



## SEVENTH MEETING OF THE PACIFIC METEOROLOGICAL COUNCIL (PMC-7)

*"AT THE FRONTLINE OF WEATHER, CLIMATE, WATER, AND OCEAN ACTION IN THE PACIFIC"*

## SEVENTH MEETING OF THE PACIFIC METEOROLOGICAL COUNCIL (PMC-7)

*"At the Frontline of Weather, Climate, Water, and Ocean Action in the Pacific"*

17-19 September 2024, Warwick Le Lagon-Vanuatu Resort, Port Vila, Vanuatu

### Agenda Item 9.2: ICAO Monitoring of Pacific Aviation OPMET Data

#### Purpose:

- To update the Meeting on the operational meteorological (OPMET) monitoring activities of the Meteorological Information Exchange Working Group (MET/IE WG), which reports to the Meteorology Sub-Group (MET SG) of the International Civil Aviation Organization (ICAO) Asia and Pacific (APAC) Air Navigation Planning and Implementation Regional Group (APANPIRG).
- To highlight the higher availability, timeliness and ICAO Meteorological Information Exchange Model (IWXXM) validity thresholds now expected for the provision of OPMET, as required in the APAC air navigation plan (ANP) and ICAO Annex 3 *Meteorological Services for International Air Navigation*.
- To seek the Meeting's guidance in assisting Pacific Island States to address and improve the provision of ICAO compliant OPMET data to ensure successful IWXXM translation.

#### Background:

The current Amendment 80 to Annex 3 requires that each ICAO Contracting State must designate a meteorological authority<sup>1</sup>, who must provide – or arrange for provision of – meteorological information (Chapter 2, clause 2.1.4 and 2.1.5) as required in the APAC ANP. This may include arrangements with another State to provide meteorological information on its behalf.

The TAFs (aerodrome forecasts) and METARs (aerodrome observations) required for international air navigation in the ICAO APAC region are detailed in the ICAO APAC ANP Volume II Table MET II-2<sup>2</sup>. The information in Table MET II-2 should reflect the current service provisions in the APAC region, however it is noted that this is not always up to date. States are encouraged to check the information in the ANP MET Tables and

<sup>1</sup> Note, the proposed Amendment 82 to Annex 3 (expected applicability November 2025) proposes a functional separation of the meteorological authority and the meteorological service provider.

<sup>2</sup> <https://www.icao.int/APAC/Pages/APAC-eANP.aspx> - Volume II contains Table MET II-2.



## SEVENTH MEETING OF THE PACIFIC METEOROLOGICAL COUNCIL (PMC-7)

"AT THE FRONTLINE OF WEATHER, CLIMATE, WATER, AND OCEAN ACTION IN THE PACIFIC"

coordinate with their national aviation authority, as necessary, to update any contents using the 'Proposal for Amendment' form on the ANP website.

METARs and TAFs should be provided in accordance with provisions contained within ICAO Annex 3 and disseminated through the Regional OPMET exchange (ROBEX) scheme by the local Regional OPMET Centre (ROC) to the five APAC Regional OPMET Data Banks (RODBs) – located in Bangkok, Brisbane, Tokyo, Singapore, Nadi.

The MET/IE WG task the APAC RODBs to undertake an annual review of OPMET data performance – specifically METARs and TAFs provided for international air navigation, as included in Table MET II-2 and distributed via the ROBEX scheme. RODB Bangkok leads the performance monitoring activity, using a web-based 'Performance Indices Analyser' to compute OPMET Performance Indices (PIs) of incoming OPMET data derived from five RODBs.

The results of the performance monitoring are presented to the annual meeting of the MET/IE WG held (normally) in March each year and the results inform the activities of the MET SG ad hoc group on deficiencies (hereafter "deficiency ad hoc group") in identifying potential new air navigation deficiencies in the meteorology field. The performance monitoring data may also provide evidence to resolve *existing* air navigation deficiencies.

The MET/IE WG have been considering ways to improve the monitoring of APAC OPMET, including assessment of the IWXXM<sup>3</sup> format of the TAFs and METARs, as well as the timeliness of the messages sent. Further, new improved availability methodology will be employed for the 2024 OPMET monitoring activity. As a result, an updated *MET Deficiency Identification Guide* was approved at the MET SG/28 meeting in July 2024<sup>4</sup>.

It should be further noted that the most recent meeting of APANPIRG (APANPIRG/34) confirmed that deficiencies in the implementation and quality of IWXXM should be considered by the MET SG<sup>5</sup>.

<sup>3</sup> The ICAO Meteorological Information Exchange Model (IWXXM) is the XML format for meteorological information required under Annex 3 and the APAC Air Navigation Plan. Currently most of the IWXXM formatted METAR and TAF from Pacific States are generated via text to IWXXM translation through an agreement with ROC Wellington.

<sup>4</sup> [icao.int/APAC/Meetings/2024%20MET%20SG%2028/WP06\\_AI3\\_AHG\\_MET-DEFICIENCIES-REVIEW-OF-THE-2023-ANNUAL-SIGMET-TEST-OUTCOMES-AND-OPMET-MONITORING-ACTIVITIES.pdf](https://icao.int/APAC/Meetings/2024%20MET%20SG%2028/WP06_AI3_AHG_MET-DEFICIENCIES-REVIEW-OF-THE-2023-ANNUAL-SIGMET-TEST-OUTCOMES-AND-OPMET-MONITORING-ACTIVITIES.pdf) – refer Attachment C.

<sup>5</sup> [icao.int/APAC/Meetings/2023%20APANPIRG%2034/FINAL%20REPORT%20OF%20APANPIRG-34.pdf](https://icao.int/APAC/Meetings/2023%20APANPIRG%2034/FINAL%20REPORT%20OF%20APANPIRG-34.pdf) – refer para 4.14.



## SEVENTH MEETING OF THE PACIFIC METEOROLOGICAL COUNCIL (PMC-7)

*"AT THE FRONTLINE OF WEATHER, CLIMATE, WATER, AND OCEAN ACTION IN THE PACIFIC"*

### **Pacific Meteorology IWXXM OPMET Data Performance:**

At the 22nd meeting of the MET/IE WG in March 2024, a paper was presented by RODB Bangkok on the analysis of IWXXM-specific statistics for the OPMET monitoring activity<sup>6</sup>. Pacific Island State-specific results are provided in Attachment A to this paper. It should be noted that the Pacific States are very well represented in the provision of IWXXM-form OPMET, with generally low percentages of unsuccessful IWXXM translation, meaning the METAR and TAF issued were mostly ICAO compliant.

For States that would like to review the TAC-form METARs and TAFs that were assessed in the 2023 OPMET monitoring activity, online tools such as OGIMET<sup>7</sup> are very useful, where you can search in a given time period (in this case 1-30 Nov 2023), choosing "SA" or "FT" for METAR and TAF respectively.

There remain challenges for some Pacific Island States with the provision of ICAO-compliant OPMET that is successfully translated into IWXXM. This is usually due to formatting issues meaning the METARs or TAFs could not be successfully translated into IWXXM (e.g. typos, missing elements, incorrect formatting, presence of RMK fields). However, now these issues have been identified via the monitoring – they can be addressed.

With the increased focus by ICAO on identifying potential air navigation deficiencies, it's important for all meteorological service providers to ensure systems and procedures are in place to ensure Annex 3 compliant OPMET is consistently issued. This may require such solutions as:

- Error checking or 'first guess' METAR tools, to ensure METARs and TAFs are in Annex 3 compliant format.
- Revising and updating, if necessary, any procedures to ensure METARs and TAFs are available in the correct format – including removing any remark (RMK) fields before international dissemination or, if the RMK field cannot be removed, then ensuring the term "RMK" is used in METARs before the additional comments, so that the translation can disregard any information contained after. For example, the following METAR:

<sup>6</sup> 2023 IWXXM analysis results: [icaoint.org/APAC/2024%20MET%20IE%20WG%2022/WP09\\_AI3\\_THA\\_ANALYSIS-OF-IWXXM-SPECIFIC-STATISTICS-RESULTS.pdf](https://icaoint.org/APAC/2024%20MET%20IE%20WG%2022/WP09_AI3_THA_ANALYSIS-OF-IWXXM-SPECIFIC-STATISTICS-RESULTS.pdf)

<sup>7</sup> <https://www.ogimet.com/metars.phtml>



## SEVENTH MEETING OF THE PACIFIC METEOROLOGICAL COUNCIL (PMC-7)

*"AT THE FRONTLINE OF WEATHER, CLIMATE, WATER, AND OCEAN ACTION IN THE PACIFIC"*

METAR NNNN 280400Z 02003KT 9999 FEW018 FEW019CB SCT029 BKN100 30/26 Q1007 **DIST SH TO S/SW**=

Should be expressed as:

METAR NNNN 280400Z 02003KT 9999 FEW018 FEW019CB SCT029 BKN100 30/26 Q1007=

Or, if RMK field is to be retained due to local reasons and cannot be removed before international dissemination, then 'RMK' should be used:

METAR NNNN 280400Z 02003KT 9999 FEW018 FEW019CB SCT029 BKN100 30/26 Q1007 **RMK** DIST SH TO S/SW=

Pacific States can check with their associated Regional OPMET Centre to ensure that their METAR and TAF are available and compliant – this is especially useful after a change or fix has been made, to ensure that the data is received as intended. A map of which Pacific State is associated with which Regional OPMET Centre is provided in Attachment B.

### **Future Challenges:**

It is anticipated that a new aerodrome observation information service will be introduced into Annex 3 from late 2027, which will be provided in IWXXM format only (no 'human readable' version will be provided). This will likely mean that there will be a need for Pacific States to create IWXXM information 'at source' – as it may be that it will not be possible to create the IWXXM data from TAC METARs. This will likely rely on coding of IWXXM data directly from the tool that generates the information.

More information on this will be shared, once available, within the PIAWS Panel and with the PMC in due course.

### **Recommendations:**

The Meeting is invited to:

- **Note** the higher thresholds (now 0.95) being applied to annual OPMET monitoring activity results for potential deficiency identification.



## SEVENTH MEETING OF THE PACIFIC METEOROLOGICAL COUNCIL (PMG-7)

*"AT THE FRONTLINE OF WEATHER, CLIMATE, WATER, AND OCEAN ACTION IN THE PACIFIC"*

- **Encourage** States to consider future proofing their observation and forecast systems to ensure the ability to comply with ICAO provisions and to meet current and future requirements for international aviation, including the provision of IWXXM from source.
- **Request** assistance for Pacific Island States' NMHSs to ensure METARs and TAFs procedures and tools promote the issuance of Annex 3 compliant products, via the use of integrated forecast tools that provide a quality assurance function.





SEVENTH MEETING OF THE PACIFIC METEOROLOGICAL COUNCIL (PMC-7)

"AT THE FRONTLINE OF WEATHER, CLIMATE, WATER, AND OCEAN ACTION IN THE PACIFIC"

**Attachment A – Pacific OPMET Performance Statistics**

Notes

1. Statistics provided for designated international aerodromes only (as included in APAC ANP).
2. Statistics for Northern Mariana Islands and American Samoa locations are not currently available.
3. Yellow-shaded cells highlight statistics that do not meet the required threshold and may result in a potential deficiency under November 2024 OPMET monitoring activities plan.

Aerodrome		IWXXM Score	
Code	Location	Successful TAF IWXXM translation	Successful METAR IWXXM translation
AGGH	Honiara	4.84%*	86.60%*
ANYN	Nauru	64.79%*	98.06%
AYPY	Port Moresby	96.39%	98.33%
AYVN	Vanimo	-	-
NCRG	Rarotonga	100.00%	100.00%
NFFN	Nadi	95.90%	100.00%
NFNA	Nausori	98.35%	97.36%
NFTF	Fua'amotu	97.52%	97.64%
NFTV	Vava'u	100.00%	98.20%
NGFU	Funafuti	-.**	96.95%
NGTA	Tarawa	99.17%	97.65%
NIUE	Niue	100.00%	97.64%
NLWW	Wallis Island	100.00%	100.00%
NFSA	Apia	100.00%	99.17%
NTAA	Tahiti	100.00%	99.59%
NVSS	Santo	95.87%	99.86%
NVVV	Port Vila	96.69%	99.31%
NWWW	Noumea	100.00%	100.00%
PLCH	Christmas Island	100.00%	98.89%

\* These results are likely due to presence of temperature and QNH information in the TAF and additional non-RMK information in the METAR.

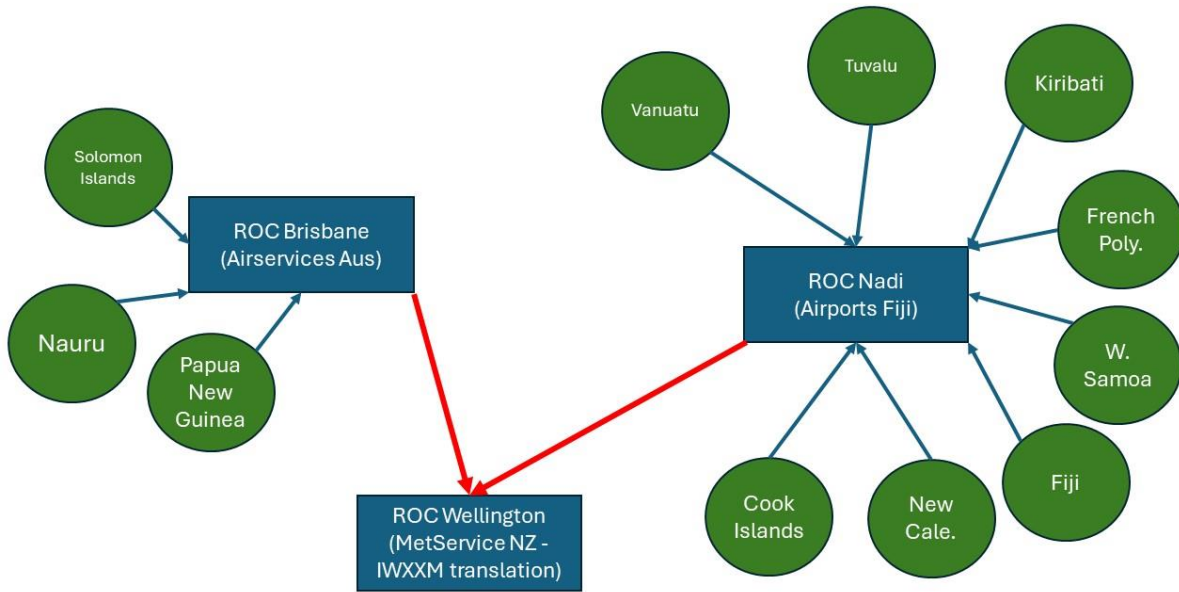
\*\* NGFU TAF appear to be mistakenly omitted from the IWXXM monitoring.



SEVENTH MEETING OF THE PACIFIC METEOROLOGICAL COUNCIL (PMG-7)

"AT THE FRONTLINE OF WEATHER, CLIMATE, WATER, AND OCEAN ACTION IN THE PACIFIC"

Attachment B – Brisbane and Nadi ROCs and their Associated Pacific States



US territories/Stater OPMET goes via ROC Washington

