



“Science to Services for a Resilient Pacific”

## Fifth Meeting of the Pacific Meteorological Council (PMC-5) (Apia, Samoa, 7-9 August 2019)

### Information Paper

#### Progress on Pacific Islands Aviation Weather Services

#### 1. Introduction

1.1. The reporting time period is from September 2017 – July 2019. The purpose of this Information Paper is to introduce and provide information on the followings.

- The Pacific Meteorological Council (PMC) and the Pacific Islands Aviation Weather Services (PIAWS) Panel.
- Progress on implementing the 4<sup>th</sup> Session of the Pacific Meteorological Council (PMC-4) decisions including the PIAWS Panel’s meetings.
- Coordination with the International Civil Aviation Organization (ICAO) Asia-Pacific Regional Office in Bangkok, Thailand.
- The ICAO Meteorological Information Exchange Model (IWXXM).
- The SystemWide Information Management (SWIM).
- ICAO volcanic ash test exercises.
- World Area Forecast System (WAFS) Internet File System (WIFS).
- Space Weather.
- Air Navigation Deficiencies in the MET fields.
- Cost recovery.
- Tests for SIGMET for tropical cyclones (WC SIGMET), SIGMET for volcanic ash (WV SIGMET), and SIGMET for other weather phenomena (WS SIGMET).
- SIGMET collaboration and harmonization.
- 30 hours Terminal Area Forecast (TAF) and verification of TAF.
- ICAO Asia-Pacific Regional Guides.
- ISO 9001-2015 including Civil Aviation Rule (CAR) Part 174.
- Competency Assessment and Capacity Development for Aeronautical Meteorological Observers (AMOs) and Aeronautical Meteorological Forecasters (AMFs).
- 18<sup>th</sup> World Meteorological Congress (Cg-18) Resolutions.
- 17<sup>th</sup> Session of the WMO Regional Association V (South-West Pacific) (RA V-17) Resolutions and Decisions.

#### 2. PMC-4

2.1. The 3<sup>rd</sup> Session of the Pacific Meteorological Council (PMC-3) (Nuku’alofa, Tonga, July 2015) established the Pacific Islands Aviation Weather Services (PIAWS) Panel and approved its initial Terms of Reference (TOR). The PMC-4 (Honiara, Solomon Islands, August 2017) reviewed and endorsed the Panel’s updated TOR. The Panel’s core membership as stipulated in Section 4.1 of the TOR, comprises of experts from the following countries and institutions: Cook Islands, Fiji, Palau, Niue, Samoa, Solomon Islands, Tonga, USA, Vanuatu, the Secretariat of the Regional Environment Programme (SPREP), the University of the Pacific (USP), WMO



Secretariat, and WMO RA V Working Group on Weather Services (WG/WX), but at the same time it remains open-ended to allow for other members of PMC to volunteer their experts and experts from other organizations to participate in the Panel's activities. The Panel's TOR is presented in Annex I to this Attachment. The List of the PIAWS Panel's members is presented in Annex 2 to this Attachment.

2.2. The PIAWS Panel presented 6 working papers at the PMC-4 under agenda item 12. The working papers and presentations can be access at [PMC-4 Working Papers](#).

2.3. A summary of the PMC-4 decisions related to aviation weather services is presented in Annex 3 to this attachment. The Final Report of the PMC-4 can be accessed on [PMC-4 Final Report](#).

### **3. Progress on the PIAWS Panel**

3.1. A summary of the PMC-4 decisions related to aviation weather services and progress of implementing these decisions are presented in Annex 3 to this Attachment.

3.2. The PIAWS Panel had 3 meetings. Two meetings are organized through the zoom video-conference facilities with the kind offer and help from the University of Hawaii, on 24 March 2019 and 12 July 2019. One face-to-face meeting was held on 5 August 2019, in Apia, Samoa. The meetings took stock of the progress of implementing the PMC-4's recommendations and decisions related to aviation weather services. The RA V-17 resolutions and decisions related to aviation weather services were introduced at the meetings. The discussions also focused on the preparation for the face-to-face meeting on 5 August 2019 in Apia, Samoa, and the working paper for the 5<sup>th</sup> Session of the Pacific Meteorological Council (PMC-5).

### **4. Coordination with the ICAO Asia-Pacific Regional Office**

4.1. The PIAWS Panel also continued to coordinate with the ICAO Asia-Pacific Regional Office through participating in the Meteorology Sub-Group (MET SG) of the Asia-Pacific Air Navigation Planning and Implementing Regional Group (APANPIRG).

### **5. ICAO APANPIRG MET SG**

5.2. In 2017, the PIAWS Panel started coordinating with the ICAO APANPIRG MET SG. The Chair of the PIAWS Panel represented the PMC and the Panel as well as Tonga, and participated in the 21<sup>st</sup> Meeting of the ICAO APANPIRG Meteorological Subgroup (MET SG/21) (Bangkok, Thailand, 29 May – 1 June 2017). Six other ICAO Members States from the Pacific region (Australia, Fiji, Nauru, New Zealand, and USA) participated in the MET SG/21. The final report of the MET SG/21 can be accessed on [MET SG/21 Final Report](#).

5.3. Three ICAO Member States from the Pacific region (Australia, New Zealand, USA) participated in the 22<sup>nd</sup> Meeting of the ICAO APANPIRG Meteorological Sub-Group (MET SG/22) (Bangkok, Thailand, 18-21 June 2018). The final report of the meeting can be accessed on [MET SG/22 Final Report](#).

5.4. Five ICAO Member States from the Pacific region (Australia, Fiji, New Zealand, Solomon Islands, and USA) participated in the 23<sup>rd</sup> Meeting of the ICAO APANPIRG Meteorological Sub-Group (MET SG/23) (Bangkok, Thailand, 17-20 June 2019). The final report of the meeting can be accessed on [MET SG/23/MET Final Report](#).

5.5. The ICAO APANPIRG MET SG meeting noted that occasionally the reports from meetings of the MET SG and / or the working groups, and more frequently the papers for consideration by the meetings were not available in timely manner as required. To address this, the meeting agreed to update the TOR for the MET SG to provide those concerned with specific timeframes for the availability of meeting documentation. The updated TOR for the MET SG is presented in Appendix 1 to the [MET SG/23 Final Report](#).



## 6. Implementing the OPMET Data Exchange Using IWMMX and AMHS/FTBP

6.1. The Meteorological information (OPMET) exchange in digital form - ICAO Meteorological (Weather) Information Exchange (in XML) Model (IWXXM) format is currently a recommended practice and will become ICAO Annex 3 Standard in November 2020. Amendment 78 to the ICAO Annex 3 specifies that ICAO Member States should disseminate specific meteorological information (i.e., METAR/SPECI, TAF, SIGMET, AIRMET and Volcanic Ash Advisory (VAA) and Tropical Cyclone Advisory (TCA) information) in IWXXM GML form. Further information can be accessed on this link [MET SG/23 WP06](#), [MET WG/23 WP/22](#), [MET SG/ 23 WP19](#), [Guidelines for the implementation of OPMET data using IWXXM 3<sup>rd</sup> Edition May 2019](#), and [Annex Amendments](#).

6.2. A copy of the Regional OPMET Bulletin Exchange (ROBEX) Handbook can be accessed on [https://www.icao.int/APAC/Documents/edocs/robex2004\\_e12.pdf](https://www.icao.int/APAC/Documents/edocs/robex2004_e12.pdf).

6.3. A copy of the Guidelines for the Implementation of the OPMET Data Exchange using IWXXM can be accessed on [Guidelines for the implementation of OPMET data using IWXXM 3<sup>rd</sup> Edition May 2019](#).

6.4. Only the IWXXM version 3 or later will be compliant with the Amendment 79 to ICAO Annex 3.

6.5. Production of the IWXXM at source is strongly encouraged (rather than translation from Traditional Alphanumerical Characters (TAC) to IWXXM).

6.6. Singapore and Australia would consider providing translation service (from TAC to IWXXM) if required and as agreed between ICAO Member States concerned.

6.7. The Air Traffic Services (ATS) Message Handling System (AMHS) path with File Transfer Body Part (FTBP) capability is necessary to allow a global dissemination of the IWXXM data. The focus is on the exchange OPMET data in IWXXM format between Regional OPMET Centres (ROCs) and Inter-Regional OPMET Gateways (IROGs), which will also provide information to the Regional OPMET Data Banks (RODBs), the Secure Aviation Data Information Service (SADIS) and the WAFS Internet File System (WIFS). This also allows for quality control, management, monitoring, and comparison of OPMET by the RODBs.

## 7. Discontinuation of Meteorological Information in TAC Form

7.1. The ICAO urges its Member States to consider necessary changes to migrate systems to enable the use of meteorological information in IWXXM form, as an alternate to meteorological information in TAC form, and prepare for consequential impacts to aviation meteorological services such as VOLMET broadcast, weather briefing system and flight documentation preparation system. ICAO Annex 3 specifies that from November 2020, States shall disseminate specific meteorological information (i.e., METAR/SPECI, TAF, SIGMET, AIRMET and space weather, volcanic ash and tropical cyclone advisory information) in IWXXM GML form. It is proposed that the dissemination of OPMET in TAC format will change from a Standard to a Recommended Practice in 2024 and then from 2026, it will no longer be included in the ICAO Annex 3. This does not preclude Member States from disseminating OPMET in TAC form domestically.

## 8. SWIM

8.1. The latest information on discussing the development of the ICAO Asia-Pacific SystemWide Information Management (SWIM) can be accessed on [SWIM/TF/2 Final Report](#) and [SWIM/TF/2 WP07](#).



8.2. The proposed ICAO Asia-Pacific regional document for SWIM-based MET information services and SWIM-enabled applications supporting Air Traffic Flow Management (AFTM). Further information can be accessed on [MET/R WG/8-and-MET/ATM Seminar Report](#) and [MET WG/23 WP08](#).

## 9. ICAO Asia-Pacific Volcanic Ash Exercises

9.1. The 5<sup>th</sup> Meeting of the ICAO Asia-Pacific Volcanic Ash Exercise Steering Group (VOLCEX SG/5) (Bangkok, Thailand, December 2018), and Information on this can be accessed on [2019 MET SG/23 WP09](#).

9.2. The 6<sup>th</sup> Meeting of the ICAO Asia-Pacific Volcanic Ash Exercise Steering Group (VOLCEX SG/6) (Bangkok, Thailand, 21-22 June 2019) and information on this can be accessed on [2019-VOLCEX SG/6 Final Report](#).

9.3. The importance of, and to consider how to promote the issuance of special air-reports, especially during events such as the eruption of Mount Agung in 1997, which are required in accordance with the ICAO Annex 3 to help maintain the safety, regularity and efficiency of international civil aviation.

9.4. The Volcanic exercise in 2018 (ICAO APANPIRG VOLCEX 18/01) for Papua Guinea is put 'on-hold' due to on-going internal issues including services disruption at the Papua New Guinea National Weather Service (PNG NWS).

9.5. The Volcanic exercise in 2019 (ICAO Asia-Pacific VOLCEX 19/01) conducted from 2100 UTC on 6 May to 0300 UTC on 7 May 2019 based on simulated the eruption of Raoul Island (29.27°S 177.92°W) located in the Kermadec Islands region of the South Pacific. Information on this test can be accessed on [2019 MET SG/23 WP16](#).

9.6. Lessons learnt from real volcanic ash events and volcanic ash exercises are important, and to include these in the VOLCEX SG TOR. The updated TOR is presented in Appendix A1 to [2019 VOLCEX SG/6 Final Report](#).

9.7. Amendment 78 to the ICAO Annex 3 related to the use of TEST and EXER indicator for SIGMET and volcanic ash advisory, which would affect volcanic ash exercises (and applies to tropical cyclone advisory and space weather advisory becomes applicable on 7 November 2019).

9.8. The Secretary to issue a State Letter reminding all States in the ICAO Asia-Pacific region that the TEST or EXER indicator in the ICAO Annex 3 templates for SIGMET, VAA, TCA and SWXA becomes applicable on 7 November 2019.

9.9. Latest information on discussion related to issuing volcanic ash SIGMET can be accessed on [2019 MET SG/23 WP26](#) revealed that the ICAO Asia-Pacific Regional SIGMET Guide ([ICAO APAC Regional SIGMET Guide 6<sup>th</sup> Edition 20May 2017](#)) did not provide specific guidance on the issuance of SIGMET for volcanic ash forecast in adjacent Flight Information Regions (FIRs). Therefore, the Guide will be updated to address volcanic ash forecast to cross FIRs boundaries; and the MET/S WG to review the Guide.

## 10. OPMET in WAFS and WIFS (USA)

10.1. Information on the OPMET availability by World Area Forecast System (WAFS) Internet File System (WIFS) is presented in [2019 MET SG/23 IP03](#) and [2019 MET SG/23 IP04](#).

10.2. The WIFS/World Area Forecast Center (WAFC) Washington will continue to work with the ICAO Asia-Pacific States and SADIS/WAFC London to continue improving the WIFS data availability.



## 11. Space Weather

11.1. Information on latest discussion on space weather can be accessed on the ICAO APANPIRG MET SG/23 information paper (IP20) ([2019 MET SG/23 IP20](#)).

11.2. Amendment 78 to the ICAO Annex 3 identified the ICAO Member States responsibility for providing space weather advisories. Furthermore, from 7 November 2019 space weather advisories are also recommended to be disseminated in the IWXXM GML form. As of 5 November 2020 dissemination of space weather advisory information in the IWXXM GML form will become a standard.

11.3. The Manual on Space Weather Information in Support of International Air Navigation (Doc 10100) is currently under development and will support the operation of space weather advisory service.

11.4. The 215th session of the ICAO Council designated three global Space Weather Center (SWXC) (ACJF (Australia, Canada, France and Japan) consortium, the European PECASUS consortium, and the United States), with two Regional Centres, (China/Russian Federation consortium and South Africa), to be established no later than November 2022.

## 12. Air Navigation Deficiencies in the Met Fields

12.1. The Updated list of APANPIRG air navigation deficiency in the Met fields for the ICAO Member States in the Pacific region is presented in Table 1 below. More information on recent discussion on deficiencies in the Met fields can be accessed on [2019 MET SG/23 WP11](#).

12.2. The APANPIRG procedural handbook requires that the ICAO Member States to provide a full report to the ICAO on the corrective action taken to resolve a deficiency.

12.3. Solomon Islands and Tonga have reported progress on their corrective action plans (CAPs) as indicated in the Attachment which can be accessed on [2019 MET SG/23 WP11](#). However due to the lack of sufficient data to support the validation by the ICAO (and Member States and appropriate international organizations where required) of the corrective action taken, deficiencies have not yet been removed from the open list.

12.4. The APANPIRG/28 (September 2017) noted the updates on the CAP implementation provided by Tonga with respect to the dissemination of required volcano observation information indicate that APANPIRG may remove the deficiency AP-MET-17 from the open list subject to the concurrence of the ATS units, MWOs and VAACs concerned. . The VAAC Wellington is now working with Tonga Meteorological Service on a series of tests to demonstrate proficiency on providing volcano observation information.

12.5. The Secretary, in conjunction with support from Member States, to assist Solomon Islands to perform the OPMET monitoring to support the validation of the corrective action and to prepare the full report to enable APANPIRG to remove the deficiencies.

**Table 1: Summary of APANPIRG air navigation deficiencies in the MET field (extracted from ICAO Asia-Pacific MET/S WG/8 WP/03: Review of air navigation deficiencies in the Met field)**

Met facilities and services	Pacific States	Def. ID	Status
Aerodrome meteorological observations or reports.	Kiribati	AP-MET-02	Open
	Nauru	AP-MET-21	Open
	Solomon Islands	AP-MET-01	Open





Meteorological watch office (MWO) or SIGMET information.	Nauru	AP-MET-24	Open
	Papua New Guinea	AP-MET-08	Open
	Papua New Guinea	AP-MET-22	Open
	Solomon Islands	AP-MET-23	Open
Volcanic ash/activity information.	Papua New Guinea	AP-MET-04	Open
	Tonga	AP-MET-17	Open
WAFS forecasts and/or flight briefings.	Kiribati	AP-MET-18	Open
	Nauru	AP-MET-19	Open
	Solomon Islands	AP-MET-20	Open

### 13. Governance of Meteorology Service and Cost Recovery

13.1. Latest information related to discussion on cost recovery can be accessed on [2019 MET SG/23 WP15](#).

13.2. The existing task in the ICAO APANPIRG Meteorology Services Working Group (MET/S WG) work plan is to assist the PIAWS Panel to develop an effective cost recovery strategy and requested the Secretary to coordinate with the Chair of the MET/S WG to progress this work. Furthermore, one of the action items/outcomes for MET SG work plan (2019/2020) is for “Information on ICAO provisions related to meteorological authority and quality assurance, cost recovery, competency, training and qualifications for meteorological service provision shared with States ([Appendix 1 of MET SG/23 Final Report](#)).”

13.3. Hong Kong China agreed to share information from the previous cost recovery workshop.

13.4. To assign ICAO Member State(s) or expert(s) to assist the PMC PIAWS Panel with development of an effective cost recovery strategy.

13.5. Further discussion related to cost recovery can be accessed on [ANC METP2 Final Report](#).

13.6. One of the ICAO MET Panel Working Group on MET Cost Recovery Guidance and Governance (MCRGG) has the job card to “develop appropriate guidance on the cost recovery aspects of sub-regional, regional, multi-regional or global service provision”.

### 14. Status of Back-up Capabilities by VAACs for Other VAACs

14.1. Recent discussion on the VAAC Darwin and VAAC Montreal back-up for VAAC Washington can be accessed on [2019 MET SG/23 IP15](#).

14.2. Discussion on results of the recent VAACs Darwin and VAAC Wellington back-up test can be accessed on [2019 MET SG/23 WP17](#). MWOs are advised to participate in the backup tests to ensure in the occurrence of a real backup event, MWOs will receive the backup VAAs issued.

### 15. WS, WC, and WV SIGMET tests

15.1. A SIGMET provides concise information issued by a Meteorological Watch Office (MWO) concerning the occurrence or expected occurrence of specific en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations. Information on the requirements for the dissemination and exchange of SIGMET is published in the ICAO Asia-Pacific Regional SIGMET Guide (6th edition May 2017) ([SIGMET Guide](#)). The updated draft Asia-Pacific Regional SIGMET Guide, 7th edition, June 2019 is presented as Attachment 1 to [2019 MET SG/23 WP21](#).



15.2. The ICAO Asia-Pacific SIGMET Guide also outlines the procedures for conducting SIGMET tests. The test procedures encompass all the three types of SIGMET, as follows: SIGMET for volcanic ash (WV SIGMET); SIGMET for tropical cyclones (WC SIGMET); and SIGMET for other weather phenomena (WS SIGMET).

15.3. The result of the 2017 WS SIGMET test which was conducted on 15 November 2017 can be accessed on [\(METS WG8 & MET/IE WG16 WP/C1\)](#).

15.4. The result of the 2017 WC SIGMET test which conducted on 1 November can be accessed on [METS WG8 & MET/IE WG16 WP/C2](#).

15.5. The 2018 WC SIGMET test was conducted on 7 November.

15.6. The 2017 WV SIGMET test which was conducted on 8 November can be accessed on [METS WG8 & MET/IE WG16 WP/C2](#).

15.7. The 2018 WV SIGMET test which was conducted on 14 November can be accessed on [METS WG8 & MET/IE WG16 WP/C2](#).

15.8. The availability of WC SIGMET test bulletins was higher than in the test in 2017 and that of WV SIGMET was the same in the test in 2017. It seems that there are still difficulties for some States to issue the test bulletins, and these could be due to the followings.

- There were still incorrect use of the priority or the WMO header including Date Time Group (DTG) and simple errors in the text.
- Test bulletins were duplicated or issued by different Date Time Group (DTG) with the same contents.
- Test bulletins were not received by all RODBs in Asia-Pacific region. Participating ICAO Member States should send the test message to all RODBs and WAFCs.
- Test bulletins were transmitted via GTS only. They should be transmitted via AFTN/AMHS.

15.9. All Meteorological Watch Offices (MWOs) are urged to participate in the annual SIGMET tests and should note that the inclusion of TEST/EXER indicator in SIGMETs, Tropical Cyclone Advisory (TCA) and Volcanic Ash Advisory (VAA) become applicable from 7 November 2019, ahead of the 2019 annual SIGMET test.

## **16. SIGMET Collaboration and Harmonization**

16.1. The purpose of collaboration between the MWOs on the creation of SIGMETs is to address SIGMET discontinuity between FIRs and the requirement for harmonized en-route hazardous weather information.

16.2. Recent discussion on Collaborative SIGMET Issuance (CSI) Scheme can be accessed on [2019 MET SG/23 IP19](#). Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA), the Vietnam Air Traffic Management Corporation (VATM) and the Japan Meteorological Agency (JMA), the Department of Meteorology and Hydrology of Lao PDR (LDMH), the Department of Meteorology and Hydrology of Myanmar (MDMH) and the Thai Meteorological Department (TMD) are participating in the scheme.

16.3. Updated information on the SIGMET coordination trial between Australian Bureau of Meteorology (ABoM) and Indonesia Bureau of Meteorology, Climatology and Geophysics (IBMKG) as presented in [2019 MET SG/23 IP14](#).



16.4. Updated information on the status of the Operational SIGMET Coordination (OSC) initiative in south-east Asia, undertaken by the MWOs of Indonesia, Malaysia, Singapore, Vietnam, and extended to Australia and Indonesia in 2018, can be accessed on [2019 MET SG/23 IP21](#).

16.5. The updated information on the SIGMET coordination project around western and northern part of the south China seas is presented on [2019 MET SG/23 IP22](#). Guangzhou (ZGZU), Hong Kong (VHHH), Hanoi (VVNB), Ho Chi Minh (VVTG) and Sanya (ZJSA) FIRs participated in the trial since November 2017. Kunming (ZPKM) FIR and Phnom-Penh (VDPP) FIR joined the trial respectively as a participating member in June 2018 and an Observer in September 2018

#### 17. Experience with 30 Hours TAF

17.1. The latest information on experiences of New Zealand and USA with 30 hours TAF can be accessed on [2019 MET S/G23 IP10](#).

#### 18. TAF Verification

18.1. The latest information on the ABoM experiences in TAF verification is presented on [2019 MET SG/23/IP11](#).

18.2. ICAO Member States with interest to access the TAF Verification system are invited to contact the ABoM for more information.

#### 19. Other ICAO Asia-Pacific Regional Guides

19.1. The draft ICAO Asia-Pacific Regional Guidance for the Alignment of Cross-FIR Boundary SIGMET Information is presented in the Attachment to [2019 MET SG/23 WP23](#) and [2019 MET/R WG8 & MET/ATM Seminar WP06](#).

19.2. The draft ICAO Asia-Pacific Regional Guidance for Tailored Meteorological Information and Services to Support Air Traffic Management (ATM) Operations can be accessed on [MET/R WG/8 & MET/ ATM Seminar WP05](#).

#### 20. ISO 9001-2015 and CAR Document Part 174

20.1. Samoa Meteorology Division submitted the Civil Aviation Rule (CAR) Part 174 corresponding document which is the Aviation Meteorology Exposition to the Ministry of Civil Aviation. They received response from the Ministry of Civil Aviation, to update the Aviation Meteorology Exposition and include CAR Part 100 corresponding document which is the quality management system (QMS) manual and Safety Management System (SMS) manual.

20.2. The status of the Vanuatu Meteorology and Geo-hazard Department (VMGD) CAR Part 174 corresponding document which is the Aviation Meteorology Exposition is presented in Table 2 below. The exposition document is expected to be completed by the end of 2019,

Table 2: VMGD CAR Part 174 EXPOSITION DOCUMENT MATRIX

Rule Reference	Exposition Reference	Title	Check
174.79		Exposition	
174.79(a)(1)(i)		CE Statement	
174.79(a)(1)(ii)		Statement by the CEO	
174.79(a)(2) [174.51(a)(1)&(2)]		Senior persons	
174.79(a)(3)		Duties and responsibilities	





[174.51(a)(1)&(2)]			
174.79(a)(4)		Organisation chart	
174.79(a)(5) [174.51(a)(3)]		Staffing structure	
174.79(a)(6)		Meteorological Services	
174.79(a)(7)(i)		Location of meteorological offices	
174.79(a)(7)(ii)		Location of facilities	
175.51(b)(1),(2) & (3)		Competency assessment	
174.79(a)(7)(iii)		Services provided	
174.79(a)(7)(iv)		Locations and airspaces covered	
174.79(a)(8) [174.59(a)(1)&(2)]		Output information and standards and formats	
174.79(a)(9)(i)-(xiv)		Procedures and systems	
174.79(a)(10)		Control of exposition	
174.109		Changes to organization	
174.51		Competence	
174.51(b)(1)(i)&(ii)		Assessing competence	
174.51(b)(2)		Maintaining competence	
174.51(b)(3)		Written authorization	
174.53		Site Requirements	
174.53(1)(i)		Security measures	
174.53(1)(ii)		Powers supplies and continuity	
174.53(2)		Remote facilities	
174.55		Communication Requirements	
174.55(a)		Establish systems and procedures	
174.55(b)		Handling volume and nature of information	
174.57		Input Requirements	
174.57(b)(1)		Continuing access to information	
174.57(b)(2)		Display and briefing resources	
174.57(b)(3)		Observing systems	
174.57(b)(4)		Meteorological info for watch service	
174.57(b)(5)		Meteorological info for preparation of climatological info	
174.59		Output Requirements	
174.59(a)(1)		Output meteorological info	
174.59(a)(2)		Standards and formats	
174.59(b)		Compliance with standards and formats	
174.61		Facility Requirements	
174.61		Electronic data processing facilities	
174.63		Documentation	
174.63(a)		Availability	
174.63(b)(1)		Reviewed and authorized	
174.63(b)(2)		Availability at locations	
174.63(b)(3)		Removal of obsolete	



		documentation	
174.63(b)(4)		Changes reviewed and authorized	
174.63(b)(5)		Identification of revision status	
174.65		Verification, Periodic Inspection, Testing and Calibration	
174.65(a)(1)		Routine verification of information	
174.65(a)(2)		Periodic inspection of offices	
174.65(a)(3)		Periodic inspection of facilities	
174.65(b)(1)		Systems capability and integrity	
174.65(b)(2)		Appropriate equipment and systems for offices	
174.65(b)(3)		Appropriate test equipment and systems	
174.65(b)(4)		Precision and accuracy of test equipment and systems	
174.65(b)(5)		Calibration and configuration of sensing facilities	
174.67		Release of Meteorological Information	
174.67(a)(1)		Release of information	
174.67(a)(2)		Placing facilities into operational service	
174.67(b)		Authorized persons	
174.69		Notification of Meteorological Office and Facility Status	
174.69(b)(1)		Operational info to AIS	
174.69(b)(2)		Status changes by NOTAM	
174.71		Meteorological Information Check after accident or Incident	
174.71(a)		Checking adequacy, accuracy and timeliness of info	
174.71(b)(1)		Checks carried out ASAP	
174.71(b)(2)		Info in secure location	
174.73		Malfunctions and Erroneous Information	
174.73(1)		Erroneous information	
174.73(2)		Detected malfunctions	
174.73(3)		Notification of users	
174.73(4)		Notification of Director	
174.73(5)		Malfunction status reports	
174.75		Records	
174.75(b)(1)		Record of input info	
174.75(b)(2)		Record of output info	
174.75(b)(3)		Retention period	
174.75(b)(4)		Offices and facilities	
174.75(b)(5)		Equipment and systems	
174.75(b)(6)		Erroneous information and malfunctions	
[Part 12]			



174.75(b)(7)		Internal QA reviews	
174.75(b)(8)		Personnel records	
174.75(b)(9)		Legible and permanent	
174.75(b)(10)		Retention period	
174.77		Quality Assurance	
174.77(a)		Procedures	
174.77(b)		Access to CEO	
Part 12		Occurrence Reporting	
12.55(a)(3)		Notification of facility malfunction incident	
12.55(a)(7)		Notification of information incident	
12.55(d)(3) [App A(c)]	N/A	Required information	N/A
12.55(d)(6) [App A(f)]	N/A	Required information	N/A
12.57(a)(1)	N/A	Provide details	N/A
12.57(b)(1)-(3)	N/A	Means of providing details	N/A
12.59(1)	N/A	Conduct investigation	N/A
12.59(2)(i)-(iii)	N/A	Submit report to CAA	N/A
12.59(3)	N/A	Preventative action	N/A

Key:  : QM CAR Part 174 Completed

20.3. Fiji Meteorological Service re-established links with the Fiji Aviation Authority (FAA). They are working on the CAR Part 174 corresponding document which is the Aviation Meteorology Exposition and subsequently auditing. Fiji Meteorological Service is also scheduled for ISO 9001:2015 audit on 20 & 21 August 2019 by TelArc Audit.

20.4. Kiribati Meteorological Service completed CAR Part 174 corresponding document is Aviation Meteorology Exposition is submitted to the Kiribati Civil Aviation Authority (KCAA). They are waiting for auditing by the CAA NZ, as engaged by the Pacific Aviation Safety Office (PASO).

20.5. Solomon Islands Meteorological Service (SIMS) updated information on QMS is presented below.

- CAR Part 174 corresponding document which is the Aviation Meteorology Exposition's: certificate expired at the end of 2018. Civil Aviation Authority in Solomon Islands (CAASI) is the MET Authority of Aviation Meteorology Services in the Solomon Islands. CAASI engaged the PASO to audit the SIMS CAR 174 Aviation Meteorology Exposition. The SIMS has recent discussion with the CAASI Office on the renewal of certificate for the SIMS Part 174 Aviation Meteorology Exposition. The CAASI has confirmation that the corrective actions on the audit findings have been successfully and satisfactorily completed. The renewal CAR Part 174 certificate for SIMS should be released in the near future.
- SIMS QMS based on ISO 9001:2015 has been audited by the Solomon Islands QMS auditors, covering Honiara and Munda international airport. QMS is compliance to ISO 9001:2015 but SIMS is yet to work towards the ISO certification and registration, and this depends on the availability funds and budget support.
- For competency assessments, SIMS's competency assessments procedure is conducted every five years. For newly recruited staff the competency assessment is conducted after induction and close supervision assistance programme. The next competency



assessments for AMOs and AMFs will be conducted in 2020. A request will be sent to development partners for assistance to conduct the AMF in-house refresher training before end of 2019, and a follow up in 2020. The ABoM has been consulted and they are willing to assist SIMS on the in-house refresher training of the AMF, if the funding support is available.

20.6. For Papua New Guinea (PNG), PNG Civil Aviation Safety Authority (CASA) is aviation services regulator as mandated by the Civil Aviation Authority (CAA) Act 2010. The major aviation service providers are: PNG National Weather Service (NWS), PNG National Airports Corporation (NAC), PNG Air Traffic Services (Air Services Ltd), PNG Air Investigation Commission (AIC). Granting of licences (Organization Service Certificate) to PNG NWS depends on compliance to CAR Part 174 with a corresponding document - Exposition Meteorology Manual, and compliance with CAR Parts 100 with corresponding – Quality Management System (QMS) manual and Safety Management System (SMS) Manuals. PNG NWS met the minimum standards of CAR Part 174 to provide aviation weather services to users, and PNG CASA awarded PNG NWS the Aviation Meteorological Service Organization Certificate (AMSOC), valid from 20 December 2018 to 20 June 2019.

20.7. PNG NWS applied for renewal of the AMSOC, and it included the followings documents:

- Aviation Meteorology Exposition.
- Quality Management Manual (QMS) Manual.
- Safety Management (SMS) System Manual.
- An application fee of PNG Kina 16, 000.00.

20.8. PNG CASA awarded the renewal of the AMSOC for PNG NWS with validity from 21 June 2019 to 21 December 2020. PNG NWS is certified by PNG CASA to provide the following aviation meteorological services within the Port Moresby FIR and aerodromes.

- Meteorological forecasting services.
- Meteorological watch services.
- Meteorological reporting services.
- Meteorological briefing services.
- Meteorological dissemination services.
- Climatological services.

20.9. PNG NWS has developed the QMS manual and SMS manual as required under the CAR Part 100. However, there are still minor gaps to fix over time.

## 21. Competency Assessment and Capacity Development for AMO and AMF

21.1. Tonga Meteorological Service through the Pacific Resilience Project (PREP) is supporting trainings of 8 meteorologists. Tonga Meteorological Service is expecting to provide training of its staff on preparing and issuing TAFs, by the end of 2019. The plan is to have expert(s) from the MetService New Zealand to provide the training. MetService New Zealand is interested in being involved in this training, but due to other commitments it is not possible to provide training and / or undertake competency assessment until 2020.

21.2. Tonga Meteorological Service installed 8 automatic weather stations at each of the total of 8 aerodromes.

## 22. Cg-18 Resolutions

22.1. Cg-18 Resolutions can be accessed on <http://meetings.wmo.int/cg-18/SitePages/Session%20Information.aspx>.



22.2. Resolution 6.1(2)/1 (Cg-18): Establishment of collaboration between the International Air Transport Association (IATA) and WMO on the development and operation of the Aircraft Meteorological Data Relay (AMDAR) programme.

- Decides to enter into an updated Working Arrangement with IATA encompassing the development and operation of the WMO-IATA Collaborative AMDAR Programme (WICAP), based on the Purpose and Principles summarized in Annex 1 to this resolution; and also based on existing arrangements within the AMDAR Programme.
- Requests the Secretary-General to establish the updated Working Arrangement with IATA in accordance with the WICAP Purpose and Principles as presented Annex 1 to Resolution 39 (Cg-18) and this can be accessed in Cg-18 Final Report
- Requests the Executive Council to:
  - (1) Review, finalize, maintain and oversee the undertaking of the WICAP Implementation Plan in accordance with the WICAP Concept of Operations as summarized in Annex 2 to Resolution 39 (Cg-18) and this can be accessed in Cg-18 Final Report.
  - (2) Oversee the establishment of the WICAP Governance structure, including the Governing Board, in accordance with the WICAP Concept of Operations.
  - (3) Assist Regional Associations in the establishment of Regional AMDAR Programmes based on the WICAP Implementation Plan and Concept of Operations.
- Requests the relevant Technical Commissions to assist Regional Association in the establishment of Regional AMDAR Programmes based on the WICAP Implementation Plan and Concept of Operations.
- Recommends that Regional Associations.
  - (1) Develop Regional AMDAR Programmes under the WICAP as proposed in the Concept of Operations and according to the WICAP Implementation Plan.
  - (2) Carry out further consultations of their Members on the Financing Mechanisms to enable the elaboration of cost sharing schemes, to ensure that financing options at global and regional levels are appropriate to support participation of all Members, in particular Least Developed and Developing Countries.

22.3. Resolution 5.4/3 (Cg-18): Long-term plan for aeronautical meteorology.

- Decides to endorse the final draft of a first edition of the long-term plan for aeronautical meteorology (<https://www.wmo.int/aemp/LTP-AeM>).
- Requests the Secretary-General to finalize and publish the long-term plan for aeronautical meteorology as the first edition (2019).
- Agrees that the long-term plan should be a living document that is kept under regular review and periodic update to ensure a high degree of alignment with,





inter alia, the WMO Strategic Plan and the International Civil Aviation (ICAO) Global Air Navigation Plan (GANP).

- Requests further the president of the Commission for Aeronautical Meteorology (CAeM) and, subsequently, the president of the Services Commission.
  - (1) To establish mechanisms to support the future maintenance and development of subsequent editions of the long-term plan for aeronautical meteorology.
  - (2) To ensure that presidents of other technical commissions and presidents of Regional Associations are kept informed of and consulted on developments in this regard as necessary.

22.4. Resolution 5.4/2 (Cg-18): Report of the 16<sup>th</sup> Session of the Commission for Aeronautical Meteorology (CAeM).

- Decides to approve Recommendations 1 to 6 (CAeM-16) inclusive and to note Recommendation 7 (CAeM-16).
- Further decides to take the following actions in respect of the CAeM-16 recommendations.
  - (1) Recommendation 1 ([CAeM-16](#)) – Scientific and technological advancement in support of meteorological service for international air navigation. Requests the Secretary-General.
    - (a) To make the necessary resources available to foster the collaborative development of interdependent initiatives such as the IWXXM and AvRDP (Aviation Research and Development Project) in cooperation with the relevant WMO bodies.
    - (b) To ensure that the evolving qualification requirements in the provision of aeronautical meteorological services are reflected when reviewing and updating the Basic Instruction Packages (BIP).
  - (2) Recommendation 2 (CAeM-16) – Cooperation with the International Civil Aviation Organization. Requests the Secretary-General.
    - (a) To invite Members to foster enhanced coordination and collaboration between national aeronautical meteorological authorities and service providers, as well as respective civil aviation administrations, with a view to improving aeronautical meteorological service delivery.
    - (b) To seek opportunities to further improve the efficiency and effectiveness of WMO cooperation with ICAO, including the development of more effective working relationships and/or methods of cooperation for respective expert bodies and the elimination of any existing duplication or redundancy that may exist.
    - (c) To make the necessary resources available to foster the recommended review and update of the working arrangements between WMO and ICAO.
  - (3) Recommendation 3 (CAeM-16) – Cooperation with other international organizations of relevance to the Commission for Aeronautical Meteorology.



Requests the Secretary-General.

- (a) To seek opportunities to foster further cooperation with other international organizations relevant to the provision of meteorological service for international air navigation through new or improved agreements or other such working arrangements, as appropriate.
- (b) To make the necessary resources available to foster the recommended operation and development of the AMDAR system arising from the emerging working arrangement between WMO and IATA with due emphasis that the cost framework should be fair, equitable and transparent.

(4) Recommendation 4 (CAeM-16) – Long-term plan for the Aeronautical Meteorology.

Requests the Secretary-General.

- (a) To make available the necessary resources to contribute to the development and maintenance of the long-term plan.
- (b) To increase Members' awareness of any developments in the regionalization and globalization of aeronautical meteorological service provision that could potentially impact the role of service providers including NMHSs.

(5) Recommendation 5 (CAeM-16) – World Meteorological Organization regulatory and guidance material addressing the provision of meteorological services for international air navigation.

Requests the Secretary-General, in coordination with ICAO.

- (a) To undertake steps necessary to discontinue Technical Regulations ([WMO-No. 49](#)), Volume II – Meteorological Service for International Air Navigation, while ensuring that any material of continuing relevance is reviewed before being transferred to other (new or existing) regulatory or guidance material of WMO or ICAO;
- (b) To ensure, during the accomplishment of (a), that:
  - (i) Any WMO or ICAO regulatory and/or guidance material that cross-references WMO Technical Regulations (WMO-No. 49), Volume II is appropriately amended.
  - (ii) Members are kept fully informed of the relevance and availability of this material as well as other relevant ICAO provisions.

Further requests the Secretary-General to keep ICAO informed of these developments and, in consultation with ICAO, to explore means to enable free access, preferably online, to relevant ICAO regulatory and guidance material by all WMO Members and their NMHSs providing meteorological service for international air navigation.

(6) Recommendation 6 (CAeM-16) – Priority themes and continuity of World Meteorological Organization activities in aeronautical meteorology.

Requests Congress, in considering the establishment of a new WMO technical commission structure for the eighteenth financial period (2020–2023).

- (a) To ensure the continuity of activities of the aeronautical meteorology programme (AeMP) corresponding to the following priority themes.
  - (1) Education, training and competency of aeronautical meteorological personnel.



- (2) Aeronautical meteorological information service and governance.
  - (3) Aeronautical meteorological hazards prediction.
  - (4) Impacts of climate change and variability on aviation; and
  - (5) Communication and outreach.
- (b) To ensure the continuity of cooperative arrangements with ICAO and other relevant aviation stakeholders with appropriate positioning of WMO in the international civil aviation community;
- (7) Recommendation 7 (CAeM-16) – Review of relevant resolutions and decisions of World Meteorological Organization governing bodies related to the Commission for Aeronautical Meteorology.  
Requests Congress and the Executive Council to take into account this recommendation.

### 23. RA V-17 Resolutions and Decisions

23.1. RA V-17 Resolutions and Decisions related to the works of the Panel are presented on pages 6 and 7 on RA V-17 final report, and these can be accessed on [RA V-17 Final Report](#).

23.2. Resolution 4 (RA V-17) urges Members, with the assistance of the president of the regional association, the RA V Management Group and the president of CAeM as necessary, to apply the outcomes of the conference with a view to accelerating the transition from scientific research to meteorological operations through, in particular, community partnerships that already exist or that should be established at a national and/or multinational level involving public and private enterprises where applicable.

23.3. Resolution 5 (RA V-17).

- Urges Members, with the assistance of the president of the regional association, the RA V Management Group and the president of CAeM as necessary.
  - (1) To analyse the outcomes of the global survey, particularly in the context of the national legal/regulatory frameworks and issues such as cost recovery and migration to XML and SIGMET quality, with a view to determining the implications on National Meteorological and Hydrological Services of WMO Members of identified trends in the provision of aeronautical meteorological services and applying common practices.
  - (2) To supply updated information of existing national practices to CAeM by 2020 initially and at regular intervals thereafter.
- Requests the Secretary-General.
  - (1) To make available the global survey results summarized at the regional level; and
  - (2) To organize a regional conference – at the earliest opportunity and in close coordination with the president of CAeM, RA V Members, relevant regional partners and international organizations concerned with the enhancement of aviation safety, efficiency and regularity, including ICAO – on the future of aeronautical meteorological service provision in order to explore coordinated regional approaches in the Region in response to evolving air transport modernization and the emerging information- and service-oriented requirements, and assist Members to resolve deficiencies in the MET field.



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## Annex 1: Panel's Terms of Reference

### Pacific Meteorological Council (PMC) Pacific Islands Aviation Weather Services (PIAWS) Panel Revised Terms of Reference (Approved by PMC-4: August 2017)

#### 1. Introduction

1.1. The Pacific Islands Aviation Weather Services (PIAWS) Panel was established by the Third Meeting of the Pacific Meteorological Council (PMC-3) to serve in the capacity of an advisory body to the Pacific Meteorological Council (PMC) on matters relating to aeronautical meteorological services including cost recovery, quality management and competency standards, in the Pacific region.

#### 2. Purpose

2.1. The purpose of PIAWS Panel is to provide technical advice to PMC and implement specific activities as directed by PMC on matters relating to aeronautical meteorological services including compliance with ICAO Annex 3, cost recovery, quality management and competency standards.

#### 3. Roles and Responsibilities

3.1. The roles and responsibilities of PIAWS Panel include the following:

- a) The establishment of linkages, coordination, discussion and liaison with the WMO Regional Association V (South-West Pacific) Working Group on Weather Services' Task Team of Quality Management System (RA V WG-WX/TT-QMS), Task Team on Training, Competencies and Qualifications (RA V-WX/TT-TRG), and Task Team on Cost Recovery (RA V WX/TT-CR);
- b) The establishment of linkages, coordination, discussion and liaison with the International Civil Aviation Organization (ICAO) Regional Office for Asia and Pacific (ROAP) including attending some of APAC MET annual meetings to ensure that the Panel and APAC MET groups are able share information and possible avoiding duplication of efforts with the aim of assisting in resolving deficiencies and improving compliance with relevant ICAO standards and recommended practices;
- c) The establishment of linkages, coordination, discussion and liaison with the WMO Commission for Aeronautical Meteorology (CAeM) Expert Team on Governance (ET-GOV) with the aim:
  - (i) To establish appropriate governance and business model and/or set up of a pilot project on cost recovery with one or more countries to test possible solutions designed specifically for the case of Pacific Small Island Developing States (SIDS) that would allow countries participating in service provision to benefit from the air navigation services charges attributed to aeronautical meteorological services;
  - (ii) To provide guidance on the development of underpinning national legislation and regulation;



- (iii) To consider a regional cooperation approach in service provision in the Pacific and address related governance issues;
- d) The establishment of linkages, coordination, discussion and liaison with other Expert Teams of the WMO CAeM as needed to address identified regional issues;
- e) The establishment of linkages, coordination, discussion and liaison with the Pacific Aviation Safety Office (PASO) with the aim of promoting the importance of enhanced aeronautical meteorological services and their contribution to safety and efficiency of air transport in the region;
- f) The exploration of opportunities to intensify assistance including bi-lateral twinning agreements and development of a regional target of resolving deficiencies related to the Pacific Island Countries and Territories (PICTs) National Meteorological and Hydrological Services (NMHS) with special focus on compliance with quality management, competency standards and provision of requisite services required by ICAO and WMO regulatory documents;
- g) The establishment linkages, coordination, discussion and liaison with member countries and develop a regional roadmap for phased improvements of the meteorological service to aviation addressing Pacific priority aeronautical meteorology needs, and to consider:
  - (i) The exploration of opportunities of deployment of advanced technological solutions through a regional collaborative approach with strong focus on improved 24/7 airport weather observations and reports, effective and efficient communications for timely data exchange, monitoring of aviation hazards including volcanic ash, and updating the airport climatological summaries;
  - (ii) The exploration of opportunities for improved forecasts for aviation with linkages to the regional Severe Weather Forecasting and Disaster Risk Reduction Demonstration Project (SWFDDP);
  - (iii) Liaison with the user community, in particular major airlines, to receive feedback on their concerns and needs of improved meteorological service in the region;
- h) The regular reporting to PMC members on the progress of PIAWS Panel;
- i) Establish a task team within the PIAWS to implement specific tasks considered important or urgent by the Panel or PMC including developing a project proposal for the region to address the most urgent aviation meteorological needs of the Pacific.
- j) The reporting to PMC.

#### **4. Membership**

4.1. The PIAWS Panel core membership comprises of experts from the following countries and institutions: Cook Islands, Fiji, Palau, Niue, Samoa, Solomon Islands, Tonga, USA, Vanuatu, SPREP, USP, WMO Secretariat, and WMO RA V WG/WX, as per decision of the PMC-3 (also refer to Annex 1), but at the same time it remains open-ended to allow for other PMC members to volunteer their experts and experts from other organizations to participate in PIAWS Panel's activities.





- 4.2. The PIAWS Panel will designate its Chair and vice-Chair.
- 4.3. The PIAWS Panel will invite experts either from its PMC members or any affiliated organization to the Panel’s meetings and discussions.
- 4.4. The PIAWS Panel will designate task team(s) from its experts to carry out specific time bound task(s) for limited time period.
- 4.5. Meetings of PIAWS Panel shall be coordinated and convened by its Chair, with the support of SPREP/WMO/Pacific Meteorological Desk Partnership (PMDP), and in coordination with ICAO ROAP Office.
- 5. **Development, Reviewing and Approving of Terms of Reference**
  - 5.1. The PIAWS Panel will keep its Terms of Reference (TOR) under review and will update, and then submit to PMC for consideration.
  - 5.2. The PMC will consider PIAWS Panel’s TOR and related amendments.

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**Note 1: PIAWS Panel Core Membership Comprises of Experts from Countries and Institutions**

Decisions of the PMC-4 PMC Working Group PIAWS Panel Members of the PIAWS comprises of experts from following countries and institutions: Cook Islands, Fiji, New Zealand, Niue, Palau, Samoa, Solomon Islands, Tonga, USA, Vanuatu, SPREP, USP, WMO Secretariat, and WMO RA V WG/WX Chair: Mr. Ofa Fa’anunu (Tonga) is designated by the PMC-3 and reconfirmed by kick-start meeting of the PIAWS Panel. The Panel also proposed the USA and as vice-Chair and USA to confirm this. Members of the task team core responsibility is to develop project proposal for the region to address aviation meteorological needs of the Pacific. Members of the task team to include Tonga (name), Fiji (name), Solomon Islands (name), WMO Secretariat (name), SPREP/WMO/PMDP (name).

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## Annex 2: Member of the Panel (17 July 2019)

Country	Name of expert	Contact
Australia	Ms Helen Tseros	hellen.tseros@bom.gov.au
	Ms Alicia Tuppack	Alicia.tuppack@bom.gov.au
Cook Islands	Mr Arona Ngari	Arona.ngari@cookislands.gov.ck
Federated States of Micronesia	Mr Johannes Berdon	Johannes.berdon@noaa.gov
Fiji	Mr Misaeli Funaki	Misaeli.funaki@met.gov.fj
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	Mr Harish Pratap	Harish.pratap@met.gov.fj
	Mr Narend Kumar	Narend.kumar@met.gov.fj
	Mr Ivan Wong	ivanw@afl.com.fj
	Ms Alisi Namoro	Alisi.namoro@caaf.com.fj
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	Mr David Hiriasia	David.hiba@met.gov.sb
Tonga	Mr 'Ofa Fa'anunu	ofaf@met.gov.to
Tuvalu	Mr Tauala Katea	t.katea@gmail.com
Vanuatu	Mr Fred Jockley	fjockley@meteo.gov.vu
	Mr Jerry Timothy	jtimothy@meteo.gov.vu
	Mr Levu Boaz Antfalo	lantfalo@meteo.gov.vu
WMO	Mr Greg Brock	gbrock@wmo.int
	Mr Henry Taiki	<a href="mailto:htaiki@wmo.int">htaiki@wmo.int</a>
ICAO	Mr Peter Dunda	pdunda@icao.int

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## Annex 3: PMC-4 decisions related to the works of the Panel and summary of progress in implementing these decisions

COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4
Agenda Item	Titles of working papers and presentations	PMC 4 decisions	Progress of implementation
12.1	Progress on the PIAWS Panel including other related regional and national meetings and surveys	Requested the Panel to develop a regional project proposal to address the regional aviation requirements of member countries identified by the survey and by the PIMS in collaboration with WMO and ICAO.	SPREP Project Management Unit has for the past months developing a regional GCF SAP Concept Note for a project/programme titled “Strengthening weather and climate services for resilience development for the Pacific islands”. Component 2 of the proposal include “Strengthened coordination and improving weather and climate information and services for air navigation and marine and oceans services”.
12.2.1	Compliance to ICAO Annex 3.	Requested the Chair of the Panel to follow up with president of RAV and the Chief of WMO Aeronautical Meteorology (AeM) programme about when the Regional MET / CAA/ Operators Coordination Meeting may take place as a matter of urgency, and if funding is not available from WMO, to bring the matter to the Donors Roundtable.	A draft concept note for “South-west Pacific conference on meteorology for aviation” has been drafted. The conference is planned for 2019. The convening of conference is also in direct response to Resolution 4 (RA V-17).
12.2.2	QMS ISO 9001-2015	Requested a training workshop for quality management practitioners on the transition to the ISO 9001:2015 quality management standard.	
12.2.3	CAR Document Part 174	SPREP to organize for technical experts to work with other Pacific Island Countries and Territories’ NMHSs and helping them on the CAR Part 174 certification.	CAR Part 174: Corresponding Document is Aviation Meteorology Exposition.  Mr. Sammy Solomons (Solomon Islands), QMS expert on 2 occasions provided training and assisted Samoa Meteorology Divisions completing documentation for compliance to CAR Document Part 174.

		National CAA to recruit inspector/auditor to audit NMHSs on the CAR Part 174.	Samoa (Refer to Section 20,1 above). Vanuatu (Refer to Section 20.2 above). Fiji (Refer to Section 20.3). Kiribati (Refer to Section 20.4). Solomon Islands (Refer to Section 20.5). Papua New Guinea (Refer to Sections 20.6, 20.7, 20.8 and 20.9).
		NMHSs to document an integrated quality system including QMS and safety management system.	CAR Part 100: Corresponding Document is quality management standards (QMS) and safety management standards (SMS).
12.2.4	Competency assessment and capacity development for Aeronautical Meteorological Observers (AMO) and Aeronautical Meteorological Forecasters (AMF).	NMHSs to ensure that personnel providing services for international air navigation meet the AMP qualification competency education and training requirements included in the WMO Technical Regulations No.49, Vol.1 and meet the required learning outcomes of the BIP-M and BIP-MT.	Tonga (Refer to Sections 21.1 and 21.2).
		NMHSs to consider implementing competency standards and requirement as per the ISO 9001: 2015 standards especially clause 7.2 on competence, to all services.	
12.3	Cost recovery for aviation weather service	Requested ICAO to work with the Panel to develop a cost recovery strategy to be used for the Pacific Island Countries.	Mr. 'Ofa Fa'anunu (Tonga), Chair of the Panel participated in the ICAO Asia-Pacific MET/S WG/8 meeting, and presented a working paper titled

			<p>“Support for Pacific Island States” and summary of discussions recorded in Paragraph 7.1 of the final report. Section 7.1 also reads “...The meeting noted that the Panel had considered quality management of meteorological services, competency of aeronautical meteorological personnel and development of an effective cost recovery strategy for aeronautical meteorological service in the Pacific SIDS. The meeting also agreed to incorporate support for the PMC and PIAWS Panel work programme when updating the terms of reference and work programme of the MET/S WG.”</p> <p>Mr. Sammy Solomons (Solomon Islands), QMS expert participated in the ICAO/APAC MET SG/23 meeting. Mr Solomons presented a working paper at the meeting titled "The governance of meteorology services in cost recovery for meteorology services." Section Solomons presentations are included in final report of the ICAO/APAC MET SG/23 meeting, especially in Paragraph 5.2 and Paragraph 5.3. Paragraph 5.2 reads "Solomon Islands discussed the need of PIAWS-Panel Member-States including Tonga and Fiji for assistance on Cost Recovery for aeronautical meteorological service." Paragraph 5.3 reads "The meeting noted the existing task in MET/S WG work plan to assist the PIAWS Panel to develop an effective cost recovery strategy and requested the Secretary to coordinate the Chair</p>
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			<p>MET/S WG to progress this work. Hong Kong China agreed to share the information from the previous cost recovery workshop with the Solomon Islands".</p> <p>One of the action items/outcomes for MET SG work plan (2019/2020) is for "Information on ICAO provisions related to meteorological authority and quality assurance, cost recovery, competency, training and qualifications for meteorological service provision shared with States (<a href="#">Appendix 1 of MET SG/23 Final Report</a>)."</p>
12.4	Future work of the Panel and TOR	Endorsed the draft TOR for the Panel.	The Panel works during the reporting period, are guided the TOR.
xxx	Training Course on Aeronautical Meteorology for the National Meteorological and Hydrological Services of the South-West Pacific Island States and Territories, Singapore, 27 to 31 May 2019.	13 personnel from 11 Pacific SIDS NMHSs participated in the training course.l	The training course contents included WMO requirements for competency assessment and framework, meteorological observation and reports, meteorological forecast and warning for aerodromes and enroute operation, roles and functions of WMO aeronautical meteorology, programme, and evaluation and verification forecast products

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