

*International Civil Aviation Organization*

**WORKING PAPER**



ICAO

**Asia and Pacific (APAC)**

**Thirteenth Meeting of the Meteorological Services Working Group (MET/S WG/13)**

Bangkok, Thailand, 29 to 31 March 2023

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**Agenda Item 5: Deficiencies in the provision of meteorological services**

**RESOLUTION OF MET DEFICIENCY AP-MET-14**

(Presented by Nepal)

**SUMMARY**

This paper outlines the work done by Nepal for the resolution of MET air navigation deficiency number AP-MET-14 for Meteorology Services Working Group (MET S) to review and provide advice for necessary action as required to resolve the deficiency.

**1. INTRODUCTION**

- 1.1 As defined by APANPIRG, an air navigation deficiency is a situation where a facility, service or procedure does not comply with a regional air navigation plan approved by the Council, or with related ICAO Standards and Recommended Practices (SARPs), and which situation has a negative impact on the safety, regularity or efficiency of international civil aviation<sup>1</sup>.
- 1.2 A deficiency was identified by APANPIRG as Requirements for issuance and dissemination of SIGMET information for Kathmandu FIR have not been fully implemented. This was first reported in 2000 and given priority A for action. The status was updated in September 2017 and APANPIRG/28 noted that Nepal should verify the status of implementation of CAP and work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the deficiency.
- 1.3 This paper presents the corrective action taken by Nepal to address the deficiency and invite MET S to examine the corrective actions provided and advice on further course of action required by the state.

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<sup>1</sup> APANPIRG Procedural Handbook, 6<sup>th</sup> edition, 1 June 2020, Part V, Section 2, paragraph 1.3

## 2. DISCUSSION

- 2.1 Nepal is required to establish a mechanism to observe, compose, and disseminate weather information for international air navigation in accordance with ICAO Annex 3.
- 2.2 The agency responsible for the issuance of weather reports in Nepal, including SIGMET, is the Meteorological Forecasting Division (MFD) under the Department of Hydrology and Meteorology (DHM).
- 2.3 The corrective action taken to ensure provision of meteorological services for international air navigation are listed below:
  - a) Establishing Hydromet workstation (SYNERGIEWEB) at MFD to compose SIGMET information with coordinates, height, speed, and direction for TS phenomena
  - b) Using the Hydromet workstation to create SIGMET messages
  - c) Using Automatic Message Handling System (AMHS) supplied by the Civil Aviation Authority of Nepal (CAAN) to disseminate SIGMET and other weather reports
  - d) Joining the SSEA SIGMET Coordination project to ensure SIGMET information is coordinated between KATHMANDU FIR and adjoining FIR
  - e) Ensuring regular participation of Nepal in SIGMET tests
- 2.4 There is an effective dissemination web that is established by CAAN to ensure SIGMET and other weather reports issued by the MET agency is delivered to ATS units and airline operators.
- 2.5 MFD, DHM has already upgraded SIGMET and other weather reports to the IWXXM format and is awaiting upgrading of AMHS systems to the IWXXM format.
- 2.6 Formal agreement between different departments of CAAN and DHM to ensure streamlined service delivery by the MET agency in Nepal is established.
- 2.7 All formal agreements will be revisited as and when required when the situation warrants (government policy updates) going forward.
- 2.8 Evidence of MET deficiency resolution have been provided in the appendix:
  - Attachment 1: Type of SIGMET possible to produce by SYNERGIEWEB
  - Attachment 2: Sample of WS SIGMET production window in SYNERGIEWEB
  - Attachment 3: Sample of WS SIGMET produced by SYNERGIEWEB
  - Attachment 4: SIGMET TEST result 2021
  - Attachment 5: Sample of SIGMET dissemination platform (AMHS)
  - Attachment 6: Sample of VA Advisory received from the AMHS system
  - Attachment 7: Sample of TAF message sent by Nepal
  - Attachment 8: Sample of wind and temperature chart provided for air navigation purpose

- 2.9 Letter of Support to confirm regular and timely receipt of meteorological information for air navigation purpose was sought as evidence from ATS, CAAN, and airline operators. The support note or letter from these organizations will be furnished as separate attachment when available.

**3. ACTION BY THE MEETING**

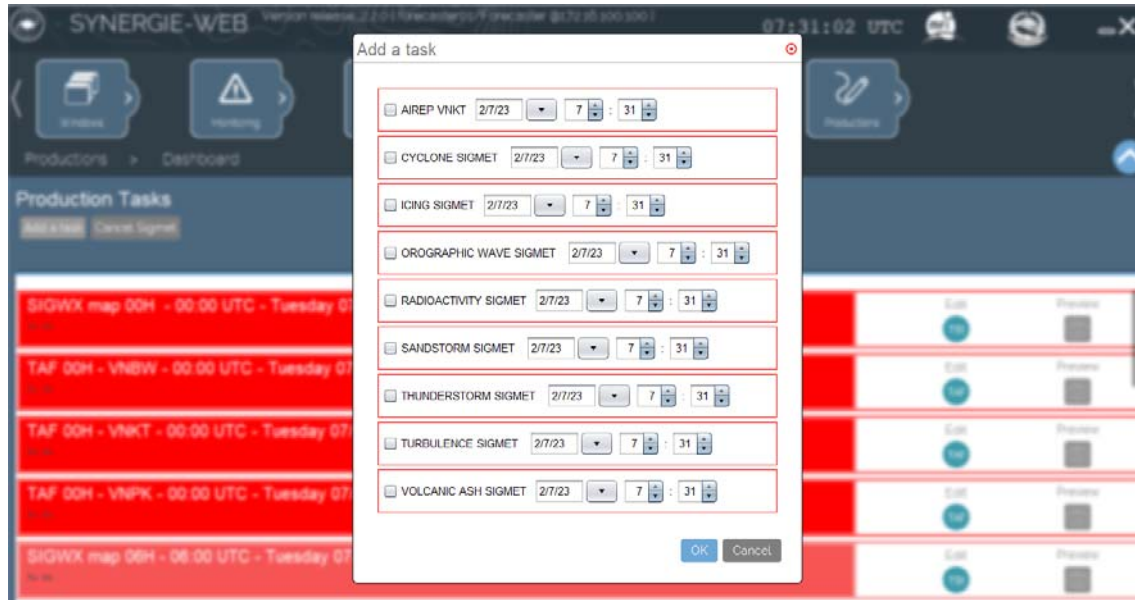
- 3.1 On the basis of establishing the resolution status of this deficiency (AP-MET-14), MFD/DHM sincerely requests the assistance of MET S to review the evidence covered in section two (2) of this paper and provide feedback.
- 3.2 The MET S is requested to consider making a recommendation to APANPIRG to remove AP-MET-14 from the deficiency list.
- 3.3 The MET/S – WG is hereby invited to :
  - a) Review the evidence of deficiency resolution presented, and
  - b) Provide feedback on the resolution status.

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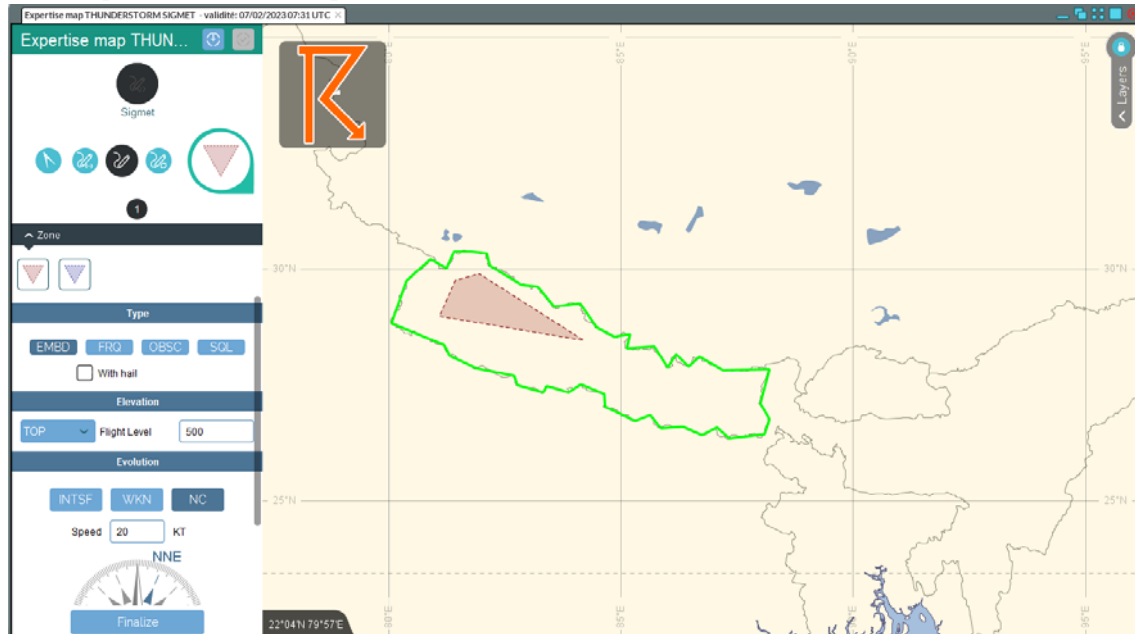
**APPENDIX**

[necessary supporting information]

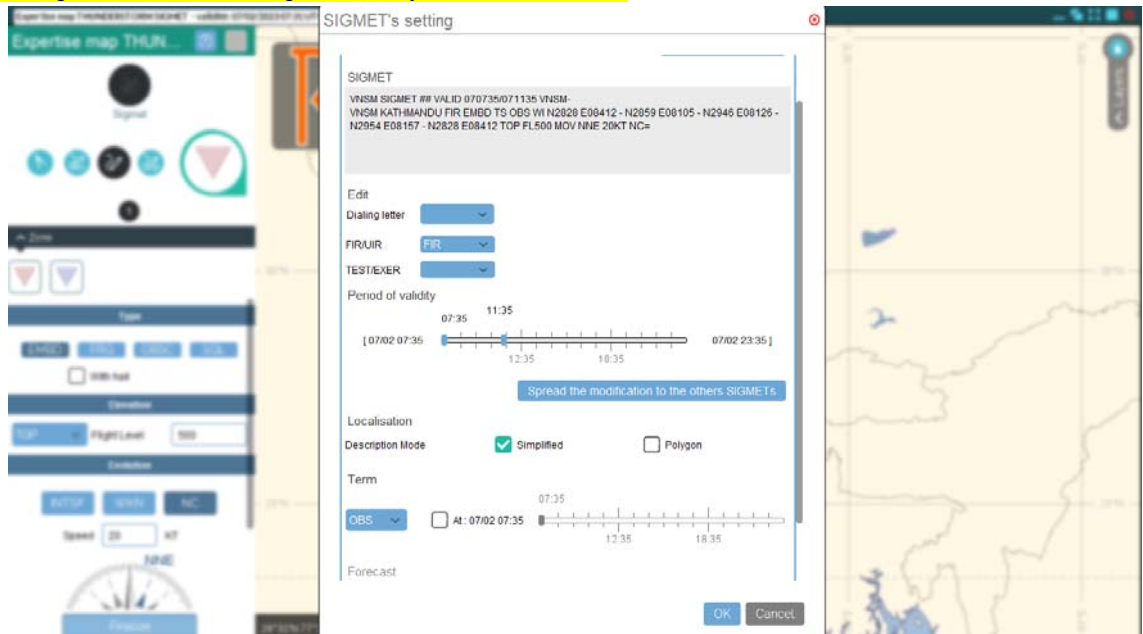
**1. Type of SIGMET possible to produce by SYNERGIEWEB**



**2. Sample of WS SIGMET production window in SYNERGIEWEB**



3. Sample of WS SIGMET produced by SYNERGIEWEB



4. SIGMET TEST result 2021

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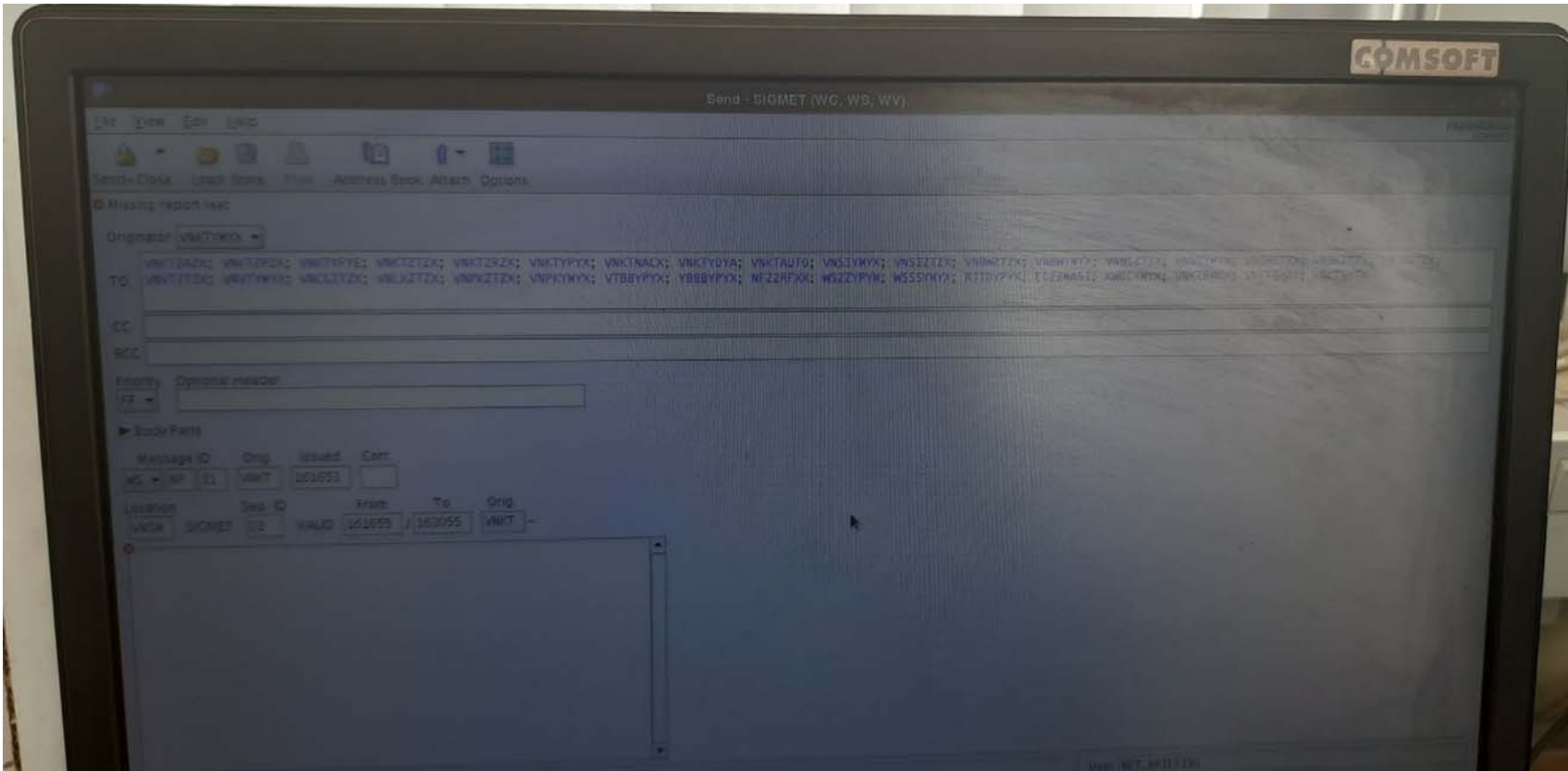
Appendix 6: Table of WV SIGMET test

State	MWO name	MWO	TTAAII	CCCC	FIR	PI	TTAAII	CCCC	YCOG##	MWO	FIR	YAAC	Test Result						Remarks
													VTBB	WSSS	YRBB	NFFN	BJTD	EUR	
AFGHANISTAN	KABUL	OAKB	WVAI01	OAKB	YAMM	FF	WVAI01	YAMC	16207	YAMC	YAMM	Darwin	2:12	2:07	2:08	2:07	2:12	2:09	
AUSTRALIA	MELBOURNE	YAMC	WVAL01	YAMC	YAMM	FF	WVAL01	YAMC	16208	YAMC	YBHB	Darwin	2:17	2:06	2:18	2:08	2:17	2:10	
BANGLADESH	DHAKA	WVBS20	WVBS20	WVBS	WVBS	GG	WVBS20	WVBS	16235	WVBS	WVBS	-	2:35	2:35		2:40	2:35		Incorrect priority (KO)
CAMBODIA	PHNOM PENH	ZULU	WVCP21	WVCP	WVCP	FF	WVCP21	ZBAA	16235	ZBAA	ZBPP	Tokyo	2:24	2:24		2:25	2:24	2:25	
CHINA	BEIJING	ZULU	WVCP38	ZBAA	ZBPP	FF	WVCP38	ZULU	16202	ZULU	ZPKM	Tokyo	2:01	2:01		2:02	2:01	2:01	
	CHENGDU	ZULU	WVCP38	ZULU	ZPKM	FF	WVCP38	ZULU	16202	ZULU	ZPKM	Tokyo	2:01	2:01		2:02	2:01	2:01	
GUANGZHOU	ZHOU	ZGGG	WVCI35	ZGGG	ZGGG	FF	WVCI35	ZGGG	16206	ZGGG	ZGGG	Tokyo	2:11	2:11		2:10	2:09	2:09	
	HAIKOU	ZHOU	WVCI35	ZHOU	ZHOU	FF	WVCI35	ZHOU	16206	ZHOU	ZHOU	Tokyo	2:11	2:11		2:10	2:09	2:09	
HONG KONG	VHHR	WVSS20	VHHR	VHHR	VHHR	FF	WVSS20	VHHR	16202	VHHR	VHHR	Tokyo	2:03	2:03		2:04	2:02	2:03	
	SHANGHAI	ZSSS	WVCI34	ZSSS	ZSSS	FF	WVCI34	ZSSS	16203	ZSSS	ZSSS	Tokyo	2:07	2:06		2:08	2:05	2:02	2:02
SHEINYANG	ZYTX	WVCI38	ZYTX	ZYTX	ZYTX	FF	WVCI38	ZYTX	16205	ZYTX	ZYTX	Tokyo	2:09	2:10		2:11	2:09	2:10	
	TAIBEI	RCTP	WVCI31	RCTP	RCAA	FF	WVCI31	RCTP	16211	RCTP	RCAA	Tokyo	2:07	2:05		2:06	2:05	2:06	
URUMQI	ZWWW	WVCI39	ZWWW	ZWWW	ZWWW	FF	WVCI39	ZWWW	16205	ZWWW	ZWWW	Tokyo	2:07	2:05		2:06	2:05	2:06	
	WUHAN	ZHHH	WVCI45	ZHHH	ZHHH	FF	WVCI45	ZHHH	16203	ZHHH	ZHHH	Tokyo	2:06	2:04		2:05	2:03	2:05	
S'UAN	ZLXY	WVCI37	ZLXY	ZLXY	ZLXY	FF	WVCI37	ZLXY	16205	ZLXY	ZLXY	Tokyo	2:08	2:07		2:09	2:05	2:07	2:08
	X'UNAN	ZKPY	WVCI31	ZKPY	ZKPY	FF	WVCI31	ZKPY	16202	ZKPY	ZKPY	Tokyo	2:03	2:01		2:03	2:04	2:02	2:02
FIJI	NADI	NFFN	WVFA01.02	NFFN	NFFN	FF	WVFA01	NFFN	020205	NFFN	NFFN	Wellington	2:05	2:04		2:05	2:30	2:04	2:05
FRENCH POLYNESIA	TAHITI	NAAA	WVFP21.22	NAAA	NAAA	FF	WVFP20	NAAA	16205	NAAA	NAAA	Wellington	2:13	2:06		2:09	2:07	2:13	2:16
INDIA	CHENNAI	WOMM	WVNS1	WOMM	WOMM	FF	WVNS1	WOMM	16205	WOMM	WOMM	Darwin	2:08	2:07		2:08	2:07	2:07	2:08
	KOLKATA	VECC	WVNS1	VECC	VECC	FF	WVNS1	VECC	16205	VECC	VECC	Toulouse	2:16	2:15		2:17	2:15	2:16	2:16
INDONESIA	MUMBAI	VABB	WVNS1	VABB	VABB	FF	WVNS1	VABB	16200	VABB	VABB	Tokyo	2:04	2:03		2:04	2:02	2:03	2:04
	NEW DELHI	VDP	WVNS1	VDP	VDP	FF	WVNS1	VDP	16200	VDP	VDP	Tokyo	2:01	2:01		2:03	2:04	2:01	2:02
JAPAN	JAKARTA	WIII	WVND20	WIII	WIII	FF	WVND20	WIII	16202	WIII	WIII	Darwin	2:03	2:03		2:03	2:04	2:03	2:04
	MAKASSAR	WAAA	WVND21	WAAA	WAAZ	FF	WVND21	WAAA	16202	WAAA	WAAZ	Darwin	2:04	2:03		2:05	2:05	2:03	2:04
LAO PDR	VIENTIANE	VJVT	WVLA31	VJVT	VJVT	FF	WVLA31	VJVT	16205	VJVT	VJVT	Tokyo	2:06	2:06		2:06	2:05	2:06	2:06
	KUALA LUMPUR	WMAK	WVMS1	WMAK	WMAK	FF	WVMS1	WMAK	16201	WMAK	WMAK	Tokyo	2:00	2:00		2:00	2:00	2:00	2:00
MALDIVES	MALE	VRMM	WVRS1	VRMM	VRMM	FF	WVRS1	VRMM	16200	VRMM	VRMM	Darwin	2:02	2:02		2:02	2:02	2:02	2:02
	MONGOLIA	ZULU	WVMS1	ZULU	ZULU	FF	WVMS1	VRMM	16205	VRMM	VRMM	Darwin	2:06	2:05		2:06	2:06	2:06	2:06
MYANMAR	YANGON	YVYY	WVMS1	YVYY	YVYY	FF	WVMS1	VRMM	16205	VRMM	VRMM	Darwin	2:06	2:05		2:06	2:06	2:06	2:06
NEPAL	KAATHMANDU	ANAU	WVNW20	ANAU	ANAU	FF	WVNW20	ANAU	16205	ANAU	ANAU	Darwin	2:07	2:07		2:07	2:07	2:07	2:07
	WELLINGTON	NZKL	WVNZ21	NZKL	NZKL	FF	WVNZ21	NZKL	16205	NZKL	NZKL	Tokyo	2:07	2:07		2:07	2:07	2:07	2:07
PAKISTAN	KARACHI	NZKL	WVPS21	NZKL	NZKL	FF	WVPS21	NZKL	16215	NZKL	NZKL	Wellington	2:06	2:05		2:06	2:04	2:06	2:06
	LAHORE	OPKA	WVPK31	OPKA	OPKA	FF	WVPK31	OPKA	16200	OPKA	OPKA	Wellington	2:06	2:04		2:18	2:04	2:06	2:06
PHILIPPINES	PORT MORSBRY	OPLA	WVPK31	OPLA	OPLA	FF	WVPK31	OPLA	16205	OPLA	OPLA	Tokyo	2:20	2:20		2:22	2:05	2:20	2:21
	MANILA	RPLI	WVPH11	RPLI	RPLI	FF	WVPH11	RPLI	16205	RPLI	RPLI	Tokyo	2:09	2:08		2:10	2:05	2:09	2:09
SINGAPORE	SHINGAPORE	WSSS	WVSK01	WSSS	WSSS	FF	WVSK01	WSSS	16205	WSSS	WSSS	Tokyo	2:05	2:04		2:05	2:05	2:04	2:05
	HONOLULU	AGCH	WVSO20	AGCH	AGCH	FF	WVSO20	AGCH	16205	AGCH	AGCH	Darwin	2:06	2:05		2:06	2:05	2:06	2:06
SOLOMON ISLANDS	COLONIA	VCBI	WVSB11	VCBI	VCBI	FF	WVSB11	VCBI	16200	VCBI	VCBI	Wellington	2:03	2:03		2:20	2:03	2:21	2:21
	BANGKOK	VTHS	WVTH11	VTHS	VTHS	FF	WVTH11	VTHS	16203	VTHS	VTHS	Darwin	2:04	2:03		2:03	2:05	2:03	2:04
VIET NAM	HANOI	VVGL	WVVS11	VVGL	VVGL	FF	WVVS11	VVGL	16205	VVGL	VVGL	Tokyo	2:07	2:06		2:08	2:06	2:07	2:07
	HANOI	PHHO	WVPA01-13	PHHO	PHHO	GG	WVPA01	PHHO	16205	PHHO	PHHO	Tokyo	2:02	2:02		2:02	2:02	2:02	2:02
UNITED STATES	ANCHORAGE	PAWU	WVAK01-08	PAWU	PAWU	DD	WVAK01	PAWU	16200	PAWU	PAWU	Washington	2:02	2:02		2:02	2:02	2:02	2:02
	KANSAS CITY	KCCI	WVFN01-13	KCCI	KZAK	DD	WVFN01	KCCI	16205	KCCI	KZAK	Washington	2:06	2:04		2:06	2:04	2:06	2:06
RUSSIAN FEDERATION	IRKUTSK	UHHH	WVRA31	RUR	UHHH	FF	WVRA31	RUR	16201	RUR	UHHH	Tokyo	2:07	2:05		2:07	2:05	2:06	2:06
	KHAROVSKNOVY	UHHH	WVRA31	RUR	UHHH	FF	WVRA31	RUR	16200	UHHH	UHHH	Tokyo	2:02	2:02		2:02	2:02	2:02	2:02
SRILANKA	KRASSNOYARSK	UHHM	WVRA31	RUMG	UHHM	FF	WVRA31	RUMG	16205	UHHM	UHHM	Tokyo	2:07	2:06		2:08	2:06	2:07	2:07
	MAGADANSOKOL	UHHM	WVRA31	RUMG	UHHM	FF	WVRA31	RUMG	16205	UHHM	UHHM	Tokyo	2:07	2:06		2:08	2:06	2:07	2:07
YAKUTSK	YAKUTSK	UHHM	WVRA31	RUMG	UHHM	FF	WVRA31	RUMG	16205	UHHM	UHHM	Tokyo	2:06	2:06		2:06	2:06	2:06	2:06
	YAKUTSK	UHHM	WVRA31	RUMG	UHHM	FF	WVRA31	RUMG	16205	UHHM	UHHM	Tokyo	2:02	2:02		2:02	2:02	2:02	2:02
SAUDI ARABIA	JEDDAH	GG	WVSD20	OJED	OJED	GG	WVSD20	OJED	16200	OJED	OJED	-	2:00	2:01		2:01	2:01	2:01	2:01

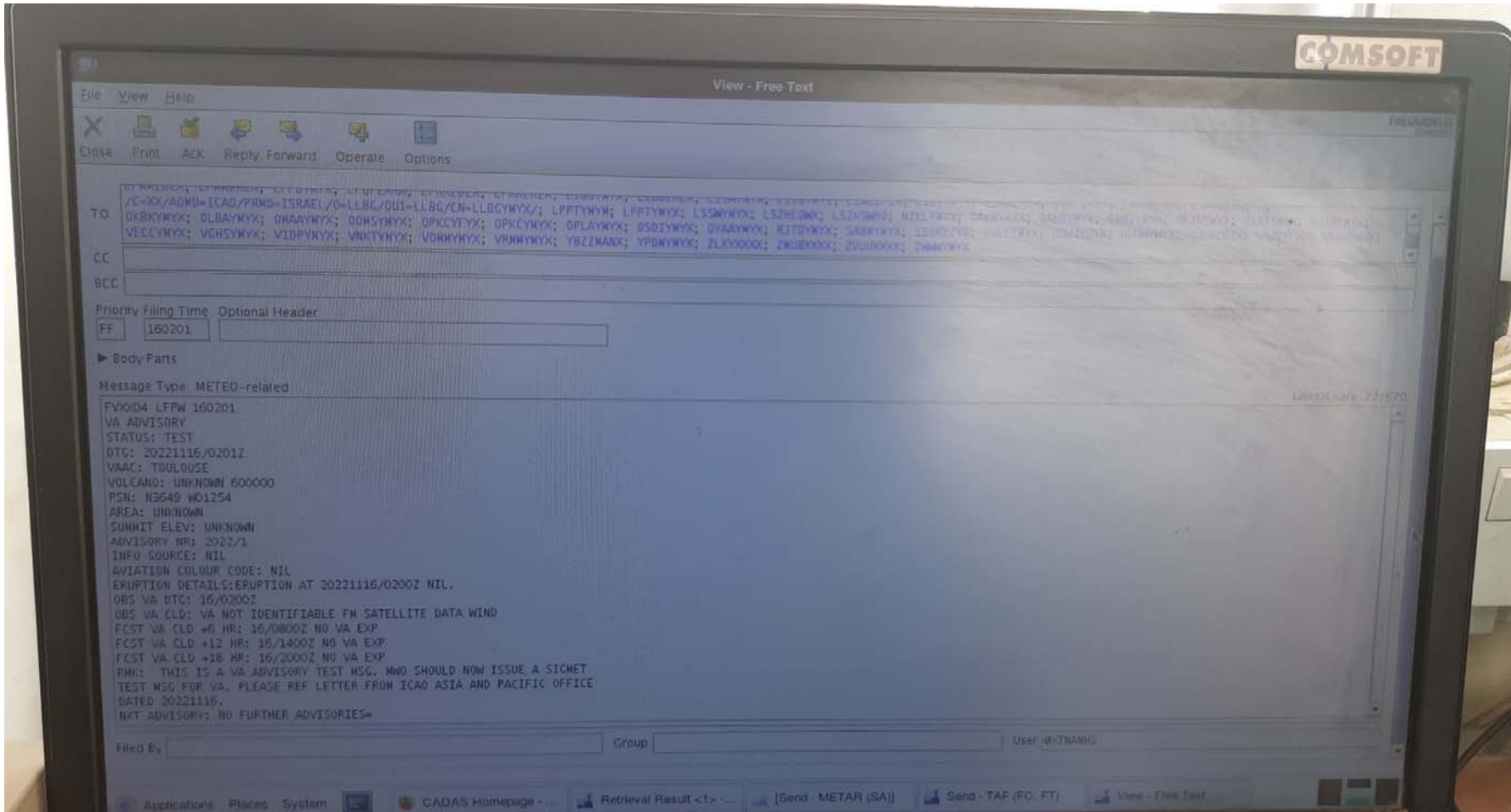
Not listed in SIGMET GUIDE



5. Sample of SIGMET dissemination platform (AMHS)



6. Sample of VA Advisory received from the AMHS system



7. Sample of TAF message sent by Nepal

This IPM: 000000000000000000000000\*/C=XX/ADMD=ICAO/PRMD=vn/O=AFTN/OU1=V  
Originator: VNKTMYX  
Primary Recipients: VABBPYX VABBMYX RJTDYZX VIDPYMYX WMKKYMY  
VTBSYMYX OTBDYMYX OBBIYMYX OMBYMYX VHHHYMYX RKSIMYX ZGGYZYX  
VNKTNACX VNKTYPYX VNKTSCYX VNKTZRZ X VNKTZAZX VNKTZTZ X VNKTIFYE  
VNKTZPZX VNNGZTZ X VNPKZTZ X VNSKZTZ X VNDHZTZ X VNBWZTZ X VNSIZTZ X  
VNJPZTZ X VNVZTZ X VNCGZTZ X VNLKZTZ X VNKTYDYX VNKTAUTO VNVTYMYX  
VNJPYMYX VNSIYMYX VNBWYMYX VNNGYMYX VNPKYMYX VNKTBHAX VNKTNYTX  
VNKTRMX ZUDSUOXX VNBZTZ X VABBAMHS  
Message Text:  
FTNFP31 VNKT 090500  
TAF VNKT 090500Z 0906/1006 12003KT 5000 HZ FEW015  
BECMG 0908/0909 26008KT 7000 FEW020 SCT030  
BECMG 0914/0915 26003KT 6000 FEW015  
BECMG 1000/1002 VRB02KT 4000 BR FEW010  
PROB40 1001/1003 1500 BR SCT030  
BECMG 1004/1005 11003KT 5000 HZ FEW015=

8. Sample of wind and temperature chart provided for air navigation purpose

