



International Civil Aviation Organization

**THIRTEENTH MEETING OF THE ASIA/PACIFIC REGIONAL OPMET
BULLETIN EXCHANGE WORKING GROUP (ROBEX WG/13)**

Seoul, Republic of Korea, 16 – 18 March 2015

Agenda Item 5: Guidance material

ASIA/PAC ANP UPDATES

(Presented by the Secretariat)

SUMMARY

This paper presents progress on MET parts of the draft new Asia/Pacific Air Navigation Plan (ANP) based on the electronic Air Navigation Plan (eANP) template and under development for possible future adoption by APANPIRG. This paper also presents interim updates to OPMET-related Tables contained in the current valid regional ANP: Facilities and Services Implementation Document (FASID), for review by the meeting.

1. INTRODUCTION

1.1 The regional ANP represents the bridge from (on one side) the global provisions contained in ICAO Standards and Recommended Practices (SARPs) and the Global Air Navigation Plan (GANP) to (on the other side) the States' national plans and actual implementation. As part of the ANP, the FASID contains a detailed description/list of the facilities and/or services to be provided to fulfill the basic requirements of the ANP as agreed between the provider and user States concerned.

1.2 The meeting is reminded that, in accordance with the APANPIRG terms of reference, the regional ANP (and FASID) is kept under constant review in consultation with user and provider States and with the assistance of the ICAO Asia and Pacific Office, Bangkok. This paper presents progress on the development of (MET parts of) a draft new Asia/Pacific eANP, which is based on the common eANP template approved by the Council in June 2014 to align the regional ANPs with the fourth edition of the GANP (Doc 9750), for possible adoption by APANPIRG/26 in September 2015. In addition, this paper presents updates necessary to maintain currency of OPMET-related Tables contained in the current version of the FASID for review by the meeting.

2. DISCUSSION

New Asia/Pacific ANP

2.1 The meeting may recall that APANPIRG/25, held in Kuala Lumpur, Malaysia, from 8 to 11 September 2014, decided to support ICAO efforts to align the regional ANPs with the fourth edition of the GANP by including the development of a new Asia/Pacific eANP (based on the eANP template and the related action plan) in the work programmes of the APANPIRG contributory bodies

and the presentation of the relevant Parts of the draft new Asia/Pacific eANP to APANPIRG/26 (by mid-2015) for final review and endorsement (APANPIRG/25 Decision 25/1 refers).

2.2 The meeting may also recall that, in anticipation of the APANPIRG decision to adopt the eANP as the basis for future development of the Asia/Pacific ANP, the MET SG/18, held in Beijing, China, from 18 to 21 August 2014, noted that the Secretariat would be in the best position to coordinate the work plan for populating the MET parts of the draft new Asia/Pacific eANP (based on the eANP template) in preparation for APANPIRG/26.

2.3 The meeting is advised that a final review of the draft MET Parts of the new Asia/Pacific eANP is expected to be conducted at the MET SG/19 meeting in August 2015; prior to submission to APANPIRG/26. A copy of the draft material for the MET parts of the new Asia/Pacific eANP developed so far (based on the eANP template) is provided in the **Attachment 1** to this paper for review by the meeting. The draft material comprises:

- Volume I Part V – MET (including Table MET I-1 – State Volcano Observatories); and
- Volume II Part V – MET

2.4 The population of data in Table MET II-1 – Meteorological Watch Offices, Table MET II-2 – Aerodrome Meteorological Offices and Table MET II-3 – VOLMET Broadcasts is to be completed and will require alignment of the data with the outstanding amendments to current FASID Tables MET, discussed further in the paragraphs below.

Review of OPMET Tables MET

2.4 In accordance with the ROBEX WG terms of reference, which include review of the regional guidance material related to OPMET exchange, a draft proposal for amendment of the Asia/Pacific FASID Tables MET are provided in the **Attachment 2** to this paper for review by the meeting.

2.5 The draft proposal for amendment incorporates changes to:

- FASID Table MET 1B related to the designation of MWO's by Australia (ROBEX WG/12, WP/15 and agreed action 12/9 refer);
- FASID Table MET 3A related to the designation of MWO's by Australia (ROBEX WG/12, WP/15 and agreed action 12/9 refer); and
- FASID Table MET 3B related to the designation of MWO's by Australia (ROBEX WG/12, WP/15 and agreed action 12/9 refer) and to realign the designated areas of responsibility of the VAACs (IAVWOPSG/8 Conclusion 8/2 refers).

2.6 The meeting is informed that, with respect to the reassignment of location indicators by Indonesia as presented to the meeting in IP/8, a proposal for amendment of the FASID Tables MET 1A and 2A will be circulated to States/Organizations in accordance with the normal procedures for amendment of the FASID after the newly assigned location indicators have been published in the ICAO Location Indicators (Doc 7910).

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) Review the information in this paper; and
- b) Provide further updates to the FASID Tables MET as necessary.

ATTACHMENT 1

Draft (MET Parts) of new Asia/Pacific ANP

ASIA/PAC ANP, VOLUME I

PART V – METEOROLOGY (MET)

1. INTRODUCTION

1.1 This part of the ASIA/PAC ANP constitutes the agreed regional requirements considered to be the minimum necessary for effective planning and implementation of aeronautical meteorology (MET) facilities and services in the ASIA/PAC Region(s) and complements the provisions of ICAO SARPs and PANS related to MET. It contains stable plan elements related to the assignment of responsibilities to States for the provision of MET facilities and services within the ICAO ASIA/PAC region(s) in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300) and mandatory requirements related to the MET facilities and services to be implemented by States in accordance with regional air navigation agreements.

1.2 The dynamic plan element related to the assignment of responsibilities to States for the provision of MET facilities and services and the mandatory requirements based on regional air navigation agreements related to MET are contained in the ASIA/PAC ANP Volume II, Part V - MET.

1.3 The ASIA/PAC ANP Volume III contains dynamic/flexible plan elements related to the implementation of air navigation systems and their modernization in line with the ICAO Aviation System Block Upgrades (ASBUs) methodology and associated technology roadmaps described in the Global Air Navigation Plan. The Aviation System Block Upgrades (ASBUs) modules are aimed at increasing capacity and improving efficiency of the aviation system whilst maintaining or enhancing safety level, and achieving the necessary harmonization and interoperability at regional and global level. This includes the regionally agreed ASBU modules applicable to the specified ICAO region/sub-region and associated elements/enablers necessary for the monitoring of the status of implementation of these ASBU modules.

Standards, Recommended Practices and Procedures

1.4 The Standards, Recommended Practices and Procedures (SARPs) and related guidance material applicable to the provision of MET are contained in:

- Annex 3 - *Meteorological Service for International Air Navigation*; and
- *Regional Supplementary Procedures (Doc 7030)*;
- *Handbook on the IAVW (Doc 9766)*;
- *Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds (Doc 9691)*; and
- *Manual of Aeronautical Meteorological Practice (Doc 8896)*.

2. GENERAL REGIONAL REQUIREMENTS

World area forecast system (WAFS) and meteorological offices

2.1 In the ASIA/PAC Region(s), WAFC London and Washington have been designated as the centres for the operation of the aeronautical fixed service satellite distribution system / WAFS Internet File Service (SADIS and WIFS) and the Internet-based Secure SADIS FTP service. The status of implementation of SADIS/WIFS by States in the ASIA/PAC Region(s) is detailed in Volume III.

2.2 In the ASIA/PAC Region(s), WAFS products in digital form should be disseminated by WAFC London and Washington using the SADIS 2G satellite broadcast and the Secure SADIS FTP service and/or WIFS.

Volcanic Ash

2.3 Volcanic ash advisory centres (VAACs) ~~(NAME of VAAC)~~ have been designated to prepare volcanic ash advisory information for the ASIA/PAC Region(s), as indicated below. The status of implementation of volcanic ash advisory information is detailed in Volume III.

- Darwin, Tokyo, Wellington

2.4 Selected State volcano observatories have been designated for notification of significant pre-eruption volcanic activity, a volcanic eruption and/or volcanic ash in the atmosphere for the **ASIA/PAC** Region(s) to their corresponding ACC/FIC, MWO and VAAC, as indicated at **Table MET I-1**. The status of implementation of volcano observatory notice for aviation (VONA) is detailed in Volume III.

Tropical Cyclone

2.5 Tropical cyclone advisory centres (TCACs) ~~(NAME(s) of TCAC)~~ have been designated to prepare tropical cyclone advisory information for the **ASIA/PAC** Region(s), as indicated below. The status of implementation of tropical cyclone advisory information is detailed in Volume III. ~~[if applicable]~~

- Darwin, Honolulu, Nadi, New Delhi, Tokyo

3. SPECIFIC REGIONAL REQUIREMENTS

3.1 **TBD (if necessary)**

TABLE MET I-1 - STATE VOLCANO OBSERVATORIES

Explanation of the Table

Column

- 1 Name of the State responsible for the provision of a volcano observatory
- 2 Name of the volcano observatory

State	Volcano observatory
1	2
China	Heilongjiang Wudalianchi Volcano Observatory
China	Jilin Changbai Mountain Tianchi Volcano Observatory
Japan	Fukuoka Volcano Observations and Information Center, Japan Meteorological Agency
Japan	Kagoshima Local Meteorological observatory, Japan Meteorological Agency
Japan	Sapporo Volcano Observations and Information Center, Japan Meteorological Agency
Japan	Sendai Volcano Observations and Information Center, Japan Meteorological Agency
Japan	Tokyo Volcano Observations and Information Center, Japan Meteorological Agency
India	TBD
Indonesia	Directorate of Volcanology and Geological Hazard Mitigation (DVGHM)
New Zealand	Wairakei Research Centre Institute of Geological and Nuclear Sciences
Papua New Guinea	Rabaul
Philippines	Philippine Institute of Volcanology and Seismology (PHIVOLCS) Central Office

TABLE MET I-1 - STATE VOLCANO OBSERVATORIES

ASIA/PAC ANP, VOLUME II
PART V – METEOROLOGY (MET)**1. INTRODUCTION**

1.1 This part of the **ASIA/PAC** ANP, Volume II, complements the provisions in the ICAO SARPs and PANS related to aeronautical meteorology (MET). It contains dynamic plan elements related to the assignment of responsibilities to States for the provision of MET facilities and services within a specified area in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300); and mandatory requirements related to the MET facilities and services to be implemented by States in accordance with regional air navigation agreements. Such agreement indicates a commitment on the part of the States concerned to implement the requirements specified.

2. GENERAL REGIONAL REQUIREMENTS*Meteorological offices*

2.1 In the **ASIA/PAC** Region(s), meteorological watch offices (MWO) have been designated to maintain continuous watch on meteorological conditions affecting flight operations within their area(s) of responsibility, as indicated at **Table MET II-1**.

Meteorological observations and reports

2.2 In the **ASIA/PAC** Region(s), routine observations, issued as a METAR, should be made throughout the 24 hours of each day at intervals of one hour or, for ~~RS and AS designated aerodromes~~ **if so determined by regional air navigation agreement**, at intervals of one half-hour at aerodromes as indicated in **Table MET II-2**. For aerodromes included on the VHF VOLMET broadcast as indicated in **Table MET II-3**, routine observations, issued as METAR, should be made throughout the 24 hours of each day.

~~(at intervals of one half-hour) [if applicable].~~

2.3 At aerodromes that are not operational throughout 24 hours, METAR should be issued at least 3 hours prior to the aerodrome resuming operations in the **ASIA/PAC** Region(s).

Forecasts

2.4 In the **ASIA/PAC** Region(s), an aerodrome forecast, issued as a TAF, should be for the aerodromes indicated in **Table MET II-2**.

2.5 In the **ASIA/PAC** Region(s), the period of validity of a routine TAF should be of ~~9-, 12-, 18-, 24-,~~ or 30-hours to meet the requirements indicated in **Table MET II-2**.

2.6 In the **ASIA/PAC** Region(s), the forecast maximum and minimum temperatures expected to occur during the period of validity, together with their corresponding day and time of occurrence, should be included in TAF at aerodromes indicated in **Table MET II-2**.

2.7 In the **ASIA/PAC** Region(s), landing forecasts (prepared in the form of a trend forecast) should be provided at aerodromes indicated in **Table MET II-2**.

Requirements for and use of communications

2.8 Operational meteorological information prepared as METAR, SPECI and TAF for aerodromes indicated in **Table MET II-2**, and SIGMET and AIRMET ~~[if applicable]~~ messages prepared for flight information regions or control areas indicated in **Table MET II-1**, should be disseminated to the international OPMET databanks designated for the **ASIA/PAC** Region(s) (namely **Bangkok, Brisbane, Nadi, Singapore and Tokyo**) and to the centre designated for the operation of the aeronautical fixed service satellite distribution system (SADIS) and the Internet-based service (Secure SADIS FTP) and/or WIFS in the **ASIA/PAC** Region(s).

2.9 SIGMET messages should be disseminated to other meteorological offices in the **ASIA/PAC** Region(s) **in accordance with the regional OPMET bulletin exchange scheme.** ~~[if applicable]~~

2.10 Special air-reports that do not warrant the issuance of a SIGMET should be disseminated to other meteorological offices in the **ASIA/PAC** Region(s) **in accordance with the regional OPMET bulletin exchange scheme.** ~~[if applicable]~~

2.11 In the **ASIA/PAC** Region(s), meteorological information for use by aircraft in flight should be supplied through VOLMET broadcasts.

2.12 In the **ASIA/PAC** Region(s), the aerodromes for which METAR and SPECI are to be included in VOLMET broadcasts, the sequence in which they are to be transmitted and the broadcast time, is indicated in **Table MET II-3**.

3. SPECIFIC REGIONAL REQUIREMENTS

EXAMPLES

- Meteorological observations and reports
-
- 3.1 ~~For the EUR Region, routine observations, issued as METAR, should be made throughout the 24 hours of each day at intervals of one half hour.~~
-
- 3.2 ~~In the (NAME) Region, aeronautical meteorological stations have been established on offshore structures or at other points of significance in support of helicopter operations to offshore structures, as indicated at Table MET II MID X (Former MET 1C Offshore structures). [if applicable]~~
-
- 3.3 ~~In the (NAME) Region, information on the sea surface temperature and the state of the sea or the significant wave height from aeronautical meteorological stations established on offshore structures in support of helicopter operations should be included as supplementary information in METAR and SPECI as indicated in Table MET II MID X (MET 1C Offshore structures). [if applicable]~~
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- 3.4 ~~In the (NAME) Region, information on the state of the runway should be included as supplementary information in METAR and SPECI as indicated in Table MET II 2 (Former MET 1A Aerodrome meteorological offices). [if applicable]~~
-
- 3.5 ~~In the (NAME) Region, GAMET area forecasts and/or area forecasts for low level flights in chart form prepared in support of the issuance of AIRMET information, and AIRMET information for low level flights relevant to the whole route, should be supplied to operators and flight crew members and kept up to date. Section II of the GAMET area forecast should include information, in addition to the provisions in Annex 3, as contained at Appendix MET LLF to Part V (MET). [if applicable]~~
-
- AIRMET information
-
- 3.6 ~~In the (NAME) Region, AIRMET information should be issued by a MWO for its areas of responsibility as indicated in Table MET II 1 (Former MET 1B Meteorological watch offices). [if applicable]~~
-
- OPMET information
-
- 3.7 ~~In the EUR Region, The details of the exchange scheme to be used the OPMET information is given in the EUR Region – EUR OPMET Data Management Handbook (EUR Doc 018). [if applicable]~~
-
- Service for operators and flight crew members
- 3.8 ~~In the (NAME) Region, meteorological information for pre flight planning by operators of helicopters flying to offshore structures as indicated in Table MET II MID X (Former MET 1C Offshore structures) should include data covering the layers from sea level to FL 100. Particular mention should be made of [the expected surface visibility, the amount, type (where available), base and tops of cloud below FL 100, the sea state and sea surface temperature, the mean sea level pressure and the occurrence or expected occurrence of turbulence and icing]. [if applicable]~~
- 3.9 In the APAC Region, scheduled VOLMET broadcasts should contain TAF and SIGMET.
- 3.10 In the APAC Region, METAR, SPECI and TAF should be available for uplink to aircraft in flight via D-VOLMET.

TABLE MET II-1 - METEOROLOGICAL WATCH OFFICES

EXPLANATION OF THE TABLE

Column

- 1 Name of the State where meteorological service is required
- 2 Name of the flight information region (FIR) or control area (CTA) where meteorological service is required
Note: The name is extracted from the ICAO Location Indicators (Doc 7910) updated quarterly. If a State wishes to change the name appearing in Doc 7910 and this table, ICAO should be notified officially.
- 3 ICAO location indicator of the FIR or CTA
- 4 Name of the meteorological watch office (MWO) responsible for the provision of meteorological service for the FIR or CTA
Note: The name is extracted from the ICAO Location Indicators (Doc 7910) updated quarterly. If a State wishes to change the name appearing in Doc 7910 and this table, ICAO should be notified officially.
- 5 ICAO location indicator of the responsible MWO
- 6 Requirement for SIGMET information (excluding for volcanic ash and for tropical cyclones) to be provided by the MWO for the FIR or CTA concerned, where:
Y - Yes, required
N - No, not required
- 7 Requirement for SIGMET information for volcanic ash to be provided by the MWO for the FIR or CTA concerned, where:
Y - Yes, required
N - No, not required
- 8 Requirement for SIGMET information for tropical cyclone to be provided by the MWO for the FIR or CTA concerned, where:
Y - Yes, required
N - No, not required
- 9 Requirement for AIRMET information to be provided by the MWO for the FIR or CTA concerned, where:
Y - Yes, required
N - No, not required

TABLE MET II-2 - AERODROME METEOROLOGICAL OFFICES**EXPLANATION OF THE TABLE****Column**

- 1 Name of the State where meteorological service is required
- 2 Name of the AOP aerodrome where meteorological service is required
Note: The name is extracted from the ICAO Location Indicators (Doc 7910) updated quarterly. If a State wishes to change the name appearing in Doc 7910 and this table, ICAO should be notified officially.
- 3 ICAO location indicator of the AOP aerodrome
- 4 Designation of AOP aerodrome:
RG - international general aviation, regular use
RS - international scheduled air transport, regular use
RNS - international non-scheduled air transport, regular use
AS - international scheduled air transport, alternate use
ANS - international non-scheduled air transport, alternate use
- 5 Name of the aerodrome meteorological office responsible for the provision of meteorological service
Note: The name is extracted from the ICAO Location Indicators (Doc 7910) updated quarterly. If a State wishes to change the name appearing in Doc 7910 and this table, ICAO should be notified officially.
- 6 ICAO location indicator of the responsible aerodrome meteorological office
- 7 Requirement for METAR/SPECI from the aerodrome concerned, where:
Y - Yes, required

- 8 N - No, not required
Requirement for information on the state of the runway provided by the appropriate airport authority to be included as supplementary information in METAR/SPECI from the aerodrome concerned, where:
Y - Yes, required
N - No, not required
- 9 Requirement for trend forecast to be appended to METAR/SPECI from the aerodrome concerned, where
Y - Yes, required
N - No, not required
- 10 Requirement for TAF from the aerodrome concerned, where
C - Requirement for 9-hour validity aerodrome forecasts in TAF code (9H)
T - Requirement for 18/24-hour validity aerodrome forecasts in TAF code (18/24H)
X - Requirement for 30-hour validity aerodrome forecasts in TAF code (30H)
N - No, not required
- 11 Requirement for maximum and minimum temperature (expected to occur during the period of validity of the TAF) to be included in TAF from the aerodrome concerned, where:
Y - Yes, required
N - No, not required
- 12 Availability of METAR/SPECI and TAF from the aerodrome concerned, where:
F - Full availability : OPMET information as listed issued for the aerodrome all through the 24-hour period
P - Partial availability: OPMET information as listed not issued for the aerodrome for the entire 24-hour period

TABLE MET II-3 – VOLMET BROADCASTS

EXPLANATION OF THE TABLE

The transmitting station appears at the top of each block.

Names in lower case letters indicate aerodromes for which reports (routine or selected special) are required.

Names in upper-case letters indicate aerodromes for which forecasts are required.

EXAMPLE FOR SPECIFIC REGIONAL REQUIREMENTS

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TABLE MET II-MID-X-OFFSHORE STRUCTURES

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EXPLANATION OF THE TABLE

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Column

- 1 Name of the State where meteorological service is required
- 2 Name of the offshore structure where meteorological service is required
Note: The name is extracted from the ICAO Location Indicators (Doc 7910) updated quarterly. If a State wishes to change the name appearing in Doc 7910 and this table, ICAO should be notified officially.
- 3 ICAO location indicator of the offshore structure
- 4 Latitude of the offshore structure (in the form Nnnnn or Snnnn)
- 5 Longitude of the offshore structure (in the form Ennnnn or Wnnnnn)
- 6 Name of the meteorological office responsible for the provision of meteorological service
Note: The name is extracted from the ICAO Location Indicators (Doc 7910) updated quarterly. If a State wishes to change the name appearing in Doc 7910 and this table, ICAO should be notified officially.
- 7 ICAO location indicator of the responsible meteorological office
- 8 Availability of information on the sea surface temperature as supplementary information in METAR/SPECI from the offshore structure concerned, where:
Y—Yes, available
N—No, not available
- 9 Availability of information on the state of the sea or significant wave height as supplementary information in METAR/SPECI from the offshore structure concerned, where:
Y—Yes, available
N—No, not available
- 10 Availability of forecasts from the offshore structure concerned, where:
Y—Yes, available
N—No, not available

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EXAMPLE FOR SPECIFIC REGIONAL REQUIREMENTS

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Appendix MET LLF to Part V (MET) Volume II

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EUR REGION ONLY

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In the EUR Region, Section II of the GAMET area forecast should include the following information in addition to the provisions in Annex 3:

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a) — Short description of general weather situation in addition to the description of pressure centres and fronts;

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b) — Information about mean surface wind also for values less than 15 m/s (30kt);

-
- e) — Upper wind and temperature in mountainous areas for altitude 15000ft, or higher if necessary;
-
- Note* — Upper wind and temperature information should have a horizontal resolution no more than 500km;
-
- d) — Information about widespread surface visibility of 5000 m or more together with the weather phenomena (if any) causing a reduction of visibility and inserted between the upper wind and cloud information;
-
- e) — State of the sea and sea surface temperature; and
-
- Note* — States under whose jurisdiction off shore structure or other points of significance in support of off shore helicopter operations are located should, in consultation with the appropriate operators, establish or arrange for the information on the state of the sea and sea surface temperature to be included in all low level area forecasts.
-
- f) — An outlook concerning expected hazardous weather phenomena during the following validity period:
-
- Note 1.* — When the area forecast for low level flights is issued as a GAMET, the following regional procedures should be followed:
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- i. — the term "widespread" should be used to indicate a spatial coverage of more than 75 per cent of the area concerned; and
- ii. — the visibility and cloud base information in section II may be complemented in the form of visibility/cloud base categories.
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- Note 2.* — Where combined cloud/visibility information is provided, this information should be in the form of visibility/cloud base categories and should be supplied for well defined sub areas and/or route segments. The boundaries of sub areas and/or route segments for which forecasts for low level flights are provided in condensed form should be published in the AIP. For each sub area and/or route segment, the reference height to which the cloud base information refers, should be specified.
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- Note 3.* — Where visibility/cloud base categories are used in low level forecasts these should be as follows:
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- O* — visibility equal to or more than 8 km and cloud base equal to or higher than 600 m (2000 ft);
-
- D* — visibility equal to or more than 5 km but less than 8 km with cloud base 300 m (1000 ft) or higher, or cloud base equal to 300 m (1000 ft) or higher but less than 600 m (2000 ft) with visibility equal to or more than 8 km;
-
- M* — visibility equal to or more than 1.5 km but less than 5 km with cloud base equal to or higher than 150 m (500 ft), or cloud base equal to or higher than 150 m (500 ft) but less than 300 m (1000 ft) with visibility equal to or more than 5 km;
-
- X* — visibility less than 1.5 km and/or cloud base less than 150 m (500 ft). The visibility/cloud base category indicated in the forecast for a sub area should refer to the prevailing conditions in the sub area concerned. Cloud information should refer to clouds with a coverage of BKN or OVC.
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[+] Refer to Table AOP II 1, Explanation of the table

ATTACHMENT 2 (Revised 18/03/15)

DRAFT
Proposal for Amendment of Asia and Pacific Regions
Air Navigation Plan
Volume II, Facilities and Services Implementation Document

(Serial No.: APAC 15/xx – MET)

- a) **Plan :** ASIA/PAC ANP Volume II, FASID Doc 9673
- b) **Proposed amendment:** Part VI METEOROLOGY (MET), FASID Table MET 1A:

Under Australia, **DELETE** requirement for MWO at Cairns YBCS (as shown in **Appendix 1**)

Part VI METEOROLOGY (MET), FASID Table MET 3A:

Under TCAC Darwin (Australia) and TCAC Nadi (Fiji), **DELETE** requirement for MWO at Cairns YBCS in columns 5 and 6 (as shown in **Appendix 2**)

Part VI METEOROLOGY (MET), FASID Table MET 3B:

Under VAAC Darwin (Australia), **DELETE** requirement for MWO at Cairns YBCS in columns 6 and 7 (as shown in **Appendix 3**)

Under VAAC Anchorage (United States), VAAC Tokyo (Japan), VAAC Toulouse and VAAC Washington (United States), **AMEND** the Area of Responsibility in column 3
- c) **Originated by:** Australia (ROBEX WG/12), with respect to changes related to Cairns YBCS.

IAVWOPSG/8 (Conclusion 8/2), with respect to VAAC Area of Responsibility.
- d) **Originator's reasons for amendment:** To reflect the current requirements for MWOs in Australia.

To ensure the areas of responsibility for volcanic ash advisory centres (VAACs), as depicted in column 3 of the ASIA/PAC FASID Table MET 3B, reflect the current requirements for VAAC areas of responsibility and are fully aligned with other (ICAO) regional air navigation plans.
- e) **Intended date of implementation :** Date of approval

f) **Proposal circulated to the following Sates and International Organizations:**

Afghanistan
Australia
Bangladesh
Bhutan
Brunei Darussalam
Cambodia
China
*cc: Hong Kong, China
Macao, China*
Cook Islands
Democratic People’s
Republic of Korea
Fiji
India
Indonesia
Japan
Kiribati
Lao PDR
Malaysia
Maldives
Marshall Islands
Micronesia
Mongolia

Myanmar
Nauru
Nepal
New Zealand
Pakistan
Palau
Papua New Guinea
Philippines
Republic of Korea
Samoa
Singapore
Solomon Islands
Sri Lanka
Thailand
Timor-Leste
Tonga
Vanuatu
Viet Nam

International Organizations
IATA
IFALPA
WMO

g) **Secretariat comments:**

i) The Secretariat is in favour of the amendment as proposed above in order to more accurately reflect the current requirements with respect to requirements for MWOs in Australia and VAAC Area of Responsibility.

ii) Editorial note: Amendments are arranged to show “deleted word/text” using strikeout (~~text to be deleted~~), and “added word/text” with yellow highlight (text to be inserted or to replace the existing text).

APPENDIX 1

MWO Location	ICAO loc. ind.	Area served		Remarks
		Name	ICAO loc. ind.	
1	2	3	4	5
....				
AUSTRALIA				
ADELAIDE (REGIONAL FORECASTING CENTRE)	YPRM	Melbourne FIR ¹⁾	YMMM	MWOs have areas of responsibility (AOR) defined by specific forecast area boundaries. These boundaries are not aligned with FIR boundaries
BRISBANE (REGIONAL FORECASTING CENTRE)	YBRF	Brisbane FIR ²⁾	YBBB	
CAIRNS	YBCS	Brisbane FIR ³⁾	YBBB	MWO Darwin is designated to issue VA SIGMET for the whole Brisbane and Melbourne FIR
DARWIN (REGIONAL FORECASTING CENTRE)	YPDM	Brisbane FIR ⁴⁾ Melbourne FIR ⁵⁾	YBBB YMMM	

APPENDIX 2

TROPICAL CYCLONE ADVISORY CENTRE	ICAO LOC. IND.	AREA OF RESPONSIBILITY	PERIOD OF OPERATION ²⁾	MWO TO WHICH ADVISORY INFORMATION IS TO BE SENT	
				Name	ICAO LOC. IND.
1	2	3	4	5	6
Darwin (Australia)	YPDM	South-East Indian Ocean N: 0°S S: 36°S W: 90°E E: 141°E South-West Pacific Ocean N: 0°S S: 40°S W: 141°E E: 160°E	November – April	Adelaide ³⁾	YPRM
				Brisbane	YBRF
				Colombo	VOMM
				Darwin	YDRM
				Hobart ³⁾	YMHF
				Honiara ⁴⁾	AGGH
				Jakarta	WIII
				Melbourne ³⁾	YMRF
				Perth	YPRF
				Port Moresby	AYPY
				Sydney ³⁾	YSRF
				Cairns ³⁾	YBCS
				Ujung Pandang	WAAA
				Melbourne (World Met Centre, BoM) ³⁾	YMMC
Honolulu (United States)	PHFO	Central Pacific: N: 60°N S: 0°N W: 180°W E: 140°W	May – November	<i>Anchorage</i>	<i>PAWU</i>
				Honolulu	PHFO
				<i>Kansas City</i>	<i>KKCI</i>
				Tahiti	NTAA
Miami (United States)	KNHC	Eastern Pacific: N: 60°N S: 0°N W: 140°W E: Coastline	May – November	Honolulu	PHFO
				<i>Kansas City</i>	<i>KKCI</i>
				Tahiti	NTAA
Nadi (Fiji)	NFFN	Southern Pacific: N: 0°S S: 40°S W: 160°E E: 120°W	November – April	Brisbane	YBRF
				Cairns ³⁾	YBCS
				Hobart ³⁾	YMHF
				Honiara ⁴⁾	AGGH
				Honolulu	PHFO
				Melbourne ³⁾	YMRF
				Melbourne (World Met Centre, BoM) ³⁾	YMMC
				Nadi	NFFN
				Nauru ⁴⁾	ANYN
				Sydney ³⁾	YSRF
Tahiti	NTAA				

TROPICAL CYCLONE ADVISORY CENTRE	ICAO LOC. IND.	AREA OF RESPONSIBILITY	PERIOD OF OPERATION ²⁾	MWO TO WHICH ADVISORY INFORMATION IS TO BE SENT	
				Name	ICAO LOC. IND.
1	2	3	4	5	6
				Wellington (Aviation Weather Centre)	NZKL
New Delhi (India)	VIDP	1) Bay of Bengal 2) Arabian Sea N: Coastline S: 5°N W: Coastline E: 100°E	April – June October – December	<i>Bahrain</i> Chennai Colombo Dhaka <i>Abu Dhabi</i> Jakarta <i>Jeddah</i> Karachi Kuala Lumpur <i>Kuwait</i> Male Mumbai <i>Muscat</i> <i>Tehran</i> <i>Sana'a</i> Yangon	<i>OBBI</i> VOMM VCBI VGHS OMAA WIII OEJN OPKC WMKK OKBK VRMM VABB OOMS OIII OYSN VYYY
Réunion (France)	FMEE	Southwest Indian Ocean N: 0°S S: 40°S W: African Coastline E: 90°E	Throughout the year	<i>Antananarivo</i> <i>Bloemfontein</i> Mumbai <i>Dar-es-Salaam</i> <i>Durban</i> <i>Gaborone</i> <i>Harare</i> <i>Johannesburg</i> <i>Lilongwe</i> <i>Mahé</i> Male <i>Maputo</i> <i>Mauritius</i> Melbourne (World Met Centre, BoM) ³⁾ <i>Nairobi</i> Perth	<i>FMMI</i> <i>FABL</i> VABB <i>HTDA</i> <i>FADN</i> <i>FBSK</i> <i>FVHA</i> <i>FAJS</i> <i>FWLI</i> <i>FSIA</i> VRMM <i>FQMA</i> <i>FIMP</i> YMMC <i>HKJK</i> YPRF

TROPICAL CYCLONE ADVISORY CENTRE	ICAO LOC. IND.	AREA OF RESPONSIBILITY	PERIOD OF OPERATION ²⁾	MWO TO WHICH ADVISORY INFORMATION IS TO BE SENT	
				Name	ICAO LOC. IND.
1	2	3	4	5	6
Tokyo (Japan)	RJTD	Western Pacific (incl. South China Sea) N: 60°N S: 0°N W: Coastline E: 180°E		Bangkok Beijing Chengdu Gia Lam Guangzhou Haikou Hong Kong Honolulu Incheon Jakarta <i>Kansas City</i> Kuala Lumpur Manila Nadi Phnom-Penh ⁵⁾ Shanghai Singapore Sunan Taibei Tokyo Ujung Pandang Vientiane	VTBS ZBAA ZUUU VVGL ZGGG ZJHK VHHH PHFO RKSI WIII <i>KMKC</i> WMKK RPLL NFFN VDPP ZSSS WSSS ZKPY RCTP RJTD WAAA VLVT

APPENDIX 3

VAAC		AREA OF RESPONSIBILITY	STATE	ICAO REGION	MWO TO WHICH INFORMATION IS TO BE SENT		ACC/FIC TO WHICH INFORMATION IS TO BE SENT	
NAME	ICAO LOC. IND.				Name	ICAO LOC. IND.	Name	ICAO LOC. IND.
1	2	3	4	5	6	7	8	9
Anchorage (United States)	PAWU	Anchorage Oceanic, Anchorage Continental, Oakland Oceanic north of N4300 E16500, N4812 W15000, N4812 W12800 Anchorage Arctic, and West to E15000, North of N6000	China	APAC	Haikou/Meilan	ZJHK	Sanya	ZJSA
			Russian Federation	EUR	Anadyr	UHMA	Anadyr Shmidta Cape	UHMA UHMI
					Magadan	UHMM	Magadan	UHMM
					Tiksi	UEST	Tiksi	UEST
					Zyryanka	UESU	Zyryanka	UESU
			USA	NAM	Anchorage	PAWU	Anchorage	PAZA
Kansas City	KKCI	Kansas City			KKCI			
Darwin (Australia)	YPDM	Southward from N2000 and from E08200 to E10000, and Southward from N1000 and from E10000 to E16000, and the Colombo, Melbourne and Brisbane FIRs	Australia	APAC	Adelaide ³⁾	YPRM	Adelaide	YPAD
			Thailand	APAC	Bangkok	VTBS	Bangkok	VTBB
			Australia	APAC	Brisbane ³⁾	YBRF	Brisbane Cairns Townsville	YBBN YBCS YBTL
			Australia	APAC	Cairns ³⁾	YBCS	Townsville	YBTL
			India	APAC	Chennai	VOMM	Chennai	VOMF
			Sri Lanka	APAC	Colombo	VCBI	Colombo	VCBI
			Australia	APAC	Darwin	YDRM	Darwin	YPDN
			Viet Nam	APAC	Gia Lam	VVGL	Hanoi Ho-Chi-Minh	VVNB VVTS
			Australia	APAC	Hobart ³⁾	YMHF	Hobart	YMHB
			Solomon I.	APAC	Honiara ¹⁾	AGGH	Honiara	AGGH
			Indonesia	APAC	Jakarta	WIII	Jakarta	WIIF
			Malaysia	APAC	Kuala Lumpur	WMKK	Kota Kinabalu Kuala Lumpur	WBFC WMFC
			Philippines	APAC	Manila	RPLL	Manila	RPHI
			Australia	APAC	Melbourne (World Met Centre, BoM)	YMMC	Melbourne	YMMM
			Australia	APAC	Melbourne ³⁾	YMRF	Melbourne	YMMM
			Australia	APAC	Perth ³⁾	YPRF	Perth	YPPH
			Papua New Guinea	APAC	Port Moresby	AYPY	Port Moresby	AYPM
			Singapore	APAC	Singapore	WSSS	Singapore	WSJC
			Australia	APAC	Sydney ³⁾	YSRF	Sydney	YSSY
			Indonesia	APAC	Ujung Pandang	WAAA	Ujung Pandang	WAAF
Myanmar	APAC	Yangon	VYYY	Yangon	VYYY			

VAAC		AREA OF RESPONSIBILITY	STATE	ICAO REGION	MWO TO WHICH INFORMATION IS TO BE SENT		ACC/FIC TO WHICH INFORMATION IS TO BE SENT	
NAME	ICAO LOC. IND.				Name	ICAO LOC. IND.	Name	ICAO LOC. IND.
1	2	3	4	5	6	7	8	9
Tokyo (Japan)	RJTD	N6000 to N1000 and from E09000 to Oakland Oceanic and Anchorage Oceanic and Continental FIR boundaries minus the region bounded by N1000, N2000, E09000 and E10000 except the area within N2000 E09000 to N2000 E10000 to N1000 E10000 to N1000 E09000	Russian Federation	EUR	Artiom (Vladivostok)	UHWW	Vladivostok	UHWW
			Thailand	APAC	Bangkok	VTBS	Bangkok	VTBB
			Russian Federation	EUR	Blagoveshchensk	UHBB	Blagoveshchensk	UHBB
			China	APAC	Beijing	ZBAA	Beijing Huhhot Taiyuan	ZBPE ZBHH ZBYN
			Russian Federation	EUR	Chita	UIAA	Chita	UIAA
			Russian Federation	EUR	Chulman (Nerungri)	UELL	Chulman	UELL
			Viet Nam	APAC	Gia Lam	VVGL	Hanoi Ho-Chi-Minh	VVNB VVTS
			China	APAC	Guangzhou	ZGGG	Guangzhou Changsha Guilin Nanning	ZGZU ZGCS ZGKL ZGNN
			China	APAC	HAIKOU/Meilan	ZJHK	Sanya	ZJSA
			China	APAC	Hong Kong	VHHH	Hong Kong	VHHK
			Republic of Korea	APAC	Incheon	RKSI	Incheon	RKRR
			Russian Federation	EUR	Irkutsk	UIII	Irkutsk	UIII
			Russian Federation	EUR	Khabarovsk	UHHH	Khabarovsk	UHHH
			China	APAC	Chengdu	ZUUU	Kunming Chengdu Chongqing	ZPKM ZUDS ZUCK
			China	APAC	Xi'an	ZLXY	Lanzhou Xi'an	ZLAN ZLHW ZLSN
			Russian Federation	EUR	Magadan	UHMM	Magadan	UHMM
			Philippines	APAC	Manila	RPLL	Manila	RPHI
			Cambodia	APAC	Phnom Penh ²⁾	VDPP	Phnom-Penh	VDPP
			DPR Korea	APAC	Sunan	ZKPY	Pyongyang	ZKKP
			China	APAC	Shanghai	ZSSS	Shanghai Hefei Jinan Nanchang Nanjing Xiamen Qingdao	ZSHA ZSOF ZSTN ZSCN ZSNJ ZSAM ZSQD
China	APAC	Shenyang	ZYTX	Shenyang Dalian Hailar Harbin	ZYSH ZYTL ZBLA ZYHB			

VAAC		AREA OF RESPONSIBILITY	STATE	ICAO REGION	MWO TO WHICH INFORMATION IS TO BE SENT		ACC/FIC TO WHICH INFORMATION IS TO BE SENT	
NAME	ICAO LOC. IND.				Name	ICAO LOC. IND.	Name	ICAO LOC. IND.
1	2	3	4	5	6	7	8	9
			China	APAC	Taibei	RCTP	Taibei	RCAA
			Japan	APAC	Tokyo	RJTD	Sapporo Tokyo Fukuoka Naha	RJCG RJTG RJDG RORG
			Mongolia	APAC	Ulaanbaatar	ZMUB	Ulaanbaatar	ZMUB
			China	APAC	Urumqi	ZWW W	Urumqi	ZWW W ZWUQ
			Lao PDR	APAC	Vientiane	VLVT	Vientiane	VLVT
			China	APAC	Wuhan	ZHHH	Wuhan	ZHWH
			Russian Federation	EUR	<i>Yelizovo (Petropavlovsk- Kamchatsky)</i>	<i>UHPP</i>	<i>Petropavlovsk- Kamchatsky</i>	<i>UHPP</i>
			Russian Federation	EUR	<i>Yuzhno- Sakhalinsk</i>	<i>UHSS</i>	<i>Yuzhno- Sakhalinsk</i>	<i>UHSS</i>
Toulouse (France)	LFPW	Santa Maria Oceanic FIR, AFI Region north of S6000 down to the South Pole, EUR Region (except for Finland, Kobenhavn, London, Norway, Scottish, and Shannon and Sweden FIRs) west of E09000 and south of N7100, MID Region, and ASIA Region; west of E09000 north of N2000 (plus Mumbai, Chennai (west of E08200) and Male FIRs)	India	APAC	Chennai	VOMM	Chennai FIR and SRR	VOMF
			India	APAC	Delhi/Indira Ghandi Intl	VIDP	Delhi FIR and SRR	VIDF
			Afghanistan	APAC	Kabul AD	OAKM	Kabul FIR and SRR	OAKX
			Pakistan	APAC	Karachi/Jinnah Int'l	OPKC	Karachi FIR and SRR	OPKR
			Nepal	APAC	Kathmandu	VNKT	Kathmandu FIR and SRR	VNSM
			India	APAC	Kolkata	VECC	Kolkata FIR and SRR	VECF
			Pakistan	APAC	Lahore/Allama Iqbal Int'l	OPLA	Lahore FIR and SRR	OPLR
			Maldives	APAC	Male/Intl	VRMM	Male FIR and SRR	VRMM
			India	APAC	Mumbai/Chhatrapati Shivaji Intl.	VABB	Mumbai FIR and SRR	VABF
			China	APAC	Urumqi/Diwopu	ZWW W	Urumqi FIR and SSR	ZMUQ

VAAC		AREA OF RESPONSIBILITY	STATE	ICAO REGION	MWO TO WHICH INFORMATION IS TO BE SENT		ACC/FIC TO WHICH INFORMATION IS TO BE SENT	
NAME	ICAO LOC. IND.				Name	ICAO LOC. IND.	Name	ICAO LOC. IND.
1	2	3	4	5	6	7	8	9
			Bangladesh	APAC	Hazrat Shahjalal International Airport	VGHS	Dhaka FIR and SRR	VGFR
Washington (United States)	KNES	New York Oceanic, Oakland Oceanic FIR south of N4300 E16500, N4812 W15000, N4812 W12800 and United States continental FIRs north of S1000 W14000 New York Oceanic Oakland Oceanic south of N4300 E16500 to N4820 W15000 to N4820 W12800, United States Continental FIRs, New York Oceanic FIR North of S1000 W14000 East of 0000 W14000 and North of S10000 W14000 to S1000 W03000 Nadi and Nauri FIRs North of Equator	USA	NAM	Honolulu Kansas City	PHFO KKCI	Oakland Oceanic	KZAK
							Guam	PGZU
			Fiji	APAC	Nadi	NFFF	Nadi	NFFF
Wellington (New Zealand)	NZKL	Southward from the Equator and from E16000 to W14000, except for the Melbourne and Brisbane FIRs, and Southward from S1000 and from W14000 to W09000	Australia	APAC	Brisbane ³⁾	YBRF	Brisbane	YBBN
			Australia	APAC	Darwin	YDRM	Darwin	YPDN
			USA	APAC	Honolulu	PHFO	Oakland Oceanic	KZAK
			Solomon I.	APAC	Honiara ¹⁾	AGGH	Honiara	AGGH
			Australia	APAC	Melbourne ³⁾	YMRF	Melbourne	YMMM
			Fiji	APAC	Nadi	NFFN	Nadi	NFFF
			Nauru	APAC	Nauru ¹⁾	ANYN	Nauru	ANAU
			Australia	APAC	Sydney ³⁾	YSRF	Sydney	YSSY

VAAC		AREA OF RESPONSIBILITY	STATE	ICAO REGION	MWO TO WHICH INFORMATION IS TO BE SENT		ACC/FIC TO WHICH INFORMATION IS TO BE SENT	
NAME	ICAO LOC. IND.				Name	ICAO LOC. IND.	Name	ICAO LOC. IND.
1	2	3	4	5	6	7	8	9
			French Polynesia	APAC	Tahiti	NTAA	Tahiti	NTTT
			New Zealand	APAC	Wellington (Aviation Weather Centre)	NZKL	Auckland Christchurch	NZZO NZZC