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WORKING PAPER (WP/16)

ICAO Asia and Pacific (APAC)
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(MET SG/29)

Bangkok, Thailand, 18 to 22 August 2025

Agenda Item 4: Regional guidance material

OPTIMIZING IWXXM MESSAGE DISSEMINATION FOR HONG KONG, CHINA

(Presented by Hong Kong, China)

SUMMARY

This paper presents the optimisation of the IWXXM message dissemination workflow and schedule implemented by Hong Kong, China since April 2025 to enhance the availability and timeliness of METAR and TAF messages in IWXXM format.

1. INTRODUCTION

1.1 During the 2024 APAC METAR and TAF Performance Indices monitoring conducted from 1 – 30 November 2024, the availability of IWXXM reports for the Hong Kong International Airport (VHHH) was 1.00 for METAR (LA) and 0.88 for TAF (LT), while the timeliness was 0.79 for METAR (LA) and 0.88[1] for TAF (LT) (MET/IE WG/23 WP/16 – Asia/Pacific Performance Indices refers). Hong Kong Regional OPMET Centre (ROC) has implemented system enhancements since April 2025 to boost the availability and timeliness of VHHH METAR and TAF in IWXXM format.

2. DISCUSSION

Re-allocation of aerodromes in METAR bulletins in Hong Kong ROC

2.1 In 2023, the Hong Kong ROC reorganised its TAF bulletin by grouping aerodromes with the same TAF issuance frequency and/or validity period into three series: FT(LT)HK31, FT(LT)HK32, and FT(LT)HK33.

2.2 To uphold consistency across bulletin structures, effective 0200 UTC on 17 April 2025, the original Hong Kong METAR bulletin SA(LA)HK31 was restructured into three corresponding bulletins: SA(LA)HK31, SA(LA)HK32, and SA(LA)HK33. **Appendix A** to this paper shows the new allocation of aerodromes in Hong Kong METAR bulletins.

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[1] Timeliness of 0.88 for TAF (LT) was resulted from the availability of 0.88. MET/IE WG/23 requested Thailand to review the PI algorithms to increase the independence of Availability and Timeliness results. **[ACTION 23-05]**

2.3 This realignment ensures that both TAF and METAR bulletins share the same aerodrome groupings, thereby streamlining the exchange of OPMET information within the ROBEX framework. Following this re-allocation, the dissemination of the bulletin SA(LA)HK31 is independent of the other two bulletins. This facilitates timely dissemination of VHHH METAR in IWXXM format once it is generated and leads to improvement in the timeliness.

Adjusting time format in VHHH TAF in IWXXM

2.4 Hong Kong ROC investigated the availability of VHHH TAF in IWXXM format with RODB Bangkok in March 2025. RODB Bangkok confirmed they received all scheduled VHHH TAF in IWXXM during the period. However, during the analysing process, the system also performed a check on the value of date/time and it supported value of hour to be 00 to 23 only. As a result, VHHH IWXXM TAF containing 24:00Z were discarded by the system and this resulted in the "reduced availability" statistics of 0.88 for IWXXM TAF.

2.5 For TAF in Traditional Alphanumeric Code (TAC) format, "00" hour is used to indicate periods of validity beginning at 0000 UTC, and "24" hour can be used to indicate periods of validity ending at 2400 UTC. However, IWXXM validation schema does not explicitly specify the use of 24:00 or 00:00 in the time format.

2.6 To ensure compatibility with OPMET message handling and processing systems, effective 0200 UTC on 17 April 2025, Hong Kong ROC implemented a change to use 00:00 as the time format for validity ending time in VHHH TAF in IWXXM.

Improved performance statistics of IWXXM-formatted VHHH METAR and TAF

2.7 Following the implementation of the above changes in April 2025, the availability and timeliness of VHHH METAR and TAF in IWXXM format have improved. Based on data provided by RODB Bangkok and RODB Singapore for the period 1 to 30 June 2025, the performance statistics for IWXXM-formatted VHHH METAR and TAF are as follows.

Aerodrome	Bulletin	RODB Bangkok		RODB Singapore	
		Timeliness	Availability	Timeliness	Availability
VHHH	LAHK31	1.00	1.00	0.99	0.99
VHHH	LTHK31	1.00	1.00	1.00	1.00

Enhancing timeliness of IWXXM METAR bulletins disseminated by Hong Kong ROC

2.8 For aerodromes included in Hong Kong METAR bulletins other than VHHH, Hong Kong ROC receives METAR reports from these aerodromes with varying issuance delays. To comply with the APAC METAR and TAF Performance Indices requirement, specifically that reports must be disseminated and received within 10 minutes after the observation time, the IWXXM message handling system was optimised to implement an earlier cut-off time after the observation time for receiving METARs from these aerodromes before aggregating into METAR bulletins LAHK32 and LAHK33 for onward dissemination. This change was implemented at 0200 UTC on 8 July 2025, following thorough testing.

2.9 While aiming to collect as many METAR reports as possible within the cut-off time, any reports received after this time will be excluded from the initial IWXXM METAR bulletin disseminated by Hong Kong ROC. Instead, they will be disseminated as delayed (retarded) IWXXM METAR bulletins (RRx), in accordance with established ROBEX procedures.

Definition of METAR Timeliness

2.10 According to paragraph 2.1 of MET/IE WG/23 WP/16, the calculation of METAR timeliness during 1-30 November 2024 is as follows:

> "METAR Timeliness = on average 95% ANP required and available METAR observation reports (not including SPECI; no NIL, no AMD observations; including COR observations) is received within **5 minutes before** observation time and **maximum 10 minutes after** the observation time (MM observation time(s) from the YYGGgg-Group in the bulletin Abbreviated Header = DDHHMM based on monitoring): HH:(MM - 5') ≤ RX-Time ≤ HH:(MM + 10')."

2.11 According to paragraph 2.2.1 in Appendix F of the latest version of APAC ROBEX Handbook (17th Edition, July 2024[2]), the calculation of METAR timeliness is as follows, which is the same as the one for ICAO EUR OPMET Performance Indices specified in *EUR OPMET Data Management Handbook (EUR Doc 018) – Appendix F*.

> "METAR Timeliness = on average 95% ANP required and available METAR observation reports (not including SPECI; no NIL, no AMD observations; including COR observations) is received **maximum 6 minutes / 10 minutes after** the observation time (MM observation time(s) from the YYGGgg-Group in the bulletin Abbreviated Header = DDHHMM based on monitoring): RX-Time ≤ HH:(MM + 6') and RX-Time ≤ HH:(MM + 10')."

2.12 As there are differences between the definition of METAR timeliness used in the 2024 annual monitoring (para. 2.10) and the one stated in ROBEX Handbook (para. 2.11), it is suggested to seek clarification on definition of METAR timeliness to be used in the coming 2025 annual performance indices monitoring to be conducted from 1 – 30 November 2025.

Applicability of 24:00Z as validity ending time in IWXXM TAF

2.13 IWXXM Schema 2023-1 for TAF stated that "*Where there are differences between the Technical Regulations and the schema, the Technical Regulations shall take precedence.*". **Appendix B** to this paper contains references related to the use of 24Z as the end of forecast period in TAF in TAC and IWXXM. It is suggested to reconsider and seek clarification on the applicability of 24:00Z as validity ending time at midnight in IWXXM TAF.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper;

b) consider the suggestions in paragraphs 2.12 and 2.13, and propose actions as necessary; and

c) discuss any relevant matters as appropriate.

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[2] Published in APAC eDocuments website in March 2025

Appendix A

New allocation of aerodromes in Hong Kong METAR bulletins implemented on 17 April 2025

SA(LA)HK31 Bulletin Time (H+00/H+30)	SA(LA)HK32 Bulletin Time (H+00/H+30)	SA(LA)HK33 Bulletin Time (H+00/H+30)
HONG KONG/Intl (VHHH)	• MACAO/Intl (VMMC) • TAIBEI CITY/Taibei Intl (RCTP) • GAOXIONG (RCKH) • MANILA/Ninoy Aquino Intl (RPLL) • LAPU-LAPU/Mactan Cebu (RPVM) • PAMPANGA/Clark Intl (RPLC)	• TAIBEI/Songshan (RCSS) • TAICHUNG/Qingquangang (RCMQ) • TAINAN (RCNN) • TAIDONG/Fengnian (RCFN) • PENGHU (RCQC) • DAVAO/Francisco Bangoy Intl (RPMD) • SUBIC BAY/Intl (RPLB) • LAOAG/Intl (RPLI) • SOUTH COTABATO/Tambler Gen. Santos lntl (RPMR) • ZAMBOANGA/Intl (RPMZ) • AKLAN/Kalibo lntl (RPVK) • PUERTO PRINCESA/Intl (RPVP)

Appendix B

References related to the use of 24Z as the end of forecast period in TAF in TAC and IWXXM

IWXXM Schema 2023-1 - TAF

https://schemas.wmo.int/iwxxm/2023-1/taf.xsd

```
▼<schema xmlns:iwxxm="http://icao.int/iwxxm/2023-1" xmlns:gml="http://www.opengis.net/gml/3.2"
 xmlns="http://www.w3.org/2001/XMLSchema" elementFormDefault="qualified"
 targetNamespace="http://icao.int/iwxxm/2023-1" version="3.0.1">
   <include schemaLocation="common.xsd"/>
   <import namespace="http://www.opengis.net/gml/3.2"
   schemaLocation="http://schemas.opengis.net/gml/3.2.1/gml.xsd"/>
  ▼<annotation>
     <documentation>TAF reporting constructs as defined in ICAO Annex 3 / WMO No. 49-2. An Aerodrome Forecast
     (TAF) report is a routine forecast of meteorological conditions at an aerodrome intended for distribution.
     TAF reports include base forecast conditions, and modifications to those conditions throughout the valid
     period. References to WMO and ICAO Technical Regulations within this XML schema shall have no formal status
     and are for information purposes only. Where there are differences between the Technical Regulations and the
     schema, the Technical Regulations shall take precedence. Technical Regulations may impose requirements that
     are not described in this schema.</documentation>
   </annotation>
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ICAO Annex 3 - Appendix 5

1. CRITERIA RELATED TO TAF

1.1 TAF format

1.1.1 TAF shall be issued in accordance with the template shown in Table A5-1 and disseminated in the TAF code form prescribed by the World Meteorological Organization (WMO).

Note.— The TAF code form is contained in the Manual on Codes *(WMO-No. 306), Volume I.1, Part A* — Alphanumeric Codes.

APAC ROBEX Handbook - Section 7

7.2. Aerodrome meteorological offices (AMO) and NOCs responsibilities

7.2.1 Originating AMOs (or other designated forecasting offices) should prepare the required TAF messages for the periods of validity indicated in *Appendix B*. TAFs from international aerodromes shall not be issued earlier than one hour prior to the beginning of its validity period. TAFs are to be sent by the AMOs or NOCs to the responsible ROC before the cut-off time determined by the centre, e.g., 5 minutes before the filing/transmission times specified in *Appendix B*.

7.2.2 Aerodrome meteorological offices in preparing TAF should follow the template for TAF in *Annex 3, Appendix 5* and the WMO TAF code form (*FM 51-XII TAF, WMO – No. 306, Manual on Codes, Volume I.1, Part A – Alphanumeric Codes*).

WMO - No. 306 Volume I.1 Part A - Alphanumeric Codes (see Note 1 of Regulation 51.8.1)

https://library.wmo.int/viewer/35713/download?file=306_i1_2019_en.pdf&type=pdf&navigator=1

51.8 **Groups** { **TTTTT YYGG/$Y_eY_eG_eG_e$** or **TTYYGGgg**

51.8.1 **These groups shall be used when, during the period $Y_1Y_1G_1G_1$ to $Y_2Y_2G_2G_2$, a change in some or all of the elements forecast is expected to occur at some intermediate time YYGGgg or during the period YYGG to $Y_eY_eG_eG_e$. Such groups shall not be introduced until all the data groups necessary to describe the elements forecast in the period $Y_1Y_1G_1G_1$ to $Y_2Y_2G_2G_2$ or YYGGgg have been given.**

Notes:

(1) **If the end of the forecast period is midnight, Y_eY_e should be the date before midnight and G_eG_e should be indicated as 24.**

(2) **See Note (1) to Regulation 51.1.4.**