INTERNATIONAL CIVIL AVIATION ORGANIZATION

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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 which may affect safety of aircraft operations, 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), Chapter 6, 6.13.2;
- *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.

1.1.4. To support regional management of SIGMET issuance and dissemination, Appendix C of the regional SIGMET guide contains guidance on the purpose, scope and procedures for conducting regional SIGMET tests.

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2. RESPONSIBILITIES AND COORDINATION

2.1. General

2.1.1. SIGMET messages provide information on hazardous meteorological phenomena which may affect safety of aircraft operations; 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, including a simplified version of Table A6-1 in Appendix A, 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 shall:

a) issue SIGMET information based on the special air-report; or

b) send the special air-report for onward transmission to MWOs, WAFCs, and other meteorological offices in accordance with regional air navigation agreement 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. Guidance including responsibilities for the issuance of the VONA is given in the *Handbook on the International Airways Volcano Watch (IAVW) – Operational Procedures and Contact List* (Doc 9766). The format of the VONA is given in Appendix E of Doc 9766.

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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

SIGMET shall only be issued for the phenomena listed in

3.2.1. 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 by the pilot in command.
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 cumulonimbus clouds (CB).
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 and

Phenomena Abbreviation	Description
	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 cumulonimbus clouds (CB).
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: • low-level turbulence associated with strong surface winds; • rotor streaming; or • clear air turbulence, whether in cloud or not in cloud. *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.*
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

Abbreviations that can be used in the meteorological section of SIGMET include are given in given in

Table 1 above and in

3.3.1. Table 2 below.

Abbreviation	Meaning
ABV	Above
APRX	Approximate or approximately
AT	At (followed by time)
BLW	Below
BTN	Between
CB	Cumulonimbus cloud
CLD	Cloud
CNL	Cancel or cancelled
E	East or eastern longitude
ENE	East-north-east
ESE	East-south-east
EXP	Expect or expected or expecting

Abbreviation	Meaning
NE	North-east
NNE	North-north-east
NNW	North-north-west
NM	Nautical miles
NO	No
NW	North-west
OBS	Observe or observed or observation
PSN	Position
S	South or southern latitude
SE	South-east
SFC	Surface
SSE	South-south-east

Abbreviation	Meaning
FCST	Forecast
FIR	Flight information region
FL	Flight level
FT	Feet
INTSF	Intensify or intensifying
KM	Kilometres
KT	Knots
LCA	Location
M	Metres
MOV	Move or moving or movement
MT	Mountain
N	North or northern latitude
NC	No change

Abbreviation	Meaning
SSW	South-south-west
STNR	Stationary
SW	South-west
TO	To
TOP	Cumulonimbus cloud top (height)
W	West or western longitude
WI	Within (area)
WID	Width or wide
WKN	Weaken or weakening
WNW	West-north-west
WSW	West-south-west
Z	Coordinated Universal Time

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

$T_1T_2A_1A_2$ii CCCC YYGGgg [BBB]

3.5.1.1. The group **$T_1T_2A_1A_2$ii** is the bulletin identification (WMO AHL) for the SIGMET message. It is constructed in the following way:

T_1T_2	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
A_1A_2	Country or territory designators	Assigned according to Table C1, Part II of *Manual on the Global Telecommunication System*, Volume I – *Global Aspects* (WMO Publication No. 386)
ii	Bulletin number	Assigned on national level according to p 2.3.2.2, Part II of *Manual on the Global Telecommunication System*, Volume I – *Global Aspects* (WMO Publication No. 386)

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

Note .1 — Tropical cyclone and volcanic ash cloud SIGMETs will be referred to hereafter as WC SIGMET (due to the T_1T_2 section of the WMO AHL being set to WC) and WV SIGMET (due to the T_1T_2 section of the WMO AHL being set to WV) respectively. All other SIGMET types will be referred to by WS (due to the T_1T_2 section of the WMO AHL being set to WS).

Note 2. — WMO AHLs for SIGMET bulletins used by ASIA/PAC MWOs are listed in Appendix D to this SIGMET Guide.

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).

3.5.1.4. The group BBB should be used only when issuing a correction to a SIGMET which had already been transmitted. The BBB indicator shall have the following form:

CCx for corrections to previously relayed bulletins, where x takes the value A for the first correction, B for the second correction, etc.

Examples:

WSTH31 VTBS 121200
WVJP31 RJTD 010230
WCNG21 AYPY 100600 CCA

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:

```
RPMM 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.

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:
  - the beginning of validity period should be the time of the expected commencement (occurrence) of the phenomenon in the MWO area of responsibility;
  - 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 (M)	Description of the phenomenon (M)	Observed or forecast (M)	Location (C)	Level (C)	Movement or expected movement (C)	Changes in intensity (C)	Forecast position (C)
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

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

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.

Example:

```
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 validity**.**

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 coordinates[1], and not normally more than 7 coordinates. This is the format preferred operationally by users.

   Symbolically, this is indicated as:

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

```
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.*

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

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

[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.

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 AND 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]>
```

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

nnnn/nnnnFT

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: **FL250/290**

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

or

MOV <direction> <speed>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. — Movement information should not be provided when a forecast position is explicitly given.

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 1. — Annex 3 (18th Edition, July 2013) enables SIGMET to contain explicit forecast position information for the end of the validity period for all SIGMET-related 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 2. — Refer to section 3.5.3.5. for examples.

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

Note 3. — 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. If levels differ significantly then separate SIGMET should be issued.

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 Table 6 below.

1	2	3	4	5	6	7	8
Name of the FIR/UIR or CTA (M)	Name and location of the volcano and/or indicator for VA cloud (M)	Time of observation or forecast (M)	Location (C)	Level and extent of the volcanic ash cloud (C)	Movement or expected movement (C)	Changes in intensity (C)	Forecast position (C)
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

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

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 coordinates[3], and not normally more than 7 coordinates. This is the format preferred operationally by users.

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

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.

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

nnnn/nnnnFT

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:

FL250/290

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.

The SIGMET should be based on the VAA unless additional information is available. This additional information must be forwarded to the responsible VAAC without delay.

3.5.4.7. Movement or expected movement of the VA cloud

MOV <direction> <speed>KMH

or

MOV <direction> <speed>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. — Movement information should not be provided when a forecast position is explicitly given.

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 forecast position of the volcanic ash cloud at the end of the validity period of the SIGMET message should not be used in conjunction with the movement or expected movement of the volcanic ash cloud. 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.

Refer to graphical examples in Appendix B.

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.

3.5.4.10. 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 (M)	Name of the tropical cyclone (M)	Time of observation or forecast (M)	Location of the TC centre (C)	Vertical and horizontal extent of the CB cloud formation around TC centre (C)	Movement or expected movement (C)	Changes in intensity (C)	Forecast position (C)
See 3.5.5.2	See 3.5.5.3	See 3.5.5.4	See 3.5.5.55	See 3.5.5.6	See 3.5.5.7	See 3.5.5.8	See 3.5.5.9

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

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

The SIGMET should be based on the TCA unless additional information is available. This additional information must be forwarded to the responsible TCAC without delay.

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

or

MOV <direction> <speed>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

Note. — Movement information should not be provided when a forecast position is explicitly given.

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 forecast position of a tropical cyclone centre at the end of the validity period of the SIGMET message should not be used in conjunction with the movement or expected movement of the tropical cyclone.

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 202155/210100 YPDM-
YBBB BRISBANE FIR CNL SIGMET E01 202000/210100 VA MOV TO WXYX
FIR=
```

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

3.5.7. Amendment of SIGMET

3.5.7.1. A SIGMET should be amended if: (a) changes in the weather phenomenon concerned result in the SIGMET no longer accurately describing the current or forecast location, level, movement or intensity of the phenomenon; or (b) the SIGMET was issued with inaccurate information related to the phenomenon (e.g. inaccurate FL). To do this, a new SIGMET with more accurate information should be issued followed immediately by a cancellation of the original, inaccurate SIGMET.

3.5.7.2. 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. In order to prevent unwanted suppression or overwriting of SIGMET messages, the WMO AHL must always be unique. This may mean issuing SIGMET bulletins with at least 1 minute difference in the issue time.

Examples:

Case (a)

Original SIGMET, which contains information that is no longer accurate (bold text identifies information that has become inaccurate by 2155Z):

```
WSAU21 ADRM 201855
YBBB SIGMET E01 VALID 201900/202300 YPDM-
YBBB BRISBANE FIR SEV TURB FCST WI S1530 E13700 - S1900 E13730
- S2000 E13130 - S1600 E13500 - S1530 E13700 SFC/FL120 MOV SE
12KT WKN=
```

New SIGMET, which contains more accurate information (bold text identifies information that has been amended):

```
WSAU21 ADRM 202155
YBBB SIGMET E02 VALID 202200/202300 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; note the unique WMO AHL):

```
WSAU21 ADRM 202156
YBBB SIGMET E03 VALID 202156/202300 YPDM-
YBBB BRISBANE FIR CNL SIGMET E01 201900/202300=
```

Case (b)

Original SIGMET, which was issued containing inaccurate information (bold text identifies information that is inaccurate):

```
WSAU21 ADRM 201855
YBBB SIGMET E04 VALID 202000/202300 YPDM-
YBBB BRISBANE FIR SEV TURB FCST WI S1530 E13700 - S2000 E13750
- S2045 E13245 - S1600 E13500 - S1530 E13700 SFC/FL020 MOV SE
12KT WKN=
```

New SIGMET, which contains accurate information (bold text identifies information that has been amended):

```
WSAU21 ADRM 201900
YBBB SIGMET E05 VALID 202000/202300 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; note the unique WMO AHL):

```
WSAU21 ADRM 201905
YBBB SIGMET E06 VALID 202000/202300 YPDM-
YBBB BRISBANE FIR CNL SIGMET E04 202000/202300=
```

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 ACCs[4] 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.

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[4] 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: ADAPTED FROM ANNEX 3, TABLE A6-1

Note. — The table below seeks to provide more targeted 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 A6-1and provides more specific guidance on expansion of the symbolic structure of SIGMET messages. It should be noted that Annex 3, Appendix 6, Table A6-1 remains the authoritative reference.

Table A-1: Template for SIGMET (adapted from Annex 3, Appendix 6, Table A6-1)

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.
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]
Identification	Message identification and sequence number (M)[3]	n nn nnn	SIGMET 5 SIGMET A3 SIGMET B10
Validity period	Day-time groups indicating the period of validity in UTC (M)	VALID nnnnnn/nnnnnn	VALID 221215/221600 VALID 101520/101800 VALID 252100/260100 VALID 122000/130200 (6 hour validity applicable to TC or VA only)
Location indicator of MWO (M)	Location indicator of MWO originating the message with a separating hyphen (M)	nnnn-	YUDO-[2] YUSO-[2]
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[2] FIR YUDD SHANLON[2] FIR/UIR YUCC AMSWELL[2] CTA
Phenomenon (M)[0]	Description of phenomenon causing the issuance of SIGMET (C)	OBSC[5] TS OBSC[5] TSGR[6] EMBD[7] TS EMBD[7] TSGR[6] FRQ[8] TS FRQ[8] TSGR[6] SQL[9] TS SQL[9] TSGR[6] TC nnnnnnnnnn TC NN[10]	OBSC TS OBSC TSGR EMBD TS EMBD TSGR FRQ TS FRQ TSGR SQL TS SQL TSGR TC GLORIA[2] TC NN

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.
		SEV TURB[11] SEV ICE[12] SEV ICE (FZRA)[12] SEV MTW[13] HVY DS HVY SS VA ERUPTION PSN Nnn[nn] *or* Snn[nn] Ennn[nn] *or* Wnnn[nn] VA CLD VA ERUPTION MT nnnnnnnnnn PSN Nnn[nn] *or* Snn[nn] Ennn[nn] *or* Wnnn[nn] VA CLD VA CLD RDOACT CLD	SEV TURB SEV ICE SEV ICE (FZRA) SEV MTW HVY DS HVY SS VA ERUPTION PSN N27 W017 VA CLD VA ERUPTION PSN S1200 E01730 VA CLD VA ERUPTION MT ASHVAL[2] PSN S15 E073 VA CLD VA ERUPTION MT VALASH[2] PSN N2030 E02015 VA CLD VA CLD RDOACT CLD
Observed or forecast phenomenon (M)	Indication whether the information is observed and expected to continue, *or* forecast (M)	OBS OBS AT nnnnZ FCST FCST AT nnnnZ	OBS OBS AT 1210Z FCST FCST AT 1815Z
Location (C)[14]	Location (referring to latitude and longitude (in degrees and minutes))	1) In 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. WI[20] Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn][- Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]] *or* 2) In a sector of the FIR a) 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). [N][NE][E][SE][S][SW][W][NW] OF [LINE] Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn]	WI N6030 E02550 – N6055 E02500 – N6050 E02630 - N6030 E02550 WI N30 W067 – N32 W070 – N35 W068 - N30 W067 NE OF LINE N2515 W08700 – N2000 W08330 S OF LINE S14 E150 – S14 E155

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.
		Wnnn[nn] *or* Ennn[nn] *or* b) Defined relative to a line of latitude and a line of longitude (effectively a quadrant). N OF Nnn[nn] AND W OF Wnnn[nn] *or* N OF Nnn[nn] AND E OF Wnnn[nn] *or* S OF Nnn[nn] AND W OF Wnnn[nn] *or* S OF Nnn[nn] AND E OF Wnnn[nn] *or* N OF Nnn[nn] AND W OF Ennn[nn] *or* N OF Nnn[nn] AND E OF Ennn[nn] *or* S OF Nnn[nn] AND W OF Ennn[nn] *or* S OF Nnn[nn] AND E OF Ennn[nn] *or* N OF Snn[nn] AND W OF Wnnn[nn] *or* N OF Snn[nn] AND E OF Wnnn[nn] *or* S OF Snn[nn] AND W OF Wnnn[nn] *or* S OF Snn[nn] AND E OF Wnnn[nn] *or* N OF Snn[nn] AND W OF Ennn[nn] *or* N OF Snn[nn] AND E OF Ennn[nn] *or* S OF Snn[nn] AND W OF Ennn[nn] *or* S OF Snn[nn] AND E OF Ennn[nn] *or* *or* c) Defined relative to a line of latitude or longitude (effectively a segment). N OF Nnn[nn] *or* S OF Nnn[nn] *or* N OF Snn[nn] *or* S OF Snn[nn] *or* W OF Wnnn[nn] *or* E OF Wnnn[nn] *or* W OF Ennn[nn] *or* E OF Ennn[nn] *or* 3) <u>At a specific point within the FIR</u> Nnn[nn] Wnnn[nn] *or* Nnn[nn] Ennn[nn] *or* Snn[nn] Wnnn[nn] *or* Snn[nn] Ennn[nn]	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 N OF S2230 S OF S43 E OF E01700 E OF W005 N5530 W02230 S12 E177 ENTIRE FIR ENTIRE CTA

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.
		or 4) In the whole FIR/CTA ENTIRE FIR[17] ENTIRE CTA[17]	
Level (C)[14]	Flight level or altitude and extent (C)[15]	1) Generic vertical extent descriptors Used with location descriptors (above) FLnnn SFC/FLnnn SFC/nnnnM SFC/nnnnFT FLnnn/nnn TOP FLnnn ABV FLnnn TOP ABV FLnnn *or*[16] 2) CB top vertical extent descriptors Used with CB related to tropical cyclone ONLY CB TOP FLnnn WI nnn{KM/NM} OF CENTRE CB TOP ABV FLnnn WI nnn{KM/NM} OF CENTRE CB TOP BLW FLnnn WI nnn{KM/NM} OF CENTRE *or*[17] 3) Volcanic ash vertical extent descriptors Used for volcanic ash within a zone defined by a line of specified width FLnnn/nnn nnKM WID LINE[18] BTN Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn][- Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]] *or* FLnnn/nnn nnNM WID LINE[18] 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]]	 FL180 SFC/FL070 SFC/9000FT FL050/080 FL310/450 TOP FL390 ABV FL280 TOP ABV FL100 CB TOP FL500 WI 270KM OF CENTRE CB TOP FL500 WI 150NM OF CENTRE CB TOP ABV FL450 WI 250KM OF CENTRE CB TOP BLW FL530 WI 150NM OF CENTRE FL310/450 100KM WID LIN BTN S4330 E02200 – N4315 E02230 – N4230 E02300 – N4145 E02230 – N4130 E02145 FL310/450 60NM WID LIN BTN S4330 E02200 – N4315 E02230 – N4230 E02300 – N4145 E02230 – N4130 E02145
Movement *or* expected movement	Movement *or* expected movement (direction and	MOV N *or* NNE *or* NE *or* ENE *or* E *or* ESE *or* SE *or* SSE *or* S *or* SSW *or* SW *or* WSW *or* W *or* WNW *or* NW *or* NNW [nnKMH *or*	MOV E 40KMH MOV E 20KT

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)[14]	speed) with reference to one of the sixteen points of compass, *or* stationary (C)	nnKT] *or* STNR	MOV SE STNR
Changes in intensity (C)[14]	Expected changes in intensity (C)	INTSF *or* WKN *or* NC	INTSF WKN NC
Forecast position (C)[17, 22]	Forecast position of volcanic ash cloud *or* the centre of the TC *or* other hazardous phenomena at the end of the validity period of the SIGMET message (C)	1) Tropical cyclone: FCST nnnnZ TC CENTRE Nnnnn or Snnnn Ennnnn or Wnnnnn FCST nnnnZ TC CENTRE Nnn or Snn Ennn or Wnnn [AND][19] *or* 2) Volcanic ash: a) 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. 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]] *or* b) A zone defining an ash cloud. Defined by a line of specified width. FCST nnnnZ VA CLD APRX nnKM (nnNM) WID LINE[18] BTN Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] [– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] [– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] [AND][19] *or* c) Volcanic ash affecting entire FIR or CTA FCST nnnnZ ENTIRE FIR[17]	FCST 2200Z TC CENTRE N2740 W07345 FCST 1600Z TC CENTRE S15 W110 FCST 1700Z VA CLD APRX S15 E075 – S15 E081 – S17 E083 – S18 E079 – S15 E075 FCST 1700Z VA CLD APRX 180KM WID LINE BTN S15 E075 – S15 E081 – S17 E083 – S18 E079 FCST 1700Z VA CLD APRX 90NM WID LINE BTN S15 E075 – S15 E081 – S17 E083 – S18 E079 FCST 1400Z ENTIRE FIR~~21~~

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.
		or FCST nnnnZ ENTIRE CTA[17] *or* 3 Phenomena other than TC or VA: a) 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. FCST nnnnZ WI[20] Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn][– Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]] *or* b) 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). FCST nnnnZ [N][NE][E][SE][S][SW][W][NW] OF [LINE] Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] *or* c) A sector of the FIR defined relative to a line of latitude and a line of longitude (effectively a quadrant). FCST nnnnZ N OF Nnn[nn] AND W OF Wnnn[nn] *or* FCST nnnnZ N OF Nnn[nn] AND E OF Wnnn[nn] *or* FCST nnnnZ S OF Nnn[nn] AND W OF Wnnn[nn] *or* FCST nnnnZ S OF Nnn[nn] AND E OF Wnnn[nn] *or* FCST nnnnZ N OF Nnn[nn] AND W OF Ennn[nn] *or* FCST nnnnZ N OF Nnn[nn] AND E OF Ennn[nn] *or* FCST nnnnZ S OF Nnn[nn] AND W OF Ennn[nn] *or* FCST nnnnZ S OF Nnn[nn] AND E OF Ennn[nn] *or* *or*	FCST 0300Z ENTIRE CTA[21] FCST 1600Z WI N6030 E02550 – N6055 E02500 – N6050 E02630 – N6030 E02550 FCST 0800Z WI N30 W067 – N32 W070 – N35 W068 – N30 W067 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 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

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.
		d) A sector of the FIR defined relative to a line of latitude or longitude (effectively a segment). FCST nnnnZ N OF Nnn[nn] *or* FCST nnnnZ S OF Nnn[nn] *or* FCST nnnnZ N OF Snn[nn] *or* FCST nnnnZ S OF Snn[nn] *or* FCST nnnnZ W OF Wnnn[nn] *or* FCST nnnnZ E OF Wnnn[nn] *or* FCST nnnnZ W OF Ennn[nn] *or* FCST nnnnZ E OF Ennn[nn] *or* e) A point: FCST nnnnZ Nnn[nn] Wnnn[nn] or FCST nnnnZ Nnn[nn] Ennn[nn] or FCST nnnnZ Snn[nn] Wnnn[nn] or FCST nnnnZ Snn[nn] Ennn[nn]	FCST 1600Z N OF S2230 FCST 1130Z S OF S43 FCST 0800Z E OF E01700 FCST 1200Z E OF W005 FCST 0800Z N5530 W02230 FCST 1500Z S12 E177
Cancellation of SIGMET (C)[21]	Cancellation of SIGMET referring to its identification	CNL SIGMET n nnnnnn/nnnnnn CNL SIGMET nn nnnnnn/nnnnnn CNL SIGMET nnn nnnnnn/nnnnnn *or* CNL SIGMET n nnnnnn/nnnnnn VA MOV TO nnnn FIR[17] CNL SIGMET nn nnnnnn/nnnnnn VA MOV TO nnnn FIR[17] CNL SIGMET nnn 251030/251430 VA MOV TO YUDO FIR[17]	CNL SIGMET 2 102100/110100[21] CNL SIGMET 12 101200/101600[21] CNL SIGMET A12 031600/032000[21] CNL SIGMET 3 251030/251630 VA MOV TO YUDO FIR[21] CNL SIGMET 06 191200/191800 VA MOV TO YUDO FIR[21] CNL SIGMET B10 030600/031200 VA MOV TO YUDO FIR[21]

Footnotes to table:

1. See Annex 3, Appendix 6, 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. Fictitious location/name.
3. In accordance with Annex 3, Appendix 6, 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. In accordance with Annex 3, Appendix 6, 1.1.4: "…only one of the listed phenomena shall be included in a SIGMET message, using the abbreviations as indicated."
5. In accordance with Annex 3, Appendix 6, 4.2.1: "**Recommendation. —** *An area of thunderstorms should be considered a) obscured (OBSC) if it is obscured by haze or smoke or cannot be readily seen due to darkness*."
6. In accordance with Annex 3, Appendix 6, 4.2.4: "**Recommendation. —** *Hail (GR) should be used as a further description of the thunderstorm, as necessary.*"
7. In accordance with Annex 3, Appendix 6, 4.2.1 b): "**Recommendation. —** *An area of thunderstorms should be considered b) embedded (EMBD) if it is embedded within cloud layers and cannot be readily recognized.*"
8. In accordance with Annex 3, Appendix 6, 4.2.2: "**Recommendation. —** *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).*"
9. In accordance with Annex 3, Appendix 6, 4.2.3: "**Recommendation. —** *Squall line (SQL) should indicate a thunderstorm along a line with little or no space between individual clouds.*"
10. Used for unnamed tropical cyclones.
11. In accordance with Annex 3, Appendix 6, 4.2.5 and 4.2.6: "**Recommendation. —** *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."
12. In accordance with Annex 3, Appendix 6, 4.2.7: "**Recommendation. —** S*evere icing (ICE) should refer to icing in other than convective clouds. Freezing rain (FZRA) should refer to severe icing conditions caused by freezing rain.*"

13. In accordance with Annex 3, Appendix 6, 4.2.8a): "**Recommendation. —** 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*."
14. In the case of the same phenomenon covering more than one area within the FIR, these elements can be repeated, as necessary.
15. Only for SIGMET messages for volcanic ash cloud and tropical cyclones.
16. Only for SIGMET messages for tropical cyclones.
17. Only for SIGMET messages for volcanic ash.
18. 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.
19. To be used for two volcanic ash clouds or two centres of tropical cyclones simultaneously affecting the FIR concerned.
20. The number of coordinates should be kept to a minimum and should not normally exceed seven.
21. End of the message (as the SIGMET message is being cancelled).
22. The levels of the phenomena remain fixed throughout the forecast period.

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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 <u>not</u> intended to give guidance on how a SIGMET in graphical format should be produced.

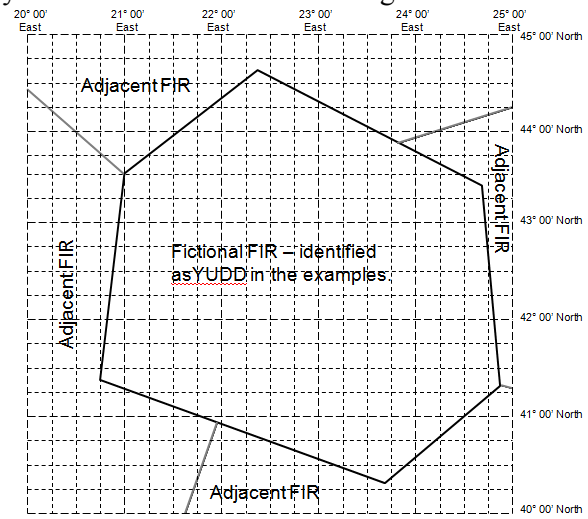
Examples of '**WS**' SIGMET. See the sections for SIGMET for volcanic ash only (WV) and SIGMET for tropical cyclone only (WC) for examples specific to those phenomena.

Contents

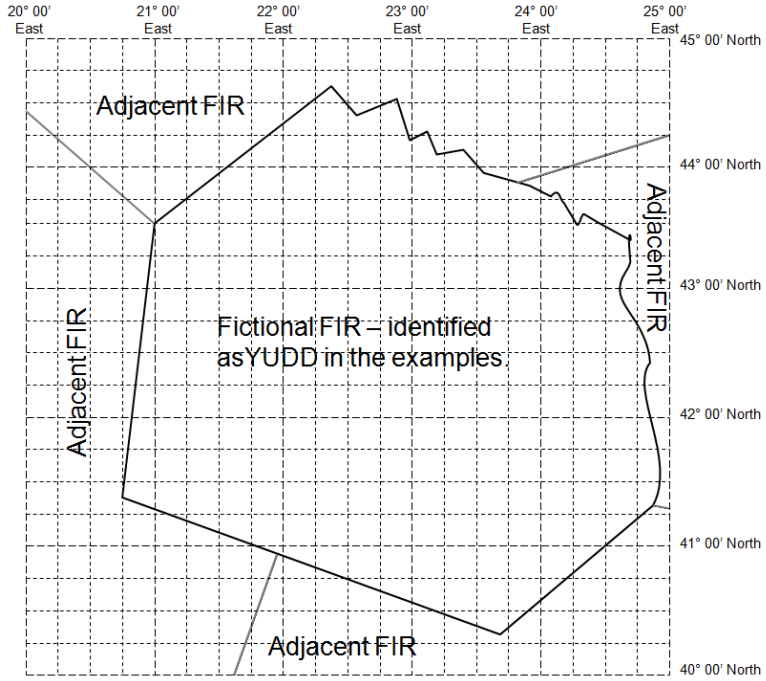
General

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.

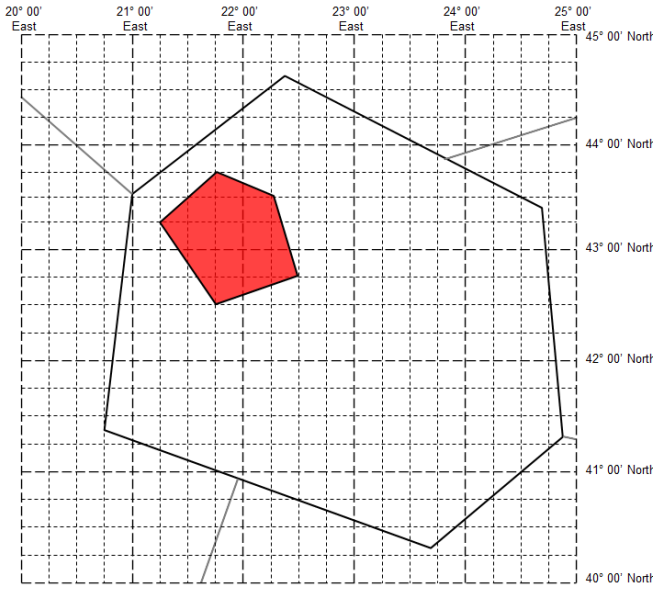
> In accordance with practices and procedures laid down for other aeronautical bulletins (i.e. NOTAM), it is recommended that the last point of a polygon is a repeat of the first point of the polygon. This will ensure that the polygon has been closed, and that no points have been omitted.

'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.

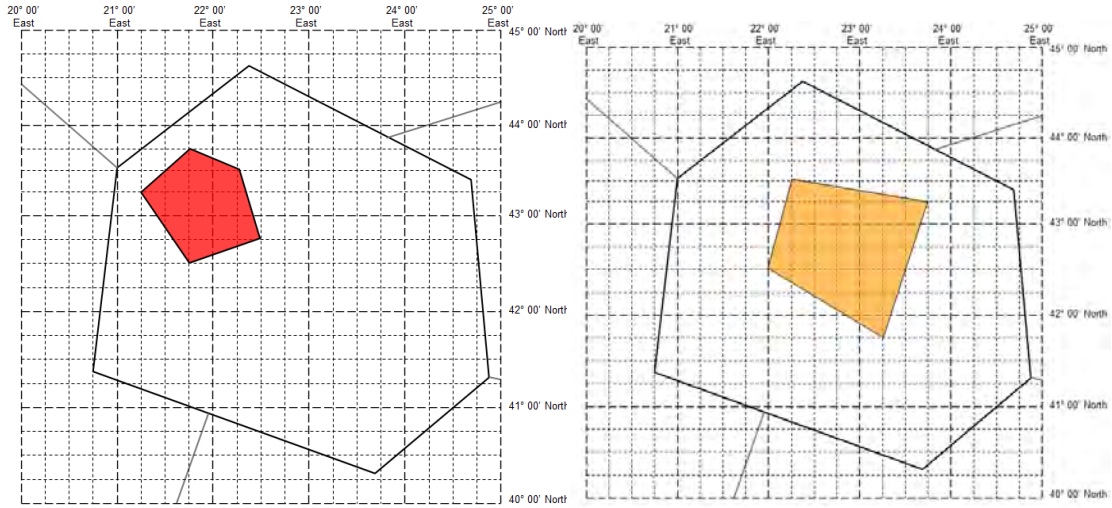
1) An area of the FIR defined by a polygon. The end point should be a repeat of the start point.

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



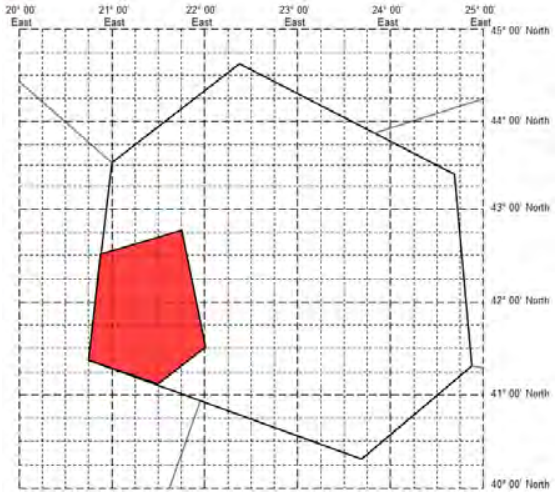

```
YUDD SIGMET 2 VALID 101200/101600 YUSO -
YUDD SHANLON FIR/UIR SEV TURB FCST WI N4230 E02145 - N4315 E02115 -
N4345 E02145 - N4330 E02215 - N4245 E02230 - N4230 E02145 FL250/370
MOV ESE 20KT INTSF=
```

With an explicit forecast position:



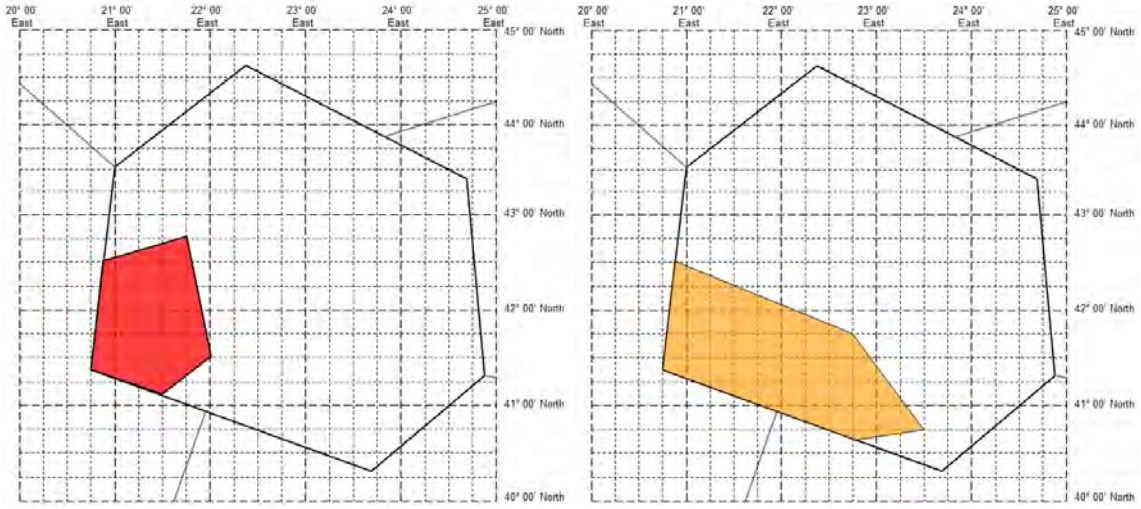

```
YUDD SIGMET 2 VALID 101200/101600 YUSO -
YUDD SHANLON FIR/UIR SEV TURB FCST AT 1200Z WI N4230 E02145 - N4315
E02115 - N4345 E02145 - N4330 E02215 - N4245 E02230 - N4230 E02145
FL250/370 INTSF FCST 1600Z WI N4145 E02315 - N4230 E02200 - N4330
E02215 - N4315 E02345 - N4145 E02315=
```

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 AT 1200Z WI N4230 E02052 – N4245 E02145 – N4130 E02200 – N4107 E02130 – N4123 E02045- N4230 E02052 FL250/370 WKN FCST 1600Z WI N4230 E02052 – N4145 E02245 – N4045 E02330 – N4040 E02248 – N4123 E02045- N4230 E02052=

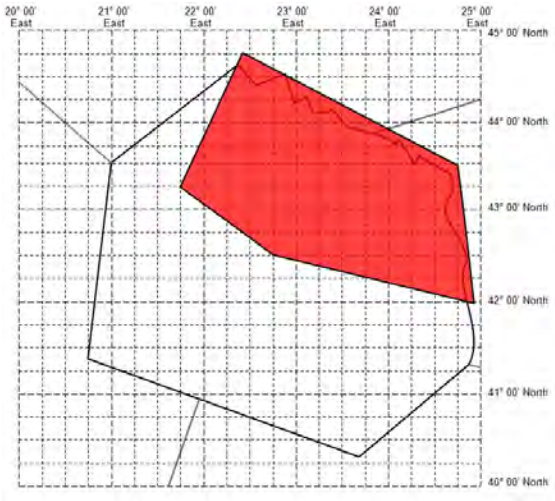
Use of polygons with complex FIR boundaries.

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.

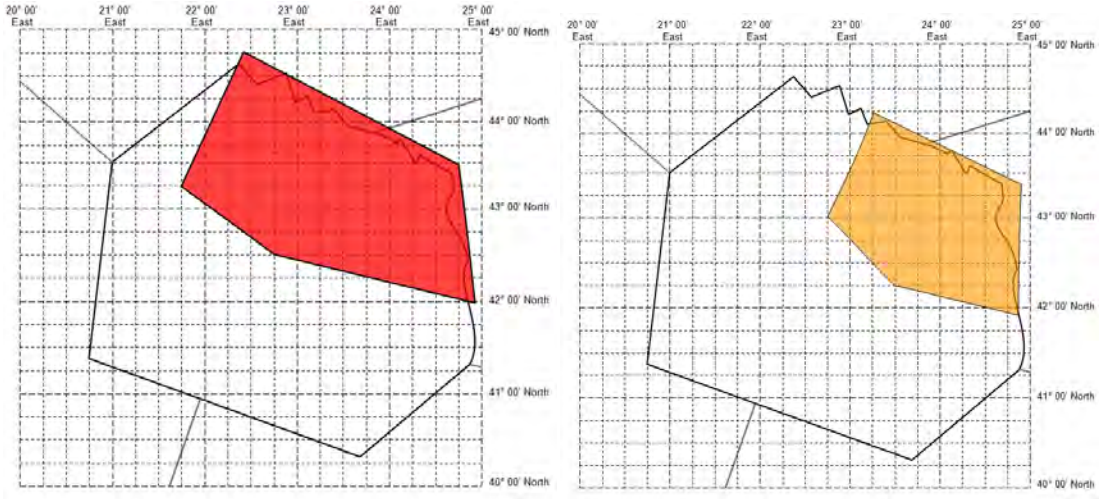
In the examples below, it would not be practical to follow the NE boundaries exactly. The point close to N4330 E02445 is obviously a 'major' turning point along the FIR boundary, but the other, numerous and complex turning points can only be approximated when constrained to seven points.

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 E02225 –
N4330 E02445 – N4200 E02455 – N4230 E02245- N4315 E02145 FL250/370
MOV SE 20KT WKN=
```

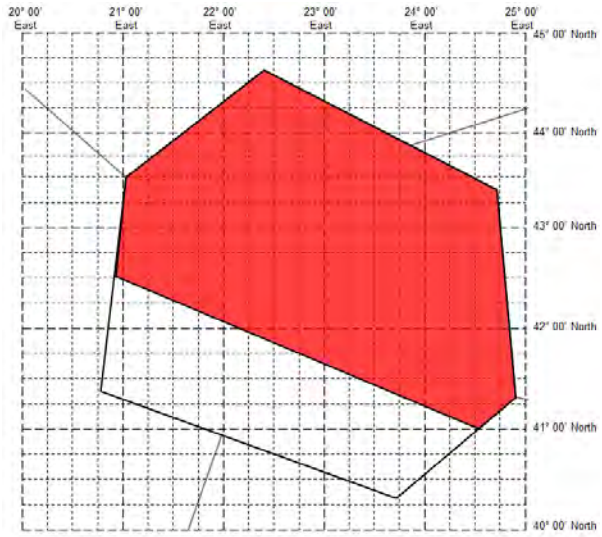
With an explicit forecast position:




```
YUDD SIGMET 2 VALID 101200/101600 YUSO –
YUDD SHANLON FIR/UIR SEV TURB FCST AT 1200Z WI N4315 E02145 – N4445
E02245 – N4330 E02445 – N4200 E02455 – N4230 E02245- N4315 E02145
FL250/370 WKN FCST 1600Z WI N4300 E02245 – N4415 E02315 – N4322
E02452 – N4155 E02445 – N4215 E02330- N4300 E02245=
```

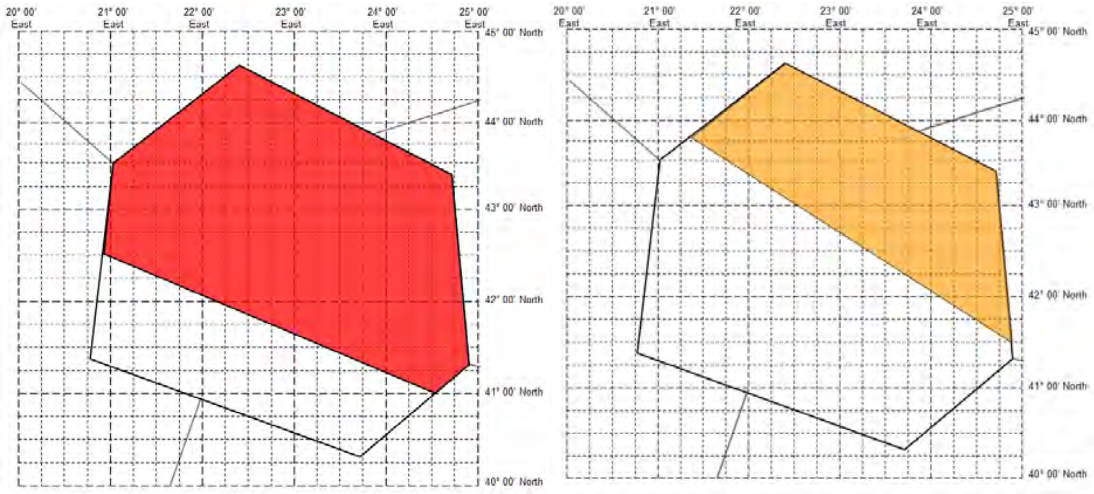
2a) In a sector of the FIR defined relative to specified line joining two points on the FIR boundary.

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:

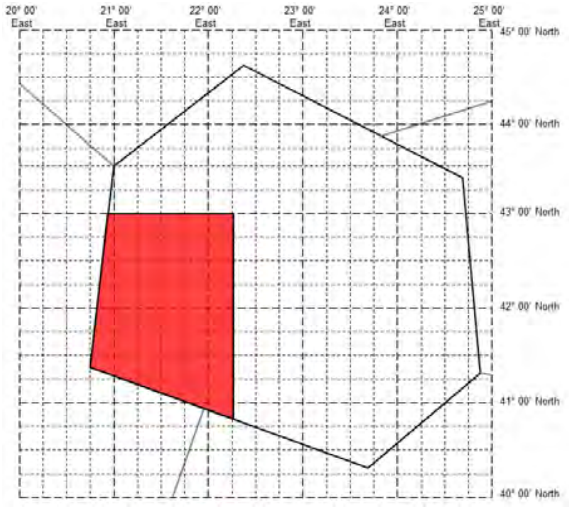


YUDD SIGMET 2 VALID 101200/101600 YUSO –
YUDD SHANLON FIR/UIR SEV TURB FCST AT 1200Z NE OF LINE N4230 E02052 – N4100 E02430 FL250/370 WKN FCST 1600Z NE OF LINE N4346 E02122 – N4130 E02452=

YUDD SIGMET 2 VALID 101200/101600 YUSO –
YUDD SHANLON FIR/UIR SEV TURB FCST AT 1200Z NE OF LINE N4230 E02052 – N4100 E02430 FL250/370 WKN FCST 1600Z NE OF LINE N4346 E02122 – N4130 E02457=

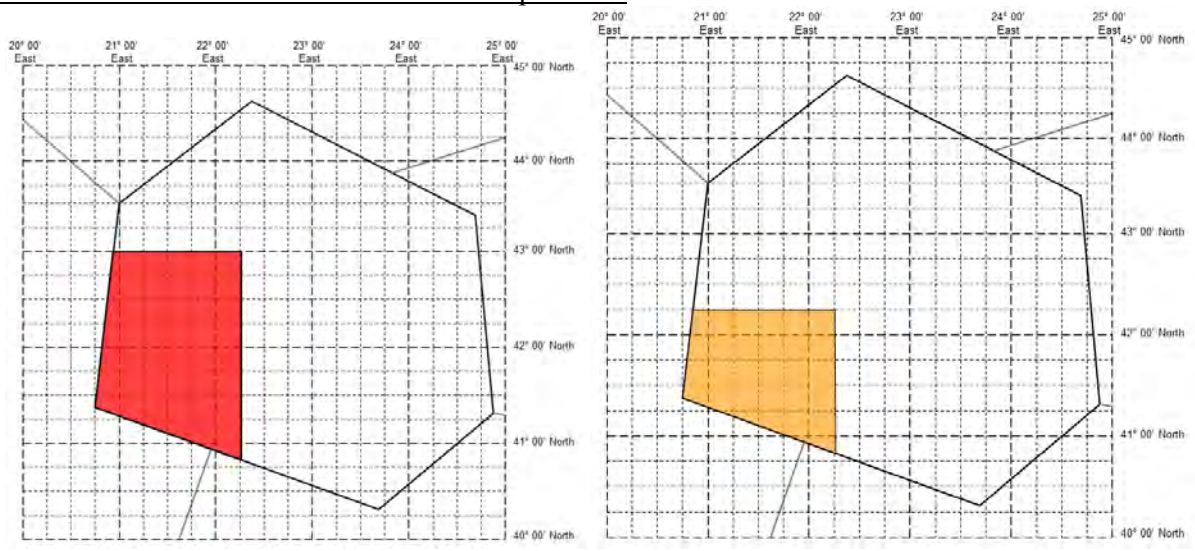
2b) In a sector of the FIR defined relative to a line of latitude and a line of longitude (effectively a quadrant)

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'.

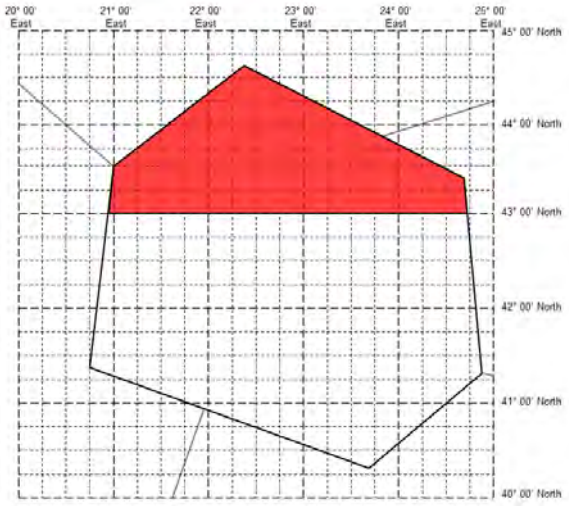


With an explicit forecast position:

```
YUDD SIGMET 2 VALID 101200/101600 YUSO –
YUDD SHANLON FIR/UIR SEV TURB FCST AT 1200Z S OF N4300 AND W OF
E02215 FL250/370 WKN FCST 1600Z S OF 4215 AND W OF E02215=
```

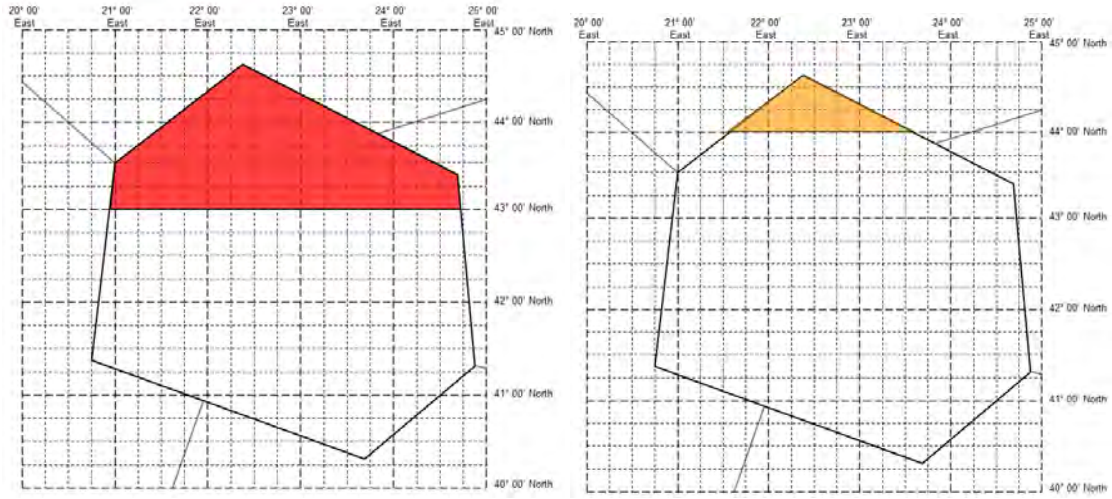
2c) In a sector of the FIR defined relative to a line of latitude or longitude (effectively a segment)

When the SIGMET does not include a ‘forecast position’ section.

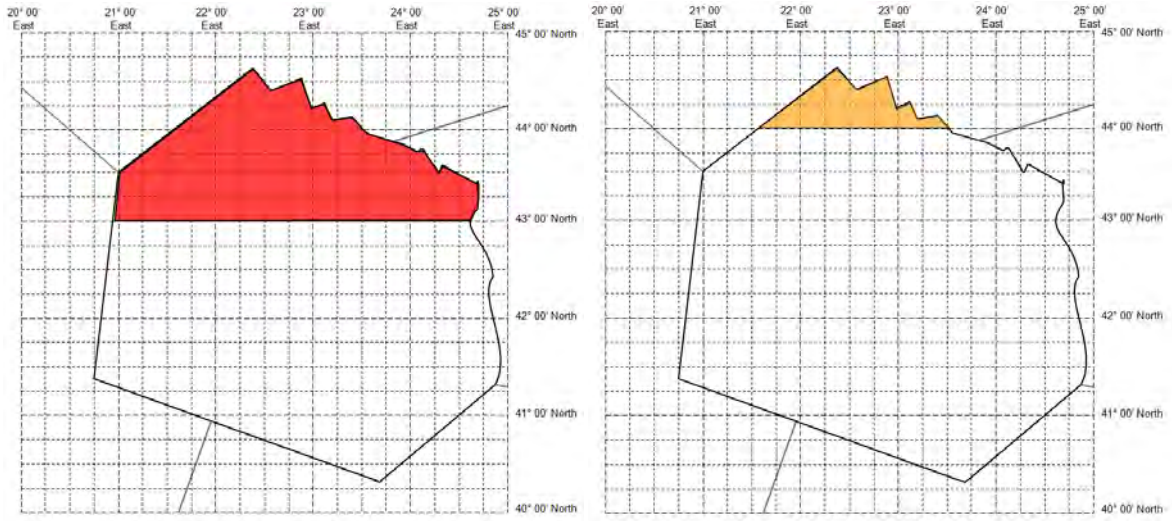



```
YUDD SIGMET 2 VALID 101200/101600 YUSO –
YUDD SHANLON FIR/UIR SEV TURB FCST N OF N43 FL250/370 MOV N 15KT
WKN=
```

When the SIGMET does include a ‘forecast position’ section.



YUDD SIGMET 2 VALID 101200/101600 YUSO –
YUDD SHANLON FIR/UIR SEV TURB FCST AT 1200Z N OF N43[5] FL250/370 WKN FCST 1600Z N OF N44=

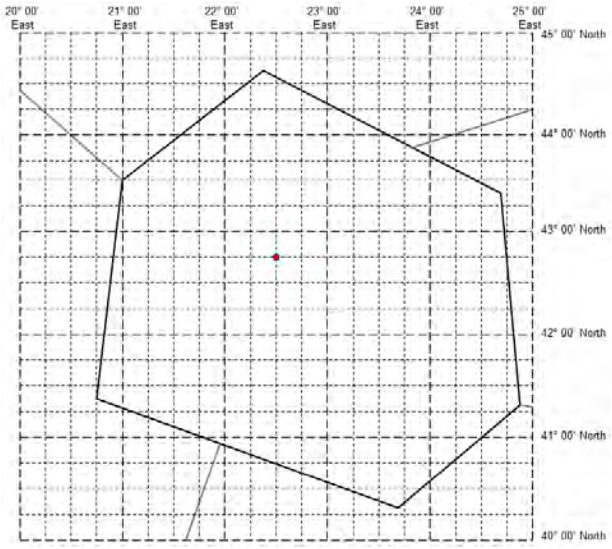


YUDD SIGMET 2 VALID 101200/101600 YUSO –
YUDD SHANLON FIR/UIR SEV TURB FCST AT 1200Z N OF N43[6] FL250/370 WKN FCST 1600Z N OF N44=

[5] It would be equally valid to use 'N4300'.
[6] It would be equally valid to use 'N4300'.

3) At a specific point within the FIR;

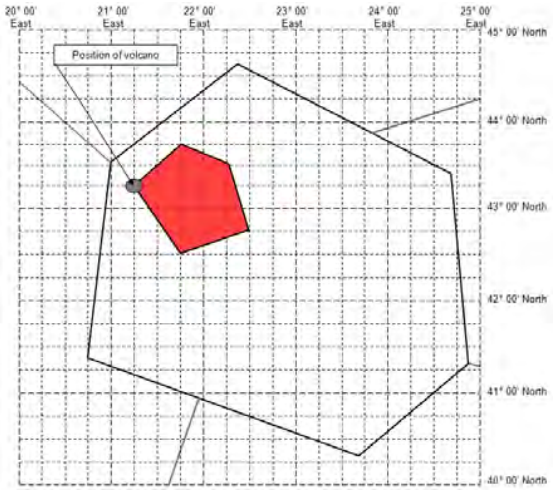
When the SIGMET does not include a 'forecast position' section.



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

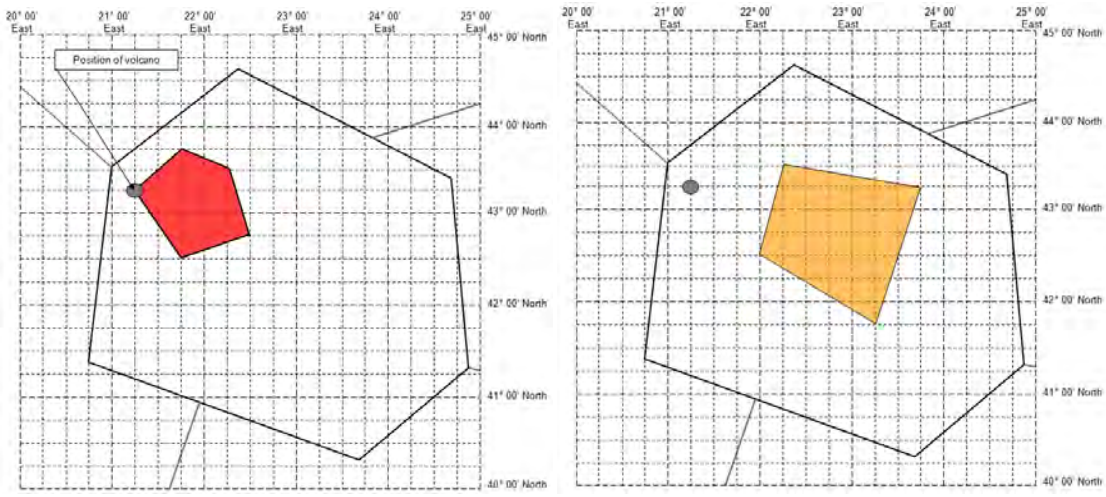
When the VA SIGMET does not include a 'forecast position' section.



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 E02115 – N4345 E02145 - N4330 E02215 – N4245 E02230 – N4230 E02145 - N4315 E02115 FL250/370 MOV ESE 20KT NC=

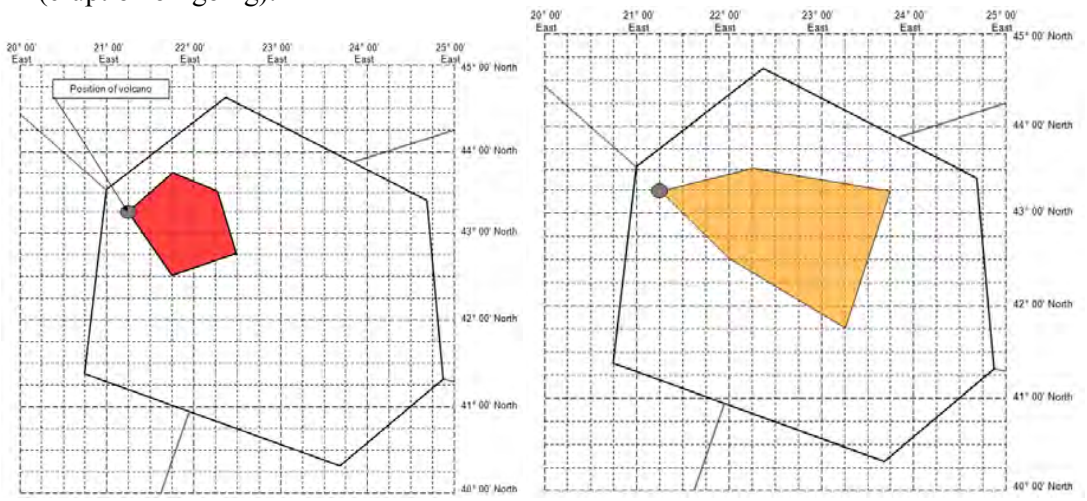
When the SIGMET does include a ‘forecast position’ section (no rate of movement).

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



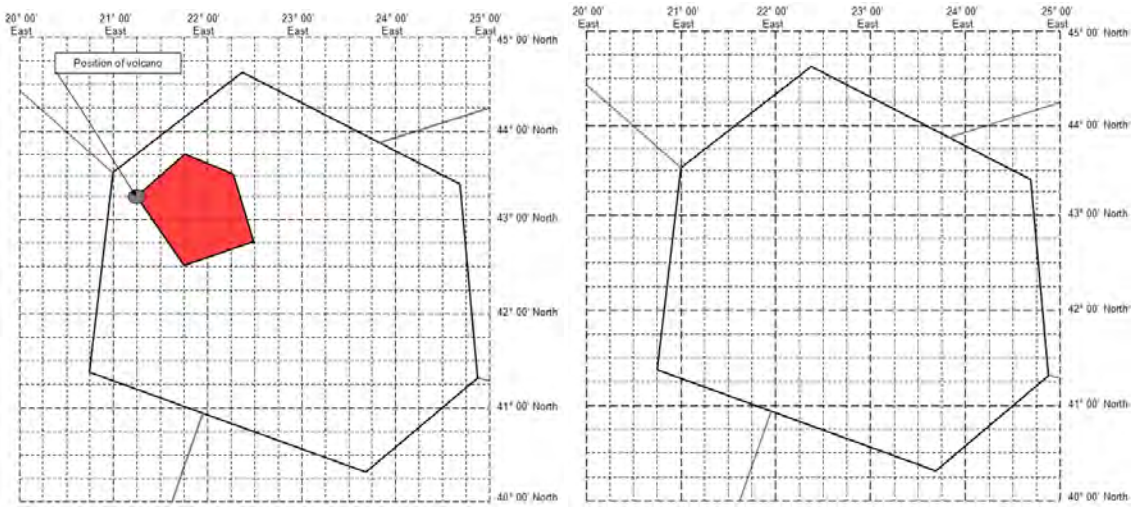
YUDD SIGMET 2 VALID 101200/101800 YUSO –
YUDD SHANLON FIR/UIR VA ERUPTION MT ASHVAL PSN N4315 E02115 VA CLD OBS AT 1200Z WI N4315 E02115 – N4345 E02145 N4330 E02215 – N4245 E02230 – N4230 E02145 - N4315 E02115 FL250/370 NC FCST 1800Z VA CLD APRX N4330 E02215 – N4315 E02345 – N4145 E02315 – N4230 E02200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

For VA (eruption on-going):



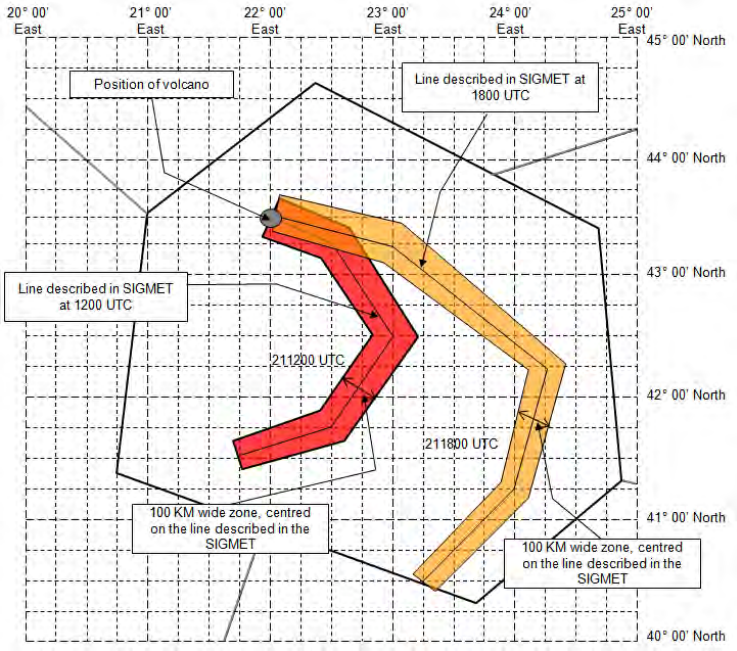
YUDD SIGMET 2 VALID 101200/101800 YUSO –
YUDD SHANLON FIR/UIR VA ERUPTION MT ASHVAL PSN N4315 E02115 VA CLD OBS AT 1200Z WI N4315 E02115 - N4345 E02145 – N4330 E02215 -- N4245 E02230 – N4230 E02145 – N4315 E2115 FL250/370 NC FCST 1800Z VA CLD APRX N4315 E02115 - N4330 E02215 – N4315 E02345 – N4145 E02315 – N4230 E02200 – N4315 E02115=

For VA (eruption ceasing, ash dispersing):



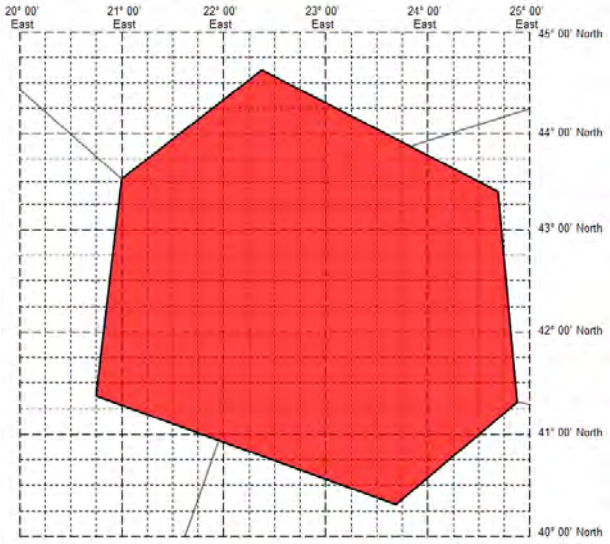
YUDD SIGMET 2 VALID 101200/101800 YUSO –
YUDD SHANLON FIR/UIR VA ERUPTION MT ASHVAL PSN N4315 E02115 VA CLD OBS AT 1200Z WI N4315 E02115 - N4345 E02145 – N4330 E02215 – N4245 E02230 - N4230 E02145 - N4315 E02115 FL250/370 MOV ESE 20KT WKN FCST 1800Z NO VA EXP=

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).

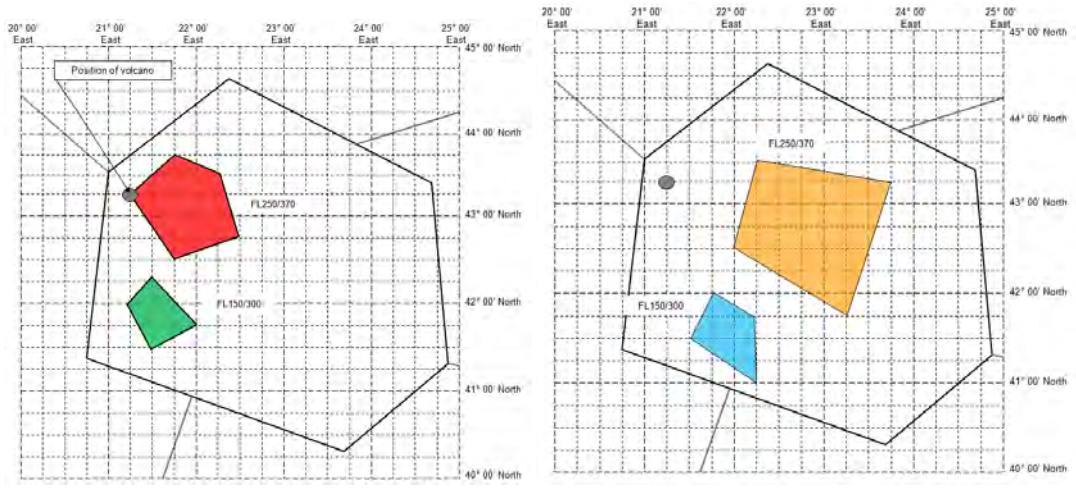


YUDD SIGMET 2 VALID 101200/101600 YUSO –
YUDD SHANLON FIR/UIR VA CLD FCST AT 1200z ENTIRE FIR FL250/370 STNR WKN FCST 1600z ENTIRE FIR=

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.

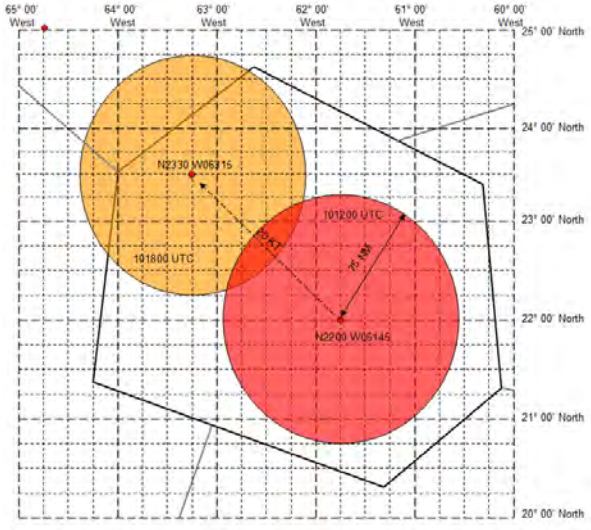
In the example below, two areas of volcanic ash cloud (at different levels) are forecast to move as described. The normal courier font refers to the northernmost areas of ash, and the italicised font refers to the southernmost areas of ash during the period. 'AND' is highlighted in **bold** to identify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

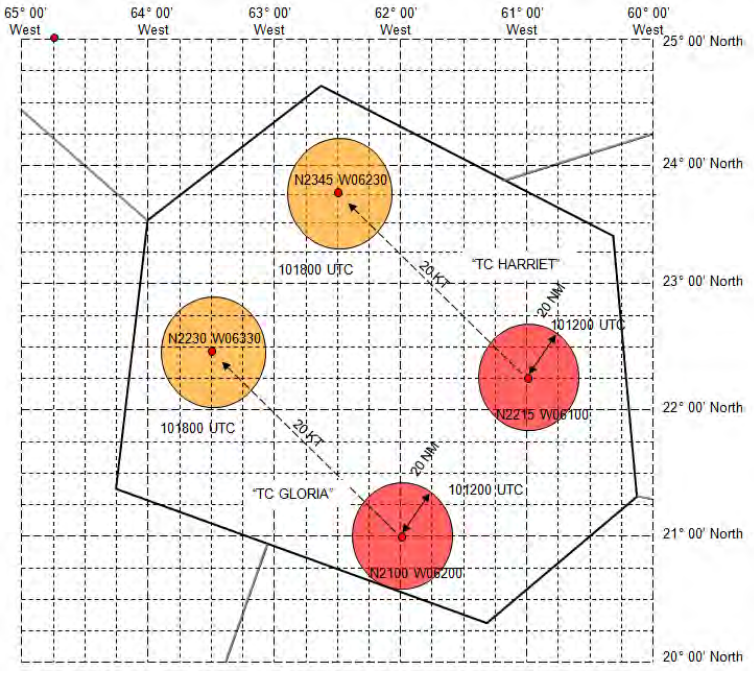



```
YUDD SIGMET 2 VALID 101200/101800 YUSO -
YUDD SHANLON FIR/UIR TC GLORIA FCST AT 1200Z N2200 W06145 CB TOP
FL500 WI 75NM OF CENTRE WKN FCST 1800Z TC CENTRE N2330 W06315=
```

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 WKN FCST 1800Z TC CENTRE N2230 W06330 **AND** *TC HARRIET FCST AT 1200Z N2215 W06100 CB TOP FL400 WI 20NM OF CENTRE WKN FCST 1800Z TC CENTRE N2345 W06230*=

APPENDIX C

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. 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 (Section 3, paragraph 3.6 – 3.6.4).

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 that 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.

3.1.1.5 **World Area Forecast Centres (WAFCs):**

London
Washington

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 in paragraphs 4.1-4.2 of this Appendix.

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 TC advisory within 30 minutes of the commencement time of the test then they should still issue a TEST SIGMET indicating that the test VA or TC advisory was not received. See paragraphs 4.3-4.5 of this Appendix for examples of the test SIGMET message.

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

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).

3.2.1.3. **World Area Forecast Centres (WAFCs):**

London
Washington

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 the TEST SIGMET sequence number should be Z99.

3.3.1.2. 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 (FASID Tables MET 3A and 3B respectively) and also to the five APAC RODBs and the two WAFCs. The relevant AFTN addresses for the RODBs and WAFCs are listed in paragraph 3.3.3.2 below.

3.3.3.2. Note that priority indicator of SIGMET messages is **FF** as they are flight safety messages (Annex 10 Vol. II, 4.4.1.1.3). All TEST SIGMET should be sent by the MWOs to the five APAC RODBs and the two WAFCs at the following AFTN addresses:

RODBs
Bangkok VTBBYPYX
Brisbane YBBBYPYX
Nadi NFFNYPYX
Singapore WSSSYZYX
Tokyo RJTDYPYX

WAFCs
London EGZZMASI
Washington KWBCYMYX

Note: To avoid duplicate TEST TCA/VAA being counted in the SIGMET test analysis, only messages received by AFTN (i.e., bulletins with WMO headings FK and FV) and not by GTS and WAFS are counted in the analysis.

3.3.3.3. RODBs that are nominated as Inter Regional OPMET Gateway (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. (e.g., from 0200 to 0400 UTC).

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. 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 in section 5 of this Appendix, should be prepared by each RODB and sent to the regional SIGMET test focal point given in paragraph 3.4.3., below, with a copy to the ICAO Regional Office.

Note. – To facilitate access to TEST SIGMETs and advisories, Appendix D and E to the Regional SIGMET Guide, respectively, provide listing of the WMO AHLs for SIGMET and volcanic ash/tropical cyclone advisory bulletins used by the ASIA/PAC MWOs and VAACs/TCACs.

3.4.2. 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.

3.4.3. 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. Jun Ryuzaki
Japan Meteorological Agency
Administration Division / Forecast Department
1-3-4 Otemachi, Chiyoda-ku
Tokyo 100-8122
JAPAN
Tel: +81 (3) 3212 8302
Fax: +81 (3) 3284 0180
e-mail: jruzaki@met.kishou.go.jp

ALL SIGMET test summary tables and any SIGMET test enquiries sent to:

ICAO Regional Office, Bangkok
e-mail: apac@.icao.int

4. Format of TEST TCA/VAA and TEST SIGMET

4.1. Format of TEST Volcanic Ash Advisory

```
VA ADVISORY
DTG:            YYYYMMDD/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 FM 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 ICAO APAC
REGIONAL OFFICE DATED xxxxxxxxxx.
NXT ADVISORY: NO FURTHER ADVISORIES=
```

4.2. Format of TEST Tropical Cyclone Advisory

```
TC ADVISORY
DTG:            YYYYMMDD/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 ICAO APAC
REGIONAL OFFICE DATED xxxxxxxxxx.
NXT MSG: NIL=
```

4.3. 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 FM [name] VAAC 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 RECEIVED FM [name] VAAC=
```

Examples:

```
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 FM TOKYO VAAC AT 170200Z=

WVJP31 RJTD 170235
RJJJ SIGMET Z99 VALID 170235/170245 RJTD-
RJJJ FUKUOKA FIR THIS IS A TEST SIGMET, PLEASE DISREGARD.
TEST VA ADVISORY NOT RECEIVED FM TOKYO VAAC=
```

4.4. 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 FM [name] TCAC 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 FM [name] TCAC=
```

Examples:

```
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 FM TOKYO TCAC 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 FM TOKYO TCAC=
```

4.5. Format of TEST SIGMET for phenomena other than volcanic ash and tropical cyclone

```
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=
```

5. Sample of SIGMET test summary table to be used by RODBs

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

VA Advisories (FV)

TTAAii	*CCCC*	*YYGGgg*	*Received Time(UTC)*	*Comments/Remarks*
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)

TTAAii	*CCCC*	*YYGGgg*	*MWO*	*FIR*	*Received Time(UTC)*	*Comments/Remarks*
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	

APPENDIX D

WMO HEADINGS (WMO AHL) FOR SIGMET BULLETINS

used by Asia/Pacific Meteorological Watch Offices

MWO location	ICAO location indicator	WMO SIGMET Headings			FIR/ACC served	Remarks
		WS	WC	WV	ICAO location indicator	
1	2	3	4	5	6	7
AFGHANISTAN						AFTN not available
KABUL AD	OAKB	WSAH31		WVAH31	OAKX	Headings not confirmed
AUSTRALIA						*Note: Non-ICAO location indicators are used in the WMO headings*
ADELAIDE/Adelaide	YPRM	WSAU21			YMMM	APRM
BRISBANE/Brisbane	YBRF	WSAU21	WCAU01		YBBB	ABRF
					YMMM	
DARWIN/Darwin	YPDM	WSAU21	WCAU01	WVAU01	YBBB	ADRM
					YMMM	
HOBART/Hobart	YMHF	WSAU21			YMMM	AMHF
MELBOURNE/Melbourne	YMRF	WSAU21			YBBB	AMRF
					YMMM	
MELBOURNE (WORLD MET CENTRE, BUREAU OF METEOROLOGY)	YMMC	WSAU21			YBBB	AMMC
					YMMM	AMMC
PERTH/Perth	YPRF	WSAU21	WCAU01		YBBB	APRF
					YMMM	
SYDNEY/Sydney	YSRF	WSAU21			YBBB	ASRF
					YMMM	
BANGLADESH						
DHAKA/Hazrat Shahjalal International Airport	VGHS	WSBW20	WCBW20	WVBW20	VGFR	
CAMBODIA						
CHENGDU/Shuangliu on behalf of PHNOM-PENH (VDPP)	ZUUU	WSKP31	WCKP31	WVKP31	VDPP	MWO not established – however, SIGMET is provided by Chengdu MWO
CHINA						
BEIJING/Capital	ZBAA	WSCI33	WCCI33	WVCI33	ZBPE	
GUANGZHOU/Baiyun	ZGGG	WSCI35	WCCI35	WVCI35	ZGZU	
HAIKOU/Meilan	ZJHK	WSCI35	WCCI35	WVCI35	ZJSA	
CHENGDU/Shuangliu	ZUUU	WSCI36		WVCI36	ZPKM	
XI'AN/Xianyang	ZLXY	WSCI37		WVCI37	ZLHW	
SHANGHAI/Hongqiao	ZSSS	WSCI34	WCCI34	WVCI34	ZSHA	
SHENYANG/Taoxian	ZYTX	WSCI38		WVCI38	ZYSH	
TAIBEI/Taibei Intl	RCTP	WSCI31	WCCI31	WVCI31	RCAA	
URUMQI/Diwopu	ZWWW	WSCI39		WVCI39	ZWUQ	
WUHAN/Tianhe	ZHHH	WSCI45		WVCI45	ZHWH	
HONG KONG/Hong Kong Intl	VHHH	WSSS20	WCSS20	WVSS20	VHHK	
DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA						

MWO location	ICAO location indicator	WMO SIGMET Headings			FIR/ACC served	Remarks
		WS	WC	WV	ICAO location indicator	
1	2	3	4	5	6	7
SUNAN	ZKPY	WSKR31	WCKR31	WVKR31	ZKKP	
FIJI						
NADI/Nadi Intl	NFFN	WSFJ01,02,…	WCFJ01,02,…	WVFJ01,02,…	NFFF	
FRENCH POLYNESIA						
TAHITI/Faaa	NTAA	WSPF21,22	WCPF21	WVPF21	NTTT	
INDIA						
KOLKATA	VECC	WSIN31	WCIN31	WVIN31	VECF	
CHENNAI/Chennai	VOMM	WSIN31	WCIN31	WVIN31	VOMF	
DELHI/Indira Ghandi Intl	VIDP	WSIN31	WCIN31	WVIN31	VIDF	
MUMBAI/Chhatrapati Shivaji Intl.	VABB	WSIN31	WCIN31	WVIN31	VABF	
INDONESIA						
JAKARTA/Soekarno-Hatta (Comm Center)	WIII	WSID20	WCID20	WVID20	WIIZ	
UJUNG PANDANG/Hasanuddin (Comm Center)	WAAA	WSID21	WCID21	WVID21	WAAZ	
JAPAN						
TOKYO (CITY)	RJTD	WSJP31	WCJP31	WVJP31	RJJJ	
LAO PEOPLE'S DEMOCRATIC REPUBLIC						
VIENTIANE/Wattay	VLVT	WSLA31	WCLA31	WVLA31	VLVT	
MALAYSIA						
SEPANG/KL International Airport	WMKK	WSMS31	WCMS31	WVMS31	WBFC WMFC	
MALDIVES						
MALE/Intl	VRMM	WSMV31	WCMV31	WVMV31	VRMF	
MONGOLIA						
ULAAN BAATAR	ZMUB	WSMO31		WVMO31	ZMUB	
MYANMAR						
YANGON/Yangon International	VYYY	WSBM31	WCBM31	WVBM31	VYYY	
NAURU						
NAURU	ANYN	WSNW20	WCNW20	WVNW20	ANAU	MWO not established however
NEPAL						
KATHMANDU	VNKT	WSNP31		WVNP31	VNSM	SIGMET currently not issued
NEW ZEALAND						
WELLINGTON (AVIATION WEATHER CENTER)	NZKL	WSNZ21	WCNZ21	WVNZ21	NZZC	
		WSPS21	WCPS21	WVPS21	NZZO	
PAKISTAN						
KARACHI/Jinnah Intl	OPKC	WSPK31	WCPK31	WVPK31	OPKR	
LAHORE/Allama Iqbal Intl	OPLA	WSPK31		WVPK31	OPLR	
PAPUA NEW GUINEA						
PORT MORESBY/Intl	AYPY	WSNG20	WCNG20	WVNG20	AYPY	
PHILIPPINES						

MWO location	ICAO location indicator	WMO SIGMET Headings			FIR/ACC served	Remarks
		WS	WC	WV	ICAO location indicator	
1	2	3	4	5	6	7
MANILA/Ninoy Aquino Intl, Pasay City, Metro Manila	RPLL	WSPH31	WCPH31	WVPH31	RPHI	
REPUBLIC OF KOREA						
INCHEON	RKSI	WSKO31	WCKO31	WVKO31	RKRR	
SINGAPORE						
SINGAPORE/Changi	WSSS	WSSR20	WCSR20	WVSR20	WSJC	
SOLOMON ISLANDS						
HONIARA/Henderson	AGGH	WSSO20	WCSO20	WVSO20	AGGG	
SRI LANKA						
COLOMBO/Bandaranaike International Airport Colombo	VCBI	WSSB31	WCSB31	WVSB31	VCBI	
THAILAND						
BANGKOK/Suvarnabhumi Intl Airport	VTBS	WSTH31	WCTH31	WVTH31	VTBB	
UNITED STATES						
ANCHORAGE/Anchorage Intl	PAWU	WSAK01-09 PAWU	WCAK01-09 PAWU	WVAK01-09 PAWU	PAZA	
HONOLULU/Honolulu Intl	PHFO	WSPA01-13 PHFO	WCPA01-13 PHFO	WVPA 01-13 PHFO	KZAK	
KANSAS CITY	*KKCI*	*WSNT01-13 KKCI*	*WCNT01-13 KKCI*	*WVNT01-13 KKCI*	*KZNY KZMA KZHU TJZU*	
KANSAS CITY	KKCI	WSPN01-13 KKCI	WCPN01-13 KKCI	WVPN01-13 KKCI	KZAK	
VIET NAM						
Gia Lam	VVGL	WSVS31	WCVS31	WVVS31	VVNB VVTS	

APPENDIX E

WMO HEADINGS FOR TROPICAL CYCLONE AND VOLCANIC ASH ADVISORY BULLETINS (FK and FV)

Used by Asia/Pacific TCACs and VAACs

Explanation of Table

Col. 1: Name of the TCAC or VAAC

Col 2: ICAO location indicator used by the TCAC or VAAC

Col 3: WMO heading (TTAAii CCCC) of the FK or FV bulletin

Col 4: Remarks (e.g., Area of coverage of the advisory, or any other bulletin-specific information)

TCAC/VAAC (State)	ICAO location indicator	WMO Heading TTAAii CCCC	Remarks
1	2	3	4
TC Advisories (FK)			
Miami (United States)	KNHC	FKNT21-24 KNHC FKPZ21-25 KNHC	Atlantic For Northeast Pacific to 140°W; ii = 21 – 25; up to 5 different bulletins possible at a time according to the number of TCs in the TCAC's area of responsibility.
Honolulu (United States)	PHFO	FKPA21-25 KHFO	For North Central Pacific: 140°W – 180°W; ii = 21 – 25; up to 5 different bulletins possible at a time according to the number of TCs in the TCAC's area of responsibility.
New Delhi (India)	VIDP	FKIN20 VIDP FKIN21 VIDP	Bay of Bengal Arabian Sea
Darwin (Australia)	ADRM	FKAU01 ADRM FKAU02 ADRM	Area bounded by 0°S 125°E, 15°S 125°E, 15°S 129°E, 40°S 129°E, 40°S 138°E, 14°S 138°E, 10°S 141°E, 0°S 141°E, 0°S 125°E. (Advisories prepared by Darwin)
		FKAU03 ADRM FKAU04 ADRM	Area bounded by 0°S 141°E, 10°S 141°E, 14°S 138°E, 40°S 138°E, 40°S 160°E, 0°S 160°E. (Advisories prepared by Brisbane)
		FKAU05 ADRM FKAU06 ADRM	Area bounded by 0°S 90°E, 40°S 90°E, 40°S 129°E, 15°S 129°E, 15°S 125°E, 0°S 125°E, 0°S 90°E. (Advisories prepared by Perth)

TCAC/VAAC (State)	ICAO location indicator	WMO Heading TTAAii CCCC	Remarks
1	2	3	4
Nadi (Fiji)	NFFN	FKPS01 NFFN	
Tokyo (Japan)	RJTD	FKPQ30-35 RJTD	
Réunion (France)	FMEE	FKIO20 FMEE	Southwest Indian Ocean N: 0°S S: 40°S W: African Coastline E: 90°E
VA Advisories (FV)			
Anchorage (United States)	PAWU	FVAK21-25 PAWU	ii = 21 – 25; up to 5 different bulletins possible at a time according to the number of VA clouds in the VAAC's area of resp.
Darwin (Australia)	ADRM	FVAU01-06 ADRM	
Tokyo (Japan)	RJTD	FVFE01 RJTD	
Toulouse (France)	LFPW	FVXX01 LFPW	
Washington (United States)	KNES	FVXX20-27 KNES	ii = 20 – 27; up to 8 different bulletins possible at a time according to the number of VA clouds in the VAAC's area of responsibility
Wellington (New Zealand)	NZKL	FVPS01-05 NZKL	

APPENDIX F

ASIA/PACIFIC VAAC BACK-UP PROCEDURES

1. Situations in which Back-up Procedures should be considered

1.1 Situations that may require VAAC responsibilities to be handed over to the back-up partner include:

- Insufficient VAAC staff resources are available to adequately perform VAAC duties;
- VAAC forecasters are unable to access the information required to adequately monitor any volcanic activity;
- The VAAC is unable to generate VAAs;
- The VAAC is unable to disseminate VAAs;
- The VAAC is under threat from an event that may limit its ability to properly perform its functions in the near future; and
- During any other situation where the VAAC Shift Supervisor considers the VAAC is unable to properly perform its functions.

2. Actions to be taken by Routine VAAC to initiate handover to Back-up VAAC

2.1 The VAAC Shift Supervisor will request back-up from Back-up VAAC using the VAAC contact details contained within IAVW Handbook (ICAO Doc. 9766) Table 4-2. Requests are to be made using the following media in this order:

a. Fax;
b. Telephone; and
c. Email.

2.2 Using the appropriate communications forms, provide detailed information regarding the following:

a. Expected duration and nature of outage;
b. Current Volcanic Ash Advisories including:
   - Volcano names
   - Next routine issue times
   - Sequence number
   - What has been observed on satellite imagery
   - What other reports have been received e.g. Volcanological Agency Reports, AIREPs, ASHTAMs, SIGMETs, phone calls or emails
   - Forecast strategy and expected developments; and
c. Other volcanoes of interest including:
   - Any volcanoes for which an imminent eruption has been forecast
   - Any volcanoes exhibiting elevated levels of activity
   - Any recent volcanic activity reports received.

2.3 If possible, provide via email or fax, any information other than listed above that is not currently available to the Back-up VAAC.

2.4 Maintain a written logbook of actions taken for the duration of the back-up service.

3. Actions to be taken by the Back-up VAAC upon receipt of a back-up request

3.1 Commence satellite monitoring for the Routine VAAC.

3.2 Send a confirmation message using the appropriate communications forms indicating whether operational back-up for the Routine VAAC is able to be commenced.

3.3 Continue routine satellite monitoring and issue VAA as required to the relevant AFTN addresses.

3.4 Send VAA to external users advising of the outage and advising Back-up VAAC contact details as per appropriate VAA proforma.

3.5 Advise volcanological agencies that new information should be sent directly to the Back-up VAAC.

3.6 Maintain a written logbook of actions taken for the duration of the back-up service.

4. Actions to be taken by Routine VAAC to resume normal operations

4.1 Commence satellite monitoring for the Routine VAAC.

4.2 Send a notification of intent to resume normal operations to the Back-up VAAC, using the appropriate communications forms.

4.3 Upon receipt of confirmation from the Back-up VAAC, continue routine satellite monitoring and issue VAA as required to the appropriate AFTN addresses.

4.4 Issue VAA to external users advising of the resumption of normal operations by the Routine VAAC as per appropriate VAA profrma.

4.5 Advise volcanological agencies that information should now be sent directly to the Routine VAAC.

4.6 Prepare an event report summarizing the significant actions and any other relevant information contained within the logbooks of the Back-up VAAC and Routine VAAC.

5. Actions to be taken by Back-up VAAC upon receipt of intent to resume normal operations notification from the Routine VAAC

5.1 Send a confirmation receipt for the intent to resume normal operations notification, using the appropriate communications forms.

5.2 Using the appropriate communications forms, provide detailed information regarding:

a. Details of current Volcanic Ash Advisories including:
   - Volcano names
   - Next routine issue times
   - Sequence number
   - What has been observed on satellite imagery
   - What other reports have been received e.g. Volcanological Agency Reports, AIREPs, ASHTAMs, SIGMETs, phone calls or emails
   - Current forecast strategy and expected developments; and

b. Other volcanoes of interest including:
   - Any volcanoes for which an imminent eruption has been forecast
   - Any volcanoes exhibiting elevated levels of activity
   - Any recent volcanic activity reports received.

5.3 Provide the Routine VAAC with copies of logbooks created by the Back-up VAAC during the back-up event.

5.4 Cease routine satellite monitoring for the Routine VAAC.

_____

APPENDIX G

TOKYO/DARWIN VAAC BACK-UP TEST PROCEDURES

1. Introduction

1.1 The *Handbook on the International Airways Volcano Watch (IAVW) — Operational Procedures and Contact List* (Doc 9766) recommends that Volcanic Ash Advisory Centres (VAACs) should conduct back-up tests at least annually.

1.2 The Tokyo and Darwin VAACs have developed a mutual back-up arrangement that includes procedures for undertaking a back-up test as described in Doc 9766.

2. Purpose and Scope of VAAC Back-up tests

2.1 The purpose of the VAAC back-up test is to ensure that internal procedures for the handover of responsibility and the issue of products for the other VAAC's area of responsibility are robust and functional.

2.2 The scope of the test also includes checking the dissemination pathways of the volcanic ash advisory (VAA) messages. However it is not designed to check the issuance of volcanic ash SIGMET and so there is **no requirement** to issue test SIGMETs.

3. Back-up test of VAAC Darwin by VAAC Tokyo

3.1 At 0100UTC on 22 October 2014 VAAC Darwin will request back-up services from VAAC Tokyo according to internal procedures and using the operational VAAC contact details contained within the IAVW Handbook (Doc 9766) Table 4-2. VAAC Tokyo will issue a VAA for commencement of back-up test to participating operational units as per the VAA example in Attachment 1A (i) and the AFTN addresses in Attachment 2A.

3.2 VAAC Tokyo will issue a VAA for VAAC back-up test to participating operational units as per the VAA example in Attachment 1A (ii) and the AFTN addresses in Attachment 2A. All recipients (ACCs/FICs, MWOs, WAFCs and RODBs) of this VAA are requested to **respond to VAAC Darwin** using the email address vaac.darwin@bom.gov.au and the subject 'VAA TEST' with an affirmative or negative response regarding the receipt of the test VAA.

3.3 At 0130UTC on 22 October 2014 VAAC Darwin will notify of intent to resume normal operations to VAAC Tokyo, and at 0145UTC VAAC Darwin will issue a VAA for cessation of back-up test to participating operational units as per the VAA example in Attachment 1A (iii) and the AFTN addresses in Attachment 2A.

3.4 MWOs should NOT issue a test SIGMET at any stage of the test.

4. Back-up test of VAAC Tokyo by VAAC Darwin

4.1 At 0200UTC on 22 October 2014 the VAAC Tokyo will request back-up services from VAAC Darwin according to internal procedures and using the operational VAAC contact details contained within the IAVW Handbook (Doc 9766) Table 4-2. VAAC Darwin will issue a VAA for commencement of back-up test to participating operational units as per the VAA example in Attachment 1B (i) and the AFTN addresses in Attachment 2B.

4.2 VAAC Darwin will issue a VAA for VAAC back-up test to participating operational units as per the VAA example in Attachment 1B (ii) and the AFTN addresses in Attachment 2B. All recipients (ACCs/FICs, MWOs, WAFCs and RODBs) of this VAA are requested to **respond to**

VAAC Tokyo using the email address vaac@eqvol2.kishou.go.jp and the subject 'VAA TEST' with an affirmative or negative response regarding the receipt of the test VAA.

4.3 At 0230UTC on 22 October 2014 VAAC Tokyo will notify of intent to resume normal operations to VAAC Darwin, and at 0245UTC VAAC Tokyo will issue a VAA for cessation of back-up test to participating operational units as per the VAA example in Attachment 1B (iii) and the AFTN addresses in Attachment 2B.

4.5 MWOs should NOT issue a test SIGMET at any stage of the test.

5. Back-up test termination and reporting

5.1 At 0300UTC on 22 October 2014 the test will be terminated.

5.2 In case of significant eruption, the test should be ceased.

5.3 During the test each VAAC will maintain a logbook of events and will provide the other VAAC with a copy.

5.4 Email responses to the VAA for VAAC back-up test will be analyzed by the VAACs. Both VAACs will analyze the responses to the test VAAs and will present the results to the conjoint meeting of the ROBEX Working Group and Meteorological Hazards Task Force to be held in March 2015.

ATTACHMENT 1A – SAMPLE VAA MESSAGES

(i) VAA for commencement of back-up test; AFTN message from VAAC Tokyo to operational units in VAAC Darwin area of responsibility:

```
GG ********
DDHHMM RJTDYMYX
FVAU01 ADRM DDHHMM
VA ADVISORY
DTG: YYYYMMDD/HHMMZ
VAAC: DARWIN
VOLCANO: NOTICE 999999
PSN: S8959 E9959
AREA: UNKNOWN
SUMMIT ELEV: 9999M
ADVISORY NR: YYYY/N
INFO SOURCE: NIL
AVIATION COLOUR CODE: NIL
ERUPTION DETAILS: NIL
OBS VA DTG: NIL
OBS VA CLD: NIL
FCST VA CLD +6HR: NO VA EXP
FCST VA CLD +12HR: NO VA EXP
FCST VA CLD +18HR: NO VA EXP
RMK: VAAC DARWIN AND VAAC TOKYO ARE CONDUCTING A BACK UP TEST NOW.
THIS IS A TEST NOTICE ISSUED BY VAAC TOKYO FOR THE VAAC DARWIN AREA
OF RESPONSIBILITY ANNOUNCING THE START OF BACK UP TEST FOR VAAC
DARWIN BY VAAC TOKYO.
NXT ADVISORY: NO FURTHER ADVISORIES.
```

(ii) VAA for VAAC back-up test; AFTN message from VAAC Tokyo to operational units in VAAC Darwin area of responsibility:

```
GG ********
DDHHMM RJTDYMYX
FVAU01 ADRM DDHHMM
VA ADVISORY
DTG: YYYYMMDD/HHMMZ
VAAC: DARWIN
VOLCANO: TEST 999999
PSN: S8959 E9959
AREA: UNKNOWN
SUMMIT ELEV: 9999M
ADVISORY NR: YYYY/N
INFO SOURCE: NIL
AVIATION COLOUR CODE: NIL
ERUPTION DETAILS: NIL
OBS VA DTG: NIL
OBS VA CLD: NIL
FCST VA CLD +6HR: NO VA EXP
FCST VA CLD +12HR: NO VA EXP
FCST VA CLD +18HR: NO VA EXP
RMK: THIS IS A TEST ADVISORY ISSUED BY TOKYO
VAAC FOR THE VAAC DARWIN AREA OF RESPONSIBILITY. PLEASE
ACKNOWLEDGE RECEIPT OF THIS ADVISORY BY SENDING AN EMAIL TO
DARWIN.VAAC AT BOM.GOV.AU
NXT ADVISORY: NO FURTHER ADVISORIES.
```

(iii) VAA for cessation of back-up test; AFTN message from VAAC Darwin to operational units in VAAC Darwin area of responsibility:

```
GG ********
DDHHMM YMMCYMYX
FVAU01 ADRM DDHHMM
VA ADVISORY
DTG: YYYYMMDD/HHMMZ
VAAC: DARWIN
VOLCANO: NOTICE 999999
PSN: S8959 E9959
AREA: UNKNOWN
SUMMIT ELEV: 9999M
ADVISORY NR: YYYY/N
INFO SOURCE: NIL
AVIATION COLOUR CODE: NIL
ERUPTION DETAILS: NIL
OBS VA DTG: NIL
OBS VA CLD: NIL
FCST VA CLD +6HR: NO VA EXP
FCST VA CLD +12HR: NO VA EXP
FCST VA CLD +18HR: NO VA EXP
RMK: VAAC DARWIN AND VAAC TOKYO ARE CONDUCTING A BACK UP TEST NOW.
THIS IS A TEST NOTICE ISSUED BY VAAC DARWIN FOR THE VAAC DARWIN AREA
OF RESPONSIBILITY ANNOUNCING THE END OF BACK UP TEST FOR VAAC DARWIN
BY VAAC TOKYO.
NXT ADVISORY: NO FURTHER ADVISORIES.
```

(******** Indicates appropriate AFTN addresses as per Attachment 2A)

ATTACHMENT 1B – SAMPLE VAA MESSAGES

(i) VAA for commencement of back-up test; AFTN message from VAAC Darwin to operational units in VAAC Tokyo area of responsibility:

```
GG ********
DDHHMM YMMCYMYX
FVFE01 RJTD DDHHMM
VA ADVISORY
DTG: YYYYMMDD/HHMMZ
VAAC: TOKYO
VOLCANO: NOTICE 999999
PSN: S8959 E9959
AREA: UNKNOWN
SUMMIT ELEV: 9999M
ADVISORY NR: YYYY/N
INFO SOURCE: NIL
AVIATION COLOUR CODE: NIL
ERUPTION DETAILS: NIL
OBS VA DTG: NIL
OBS VA CLD: NIL
FCST VA CLD +6HR: NO VA EXP
FCST VA CLD +12HR: NO VA EXP
FCST VA CLD +18HR: NO VA EXP
RMK: VAAC DARWIN AND VAAC TOKYO ARE CONDUCTING A BACK UP TEST NOW.
THIS IS A TEST NOTICE ISSUED BY VAAC DARWIN FOR THE VAAC TOKYO AREA
OF RESPONSIBILITY ANNOUNCING THE START OF BACK UP TEST FOR VAAC
TOKYO BY VAAC DARWIN.
NXT ADVISORY: NO FURTHER ADVISORIES.
```

(ii) VAA for VAAC back-up test; AFTN message from VAAC Darwin to operational units in VAAC Tokyo area of responsibility:

```
GG ********
DDHHMM YMMCYMYX
FVFE01 RJTD DDHHMM
VA ADVISORY
DTG: YYYYMMDD/HHMMZ
VAAC: TOKYO
VOLCANO: TEST 999999
PSN: S89.59 E99.59
AREA: UNKNOWN
SUMMIT ELEV: 9999M
ADVISORY NR: YYYY/N
INFO SOURCE: NIL
AVIATION COLOUR CODE: NIL
ERUPTION DETAILS: NIL
OBS VA DTG: NIL
OBS VA CLD: NIL
FCST VA CLD +6HR: NO VA EXP
FCST VA CLD +12HR: NO VA EXP
FCST VA CLD +18HR: NO VA EXP
RMK: THIS IS A TEST ADVISORY ISSUED BY DARWIN
VAAC FOR THE VAAC TOKYO AREA OF RESPONSIBILITY. PLEASE
ACKNOWLEDGE RECEIPT OF THIS ADVISORY BY SENDING AN EMAIL TO
VAAC AT EQVOL2.KISHOU.GO.JP
NXT ADVISORY: NO FURTHER ADVISORIES.
```

(iii) VAA for cessation of back-up test; AFTN message from VAAC Tokyo to operational units in VAAC Tokyo area of responsibility:

```
GG ********
DDHHMM RJTDYMYX
FVFE01 RJTD DDHHMM
VA ADVISORY
DTG: YYYYMMDD/HHMMZ
VAAC: TOKYO
VOLCANO: NOTICE 999999
PSN: S89.59 E99.59
AREA: UNKNOWN
SUMMIT ELEV: 9999M
ADVISORY NR: YYYY/N
INFO SOURCE: NIL
AVIATION COLOUR CODE: NIL
ERUPTION DETAILS: NIL
OBS VA DTG: NIL
OBS VA CLD: NIL
FCST VA CLD +6HR: NO VA EXP
FCST VA CLD +12HR: NO VA EXP
FCST VA CLD +18HR: NO VA EXP
RMK: VAAC DARWIN AND VAAC TOKYO ARE CONDUCTING A BACK UP TEST NOW.
THIS IS A TEST NOTICE ISSUED BY VAAC TOKYO FOR THE VAAC TOKYO AREA
OF RESPONSIBILITY ANNOUNCING THE END OF TEST FOR VAAC TOKYO BY VAAC
DARWIN.
NXT ADVISORY: NO FURTHER ADVISORIES.


(******** Indicates appropriate AFTN addresses as per Attachment 2B)
```

ATTACHMENT 2A

AFTN addresses for exchange of VAAC back-up test VAA messages in the VAAC Darwin area of responsibility

YPDMYMYX (VAAC Darwin)					
AGGHYMYX,	ANYNYOYX,	AYPMYMYX,	AYPMYSYX,	AYPMZGZX,	AYPYANGM,
AYPYANGO,	EGKKVIRW,	EGLLSITV,	EGZZMASI,	EGZZMPAC,	EGZZVANW,
EHAMKLMD,	EHAMKLMK,	EHAMKLMW,	ELLXCLXB,	KDENXLDW,	KJFKGTIW,
KWBCYMYX,	LOZZMMSS,	LSZHSWRW,	NFFNYPYX,	NZAAANZO,	NZKLYMYX,
RJAAANAO,	RJAAJALO,	RJAANCAO,	RJAAYMYX,	RKSIYPYX,	RPHIZRZX,
RPLLYMYX,	VCBIYMYX,	VCBIZQZX,	VHHHCPAO,	VHHHYMYX,	VOMFZQZX,
VOMMYMYX,	VTBBYPYX,	VTBDYMYX,	VTBSYMYX,	VVGLYMYX,	VVNBZRZX,
VVTSYMYX,	VVTSZRZX,	VYYYYMYX,	VYYYZQZX,	WAAAYMYX,	WAAAZQZX,
WABBYMYX,	WADDYMYF,	WADDYMYX,	WADDYOYX,	WBFCZQZX,	WBKKYMYX,
WBSBYMYX,	WIHHYMYX,	WIIIYMYX,	WIIIZQZX,	WMFCZQZX,	WMKBYMYX,
WMKBYWYX,	WMKKMASD,	WMKKYMYX,	WPDLZTZX,	WRRRYNYX,	WSATYMYX,
WSJCZRZX,	WSSSSIAO,	WSSSYMYW,	WSSSYMYX,	WSSSYZYX,	WSZZYMYR,
YAMBZAZX,	YAMBZGZA,	YAMBZTZX,	YBBBNCYM,	YBBBVOZM,	YBBBZRZA,
YBBBZRZB,	YBBBZRZG,	YBBBZRZX,	YMMLJSTX,	YMMMZRZA,	YMMMZRZB,
YMMMZRZG,	YMMMZRZX,	YPDNZAZX,	YPDNZGZA,	YPDNZTZX,	YPTNZAZX,
YPTNZGZA,	YPTNZTZX,	YSSYQFAM			

ATTACHMENT 2B

AFTN addresses for exchange of VAAC back-up test VAA messages in the VAAC Tokyo area of responsibility

RJTDYMYX (VAAC Tokyo)					
EGZZMASI,	KWBCYMYX,	NFFNYPYX,	RCTPYMYX,	RCTPZQZX,	RJAAYMYX,
RJCGZQZX,	RJDGZQZX,	RJTDYMYX,	RJTGZQZX,	RKRRZQZX,	RKSIYMYX,
RORGZQZX,	RPHIZRZX,	RPLLYMYX,	UELLYMYX,	UELLZRZX,	UHHHYMYX,
UHHHZRZX,	UHMMYMYX,	UHMMYMYX,	UHMMZRZX,	UHPPZRZX,	UIIIYMYX,
UIIIZRZX,	VDPPYMYX,	VDPPZRZX,	VHHHYMYX,	VHHKZQZX,	VLVTYMYX,
VLVTZQZX,	VTBBYPYX,	VTBBYZYX,	VTBSYMYX,	VVGLYMYX,	VVNBZRZX,
VVTSZRZX,	WSSSYZYX,	YBBBYPYX,	ZBAAYMYX,	ZBHHZQZX,	ZBLAZQZX,
ZBPEZQZX,	ZBYNZQZX,	ZGCSZQZX,	ZGGGYMYX,	ZGKLZQZX,	ZGNNZQZX,
ZGZUZQZX,	ZHHHYMYX,	ZHWHZQZX,	ZJHKYMYX,	ZJSAZQZX,	ZKPYYMYX,
ZKPYYMYX,	ZLANZQZX,	ZLHWZQZX,	ZLSNZQZX,	ZLXYYMYX,	ZMUBYMYX,
ZMUBZQZX,	ZPKMZQZX,	ZSAMZQZX,	ZSCNZQZX,	ZSHAZQZX,	ZSNJZQZX,
ZSOFZQZX,	ZSQDZQZX,	ZSSSYMYX,	ZSTNZQZX,	ZUCKZQZX,	ZUDSZQZX,
ZUUUYMYX,	ZWUQZQZX,	ZWWWYMYX,	ZWWWZQZX,	ZYHBZQZX,	ZYSHZQZX,
ZYTLZQZX,	ZYTXYMYX				

ATTACHMENT 3

List of States, participating units and tasks required* for VAAC back-up test

STATE	UNIT TYPE	LOCATION NAME	LOC. ID.	TASK/S REQUIRED*	AFTN ADDRESS
AUSTRALIA	ACC/FIC	BRISBANE/BRISBANE INTL	YBBN	D	YBBBZRZA YBBBZRZB YBBBZRZG YBBBZRZX
AUSTRALIA	ACC/FIC	MELBOURNE ACC/FIC	YMMM	D	YMMMZRZA YMMMZRZB YMMMZRZG YMMMZRZX
AUSTRALIA	RODB	BRISBANE (FIR/FIC/ACC/COM/MET/NOF)	YBBB	D J	YBBBYPYX
AUSTRALIA	VAAC	DARWIN (REGIONAL FORECASTING CENTRE)	YPDM	A E F H I M	YPDMYMYX
CAMBODIA	ACC/FIC	PHNOM PENH	VDPP	J	VDPPZRZX
CAMBODIA	MWO	PHNOM PENH	VDPP	J	VDPPYMYX
CHINA	ACC/FIC	TAIBEI CITY/TAIBEI INTL AP	RCTP	J	RCTPZQZX
CHINA	ACC/FIC	HONG KONG FIR	VHHK	J	VHHKZQZX
CHINA	ACC/FIC	HUHHOT/BAITA	ZBHH	J	ZBHHZQZX
CHINA	ACC/FIC	HULUNBEIER/HAILAR	ZBLA	J	ZBLAZQZX
CHINA	ACC/FIC	BEIJING FIR	ZBPE	J	ZBPEZQZX
CHINA	ACC/FIC	TAIYUAN/WUSU	ZBYN	J	ZBYNZQZX
CHINA	ACC/FIC	CHANGSHA CITY	ZGCS	J	ZGCSZQZX
CHINA	ACC/FIC	GUILIN/LIANGJIANG	ZGKL	J	ZGKLZQZX
CHINA	ACC/FIC	NANNING/WUXU	ZGNN	J	ZGNNZQZX
CHINA	ACC/FIC	GUANGZHOU FIR	ZGZU	J	ZGZUZQZX
CHINA	ACC/FIC	WUHAN FIR	ZHWH	J	ZHWHZQZX
CHINA	ACC/FIC	SANYA FIR/ACC	ZJSA	J	ZJSAZQZX
CHINA	ACC/FIC	LANZHOU CITY	ZLAN	J	ZLANZQZX
CHINA	ACC/FIC	LANZHOU FIR	ZLHW	J	ZLHWZQZX
CHINA	ACC/FIC	XI'AN CITY	ZLSN	J	ZLSNZQZX
CHINA	ACC/FIC	KUNMING FIR	ZPKM	J	ZPKMZQZX
CHINA	ACC/FIC	XIAMEN/GAOQI	ZSAM	J	ZSAMZQZX
CHINA	ACC/FIC	NANCHANG/CHANGBEI	ZSCN	J	ZSCNZQZX
CHINA	ACC/FIC	SHANGHAI FIR	ZSHA	J	ZSHAZQZX
CHINA	ACC/FIC	NANJING/LUKOU	ZSNJ	J	ZSNJZQZX
CHINA	ACC/FIC	HEFEI/XINQIAO	ZSOF	J	ZSOFZQZX
CHINA	ACC/FIC	QINGDAO/LIUTING	ZSQD	J	ZSQDZQZX
CHINA	ACC/FIC	JINAN CITY	ZSTN	J	ZSTNZQZX
CHINA	ACC/FIC	CHONGQING/JIANGBEI	ZUCK	J	ZUCKZQZX
CHINA	ACC/FIC	CHENGDU CITY	ZUDS	J	ZUDSZQZX
CHINA	ACC/FIC	URUMQI FIR	ZWUQ	J	ZWUQZQZX
CHINA	ACC/FIC	URUMQI/DIWOPU	ZWWW	J	ZWWWZQZX
CHINA	ACC/FIC	HARBIN/TAIPING	ZYHB	J	ZYHBZQZX
CHINA	ACC/FIC	SHENYANG FIR	ZYSH	J	ZYSHZQZX
CHINA	ACC/FIC	DALIAN/ZHOUSHUIZI	ZYTL	J	ZYTLZQZX
CHINA	MWO	TAIBEI CITY/TAIBEI INTL AP	RCTP	J	RCTPYMYX
CHINA	MWO	HONG KONG/INTERNATIONAL	VHHH	J	VHHHYMYX
CHINA	MWO	BEIJING/CAPITAL	ZBAA	J	ZBAAYMYX
CHINA	MWO	GUANGZHOU/BAIYUN	ZGGG	J	ZGGGYMYX
CHINA	MWO	WUHAN/TIANHE	ZHHH	J	ZHHHYMYX
CHINA	MWO	HAIKOU/MEILAN	ZJHK	J	ZJHKYMYX
CHINA	MWO	XI'AN/XIANYANG	ZLXY	J	ZLXYYMYX
CHINA	MWO	SHANGHAI/HONGQIAO	ZSSS	J	ZSSSYMYX
CHINA	MWO	CHENGDU/SHUANGLIU	ZUUU	J	ZUUUYMYX
CHINA	MWO	URUMQI/DIWOPU	ZWWW	J	ZWWWYMYX

STATE	UNIT TYPE	LOCATION NAME	LOC. ID.	TASK/S REQUIRED*	AFTN ADDRESS
CHINA	MWO	SHENYANG/TAOXIAN	ZYTX	J	ZYTXYMYX
DPR KOREA	ACC/FIC	PYONGYANG (FIR)	ZKKP	J	ZKPYYMYX
DPR KOREA	MWO	SUNAN	ZKPY	J	ZKPYYMYX
FIJI	RODB	NADI/INTL	NFFN	D J	NFFNYPYX
INDIA	ACC/FIC	CHENNAI (FIC)	VOMF	D	VOMFZQZX
INDIA	MWO	CHENNAI	VOMM	D	VOMMYMYX
INDONESIA	ACC/FIC	MAKASSAR/SULTAN HASANUDDIN	WAAA	D	WAAAZQZX
INDONESIA	ACC/FIC	JAKARTA INTL/SOEKARNO-HATTA	WIII	D	WIIIZQZX
INDONESIA	MWO	MAKASSAR/SULTAN HASANUDDIN	WAAA	D	WAAAYMYX
INDONESIA	MWO	JAKARTA INTL/SOEKARNO-HATTA	WIII	D	WIIIYMYX
JAPAN	ACC/FIC	SAPPORO ACC	RJCG	J	RJCGZQZX
JAPAN	ACC/FIC	FUKUOKA ACC	RJDG	J	RJDGZQZX
JAPAN	ACC/FIC	TOKYO ACC	RJTG	J	RJTGZQZX
JAPAN	ACC/FIC	NAHA ACC	RORG	J	RORGZQZX
JAPAN	MWO	TOKYO (CITY)	RJTD	J	RJTDYMYX
JAPAN	RODB	TOKYO (CITY)	RJTD	D J	RJAAYMYX
JAPAN	VAAC	TOKYO (CITY)	RJTD	B C G K L M	RJTDYMYX
LAO PDR	ACC/FIC	VIENTIANE(WATTAY)	VLVT	J	VLVTZQZX
LAO PDR	MWO	VIENTIANE(WATTAY)	VLVT	J	VLVTYMYX
MALAYSIA	ACC/FIC	KOTA KINABALU ACC/FIC	WBFC	D	WBFCZQZX
MALAYSIA	ACC/FIC	KUALA LUMPUR ACC/FIC	WMFC	D	WMFCZQZX
MALAYSIA	MWO	SEPANG/KL INTERNATIONAL AIRPORT	WMKK	D	WMKKYMYX
MONGOLIA	ACC/FIC	ULAANBAATAR/CHINGGIS KHAAN	ZMUB	J	ZMUBZQZX
MONGOLIA	MWO	ULAANBAATAR/CHINGGIS KHAAN	ZMUB	J	ZMUBYMYX
MYANMAR	ACC/FIC	YANGON INTERNATIONAL	VYYY	D	VYYYZQZX
MYANMAR	MWO	YANGON INTERNATIONAL	VYYY	D	VYYYYMYX
PAPUA NEW GUINEA	ACC/FIC	PORT MORESBY ACC/FIC/COM	AYPM	D	AYPMZGZX
PAPUA NEW GUINEA	MWO	PORT MORESBY ACC/FIC/COM	AYPM	D	AYPMYMYX
PHILIPPINES	ACC/FIC	MANILA (ACC/FIC/COM)	RPHI	D J	RPHIZRZX
PHILIPPINES	MWO	NINOY AQUINO INTERNATIONAL AIRPORT, MANILA	RPLL	D J	RPLLYMYX
REPUBLIC OF KOREA	ACC/FIC	INCHEON ACC	RKRR	J	RKRRZQZX
REPUBLIC OF KOREA	MWO	INCHEON INTL	RKSI	J	RKSIYMYX
RUSSIAN FEDERATION	ACC/FIC	CHULMAN	UELL	J	UELLZRZX
RUSSIAN FEDERATION	ACC/FIC	KHABAROVSK/NOVY	UHHH	J	UHHHZRZX
RUSSIAN FEDERATION	ACC/FIC	MAGADAN/SOKOL	UHMM	J	UHMMZRZX
RUSSIAN FEDERATION	ACC/FIC	PETROPAVLOVSK-KAMCHATSKY/YELIZOVO	UHPP	J	UHPPZRZX
RUSSIAN FEDERATION	ACC/FIC	IRKUTSK	UIII	J	UIIIZRZX
RUSSIAN FEDERATION	MWO	CHULMAN	UELL	J	UELLYMYX
RUSSIAN FEDERATION	MWO	KHABAROVSK/NOVY	UHHH	J	UHHHYMYX
RUSSIAN FEDERATION	MWO	MAGADAN/SOKOL	UHMM	J	UHMMYMYX
RUSSIAN FEDERATION	MWO	PETROPAVLOVSK-KAMCHATSKY/YELIZOVO	UHPP	J	UHPPYMYX

STATE	UNIT TYPE	LOCATION NAME	LOC. ID.	TASK/S REQUIRED*	AFTN ADDRESS
RUSSIAN FEDERATION	MWO	IRKUTSK	UIII	J	UIIIYMYX
SINGAPORE	ACC/FIC	SINGAPORE ACC/FIC	WSJC	D	WSJCZRZX
SINGAPORE	MWO	SINGAPORE/CHANGI	WSSS	D	WSSSYMYX
SINGAPORE	RODB	SINGAPORE/CHANGI	WSSS	D J	WSSSYZYX
SOLOMON ISLANDS	ACC/FIC	HONIARA (HENDERSON)	AGGH	D	AGGHYMYX
SOLOMON ISLANDS	MWO	HONIARA (HENDERSON)	AGGH	D	AGGHYMYX
SRI LANKA	ACC/FIC	KATUNAYAKE/BANDARANAIKE INTERNATIONAL AIRPORT COLOMBO	VCBI	D	VCBIZQZX
SRI LANKA	MWO	KATUNAYAKE/BANDARANAIKE INTERNATIONAL AIRPORT COLOMBO	VCBI	D	VCBIYMYX
THAILAND	ACC/FIC	BANGKOK (ACC/FIC/COM CENTRE)	VTBB	D J	VTBBYPYX
THAILAND	MWO	BANGKOK/SUVARNABHUMI INTL AIRPORT	VTBS	D J	VTBSYMYX
THAILAND	RODB	BANGKOK (ACC/FIC/COM CENTRE)	VTBB	D J	VTBBYPYX
UNITED KINGDOM	WAFC	UK PDAI (GEN)	EGZZ	D J	EGZZMASI
UNITED STATES	WAFC	WASHINGTON (NWS NATIONAL MET CENTER), DC.	KWBC	D J	KWBCYMYX
VIET NAM	ACC/FIC	HA NOI/NOI BAI INTERNATIONAL	VVNB	D J	VVNBZRZX
VIET NAM	ACC/FIC	HO CHI MINH/TAN SON NHAT INTERNATIONAL	VVTS	D J	VVTSZRZX
VIET NAM	MWO	GIA LAM	VVGL	D J	VVGLYMYX

*Tasks required for VAAC back-up test

TASK ID.	TIME UTC	TASK DESCRIPTION
A	**0100**	VAAC Darwin will request VAAC Tokyo to commence back-up services
B	Sequential	VAAC Tokyo will issue a VAA (commencement of test) for VAAC Darwin area of responsibility
C	Sequential	VAAC Tokyo will issue a VAA (test) for VAAC Darwin area of responsibility
D	Sequential	MWOs/ACCs/FICs in VAAC Darwin area of responsibility and RODBs/WAFCs will respond to VAAC Darwin (using email) to confirm receipt or non-receipt of test VAA issued by Tokyo VAAC for the VAAC Darwin area of responsibility
E	**0130**	VAAC Darwin will notify VAAC Tokyo of intent to resume normal operations
F	**0145**	VAAC Darwin will issue a VAA (cessation of test) for VAAC Darwin area of responsibility
G	**0200**	VAAC Tokyo will request VAAC Darwin to commence back-up services
H	Sequential	VAAC Darwin will issue a VAA (commencement of test) for VAAC Tokyo area of responsibility
I	Sequential	VAAC Darwin will issue a VAA (test) for VAAC Tokyo area of responsibility
J	Sequential	MWOs/ACCs/FICs in VAAC Tokyo area of responsibility and RODBs/WAFCs will respond to VAAC Tokyo (using email) to confirm receipt or non-receipt of test VAA issued by VAAC Darwin for the VAAC Tokyo area of responsibility

TASK ID.	TIME UTC	TASK DESCRIPTION
K	**0230**	VAAC Tokyo will notify VAAC Darwin of intent to resume normal operations
L	**0245**	VAAC Tokyo will issue a VAA (cessation of test) for VAAC Tokyo area of responsibility
M	0100 - 0245	VAAC Tokyo and VAAC Darwin will maintain a log of events

APPENDIX H

WELLINGTON/DARWIN VAAC BACK-UP TEST PROCEDURES

1. Introduction

1.1 The International Airways Volcano Watch Operations Group (IAVWOPSG) recognized the need for the regular testing of VAAC back-up procedures that would ensure the continuing availability of Volcanic Ash Advices and identify deficiencies in the dissemination procedures of back-up products. Therefore, the second meeting of IAVWOPSG held in Bangkok, 15 to 19 March 2004, adopted Conclusion 2/19, as follows:

Conclusion 2/19 – Inclusion of VAAC back-up procedures in Doc 9766

That the Secretariat include in Doc 9766, Handbook on the International Airways Volcano Watch (IAVW) – Operational Procedures and Contact List, the VAAC back-up procedures agreed by the group.

1.2 Appendix D, paragraph f) of ICAO Doc.9766 - *Handbook on International Airways Volcano Watch (IAVW)* states that:

The back-up arrangements should be tested at least annually.

1.3 The Wellington and Darwin VAACs have developed a mutual back-up arrangement that includes procedures for undertaking a back-up test as described in this document.

2. Purpose and Scope of VAAC Back-up tests

2.1 The purpose of the VAAC back-up test is to ensure that internal procedures for the handover of responsibility and the issue of products for the other VAAC's area of responsibility are robust and functional.

2.2 The scope of the test also includes checking the dissemination pathways of the Volcanic Ash Advisory (VAA) messages.

2.3 The test is not designed to check the issuance of Volcanic Ash SIGMET and so there is **no requirement** to issue test SIGMETs.

3. Back-up test procedures

3.1 Procedures for Wellington – Darwin VAAC Back-up tests

3.1.1 Internal procedures related to handover of responsibility and issuance of VAAs for the other VAAC's area of responsibility will be tested and the results included in a final report.

3.2 Procedures for testing the dissemination of back-up VAAs

3.2.1 On the specified date at **0100 UTC** the Wellington VAAC will issue a test Volcanic Ash Advisory (VAA) for the Darwin VAAC area of responsibility south of latitude 20S. The message will indicate that it is a TEST and will follow the format given in **Section 4** of these procedures.

3.2.2 Recipients of the message **should send a confirmation email** to the address given in the message, including the message text and the time received.

3.2.3 **MWOs should NOT issue a test SIGMET**.

3.2.4 At **0200 UTC** the Darwin VAAC will issue a test VAA for the Wellington VAAC area of responsibility. The message will indicate that it is a TEST and will follow the format given in **Section 4** of these procedures.

3.2.5 Recipients of the message **should send a confirmation email** to the address given in the message, including the message text and the time received.

3.2.6 **MWOs should NOT issue a test SIGMET**.

3.2.7 In the event of a major eruption in either area the test may be cancelled.

3.3 Processing of the test results

3.3.1 The participating Asia/Pacific VAACs, in conjunction with the Asia/Pacific Regional OPMET Databanks (RODBs), will analyse the received responses to the test messages and present the results to the APANPIRG Meteorology Sub Group (MET SG) or an appropriate expert group (or groups) that may be required to progress international airways volcano watch (IAVW) related work.

4. Format of test VAA for the external test

4.1 From VAAC Wellington for VAAC Darwin

```
FVAU01 ADRM DDHHMM
VA ADVISORY
DTG: YYYYMMDD/HHMMZ
VAAC: DARWIN
VOLCANO: TEST 9999-999
PSN: N1000 E10000
AREA: UNKNOWN
SUMMIT ELEV: 9999M
ADVISORY NR: YYYY/N
INFO SOURCE: TEST TEST TEST
AVIATION COLOUR CODE: NIL
ERUPTION DETAILS: TEST TEST TEST
OBS VA DTG: 99/9999Z
OBS VA CLD: WIND SFC/FL999 999/99KT
FCST VA CLD +6 HR: NO VA EXP
FCST VA CLD +12 HR: NO VA EXP
FCST VA CLD +18 HR: NO VA EXP
RMK: THIS IS A TEST ADVISORY ISSUED BY WELLINGTON VAAC FOR THE
DARWIN VAAC AREA OF RESPONSIBILITY SOUTH OF LATITUDE 20S.
PLEASE ACKNOWLEDGE RECEIPT OF THIS ADVISORY BY SENDING AN EMAIL
TO DARWIN.VAAC@BOM.GOV.AU DARWIN VAAC.
NXT ADVISORY: NO FURTHER ADVISORIES=
```

4.2 From VAAC Darwin for VAAC Wellington

```
FVPS01 NZKL DDHHMM
VA ADVISORY
DTG: YYYYMMDD/HHMMZ
VAAC: WELLINGTON
VOLCANO: TEST 9999-999
PSN: N1000 E10000
AREA: UNKNOWN
SUMMIT ELEV: 9999M
ADVISORY NR: YYYY/N
INFO SOURCE: TEST TEST TEST
AVIATION COLOUR CODE: NIL
ERUPTION DETAILS: TEST TEST TEST
OBS VA DTG: 99/9999Z
```

```
OBS VA CLD: WIND SFC/FL999 999/99KT
FCST VA CLD +6 HR: NO VA EXP
FCST VA CLD +12 HR: NO VA EXP
FCST VA CLD +18 HR: NO VA EXP
RMK: THIS IS A TEST ADVISORY ISSUED BY DARWIN VAAC FOR THE
WELLINGTON VAAC AREA OF RESPONSIBILITY. PLEASE ACKNOWLEDGE
RECEIPT OF THIS ADVISORY BY SENDING AN EMAIL TO
VAAC@METSERVICE.COM WELLINGTON VAAC.
NXT ADVISORY: NO FURTHER ADVISORIES=
```