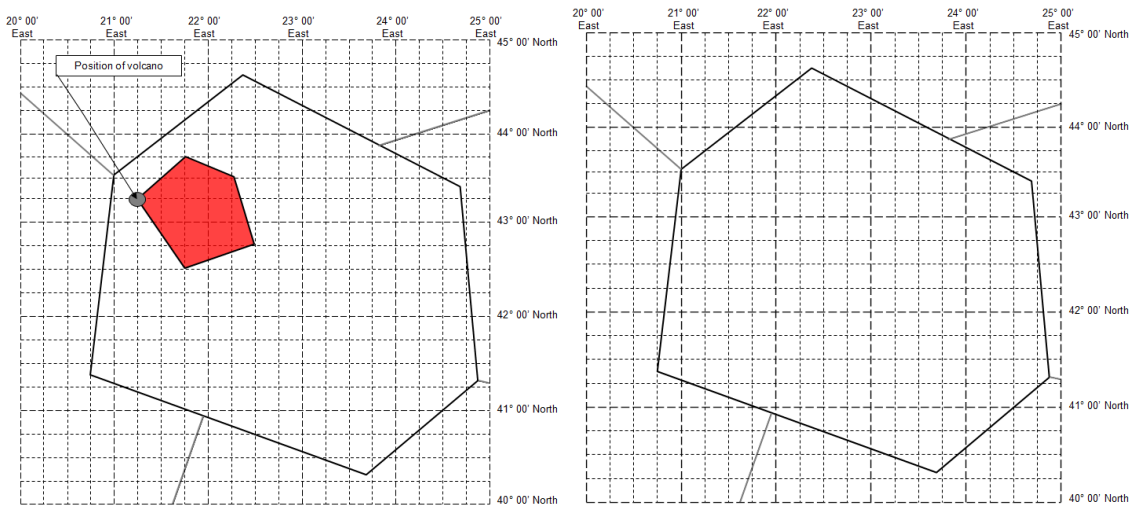
```
YUDD SIGMET 2 VALID 101200/101800 YUSO -
YUDD SHANLON FIR/UIR VA ERUPTION MT ASHVAL PSN N4315 E02115 VA CLD
OBS AT 1200Z WI N4315 E02115 - N4345 E02145 N4330 E02215 - N4245
E02230 - N4230 E02145 - N4315 E02115 FL250/370 MOV ESE 20KT NC FCST
1800Z VA CLD APRX N4330 E02215 - N4315 E02345 - N4145 E02315 - N4230
E02200 - N4330 E02215=
```

For VA (eruption on-going):



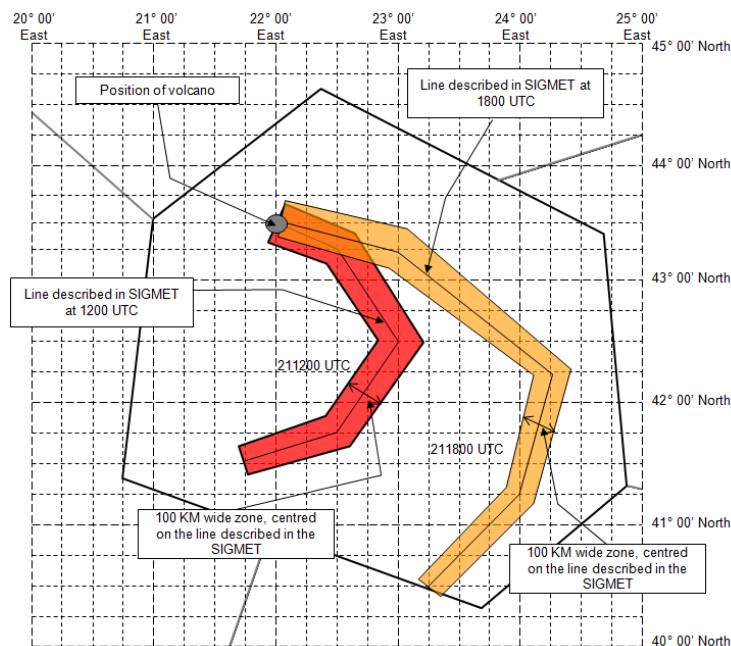
```
YUDD SIGMET 2 VALID 101200/101800 YUSO -
YUDD SHANLON FIR/UIR VA ERUPTION MT ASHVAL PSN N4315 E02115 VA CLD
OBS AT 1200Z WI N4315 E02115 - N4245 E02145 - N4330 E02215 -- N4245
E02230 - N4230 E02145 - N4315 E2115 FL250/370 MOV ESE 20KT NC FCST
1800Z VA CLD APRX N4315 E02115 - N4330 E02215 - N4315 E02345 - N4145
E02315 - N4230 E02200 - N4315 E02115=
```

For VA (eruption ceasing, ash dispersing):



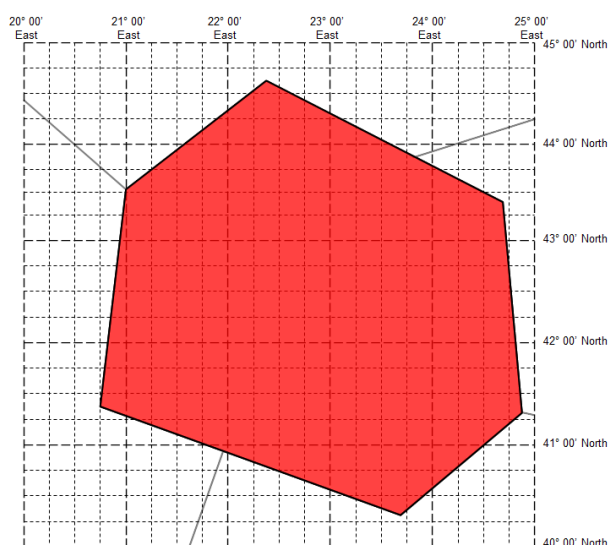
```
YUDD SIGMET 2 VALID 101200/101800 YUSO -
YUDD SHANLON FIR/UIR VA ERUPTION MT ASHVAL PSN N4315 E02115 VA CLD
OBS AT 1200Z WI N4315 E02115 - N4345 E02145 - N4330 E02215 - N4245
E02130 - N4230 E02145 N4315 E02115 FL250/370 MOV ESE 20KT WKN FCST
1800Z NO VA EXP=
```

For VA (eruption on-going), defining the area affected as a line of specified width:



```
YUDD SIGMET 2 VALID 211200/211800 YUSO -
YUDD SHANLON FIR/UIR VA ERUPTION MT ASHVAL PSN N4330 E02200 VA CLD
FCST 1200Z FL310/450 100KM WID LINE BTN N4330 E02200 - N4315 E02230 -
N4230 E02300 - N4145 E02230 - N4130 E02145 NC FCST 1800Z VA CLD APRX
100KM WID LIN BTN N4330 E02200 - N4315 E02300 - N4215 E02415 - N4115
E02400 - N4030 E02315=
```


5) Covering entire FIR (volcanic ash only).

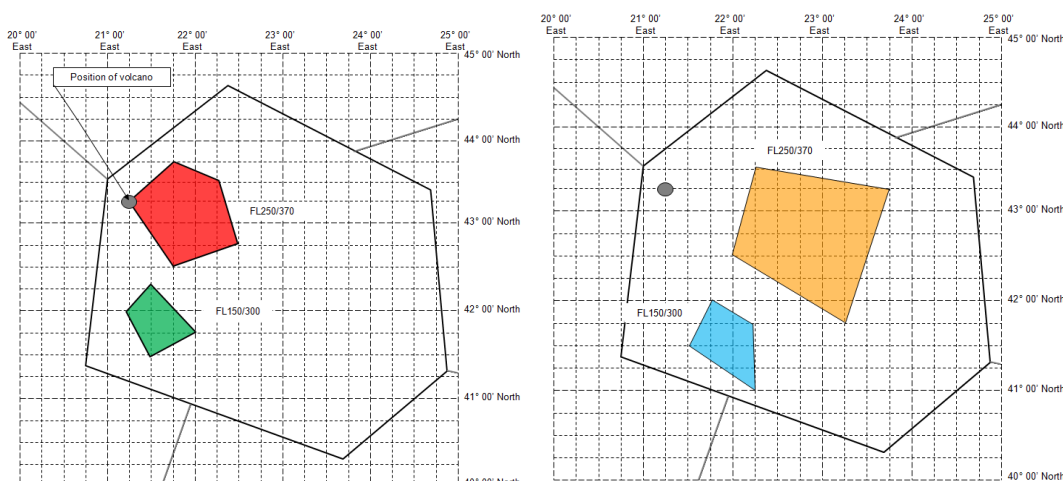


YUDD SIGMET 2 VALID 101200/101600 YUSO -
 YUDD SHANLON FIR/UIR SEV TURB FCST ENTIRE FIR FL250/370 STNR WKN=

Multiple areas in SIGMET for volcanic ash.

Strictly, the only way to include a second instance of a volcanic ash cloud in a SIGMET message is to use the 'AND' option in the 'Forecast position' section.

In the example below, two areas of volcanic ash cloud (at different levels) are forecast to move as described. The normal courier font refers to the northernmost areas of ash, and the italicised font refers to the southernmost areas of ash during the period. 'AND' is highlighted in **bold** to identify the separation of the two features.

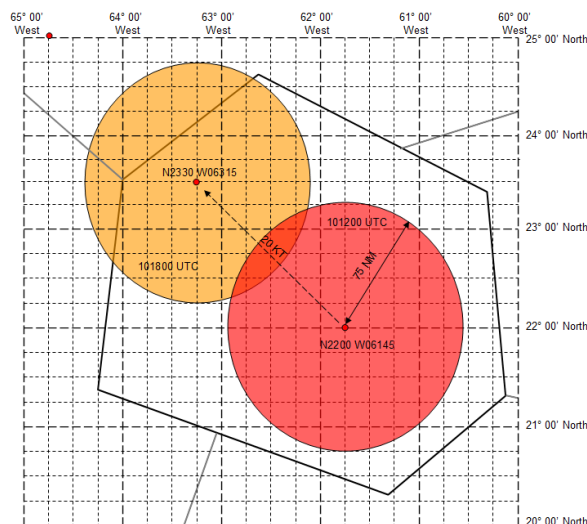


YUDD SIGMET 2 VALID 101200/101800 YUSO -
 YUDD SHANLON FIR/UIR VA ERUPTION MT ASHVAL PSN N4315 E02115 VA CLD
 OBS AT 1200Z WI N4315 E02115 - N4345 E02145 N4330 E02215 - N4245
 E02230 - N4230 E02145 - N4315 E02115 FL250/370 MOV ESE 20KT NC FCST
 1800Z VA CLD APRX N4330 E02215 - N4315 E02345 - N4145 E02315 - N4230
 E02200 - N4330 E02215 **AND** N4200 E02115 - N4217 E02130 - N4145 E02200
 - N4130 E02130 - N4200 E02100 FL150/300 MOV ESE 20KT NC FCST 1800Z VA

CLD APRX N4200 E02145 - N4145 E02215 - N4100 E02215 - N4130 E02130 - N4200 E02145=

The above only works if there are two instances of ash at the start and end of the period. If the number of ash areas is different at the start and end, it is recommended that separate SIGMETs be issued as necessary.

6) Tropical Cyclone SIGMET Only

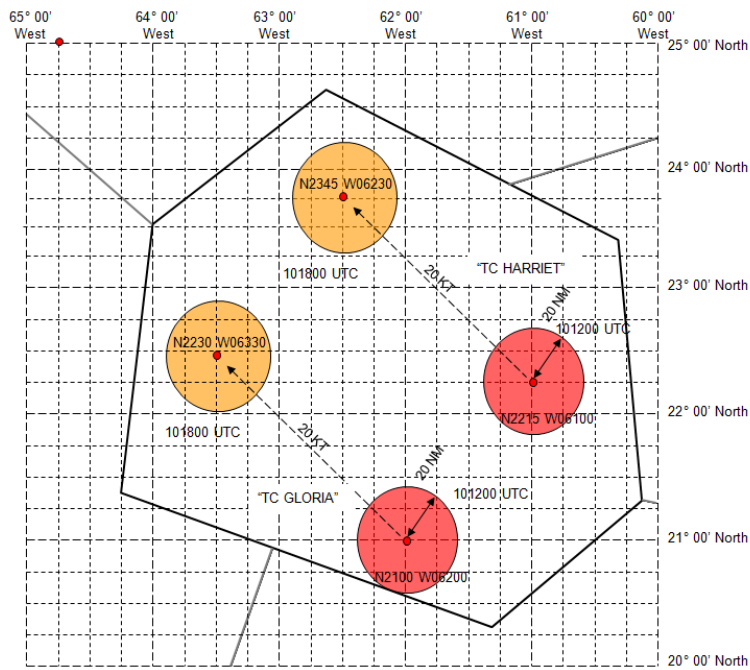


YUDD SIGMET 2 VALID 101200/101800 YUSO -
 YUDD SHANLON FIR/UIR TC GLORIA FCST AT 1200Z N2200 W06145 CB TOP
 FL500 WI 75NM OF CENTRE MOV NW 20KT WKN FCST 1800Z TC CENTRE N2330
 W06315=

Multiple areas in SIGMET for tropical cyclone.

Strictly, the only way to include a second instance of a tropical cyclone in a SIGMET is to use the 'AND' option in the 'Forecast position' section.

The example below demonstrates how two separate TCs, and the CB within a specified radius of those TCs, can be described. The normal courier font refers to TC Gloria, and the italicised font refers to TC Harriet. 'AND' is highlighted in **bold** to identify the separation between information for the two features.



YUDD SIGMET 2 VALID 101200/101800 YUSO -
 YUDD SHANLON FIR/UIR TC GLORIA FCST AT 1200Z N2100 W06200 CB TOP
 FL500 WI 20NM OF CENTRE MOV NW 20KT WKN FCST 1800Z TC CENTRE N2230
 W06330 **AND** TC HARRIET FCST AT 1200Z N2215 W06100 CB TOP FL400 WI 20NM
 OF CENTRE MOV NW 20KT WKN FCST 1800Z TC CENTRE N2345 W06230=

APPENDIX C

SIGMET TEST PROCEDURES

CHAPTER 1 — REGIONAL SIGMET TEST PROCEDURES

1. Introduction

1.1. The Meteorology Divisional Meeting (2002) formulated Recommendation 1/12 b), *Implementation of SIGMET requirements*, which called, *inter alia*, for the relevant planning and implementation regional groups (PIRGs) to conduct periodic tests of the issuance and reception of SIGMET messages, especially those for volcanic ash.

1.2. This document describes the procedures for conducting regional SIGMET tests ~~as described in this document~~. The test procedures encompass all the three types of SIGMET, as follows:

- SIGMET for volcanic ash (WV SIGMET);
- SIGMET for tropical cyclone (WC SIGMET); and
- SIGMET for other weather phenomena (WS SIGMET).

1.3. The requirements for dissemination of SIGMET are specified in Annex 3, Appendix 6, 1.2 and in this guide (page 3-23).

1.4. Tropical cyclone and volcanic ash cloud SIGMETs will be referred to hereafter as **WC** SIGMET (due to the **T₁T₂** section of the WMO AHL being set to **WC**) and **WV** SIGMET (due to the **T₁T₂** section of the WMO AHL being set to **WV**) respectively. All other SIGMET types will be referred to by **WS** (due to the **T₁T₂** section of the WMO AHL being set to **WS**).

2. Purpose and scope of regional SIGMET tests

2.1. The purpose of the regional SIGMET tests is to check the awareness of participating MWOs of the ICAO requirements for the issuance of SIGMET and the compliance of the States' procedures for preparation and dissemination of SIGMET bulletins with the relevant ICAO Standards and Recommended Practices (SARPs) and regional procedures.

2.2. Note: an MWO is at liberty to issue SIGMET test messages for local reasons (i.e. testing of local systems/routing etc.). Whilst such tests may not involve other MWOs or agencies directly, it is recommended that the general principles of this guide be followed with regard to local, ad hoc testing.

2.3. Hereafter, references to 'SIGMET tests' or 'tests' should be understood to refer to regional SIGMET tests.

2.4. The scope of the tests is to check also the interaction (where appropriate, depending on regional requirements) between the tropical cyclone advisory centres (TCAC) and volcanic ash advisory centres (VAAC), and the MWOs in their areas of responsibility. Therefore, where the issuance of **WC** and **WV** SIGMET is being tested, the TEST SIGMET messages initiated by the MWO should normally be triggered by a test advisory issued by the respective TCAC or VAAC.

2.5. The regional OPMET data banks (RODB) will monitor the dissemination by filing all TEST SIGMETs and advisories and the corresponding reception times. The monitoring results for **WC**, **WV** and **WS** SIGMET will be provided in the form of summaries to the SIGMET test focal points given in section 3.4.1.3 with a copy to the Regional Office concerned

2.6. A consolidated summary report will be prepared by both the SIGMET test focal points and submitted to the ICAO regional office concerned. The report will include recommendations for improvement of the SIGMET exchange and availability. The results of the tests should be reported to the appropriate regional OPMET bulletin exchange/data management group and MET Sub-group meetings.

2.7. Participating States, for which discrepancies of the procedures or other findings are identified by the tests, will be advised by the ICAO Regional Office and requested to take necessary corrective action.

3. SIGMET test procedures

3.1. Procedures for WC and WV SIGMET tests

3.1.1. Participating units

3.1.1.1. Tropical Cyclone Advisory Centres (TCAC):

Darwin
Honolulu
Miami
Nadi
New Delhi
Tokyo
Réunion

3.1.1.2. Volcanic Ash Advisory Centres (VAAC):

Anchorage
Darwin
Tokyo
Toulouse
Washington
Wellington

3.1.1.3. Regional OPMET Data Banks (RODB):

Bangkok
Brisbane
Nadi
Singapore
Tokyo

3.1.1.4. Meteorological Watch Offices (MWO):

All MWOs listed in FASID Tables MET 3A and MET 3B of the ASIA/PAC Basic ANP and FASID (Doc 9673), under the responsibility of the corresponding TCACs and VAACs.

Note: The participation of MWOs of States outside ASIA/PAC region, but listed in Doc 9673 (FASID Tables MET 3A and MET 3B) should be coordinated through the ICAO Regional Office concerned.

3.1.2. WV/WC SIGMET test messages

3.1.2.1. On the specified date for the test at 0200 UTC the participating VAAC and TCAC should issue a TEST VA or TC advisory. To accommodate the MID Region in the WC SIGMET Test, TCAC New Delhi will issue a TEST TC advisory at 0800 UTC on the specified date for the test only to MWOs in the MID Region in addition to the 0200 UTC TEST TC advisory issued only to MWOs in the Asia Region. The structure of the TEST advisories should follow the standard format given in Annex 3 with indication that it is a test message as shown on pages C-6 and C-7.

3.1.2.2. MWOs, upon receipt of the TEST VA or TC advisory, should issue a TEST SIGMET for volcanic ash (WV) or tropical cyclone (WC), respectively, and send it to all participating RODBs. The WMO AHL, the first line of the SIGMET, and the FIR reference in the second line of the SIGMET should be valid entries. The remainder of the body of the message should contain only the specified text informing recipients in plain language that the message is a test. TEST SIGMETs should normally have short validity periods (10 minutes), but where appropriate TEST SIGMET may be issued with validity periods up to the maximum allowed (4 hours for WS, 6 hours for WC and WV).

3.1.2.3. If the MWO does not receive the TEST VA or TCA advisory within 30 minutes of the commencement time of the test then they should still issue a TEST SIGMET indicating that the VAA or TCA was not received. See pages C-7 and C-8 for examples of the test SIGMET message.

~~3.1.2.4. To avoid over-writing of a valid SIGMET, a TEST SIGMET for VA or TC should not be sent in the case where there is a valid SIGMET of the same type for the MWO's area of responsibility. However, in this case the responsible MWO should notify the WV/WC SIGMET test focal point as given in 3.4.1.3 so that they can be excluded from the analysis.~~

3.2. Procedures for WS SIGMET tests

Note. — The WS SIGMET is initiated by the MWO at the designated time in 3.2.2. It is not initiated by an advisory as in the WC and WV SIGMET tests.

3.2.1. Participating units

Each Regional Office should develop its own list of participating units, using the template below:

3.2.1.1. **Regional OPMET Data Banks (RODB):**

Bangkok
Brisbane
Nadi
Singapore
Tokyo

3.2.1.2. **Meteorological Watch Offices (MWO):**

All MWOs listed in FASID Table MET 1B of ASIA/PAC Basic ANP and FASID (Doc 9673).

3.2.2. WS SIGMET Test Message

3.2.2.1. The MWOs should issue a TEST SIGMET during the 10-minute period between 0200 UTC and 0210 UTC.

3.2.2.2. The WMO AHL, the first line of the SIGMET, and the FIR reference in the second line of the SIGMET should be valid. The remainder of the body of the message should contain only the specified text informing recipients in plain language that the message is a test. TEST SIGMETs should normally have short validity periods (10 minutes), but where appropriate TEST SIGMET may be issued with validity periods up to the maximum allowed (4 hours for **WS**, 6 hours for **WC** and **WV**).

3.3. Common procedures

3.3.1. Special procedure to avoid overwriting of a valid WV/WC/WS SIGMET

3.3.1.1. It is vital to ensure that TEST SIGMET is unique so that it is not confused with operational SIGMET and avoid overwriting a valid operational SIGMET in an automated system. In order to prevent this it is suggested that:

3.3.1.2. Test SIGMETs will use the next normally available sequence number for test SIGMET messages or the first available sequence number of any pre-defined letter assigned to test SIGMETs for those States identifying SIGMETs using an alphanumerical sequence number (ex: T1 or Z99)

For example, a SIGMET test is scheduled for 0200 UTC on the 29th. The TEST SIGMET is issued as follows:

```
WSAU01 YBRF 290200  
YBBB SIGMET Z99 VALID 290200/290210 YBRF-  
YBBB BRISBANE FIR TEST SIGMET PLEASE DISREGARD=
```

3.3.2. The test date and time

3.3.2.1. ICAO Regional Office will set a date and time for each SIGMET test after consultation with the participating VAACs, TCACs and RODBs. The information about the agreed date and time will be sent to all States concerned by a State letter and copied to the States' SIGMET Tests Focal Points.

3.3.2.2. Tests for different types of SIGMET should preferably be conducted on separate dates.

3.3.2.3. SIGMET tests for **WC**, **WV** and **WS** should be conducted at least yearly.

3.3.3. Dissemination of test SIGMETs and advisories

3.3.3.1. All TEST TC/VA advisories should be sent by the TCACs and VAACs to the participating units, as specified in the Regional Air Navigation Plan. The relevant AFTN addresses should be identified as part of the Region specific documentation.

3.3.3.2. All TEST SIGMETs should be sent by the MWOs to the participating units, as specified in the Regional Air Navigation Plan identified by each Regional Office. The relevant AFTN addresses should be identified as part of the Region specific documentation.

3.3.3.3. RODBs that are nominated as IROGs will relay the test bulletins to their corresponding IROG.

3.3.3.4. SIGMET tests should be terminated within 2 hours of the test start time. Exceptionally, where the test requires SIGMETs to be valid for up to 4 hours, then tests may be extended to a maximum of 4 hours for WS SIGMET and 6 hours for WC and WV SIGMET.

3.3.4. Coordination with the ATS units

3.3.4.1. MWOs should inform the associated ATS units of the forthcoming SIGMET tests by a suitable advanced notice.

3.4. **Processing of the test messages and results**

3.4.1.1. The RODBs should file all incoming TEST advisories and SIGMETs and perform an analysis of the availability, timeliness of arrival and the correctness of the WMO bulletin headings. A SIGMET TEST Summary Table, as shown on pages C-8 and C-9 of this guide, should be prepared by each RODB and sent to the regional SIGMET test focal point given in section 3.4.1.3., with a copy to the ICAO Regional Office.

3.4.1.2. The SIGMET test focal points should prepare the final report of the test and present to the ICAO Regional Office. A summary report should be submitted to the next regional OPMET bulletin exchange/data management group and MET Sub-group meetings.

3.4.1.3. The current SIGMET test focal points for the Asia/Pacific Region are as follows:

Asia/Pacific Region

WS SIGMET summary table sent to:

Ms. CHUA Guat Mui
Chief Technical Officer
Weather Services Department
Meteorological Service Singapore
P.O. Box 8, Singapore Changi Airport Post Office
SINGAPORE 918141
Tel: +65 (3) 6542 2861
Fax: +65 (3) 6542 2915
e-mail: chua_guat_mui@nea.gov.sg

WV/WC SIGMET summary table sent to:

Mr. Yuichi Yamakoshi
Senior Scientific Officer / Administration Division
Forecast Department, Japan Meteorological Agency
1-3-4 Otemachi, Chiyoda-ku
Tokyo 100-8122
JAPAN
Tel: +81 (3) 3212 8341
Fax: +81 (3) 3284 0180
e-mail: y-yamakoshi@met.kishou.go.jp

SIGMET TEST PROCEDURES

Format of TEST Advisories and SIGMETs

1. Format of TEST Volcanic Ash Advisory

VA ADVISORY
DTG: YYYYYMMDD/0200Z
VAAC: <<NAME OF VAAC>>
VOLCANO: TEST
PSN: UNKNOWN
AREA: <<NAME OF VAAC>> VAAC AREA
SUMMIT ELEV: UNKNOWN
ADVISORY NR: YYYY/nn
INFO SOURCE: NIL
AVIATION COLOUR CODE: NIL
ERUPTION DETAILS: NIL
OBS VA DTG: DD/GGggZ
OBS VA CLD: ASH NOT IDENTIFIABLE FROM SATELLITE DATA
FCST VA CLD +6 HR: DD/0800Z SFC/FL600 NO ASH EXP
FCST VA CLD +12 HR: DD/1400Z SFC/FL600 NO ASH EXP
FCST VA CLD +18 HR: DD/2000Z SFC/FL600 NO ASH EXP
RMK: THIS IS A TEST VA ADVISORY. MWO SHOULD NOW ISSUE A TEST
SIGMET FOR VA. PLEASE REFER TO THE LETTER FROM <<REGION>>
REGIONAL OFFICE DATED xxxxxxxxxxxx.
NXT ADVISORY: NO FURTHER ADVISORIES=

2. Format of TEST Tropical Cyclone Advisory

TC ADVISORY
DTG: YYYYYMMDD/0200Z
TCAC: <<NAME OF TCAC>>
TC: TEST
NR: nn (actual number)
PSN: NIL
MOV: NIL
C: NIL
MAX WIND: NIL
FCST PSN +06HR: NIL
FCST MAX WIND +06HR: NIL
FCST PSN +12HR: NIL
FCST MAX WIND +12HR: NIL
FCST PSN +18HR: NIL
FCST MAX WIND +18HR: NIL
FCST PSN +24HR: NIL
FCST MAX WIND +24HR: NIL

RMK: THIS IS A TEST TC ADVISORY. MWO SHOULD NOW ISSUE A TEST SIGMET FOR TC. PLEASE REFER TO THE LETTER FROM <<REGION>> REGIONAL OFFICE DATED xxxxxxxxxxxx.
NXT MSG: NIL=

3. Format of TEST SIGMET for Volcanic Ash

WVXXii CCCC YYGGgg
CCCC SIGMET Z99 VALID YYGGgg/YYGGgg CCCC-
CCCC <<NAME>> FIR THIS IS A TEST SIGMET, PLEASE DISREGARD.
TEST VA ADVISORY NUMBER xx RECEIVED AT YYGGggZ=

or

WVXXii CCCC YYGGgg
CCCC SIGMET Z99 VALID YYGGgg/YYGGgg CCCC-
CCCC <<NAME>> FIR THIS IS A TEST SIGMET, PLEASE DISREGARD.
TEST VA ADVISORY NOT RECIEVED=

Example:

WVJP31 RJTD 170205
RJJJ SIGMET Z99 VALID 170205/170215 RJTD-
RJJJ FUKUOKA FIR THIS IS A TEST SIGMET, PLEASE DISREGARD.
TEST VA ADVISORY NUMBER 1 RECEIVED AT 170200Z=

WVJP31 RJTD 170205
RJJJ SIGMET Z99 VALID 170205/170215 RJTD-
RJJJ FUKUOKA FIR THIS IS A TEST SIGMET, PLEASE DISREGARD.
TEST VA ADVISORY NOT RECEIVED=

4. Format of TEST SIGMET for Tropical Cyclone

WCXXii CCCC YYGGgg
CCCC SIGMET Z99 VALID YYGGgg/YYGGgg CCCC-
CCCC <<NAME>> FIR THIS IS A TEST SIGMET, PLEASE DISREGARD.
TEST TC ADVISORY NUMBER xx RECEIVED AT YYGGggZ=

or

WCXXii CCCC YYGGgg
CCCC SIGMET Z99 VALID YYGGgg/YYGGgg CCCC-
CCCC <<NAME>> FIR THIS IS A TEST SIGMET, PLEASE DISREGARD.
TEST TC ADVISORY NOT RECEIVED=

Example:

WCJP31 RJTD 100205
RJJJ SIGMET Z99 VALID 100205/100215 RJTD-

RJJJ FUKUOKA FIR THIS IS A TEST SIGMET, PLEASE DISREGARD.
 TEST TC ADVISORY NUMBER 1 RECEIVED AT 180200Z=

WCJP31 RJTD 100205
 RJJJ SIGMET Z99 VALID 100205/100215 RJTD-
 RJJJ FUKUOKA FIR THIS IS A TEST SIGMET, PLEASE DISREGARD.
 TEST TC ADVISORY NOT RECEIVED=

5. Format of TEST SIGMET for other weather phenomena

WSXXii CCCC YYGGgg
 CCCC SIGMET Z99 VALID YYGGgg/YYGGgg CCCC-
 CCCC <<NAME>> FIR THIS IS A TEST SIGMET, PLEASE DISREGARD=

Example:

WSJP31 RJTD 240205
 RJJJ SIGMET Z99 VALID 240205/240215 RJTD-
 RJJJ FUKUOKA FIR THIS IS A TEST SIGMET, PLEASE DISREGARD=

CHAPTER 2 — SAMPLE TABLE TO USED BY REGIONAL OPMET DATA BANKS

Name of RODB Tokyo
 Date of Test 2011/11/17
 Target (VA or TC) VA

VA Advisories (FV)

<i>TTAAii</i>	<i>CCCC</i>	<i>YYGGgg</i>	<i>Received Time(UTC)</i>	<i>Comments/Remarks</i>
FVAK23	PAWU	170159	01:59:29	
FVAU01	ADRM	170201	02:01:53	
FVFE01	RJTD	170200	02:00:09	
FVPS01	NZKL	170207	02:08:27	
FVXX02	LFPW	170202	02:02:41	
FVXX25	KNES	170200	02:02:01	

VA SIGMET (WV)

<i>TTAAii</i>	<i>CCCC</i>	<i>YYGGgg</i>	<i>MWO</i>	<i>FIR</i>	<i>Received Time(UTC)</i>	<i>Comments/Remarks</i>
WVAK01	PAWU	170200	PAWU	PAZA	02:00:11	
WVAU01	ADRM	170201	YDRM	YBBB	02:02:04	
WVCI31	RCTP	170205	RCTP	RCAA	02:04:58	
WVCI33	ZBAA	170205	ZBAA	ZBPE	02:05:26	
WVCI34	ZSSS	170205	ZSSS	ZSHA	02:02:34	
WVCI35	ZJHK	170201	ZJHK	ZJSA	02:03:34	
WVCI36	ZUUU	170205	ZUUU	ZPKM	02:11:04	
WVCI37	ZLXY	170205	ZLXY	ZLHW	02:07:44	
WVCI38	ZYTX	170205	ZYTX	ZYSH	02:01:50	
WVCI39	ZWWW	170202	ZWWW	ZWUQ	02:02:40	
WVCI45	ZHHH	170204	ZHHH	ZHWH	02:08:52	

WVFJ01	NFFN	170000	NFFN	NFFF	02:15:46
WVIN31	VOMM	170201	VOMM	VOMF	02:09:57
WVJP31	RJTD	170205	RJTD	RJJJ	02:06:24
WVKP31	ZUUU	170206	ZUUU	VDPP	02:12:23
WVLA31	VLVT	170200	VLVT	VLVT	02:01:03
WVMS31	WMKK	170205	WMKK	WBFC	02:04:28
WVPA01	PHFO	170201	PHFO	KZAK	02:02:09
WVPH31	RPLL	170210	RPLL	RPHI	02:08:43
WVPN01	KKCI	170200	KKCI	KZAK	02:00:11
WVRA31	RUCH	170205	RUCH	UIAA	02:08:01
WVRA31	RUHB	170206	RUHB	UHHH	02:07:57
WVRA31	RUMG	170205	RUMG	UHMM	02:08:59
WVRA31	RUPV	170200	RUPV	UHMP	02:09:13
WVRA31	RUSH	170205	RUSH	UHSS	02:04:22
WVRA31	RUVV	170202	RUVV	UHWW	02:03:13
WVRA32	RUPV	170200	RUPV	UHMA	02:06:01
WVRA32	RUYK	170207	RUYK	UELL	02:07:28
WVRA33	RUHB	170202	RUHB	UHBB	02:02:49
WVSR20	WSSS	170205	WSSS	WSJC	02:05:38
WVSS20	VHHH	170202	VHHH	VHHK	02:03:05
WVTH31	VTBS	170211	VTBS	VTBB	02:13:53
WVVS31	VVGL	170200	VVGL	VVNB	02:05:06
WVVS31	VVGL	170208	VVGL	VVTS	02:14:38

— END —

Changes proposed in the Regional SIGMET Guide template, with respect to the Asia/Pacific Regional SIGMET Guide (4th Edition)

SIGMET Guide 4th Edition (Amd.10)	SIGMET Guide 5th Edition (template)	Brief description of specific changes
1.1.2.	1.1.2.	Added Docs 8400 and 9766 to list of ICAO SIGMET provisions
1.1.4.	-	Deleted redundant references to preparation and updates of the document
1.1.5.	-	Deleted redundant references to preparation and updates of the document
2.1.6.	-	Deleted redundant references to following paragraphs
2.2.3.	-	Deleted redundant references to FASID Table MET 1B and Appendix A to the SIGMET Guide
2.2.7.	2.2.7.	Added a consolidated list of sources for SIGMET related information
-	2.4.3.	Added pilot responsibilities concerning compilation and dissemination of special air-reports
-	2.5.	Added coordination between MWO and ATS to support collaborative decision-making
2.5.3.	2.6.3.	Deleted redundant references to Appendix B and C to the SIGMET Guide
-	2.6.4.	Added information from State volcano observatories / VONA
3.1.7.	-	Deleted redundant reference to METWSG and local instruction on the use of “moderate to severe” in air-reports
3.1.8.	-	Deleted redundant references to CNS/MET SG/14 and APANPIRG/21 concerning the use of “moderate to severe” in air-reports
-	3.2.	Added Table 1 listing the phenomena (abbreviation/description) for which SIGMET shall be issued
-	3.3.	Added Table 2 listing the allowable abbreviations used in the meteorological section of SIGMET
-	3.4.3.	Added reference to more than one instance of a phenomenon in SIGMET
3.4.1.	3.5.1.	Replaced “CCx” with “BBB” in the WMO abbreviated header
3.4.1.4.	3.5.1.4.	Deleted reference to the use of “CCx” in the WMO abbreviated header
3.4.2.2.	3.5.2.2.	Deleted note (2) with redundant reference to special numbering of SIGMET by some States, like Australia Added note (3) to specify the setting for time group GGgg when the SIGMET validity period ends at midnight
3.4.3.1.4.	3.5.3.5.	Added guidance on possible ways to describe the location of the phenomenon in SIGMET Deleted redundant reference to Appendix F of the Guide
-	3.5.3.9.	Added guidance on forecast position of phenomenon at the end of the validity period of SIGMET
3.4.4.6.	3.5.4.9.	Added guidance on the inclusion of multiple instances of volcanic ash
3.4.5.8.	3.5.5.9.	Added guidance on the inclusion of multiple instances of Tropical Cyclone
-	3.5.7.	Added guidance on amendment of SIGMET

-	Appendix A	Added SIGMET guidance Table A-1: simplified from Annex 3 Table A6-1
Appendix A	-	Deleted copy of FASID Table MET 1B
Appendix B	-	Deleted copy of FASID Table MET 3A
Appendix C	-	Deleted copy of FASID Table MET 3B
Appendix D	-	Deleted list of abbreviations and codes (replaced by Table 2, paragraph 3.3. in 5th Edition)
Appendix E	-	Deleted list of phenomena to be reported by SIGMET (replaced by Table 1, paragraph 3.2. in 5th Edition)
Appendix F	-	Deleted guidance for reporting geographical coordinates in SIGMET (replaced by paragraph 3.5.3.5. in 5th Edition)
Appendix G	Appendix B	Revised examples including figures to clarify the intent of the SIGMET message in abbreviated plain language (note: examples of the use of various SIGMET code elements are provided Table A-1, Appendix A in 5 th Edition)
Appendix H	-	Deleted table of WMO headings for SIGMET bulletins
Appendix I	-	Deleted table of WMO headings for TC and VA Advisory bulletins
Appendix J 1.2.	Appendix C -	Deleted redundant reference to APANPIRG Conclusion 15/42 concerning conducting SIGMET tests in APAC
Appendix J 2.3.	Appendix C 2.5.	Deleted redundant reference to specific Regional Office (Bangkok)
Appendix J 2.4.	Appendix C 2.6.	Deleted redundant reference to specific Regional meetings (ROBEX WG, MET/H TF and MET SG)
Appendix J 3.1.1.5.	Appendix C -	Deleted reference to WAFCS
Appendix J 3.1.2.3.	Appendix C 3.1.2.2.	Added reference to extended validity period of TEST SIGMET
Appendix J 3.3.3.1.	Appendix C 3.3.3.1.	Added reference to Region specific documentation for AFTN addresses Deleted reference to FASID Tables MET 3A and 3B and the list of RODBs and WAFCS
Appendix J 3.3.3.2.	Appendix C 3.3.3.2.	Added reference to Region specific documentation for AFTN addresses Deleted the list of RODBs and WAFCS
Appendix J 3.3.3.4.	Appendix C 3.3.3.4.	Added reference to extended validity period of TEST SIGMET
Appendix K	-	Deleted VAAC back-up procedures
Appendix L	-	Deleted VAAC back-up test procedures