International Civil Aviation Organization

WORKING PAPER (WP/21)

ICAO Asia and Pacific (APAC)
Twenty-Ninth Meeting of the Meteorology Sub-Group (MET SG/29)

Bangkok, Thailand, 18 - 22 August 2025

Agenda Item 5: Planning and monitoring

INCLUSION OF VONA IN THE APAC REGIONAL SIGMET TEST PROCEDURES

(Presented by New Zealand)

SUMMARY

This paper proposes a method for the inclusion of the volcano observatory notice to aviation (VONA) in the annual ICAO APAC Regional SIGMET Test Procedures, from 2026 onwards, following the elevation of the VONA as a Recommended Practice in Amendment 82 to Annex 3. Action for the meeting is contained in paragraph 3.1.

1. INTRODUCTION

1.1 The 28th Meeting of the Meteorology Sub-Group (MET SG/28) agreed Action 28/11, for New Zealand to prepare a proposal to include VONA in the ICAO APAC Regional SIGMET Test ('annual SIGMET test') procedures for 2026.

1.2 Amendment 82 to Annex 3, applicable 27 November 2025, includes a new Recommended Practice for State volcano observatories (SVOs) to provide their information on volcanic activity in the form of a VONA.

1.3 To support monitoring of the implementation of VONA, and to ascertain where assistance may be needed, it is proposed to include issuance of test VONA as part of the annual SIGMET test.

2. DISCUSSION

2.1 The introduction to the annual SIGMET test procedures advises that the annual SIGMET test is intended to check the issuance and reception of SIGMET messages, "especially those for volcanic ash". Volcanic ash, particularly in the immediate period following an eruption, poses a significant risk to aviation. Prompt issuance of VONA to the required recipients is crucial to support aviation safety during volcanic eruptions, as well as supporting meteorological watch offices (MWOs) and volcanic ash advisory centres (VAACs) in issuing their SIGMET and volcanic ash advisory (VAA) information.

2.2 It is proposed that designated SVOs could participate in the annual SIGMET test, as part of the volcanic ash SIGMET procedure. Draft changes to the current test procedures are provided in Appendix A to this paper, for review by the meeting.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper;
b) review the draft procedures provided in Appendix A to this paper;
c) propose edits to the draft procedures to improve their useability by SVOs; and
d) update the Regional SIGMET Guide (after November 2025) to include the changes.

– – – – – – – – – – – – – –

APPENDIX A – Draft SIGMET Test Procedures

Editorial note – additional text is in grey highlight; deleted text is in ~~red strikeout~~.

1. INTRODUCTION

[…]

1.2 This document describes the procedures for conducting regional SIGMET tests. Following the provisions of *Procedures for Air Navigation Services — Meteorology (*PANS-MET, Doc 10157) ~~ICAO Annex 3~~, the test messages (for SIGMET, ~~and~~ volcanic ash and tropical cyclone advisories (VAA and TCA respectively), and volcano observatory notice to aviation (VONA) information) should be disseminated in the ICAO meteorological information exchange model (IWXXM) form in addition to the dissemination of the test messages in abbreviated plain language and alphanumeric form following the templates provided in PANS-MET ~~Annex 3~~.

[…]

1.4 The test procedures encompass all the three types of SIGMET messages, VAA, TCA, and VONA, as follows:

~~SIGMET m~~Message type	~~SIGMET~~ Message header data type designator	
	Alphanumeric	IWXXM
Tropical cyclone SIGMET	WC	LY
Volcanic ash SIGMET	WV	LV
Weather and other phenomena SIGMET (apart from tropical cyclone and volcanic ash)	WS	LS
Tropical cyclone advisory	FK	LK
Volcanic ash advisory	FV	LV
VONA	WM	LM

1.5 The requirements for disseminating SIGMET, TCA, VAA and VONA messages are specified in PANS-MET ~~Annex 3 to the Convention on International Civil Aviation — *Meteorological Service for International Air Navigation*, Appendix 6, para. 1.2~~, and in the ICAO Asia/Pacific Regional SIGMET Guide, para. 3.6~~8~~ (currently excludes VONA).

[…]

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 messages and the compliance of the States' procedures for the preparation and dissemination of SIGMET messages with the relevant ICAO Standards and Recommended Practices (SARPs) and regional procedures. A secondary outcome of the SIGMET tests is to further verify the compliance of participating volcanic ash and tropical cyclone advisory centres (TCACs and VAACs), along with SVOs, for the issuance of VAA, TCA and VONA, respectively.

2.2 An MWO (or TCAC, VAAC, SVO) can issue ~~SIGMET~~ test messages for local reasons (e.g., testing of local systems or routing, etc.). Furthermore, it is recommended that agencies ~~MWOs~~ consider issuing ~~SIGMET~~ test messages following upgrades to operational forecast or product tools, ~~SIGMET~~ or dissemination systems. However, whilst such tests may not involve other MWOs or agencies directly, it is recommended that the general principles of the ICAO Asia/Pacific Regional SIGMET Guide be followed concerning local and ad hoc testing.

2.3 For this document's purposes, references to "SIGMET tests" or "tests" should be understood to refer to regional SIGMET tests, encompassing all test SIGMETs, advisories and VONA.

2.4 The scope of the tests is to check also the interaction between ~~the tropical cyclone and volcanic ash advisory centres (~~TCACs, ~~and~~ VAACs~~)~~ and the MWOs located within the TCACs and VAACs' respective areas of responsibility, along with the interaction of SVOs with their associated VAAC(s). Therefore, where the issuance of WC/LY and WV/LV SIGMET messages is being tested, the SIGMET test messages initiated by the MWOs should normally be triggered by an advisory test message issued by the responsible TCAC or VAAC. Further, a VAAC will record the test VONA received from its associated SVO(s).

2.5 When an MWO is responsible for SIGMET services for an FIR that falls within the area of responsibility of more than one VAAC or TCAC, it should issue a corresponding SIGMET test message based on the receipt (or non-receipt) of each advisory test message from each of its associated VAACs or TCACs. For example, the FIR Kolkata lies within the areas of responsibility of VAACs Tokyo, Darwin and Toulouse. Therefore, the responsible MWO should issue a corresponding WV/LV SIGMET test message based on the receipt (or non-receipt) of each advisory test message from the VAACs Tokyo, Darwin and Toulouse.

2.6 When an SVO is responsible for monitoring volcanoes located within the areas of responsibility of multiple VAACs, it should issue a test VONA message and send it to each relevant VAAC. For example, one of the United States SVOs, the Hawai'i Volcano Observatory, has responsibility for monitoring volcanoes in American Samoa (VAAC Wellington area of responsibility) and also Hawai'i (VAAC Washington area of responsibility).

2.7 ~~2.6.~~ The regional OPMET data banks (RODBs) will monitor the message dissemination by filing all advisory, ~~and~~ SIGMET, and VONA test messages and the corresponding reception times. The participating RODBs will provide the monitoring results from the WC/LY, WV/LV and WS/LS SIGMET tests in the form of summaries to the two SIGMET test focal points (ref: para. 6.2.2.), with a copy to the ICAO APAC Office.

2.8 ~~2.7.~~ The SIGMET test focal points will prepare a consolidated summary report and submit it to the ICAO APAC Office. The report will include recommendations for improving the SIGMET, advisory and VONA message exchange and availability. The test results should be reported to the ~~conjoint session of the~~ Meteorological Information Exchange Working Group (MET/IE WG) ~~and Meteorological Services Working Group (MET/S WG)~~.

2.9 ~~2.8.~~ The ICAO APAC Office will advise participating States of any discrepancies with respect to SIGMET issuance procedures or other findings identified by the tests and request the States concerned to take necessary corrective action.

3. PROCEDURES FOR WC/LY AND WV/LV SIGMET TEST

3.1 Participating units

3.1.1 Participating units include the following:

- Meteorological Watch Offices (MWOs)* as listed in para. 9.3. Table 1, with a required SIGMET test task indicated as 'WC/LY' or 'WV/LV';
- Regional OPMET Data Banks (RODBs) as listed in para. 9.3. Table 2;
- Tropical Cyclone Advisory Centres (TCACs) as listed in para. 9.3. Table 3;
- Volcanic Ash Advisory Centres (VAACs) as listed in para. 9.3. Table 4; ~~and~~
- World Area Forecast Centres (WAFCs) as listed in para. 9.3. Table 5; and~~.~~
- State volcano observatories (SVOs) as listed in para. 9.3. Table 6.

**Note. - The participation of MWOs in States outside the APAC region should be coordinated through the responsible ICAO Regional Office.*

3.2 Issuance of the advisory test message

3.2.1 On the specified date for the test, each participating TCAC and VAAC should issue an advisory test message (to trigger the associated MWOs to issue the WC/LY or WV/LV SIGMET test messages) at 0200 UTC, apart from TCAC New Delhi and TCAC La Réunion (see below) *.

**Notes. –*

i. To accommodate the ICAO Middle East (MID) Region in the WC/LY SIGMET test, TCAC New Delhi should issue the advisory test message at 0200 UTC (to MWOs in the ~~Asia~~ APAC Region only) followed by another advisory test message at 0800 UTC (to MWOs in the MID Region, only), as indicated in para 9.3. Tables 3 and 6; and

ii. To accommodate TCAC La Réunion in the WC/LY SIGMET test, TCAC La Réunion should issue one advisory test message at 0500 UTC (to MWOs in the ~~Asia~~ APAC Region only), as indicated in para. 9.3. Tables 3 and 6.

[…]

3.6 Issuance, dissemination and content of VONA test message

3.6.1 On the specified date for the test, each participating SVO should issue a test VONA message. The test VONA message should be sent to the SVO's associated VAAC(s) and to the RODBs, as indicated in para. 9.3. Table 2.

3.6.2 The content of the test VONA message should follow the template given in PANS-MET, Appendix 7, Table A7-1 (ref: examples of test VONA messages in abbreviated plain language in paras. X.x.). Using the status indicator "TEST" at the appropriate position of the test VONA message provides recipients with an indication that it is a test message.

3.6.3 For the test VONA messages in IWXXM form, the *Guidelines for the Implementation of OPMET Data Exchange using IWXXM* provides further guidance on the format for IWXXM messages issued for non-operational purposes. Crucially, the IWXXM element name 'permissibleUsage' shall be set to NON-OPERATIONAL. In addition, the 'permissibleUsageReason' field shall be set to TEST.

3.7 ~~3.6~~ **Special case for the non-issuance of WC/LY and WV/LV SIGMET test message**

3.7.1 ~~3.6.1~~ To avoid any possible risk of confusion during actual tropical cyclone and volcanic ash events, in the case where, at the time of the test, there is a valid WC/LY or WV/LV SIGMET message for the MWO's area of responsibility, the MWO should not send a SIGMET test message of the same type. However, in this case, the MWO should notify the WC/LY and WV/LV SIGMET test focal point (ref: para. 6.2.2.) to be excluded from the analysis of the SIGMET test messages.

[…]

5.6 **Heading of the meteorological bulletin for advisory, VONA and SIGMET test message**

5.6.1 Following ICAO Annex 3, Appendix 10, para. 2.1.3, the meteorological bulletin from a participating unit containing an advisory, VONA or SIGMET test message should contain a valid heading, also known as the World Meteorological Organization (WMO) abbreviated heading line (AHL).

5.6.2. The APAC Regional SIGMET Guide, Appendices D and E list the WMO AHLs for the meteorological bulletins containing SIGMET messages and TC ~~and VA~~ advisory messages used by the MWOs and TCACs ~~and VAACs~~ in the APAC Region. WMO AHLs for the VA advisory message bulletins are available in Table 4-3 of the ICAO *Handbook on the International Airways Volcano Watch* (Doc 9766), available at https://www.icao.int/airnavigation/METP/Pages/default.aspx.

[…]

6. PROCESSING THE ~~SIGMET~~ TEST RESULTS

6.1 **Role of the RODBs**

6.1.1 Each participating RODB should file all incoming meteorological bulletins containing advisory test messages, ~~and~~ SIGMET test messages, and VONA test messages, and perform an analysis of the availability and timeliness of arrival of the test messages and the correctness of the bulletin headings (WMO AHLs).

[…]

7. EXAMPLES OF TEST MESSAGES

[…]

7.6 VONA test message

7.6.1 Example of the VONA test message for volcanic activity in abbreviated plain language:

VONA
STATUS: TEST
DTG: YYYMMDD/hhmmZ
VOLCANO: TEST 999999
PSN: UNKNOWN
AREA: UNKNOWN
SOURCE ELEV: UNKNOWN
NOTICE NR: YYYY/nn
CURRENT COLOUR CODE: NIL
PREVIOUS COLOUR CODE: NIL
SVO: <name of VAAC>
ACT STS: NIL
ONSET: NIL
DUR: NIL
VA CLD HGT: NO VA CLD PRODUCED
HGT SOURCE: NO VA CLD PRODUCED
MOV: NO VA CLD PRODUCED
CTC: NIL
RMK: THIS IS A TEST VONA MSG. VAAC SHOULD RECORD DETAILS. PLEASE REF LETTER FROM ICAO APAC OFFICE DATED YYYYMMDD.

7.6.1 For the test VONA message in the IWXXM form, the *Guidelines for the Implementation of OPMET Data Exchange using IWXXM* provides further guidance on the format for IWXXM messages issued for non-operational purposes. Crucially, the IWXXM element name 'permissibleUsage' shall be set to NON-OPERATIONAL. In addition, the 'permissibleUsageReason' field shall be set to TEST.

[…]

8. ~~SIGMET~~ TEST SUMMARIES~~Y~~

8.1. ~~SIGMET t~~Test summary tables

8.1.1. The RODBs should present the summaries of meteorological bulletins received in the abbreviated plain language/alphanumeric form and the IWXXM form in separate tables.

8.1.2 VAACs should record test VONA they receive and provide the name of the SVO, VONA bulletin heading information (TTAAii, CCCC and DTG) of the VONA, as well as the time received (in UTC) and any comments the VAAC may have. This information should then be shared with RODB Tokyo at the conclusion of the test, using a summary table (see example for VONA in paragraph 8.1.3).

8.1.3~~2~~. Example of ~~SIGMET~~ test summary tables used by RODBs (for meteorological bulletins received in abbreviated plain language/alphanumeric form):

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

VONA test messages (WM)				
TTAAii	CCCC	YYGGgg	Received Time(UTC)	Comments/Remarks
WMNZ02	NZKL	170201	02:01:53	SVO: Earth Sciences NZ
WMFE01	RJTD	170200	02:00:09	SVO: JMA
WMID05	WAAA	170200	02:00:45	SVO: CVGHM

[…]

9. ~~SIGMET~~ TEST SUPPLEMENTARY INFORMATION

9.3 Detailed list of participating States, operational units and tasks

9.3.1 The following tables indicate the participating States, operational units and tasks required for the APAC regional SIGMET tests:

Table 1: Participating MWOs
MWOs (listed by ICAO Region and State) with an indication of the required SIGMET test task/s, including, where applicable, the associated TCACs and VAACs.

MWO DETAILS	REQUIRED SIGMET TEST TASK ID (Refer Table 7~~6~~ for further details)		
	Associated TCAC WC/LY SIGMET test	Associated VAAC WV/LV SIGMET test	
…	…	…	…

Editorial note – Table reference should be updated at top of table on page 13 also.

Table 2: Participating RODBs

[…]
*Refer to Table 7~~6~~ for details.

Table 3: Participating TCACs

[…]
*Refer to Table 7~~6~~ for further details.

Table 4: Participating VAACs

[…]
*Refer to Table 7~~6~~ for further details.

Table 5: Participating WAFCs

[…]
*Refer to Table 7~~6~~ for further details.

Table 6: ~~SIGMET test tasks~~ Participating SVOs

SVOs listed by State, with indication of required SIGMET test tasks.
Note:- Refer to APAC Air Navigation Plan Vol I, Table MET I-1, for current list of designated SVOs.

STATE	ICAO REGION	SVO NAME	TASK (ID)*	Associated VAACs to which the VONA test message should be sent.
China	APAC	Heilongjiang Wudalianchi Volcano Observatory	1.1	Tokyo
		Jilin Changbai Mountain Tianchi Volcano Observatory	1.1	Tokyo
Japan		Fukuoka Volcanic Observation and Information Center, Japan Meteorological Agency	1.1	Tokyo
		Kagoshima Local Meteorological Office, Japan Meteorological Agency	1.1	Tokyo
		Sapporo Volcanic Observation and Information Center, Japan Meteorological Agency	1.1	Tokyo
		Sendai Volcanic Observation and Information Center, Japan Meteorological Agency	1.1	Tokyo
		Tokyo Volcanic Observation and Information Center, Japan Meteorological Agency	1.1	Tokyo
India		TBD	1.1	Darwin
Indonesia		Directorate of Volcanology and Geological Hazard Mitigation (DVGHM)	1.1	Darwin
New Zealand		Wairakei Research Centre Institute of Geological and Nuclear Sciences	1.1	Wellington
Papua New Guinea		Rabaul	1.1	Darwin

*Refer to Table 7 for further details

Table ~~6~~7: ~~SIGMET t~~Test tasks

TASK ID.	WHO? Responsible unit/s	WHAT? Detailed description of the task	WHEN? Date/Time indicated in the following format: YYYYMMDD/HHMM UTC
~~SIGMET t~~Test for tropical cyclone (WC/LY SIGMET, FK/LK TCA test) – 202611dd/0200, 202611dd/0500 and 202611dd/0800			
…	…	…	…
~~SIGMET t~~Test for volcanic ash (WV/LV SIGMET, FV/LU VAA, WM/LM VONA ~~test~~) – 202611dd/0200			
WV/LV 1.0	VAACs listed in Table 4	Send the VA advisory test message (see para. 7.2) to: i. MWOs as indicated in Table 4;	202611dd/0200

		ii. RODBs listed in Table 2 (Note: this only applies to VAACs Darwin, Tokyo and Wellington); and iii. WAFCs listed in Table 5	
WV/LV 1.1	SVOs listed in Table 6	Send test VONA message (see para. 7.6) to: i. VAACs as indicated in Table 6; and ii. RODBs listed in Table 2.	202611dd/0200
Editorial note – re-number following tasks in this table and in other relevant tables.			

[…]

Figure 1: Schematic diagram of ~~SIGMET~~ test message dissemination

Editorial note – include new flow diagram for SVO information to VAACs and RODBs.