International Civil Aviation Organization

WORKING PAPER (WP/07~~xx~~)

ICAO Asia and Pacific (APAC)
Twenty-Eighth Meeting of the Meteorology Sub-Group (MET SG/28)

Bangkok, Thailand, 8 to 12 July 2024

Agenda Item 4: Regional guidance material

ROBEX HANDBOOK UPDATES IN ACCORDANCE WITH THE REVIEW OF THE PERFORMANCE INDICES (PIs) USED IN APAC OPMET MONITORING

(Presented by Thailand and PI Ad-hoc group)

SUMMARY

This paper presents proposals for updates to the Regional OPMET Bulletin Exchange (ROBEX) Handbook in relation to the review of the performance indices (PIs) used in APAC OPMET monitoring.

1. INTRODUCTION

1.1 The ICAO APAC Regional OPMET Bulletin Exchange (ROBEX) scheme provides a systematic plan for APAC States to exchange meteorological information in the form of OPMET bulletins within the APAC region and inter-regionally with the other ICAO regions.

1.2 The APAC ROBEX Handbook provides users with guidance on the operation of the ROBEX scheme, including the responsibilities and procedures for ROBEX centres and the content and format for ROBEX bulletins.

1.3 This paper invites the Meeting to review proposed updates to the ROBEX Handbook and provide additional information, as necessary, to ensure the ROBEX Handbook reflects the responsibilities and procedures with respect to the review of the performance indices (PIs) used in APAC OPMET monitoring.

2. DISCUSSION

2.1 The OPMET monitoring in ASIA/PACIFIC region carried out by the five designated RODBs: Bangkok, Brisbane, Nadi, Singapore, and Tokyo. The results were presented at the Meeting annually.

~~2.1~~2.2 The MET/IE Meetings noted the related action from the previous Meeting, MET/IE WG/20 action item 05, group to review the Performance Indices (PIs) used in APAC OPMET monitoring. [ACTION MET/IE WG21-07].

~~2.2~~2.3 The ad hoc group, in coordination with the Secretariat, Chair, Australia, Hong Kong, New Zealand, and Thailand, agreed to perform the action and consider the timeliness of IWXXM.

~~2.3~~2.4 The MET/IE WG/22 meeting considered the minimum availability and timeliness criteria (instead of availability, compliance and reliability) for meteorological information of METAR and TAF in TAC (SA and FT) and IWXXM (LA and LT) forms and consulted criteria used in the European region. It was agreed that a threshold of ninety-five per cent (95%) to identify possible deficiencies. Additional criteria should be that the IWXXM messages are well formed and, where translated from TAC, properly translated.

~~2.4~~2.5 The meeting also considered that consequential updates to the ROBEX Handbook would be required to facilitate the next OPMET monitoring activity and requested the ad hoc group on PIs [Ref: MET/IE WG/21 action item 07] to develop the proposed updates for review and possible approval by MET SG/28. [ACTION MET/IE WG/22-04]

~~2.5~~2.6 As a result, the proposed amendments to ASIA PACIFIC ROBEX HANDBOOK are presented in Appendix A.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper; and

b) discuss necessary follow-up actions arising from the proposed amendments of the OPMET performance indices (PIs) used in APAC OPMET monitoring mentioned in the paper.

– – – – – – – – – – – – – –

INTERNATIONAL CIVIL AVIATION ORGANIZATION

ASIA PACIFIC
ROBEX HANDBOOK

Sixteenth Edition — April 2024

Prepared by the ICAO Asia and Pacific Office
and Published under the Authority of the Secretary General

RECORD OF AMENDMENTS AND CORRIGENDA

Amendments			
No.	Date of issue	Date entered	Entered by
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

Corrigenda			
No.	Date of issue	Date entered	Entered by

Table of Contents

Acronyms and Abbreviations

ACC	Area Control Centre
ADMIN	Administrative message
AFI	Africa-Indian Ocean Region
AFS	Aeronautical Fixed Service
AFTN	Aeronautical Fixed Telecommunication Network
AIREP	Air-report
AMHS	ATS Message Handling System
AMO	Aerodrome Meteorological Office
AMS	Aeronautical Meteorological Station
ANP	Air Navigation Plan
AOP	Aerodrome Operations
APAC	Asia Pacific Region
APANPIRG	Asia/Pacific Air Navigation Planning and Implementation Regional Group
ARS	Special Air-report indicator
ASIA	Asia Region
ASIA/PACIFIC	Asia and Pacific Regions
ATM	Air Traffic Management
ATS	Air Traffic Services
COM	Communications
CTA	Control Area
eDocuments	Electronic Documents
EUR	European Region
FASID	Facilities And Services Implementation Document
FIR	Flight Information Region
GML	Geography Mark-up Language
HF	High Frequency
ICAO	International Civil Aviation Organization
ICD	Interface Control Document
IROG	Inter-regional OPMET Gateway
IWXXM	ICAO Meteorological Information Exchange Model
METAR	Aerodrome Routine Meteorological Report
MET/IE WG	Meteorological Information Exchange Working Group
MID	Middle East Region
MWO	Meteorological Watch Office

NOC	National OPMET Centre
OPMET	Operational Meteorological Information
PAC	Pacific Region
PIRG	Planning and Implementation Regional Group
ROBEX	Regional OPMET Bulletin Exchange
ROC	Regional OPMET Centre
RODB	Regional OPMET Data Banks
SADIS	Secure Aviation Data Information Service
SAM	South American Region
SIGMET	Significant Meteorological Information
SPECI	Aerodrome Special Meteorological Report
SUG	SADIS User Guide
SWX	Space Weather
SWXC	Space Weather Centre
TAC	Traditional Alphanumeric Code
TAF	Aerodrome Forecast
TC	Tropical Cyclone
TCA	Tropical Cyclone Advisory
TCAC	Tropical Cyclone Advisory Centre
VA	Volcanic Ash
VAA	Volcanic Ash Advisory
VAAC	Volcanic Ash Advisory Centre
WAFC	World Area Forecast Centre
WAFS	World Area Forecast System
WG	Working Group
WIFS	WAFS Internet File Service
WMO	World Meteorology Organization
XML	Extensible Mark-up Language

1. INTRODUCTION

1.1. The Regional Operational Meteorological (OPMET) Bulletin Exchange (ROBEX) scheme was established by the MID/SEA COM/MET Regional Planning Group at its first meeting in Bangkok, July 1972. The scheme became operational in 1974 and has since been successfully exchanging OPMET information in the ASIA/PAC (APAC) region and inter-regionally with the AFI, EUR, MID, NAM and SAM regions.

1.2. The ROBEX scheme was intended initially only for METAR exchange; AIREP and TAF exchanges were added to the scheme at a later stage. The operation of the ROBEX scheme included exchange of OPMET bulletins between the originating tributary offices and the bulletin compiling centres, which, according to their functions and responsibilities, were classified as Main Collection Centres or Sub-collection Centres, or TAF Collection Centres. The operational exchange has been carried out according to agreed transmission schedules; the bulletin contents were specified in the ROBEX Handbook.

1.3. Based on COM facilities of very limited capacity in the early seventies, the ROBEX scheme was strictly planned to accommodate only those OPMET exchanges considered vital for the flight operations. Over the years, the COM facilities have improved considerably and the ROBEX scheme has developed accordingly. The ROBEX Handbook is dynamic in nature in that it is updated regularly to reflect current communications (COM) facilities and the requirements of users for OPMET.

1.4. The ROBEX Handbook is the main guidance material providing detail on the procedures for OPMET exchange under the ROBEX scheme. The Handbook defines the responsibilities of the Regional OPMET Centres (ROCs) and the procedures to be followed. It also defines the content and format of the ROBEX bulletins.

1.5. The ROBEX Handbook is published and kept up-to-date by the ICAO APAC Office (Bangkok).

1.6. Although the ROBEX Handbook primarily covers the exchange of OPMET in the ASIA/PAC Region, it also provides information on the exchange of OPMET inter-regionally as agreed with the other regions.

2. ROBEX SCHEME – GENERAL

2.1. Objective

2.1.1 The main purpose of the Regional Operational Meteorological Bulletin Exchange (ROBEX) Scheme is to ensure the following:

a) Most efficient exchange of OPMET information within APAC and with the other ICAO regions to meet the requirements of the users of OPMET information; and

b) Implementation of the OPMET-related SARPs in *Annex 3* and *Annex 10*, and the relevant provisions of the APAC Air Navigation Plan (ANP) in a highly efficient and standardized way.

2.2. Structure

2.2.1 The above objective is achieved by implementing a number of Regional OPMET Centres (ROC), Regional OPMET Data Banks (RODB), and Inter-regional OPMET Gateways (IROG). All these operational units form the ROBEX scheme. In order to ensure seamless global exchange of the required OPMET information, the ROBEX scheme is consistent with similar schemes in the other ICAO regions, as well as with the AFS distribution systems used to disseminate OPMET data.

2.3. Purpose

2.3.1 The ROBEX scheme produces and delivers to the aviation users the required OPMET information in the form of predefined bulletins. The scheme should handle all types of OPMET information in the Traditional Alphanumeric Code (TAC) and the new ICAO Meteorological Exchange (IWXXM) form and should provide facilities and services for scheduled and non-scheduled delivery of OPMET information to the users.

2.4. Introduction of IWXXM Exchange

2.4.1 ICAO Annex 3 Amendments *76, 77* and *78* provide the first steps to the transition of Traditional Alphanumeric Code (TAC) formatted OPMET data towards XML formatted data in compliance with the ICAO Meteorological Information Exchange Model (IWXXM):

- ***Amendment 76*** (14 November 2013) enabled the bilateral exchange of XML data for those States in a position to do so;

- ***Amendment 77*** (10 November 2016) enables the international exchange of XML-formatted METAR/SPECI, TAF, AIRMET and SIGMET, VAA and TCA; and

- ***Amendment 78*** (8 November 2018) will require the international exchange of XML-formatted METAR/SPECI, TAF, AIRMET and SIGMET, VAA and TCA to be raised to a standard, although the provisions relating specifically to IWXXM will not become applicable until 5 November 2020.

2.4.2 The phased transition of TAC OPMET data to IWXXM OPMET data is to be considered as a first step towards the ICAO System Wide Information Management (SWIM) concept.

2.4.3 This edition of the Handbook focuses largely on the exchange of OPMET in TAC form because all States currently have the ability to send and receive OPMET in TAC form. Only a limited number of States have developed the capability to send and receive OPMET in IWXXM. In addition, AMHS with FTBP has yet to be implemented in a number of APAC States. It should be noted that AFTN cannot be used to disseminate IWXXM coded OPMET. However, some information on the exchange

of OPMET in IWXXM is provided in this Handbook, but detailed information on IWXXM, and the transition from TAC to IWXXM, is provided in the document *Guidelines for the Implementation of OPMET Data Exchange using IWXXM* available on the APAC website in the MET section under APAC eDocuments (https://www.icao.int/APAC/Pages/edocs.aspx).

2.4.4 To facilitate OPMET Data Exchange using IWXXM in the APAC region, the Meteorology Sub-Group (MET SG) of APANPIRG decided to include in this handbook the following link to the online register of the status of IWXXM exchange in the APAC Region [MET SG/24, Decision MET SG/24-15 and Conclusion MET SG/24-12, refer]:

Online Register of APAC IWXXM Exchange Status

[https://docs.google.com/spreadsheets/d/1WEcGfMRZq2dgHsfdpFhiefJEcA8OeMhfbCJHTqA7NX0/edit#gid=0]

2.5. Management

2.5.1 Monitoring of the OPMET exchange under the ROBEX scheme and planning for improvements and preparation of proposals for any changes of the scheme that may become necessary are carried out by the ASIA/PAC Air Navigation Planning and Implementation Regional Group (APANPIRG). In order to achieve these tasks, the ROBEX implementation status and planning is part of the agenda of the MET sub-groups of APANPIRG, and in particular, the MET Information Exchange (MET/IE) Working Group (WG).

2.5.2 Any proposals for amendments to the ROBEX scheme, which States or international organizations concerned consider necessary, due to changes in the operational requirements for OPMET data or to developments of the AFS system, are normally forwarded for consideration to the ICAO Asia and Pacific Office, Bangkok.

2.6. Requests for OPMET (Request and Reply)

2.6.1 The RODBs provide a request and reply facility to allow users to request OPMET on a non-regular or occasional basis. This is not intended for routine requests, which should be arranged through the implementation of a predetermined regular OPMET exchange.

2.6.2 Guidance on the interrogation procedures for access to the designated RODBs in the ASIA/PAC Region to request OPMET is provided in *Appendix H*.

3. OPMET INFORMATION AND OPMET EXCHANGE

3.1. OPMET data types

3.1.1 The following OPMET data types should be handled by the ROBEX scheme:

Data type	Abbreviated name	WMO data type designator	
		TAC	IWXXM
Aerodrome reports	METAR SPECI	SA SP	LA LP
Aerodrome forecasts	TAF: 12 to 30 hour	FT	LT
SIGMET information	SIGMET SIGMET for TC SIGMET for VA	WS WC WV	LS LY LV
AIRMET information	AIRMET	WA	LW
Volcanic Ash and Tropical Cyclone Advisories	Volcanic Ash Advisory Tropical Cyclone Advisory	FV FK	LU LK
Air-reports	AIREP SPECIAL (ARS)	UA	N/A
Space Weather Advisory	SWX ADVISORY	FN	LN
Administrative	METNO	NO	N/A

Note: IATA TAF requirements in the ASIA/PAC region are for TAF validity of either 24 or 30 hours. Some States issue 12- and 18-hour TAF, which don't meet IATA requirements, but are nevertheless classified as FT for the WMO data type designator.

3.2. OPMET bulletins

3.2.1 The exchange of OPMET data is carried out through bulletins containing one or more meteorological messages (METAR, SPECI, TAF or other OPMET information). An OPMET bulletin contains messages of the same type.

3.2.2 The format of OPMET bulletins is determined by:

- ***ICAO Annex 10****, Aeronautical telecommunications* - AFTN envelope of the bulletin;
- ***WMO-No.386****, WMO Manual on the Global telecommunication System* - WMO abbreviated heading of the bulletin; and
- ***ICAO Annex*** *3 and* ***WMO-No.306****, Manual on Codes* - format and coding of the information included in the bulletin.

3.3. Types of OPMET exchange

3.3.1 ***Regional exchange – ROBEX scheme***

3.3.1.1 The ROBEX scheme covers the exchange of OPMET information within the APAC region and to and from adjacent ICAO regions. It includes several types of exchanges as described below:

3.3.1.1.1 *Regular exchange* is a scheduled exchange that encompasses the collection of messages from the originating stations, compiling of bulletins and their dissemination according to predetermined distribution schemes. The collection and distribution are carried out at fixed times, and the bulletin content is defined in this Handbook.

3.3.1.1.2 *Non-regular exchange* The RODBs store OPMET data and make this available on request. The procedure for requesting OPMET is provided in *Appendix H*.

3.3.2 ***Inter-regional OPMET exchange***

3.3.2.1 Exchange of OPMET data between the APAC region and the other ICAO regions is carried out via designated centres, which serve as Inter-regional OPMET Gateways (IROG). An IROG is set up for sending and receiving specified OPMET data between the APAC region and other ICAO regions.

3.3.2.2 Inter-regional OPMET exchange via IROGs is carried out through the ground segment of the AFS (AFTN/AMHS).

3.3.3 ***Exchange of OPMET information through the Internet.***

3.3.3.1 All APAC OPMET data handled by the ROBEX scheme is relayed to the SADIS and WIFS Service Providers, allowing users to retrieve the data via SADIS and WIFS.

3.3.4 ***Other OPMET exchanges***

3.3.4.1 Where OPMET exchanges described in the above paragraphs are not sufficient, direct AFTN/AMHS addressing can be utilized by the originating centres or NOCs.

4. THE COMPOSITION OF ROBEX

4.1 The ROBEX scheme involves a number of aeronautical meteorological stations, aeronautical telecommunication stations, aerodrome meteorological offices and other operational units. The following operational units are considered to be components of the ROBEX scheme.

4.1.1 ***Originating station*** – An aeronautical meteorological station, aerodrome meteorological office, forecasting office, MWO, TCAC, or a VAAC. The duties and responsibilities of these originating stations are defined by the State's meteorological authority.

4.1.2 ***National OPMET centre (NOC)*** – Normally, a NOC is associated with the State's national AFTN/AMHS COM centre. The role of the NOC is to collect all OPMET messages generated by the originating stations in the State and to send them to the responsible ROBEX bulletin-compiling centre (ROC). Some NOCs also serve as ROCs. National regulations should be developed to ensure that NOCs disseminate the international OPMET data within their own State, as necessary.

4.1.3 ***Regional OPMET Centre (ROC)***

4.1.3.1 ROCs are responsible for the collection of OPMET messages from the originating stations or NOCs in their area of responsibility and for compiling these messages into ROBEX bulletins. *Tables A and B of the ROBEX Handbook* define the areas of responsibility (or collection areas) of the ROCs for METAR/SPECI and TAF.

4.1.3.2 The ROCs are responsible for the dissemination of bulletins compiled by them to:

- Other ROCs, according to predefined distribution lists, specific for each bulletin;

- APAC RODBs; and

- NOCs or other COM or MET offices in the States in their area of responsibilities, as agreed between the ROC and the States' authorities concerned.

4.1.4 ***Regional OPMET Data Banks (RODB)***

4.1.4.1 Five centres have been designated by APANPIRG to serve as Regional OPMET Data Banks (Bangkok, Brisbane, Nadi, Singapore and Tokyo).

4.1.4.2 The **main responsibilities** of the RODBs are defined as follows:

- To support the ROBEX Scheme and to facilitate a regular exchange of OPMET information based on predetermined distribution within the APAC Region; and

- To provide facilities for request/response type of access to the stored OPMET data for users to obtain non-regular or occasional information.

Note 1: The interrogation procedures applicable to the OPMET data banks and catalogues are provided in Appendix H.

Note 2: Responsibilities of RODBs are given in 4.1.4.2, 10.2, 10.3 and 12.3

4.1.5 ***Inter-regional OPMET Gateways (IROG)*** – The Inter-regional OPMET Gateways in the APAC Region are the designated RODBs. Each RODB is assigned responsibility for the exchange of OPMET information with other ICAO Regions. The responsibilities of the IROGs are shown in *11.1* of this Handbook.

4.1.6 ***Support to SADIS and WIFS*** – The IROGs should facilitate the global exchange of OPMET data carried out through SADIS and WIFS. In order to achieve this, close liaison should be maintained between the IROGs and the corresponding SADIS and WIFS gateways. Availability of APAC data on SADIS and WIFS should be monitored, and any systematic shortfalls of data identified should be reported to the relevant ICAO regional office.

4.2 The overall structure of the ROBEX scheme is presented in *Appendix G*.

5. COMMUNICATIONS - GENERAL

5.1. Exchange of OPMET

5.1.1 According to *Annex 3, Chapter 11, 11.1.9*, the telecommunications facilities used for the exchange of OPMET should be the aeronautical fixed service (AFS) or, for the exchange of non-time-critical OPMET, the public internet, subject to availability, satisfactory operation and bilateral/multilateral and/or regional air navigation agreement.

Note 1: Aeronautical fixed service Internet-based services, operated by the World Area Forecast Centres (WAFC), support the global exchanges of OPMET.

Note 2: Guidance material on non-time-critical OPMET and relevant aspects of the public Internet is provided in the Guidelines on the Use of the Public Internet for Aeronautical Applications (Doc 9855).

5.2. Use of AFTN/AMHS

5.2.1 The AFTN is used for the exchange of OPMET in TAC form, and AMHS is used for the exchange in IWXXM form. It is to be noted that IWXXM cannot be exchanged over the AFTN due to the character set included in IWXXM. When AMHS is used, this must be either AMHS Extended or AMHS with File Transfer Body Part (FTBP).

5.2.2 AFTN/AMHS circuits are used for the collection of OPMET messages by the ROCs, and for regional and inter-regional exchanges of OPMET bulletins. However, the exchanges are subject to the use of AFTN and AMHS, as noted in 5.2.1.

5.2.3 OPMET bulletins containing TAC or IWXXM formatted OPMET transmitted via AFTN/AMHS shall be encapsulated in the normal AFTN envelope (for TAC) and for IWXXM as described in the *Guidelines for the Implementation of OPMET Data Exchange using IWXXM* available at https://www.icao.int/APAC/Pages/edocs.aspx.

5.2.4 AFTN/AMHS messages and bulletins containing OPMET shall achieve transit times of less than 5 minutes unless otherwise determined by regional air navigation agreement.

5.2.5 OPMET bulletins (TAC) transmitted via AFTN shall use the following priority indicators:

- FF – for SIGMET, AIREP SPECIAL, VAA, TCA and TAF AMD; and
- GG – for TAF, METAR and SPECI.

5.2.6 For information about the transmission of OPMET bulletins (IWXXM) via AMHS, refer to the document *Guidelines for the Implementation of OPMET Data Exchange using IWXXM*, which is available on the following ICAO APAC Office website (click on MET):

https://www.icao.int/APAC/Pages/edocs.aspx.

6. METAR/SPECI EXCHANGE

6.1. General

6.1.1 Routine METAR reports should be prepared for the international aerodromes listed in the *ANP, Volume I, Table AOP I-1*, and in *Volume II, Table MET II-2.* METAR should be issued hourly or half-hourly throughout the 24 hours of each day as determined by regional air navigation agreement or by agreement by individual States (refer to *6.1.2*).

6.1.2 METAR from all international aerodromes (referred to as AOP aerodromes) listed in the Tables referred to in *6.1.1* should be included in the regular ROBEX exchange. This also includes METAR from a number of domestic aerodromes, required by the users as alternate aerodromes (referred to as non-AOP aerodromes), and should be included in the regular ROBEX exchange, if so agreed by the States concerned.

Note: When OPMET data from non-AOP aerodromes is required by users, the corresponding State is consulted on its agreement to provide the additional information.

6.1.3 A description of the ASIA/PAC METAR bulletins provided in the regular ROBEX exchange, including the responsible compiling ROC, WMO bulletin identification, list of aerodromes, observation times and AFTN distribution, is given in *Appendix A*.

6.1.4 SPECI reports are included in separate bulletins and should be disseminated in the same way as the METAR reports originated by the same aerodromes. It should be noted that METAR and SPECI reports are not to be included together in a bulletin.

6.1.5 The exchange of METAR/SPECI messages outside the ROBEX scheme, if necessary, should be carried out by direct AFTN/AMHS addressed messages.

6.2. Responsibilities of originating stations and NOCs

6.2.1 The originating stations (aeronautical meteorological stations) and/or NOCs should prepare METAR messages for the observation times Indicated in *Appendix A* and send them to their responsible ROC.

6.2.2 SPECI should be prepared between the regular observation times, following the requirements set out in Annex 3, and sent with no delay to the responsible ROC.

6.2.3 In preparing METAR and SPECI messages, the originating stations should follow the specifications for METAR and SPECI in Annex 3 (Chapter 4 and Appendix 3 including the template in Table A3-2) and the WMO METAR and SPECI code forms (FM 15-XII METAR and FM 16-XII SPECI, WMO – No. 306, Manual on Codes, Volume I.1, Part A – Alphanumeric Codes) strictly.

6.2.4 METAR messages should be sent to the responsible ROC before the cut-off time specified by the ROC to allow for timely compilation of the METAR bulletin. If, for some reason, a METAR message has not been sent before the cut-off time, the originating station/NOC should send it as soon as possible after that, as a delayed message. The originating stations/NOCs should follow strictly the schedules specified for METAR messages and keep to a minimum the number of delayed messages.

6.2.5 METAR and SPECI messages should be quality controlled by the originating stations/NOCs. When necessary, a corrected message should be sent immediately after an error in an already transmitted message has been identified.

Note: Procedures applying to the corrected and delayed messages are given in Appendix D.

6.3. ROCs – METAR and SPECI Responsibilities

6.3.1 ROCs should collect METAR messages from the aerodromes in their area of responsibility and compile METAR bulletins, according to *Appendix A*. The content of bulletins and the order of stations in each bulletin should be kept fixed until a bulletin change is requested and coordinated according to the established procedure.

6.3.2 ROCs should determine a cut-off time for the reception of METAR from the stations in their area of responsibility. At the cut-off time, the ROC should compile METAR bulletin(s) containing all prescribed aerodromes, indicating any missing METAR with "NIL".

6.3.3 At scheduled transmission times, ROCs should transmit the compiled METAR bulletins to other ROCs and RODBs according to the distribution lists specified for each METAR bulletin in *Appendix A*. METAR bulletins should be filed for transmission, not later than 5 minutes after the observation time.

6.3.4 ROCs should transmit the METAR bulletins compiled by them, as well as bulletins received from other ROCs, as necessary, to the NOCs and/or other offices in the States in their area of responsibility, as agreed between the ROC and the meteorological authorities of the States concerned.

6.3.5 A SPECI, when received by a ROC, should be sent as a SPECI bulletin to the same addresses to which METAR from the issuing aerodrome are sent. Normally, a SPECI bulletin should contain a single SPECI and must not be included in any METAR bulletin.

6.3.6 The WMO heading of a SPECI bulletin should be constructed in the same way as the WMO heading of the METAR bulletin, which contains the aerodrome, for which the SPECI is issued, by using SP data type designator instead of SA.

6.3.7 A METAR message received by the ROC after the scheduled transmission of the corresponding bulletin is a delayed METAR. The ROC should send a delayed bulletin as soon as one or more delayed messages are received or at specified times after the scheduled bulletin time (e.g., the first delayed bulletin (RRA) issued 10 minutes after the regular time; the second delayed bulletin (RRB) issued 20 minutes after the regular time, etc.).

6.3.8 As soon as a corrected METAR or SPECI message is received from a station, the ROC should transmit it as a corrected bulletin to all recipients.

6.4. METAR Bulletins in TAC - Format and Content

6.4.1 Each METAR message in a METAR bulletin should start with the code word METAR followed by the ICAO location indicator (CCCC) of the aerodrome and the date/time group (YYGGggZ), indicating the official time of observation. Corrected METAR messages should start with METAR COR.

6.4.2 The following is an example of the format to be applied in preparing a METAR bulletin by the ROCs:

Parts of Message	ROBEX SA Bulletin
AFTN header	
Priority Indicator and Address Date and Time of filing and Originator	GG VTBBYPYX 271304 ZBBBYPYX
WMO Abbreviated Heading	SACI31 ZBBB 271300
METAR messages	METAR ZBAA 271300Z ..…….. = METAR ZBTJ 271300Z …….=
AFTN Normal Ending	NNNN

Note: The inclusion of the code name METAR in front of each message in the METAR bulletin is mandatory.

6.4.3 The rules related to the use of the BBB group in the WMO abbreviated heading, with regard to delayed or corrected bulletins, are given in *Appendix D*.

6.4.4 For METARs, which are not available at the time of compilation of the bulletin, the word NIL should be inserted following the date/time group indicating the time of the observation.

Example: METAR ZBTJ 271200Z NIL=

6.5. SPECI Bulletins in TAC - Format and Content

6.5.1 A SPECI message included in a SPECI bulletin should start with the code word SPECI followed by the ICAO location indicator (CCCC) of the aerodrome and a date/time group (YYGGggZ) indicating the time of the observation of the meteorological conditions for which the SPECI is issued. Corrected SPECI messages should start with SPECI COR.

6.5.2 The following is an example of the format to be applied in preparing a SPECI bulletin by the ROC:

Parts of Message	ROBEX SP Bulletin
AFTN header	
Priority Indicator and Address Date and Time of filing and Originator	GG VTBBYPYX 081647 ZBBBYPYX
WMO Abbreviated Heading	SPCI31 ZBBB 081645
SPECI message	SPECI ZBAA 081645Z …….. =
AFTN Normal Ending	NNNN

6.6. METAR and SPECI Bulletins in IWXXM - Format and Content

6.6.1 Refer to the document *Guidelines for the Implementation of OPMET Data Exchange using IWXXM* available on the APAC website in the MET section under APAC eDocuments

(https://www.icao.int/APAC/Pages/edocs.aspx).

7. TAF EXCHANGE

7.1. General

7.1.1 Aerodrome forecast (TAF) should be prepared by the aerodrome meteorological offices (AMO) or other meteorological offices, designated for the provision of TAF by the State's meteorological authority, for all international aerodromes, for which TAF is required (refer to the *ANP, Volume II, Table MET II-2*

7.1.2 All TAFs required should be included in the regular ROBEX exchange. In addition, TAFs from a number of domestic aerodromes required by the users as alternate aerodromes should also be included in the regular ROBEX exchange, if so agreed by the States concerned.

Note: Airline users require that TAF for all international aerodromes listed in the ANP, Volume I, Table AOP I-1, and in Volume II, Table MET II-2, should be available through regular exchange and through the Internet distribution systems SADIS and WIFS.

7.1.3 TAF exchanges not covered by the ROBEX Scheme, but required operationally, should be met by means of direct addressed AFTN/AMHS messages.

7.1.4 The requirements for the exchange of 24 or 30-hour TAFs are listed in the *ANP, Volume II, Table MET II-2*.

7.2. Aerodrome meteorological offices (AMO) and NOCs responsibilities

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

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

7.2.3 The originating AMOs should monitor TAFs, and amended TAF (TAF AMD) should be issued according to the established criteria. Amended TAFs should be sent by the originating station to the responsible ROC with no delay. The optional group BBB should be used in the WMO abbreviated heading to indicate amended TAF in accordance with *Appendix D*.

7.2.4 TAF messages should be quality controlled by the originating meteorological offices, and, when necessary, a corrected TAF (TAF COR) should be sent immediately after an error in an already transmitted message has been identified.

7.3. ROCs – TAF Responsibilities

7.3.1 ROCs should collect TAFs from the AMOs and/or NOCs in their area of responsibility and compile TAF Bulletins according to *Appendix B*. The areas of responsibility, as far as practicable, should group together aerodromes and their alternates. ROCs should ensure that TAFs in a single bulletin have common periods of validity.

7.3.2 If necessary, ROCs should prepare two or more separate TAF bulletins using different "ii" values (e.g., "31" and "32") in the WMO heading. The content of the ROBEX TAF bulletins is specified in *Appendix B*.

7.3.3 ROCs should establish a cut-off time for reception of TAFs from AMOs and/or NOCs in their area of responsibility, e.g., 5 minutes before the filing/transmission times specified in *Appendix B*. At the cut-off time, ROCs should compile TAF bulletin(s) containing all prescribed aerodromes, indicating any missing TAF with "NIL".

7.3.4 The filing/transmission times specified in *Appendix B* ensure the OPMET information is available to the users twenty-five (25) minutes prior to the beginning of the TAF validity period.

7.3.5 ROCs should transmit the compiled TAF bulletins, to other ROCs and the RODBs according to the distribution lists as specified for each TAF bulletin in *Appendix B*.

7.3.6 ROCs should transmit the TAF bulletins compiled by them, as well as TAF bulletins received from other ROCs, as necessary, to the NOCs and/or other offices in the States in their area of responsibility, as agreed between the ROC and the meteorological authorities of the States concerned.

7.3.7 A TAF message received by a ROC after the scheduled transmission of the corresponding bulletin is a delayed TAF. The ROC should send a delayed TAF bulletin as soon as one or more delayed messages are received or at specified times after the scheduled bulletin time. The optional BBB group should be used in the WMO bulletin heading accordingly.

7.3.8 Amended TAF (TAF AMD) received from an AMO or NOC should be distributed with no delay as an amended TAF bulletin to all recipients in the distribution list for the TAF bulletin to which the originating aerodrome belongs. The optional BBB group should be used in the WMO bulletin heading accordingly.

7.4. TAF Bulletins in TAC - Format and Content

7.4.1 Issuance and period of validity

7.4.1.1 24- and 30-hour TAFs should be issued at intervals of six hours, with the period of validity beginning at one of the main synoptic hours (00, 06, 12, 18 UTC), as shown in the table below.

7.4.1.2 All TAFs in a ROBEX TAF bulletin should have a common period of validity. It is not permitted to mix TAF with different periods of validity in one bulletin.

Synoptic hours (UTC)	24-hour TAF		30-hour TAF	
	Period of validity	Filing time (not prior to)	Period of validity	Filing time (not prior to)
00	00-00	23 (-1)*	00-06 (+1)	23 (-1)
06	06-06	05	06-12 (+1)	05
12	12-12	11	12-18 (+1)	11
18	18-18	17	18-00 (+1)	17

Note: "-1" indicates the previous day and "+1" indicates the next day

7.4.2 Each TAF message in a TAF bulletin should start with the code word TAF followed by the ICAO location indicator (CCCC) of the aerodrome and the date/time group (YYGGggZ) indicating the official time of issuance. Corrected TAF messages should start with TAF COR. Amended forecasts should start with TAF AMD.

7.4.3 The use of the BBB group in the WMO heading for delayed, corrected, or amended TAFs is described in *Appendix D*.

7.4.4 The following is an outline of the format to be applied by a ROC in preparing a TAF TAC bulletin containing FT TAFs (24- or 30-hour) :

Parts of Message	ROBEX FT Bulletin
AFTN header	
Priority Indicator and Address Date and Time of filing and Originator	GG YBBBYPYX 271104 ZBBBYPYX
WMO Abbreviated Heading	FTCI31 ZBBB 271100
TAF messages	TAF ZBAA 271100Z 2712/2812.....= TAF ZBTJ 271100Z 2712/2812.....=
AFTN Normal Ending	NNNN

7.4.5 A missing TAF in a TAF bulletin should be indicated with "NIL", as shown in the following example:

TAF VTBD 281000Z NIL=

7.4.6 A cancelled TAF in a TAF bulletin should be indicated with "CNL", as shown in the following example:

TAF VTBD 281100Z 2812/2912 CNL=

7.5. TAF Bulletins in IWXXM - Format and Content

7.5.1 Refer to the document *Guidelines for the Implementation of OPMET Data Exchange using IWXXM* available on the APAC website in the MET section under APAC eDocuments (https://www.icao.int/APAC/Pages/edocs.aspx).

7.6. Summary of OPMET data issuance

7.6.1 A summary of correct methods of issuing OPMET data is provided in the following two tables:

METAR observation, compiling and filing			
Function	**Responsible Entity**	**Explanation of Time**	**Time of task (min)**
METAR Observation	Originating stations (AMS, AMO, forecast office)	The State determines how often and when, e.g., 30 minutes past the hour 24/7. Examples: H+00, H+30 *Note that the observation time is used in the METAR report*	0
Send METAR observation to NOC	Originating station		<5
Send METAR observations to ROC	NOC		
Bulletin compiling and filing	ROC	Up to 5 minutes after the actual time of observation *Note 1: The observation time of the METAR is used in the DTG – YYGGgg of the bulletin header.* *Note 2: The filing time is used in the AFTN header and should be up to 5 minutes after the observation time given in the bulletin header, also referred to as the WMO Abbreviated Heading.*	
Send METAR bulletin to: ROCs (predefined distribution list) RODBs NOCs Other MET offices	ROC *via AFTN or AMHS*	Less than 5 minutes	<5
Acceptable time from observation at originating stations to reception by the user			<10

TAF issuance, compiling and filing			
Function	**Responsible Entity**	**Explanation of Time**	**Time of task (min)**
TAF Issuance	AMO or NOC	The State determines the time of the beginning of the validity period for four (4) scheduled TAFs each day, i.e. 00, 06, 12, 18Z. *Note: That issuance time of TAF (which is not earlier than one hour prior to the*	Allow enough time to reach ROC before the cut-off time

TAF issuance, compiling and filing			
Function	**Responsible Entity**	**Explanation of Time**	**Time of task (min)**
		beginning of its validity period) is used in the date/time group (DTG) (YYGGggZ) of TAF messages). TAF is sent to ROC before the cut-off time of accepting TAF for filing as indicated in *Appendix B* (typically 5 minutes before filing).	
Bulletin compiling and filing	ROC	Bulletins are compiled during the 15 minutes before filing. *Note 1: The TAF issuance time (official filing time) is used in the DTG – YYGGgg of the bulletin header* *Note 2: The actual filing time is used in the AFTN header and should be after the time given in the bulletin header, also referred to as the WMO Abbreviated Heading.* TAF should be filed for transmission not earlier than one hour prior to the beginning of their validity period.	<15
Send TAF bulletin to: ROCs (predefined distribution list) RODBs NOCs Other MET offices	ROC *via AFTN or AMHS*	In less than 5 minutes	<5
Acceptable time for ROC compiling and filing to reception by the user			<5

8. EXCHANGE OF SIGMET, TCA and VAA

8.1 SIGMET should be prepared by the meteorological watch offices (MWO) designated by the State's meteorological authority. The MWOs and their areas of responsibility are given in *ANP, Volume II, Table MET II-1*.

8.2 SIGMET messages should be distributed to all RODBs within the Region, who should also make the SIGMET messages available on request. In order to facilitate that, the originating MWOs should use the WMO headings given in the *ASIA/PAC Regional SIGMET Guide, Appendix D* for their SIGMET bulletins

Note: The required distribution of SIGMET to MWOs and ACCs in the adjacent FIRs described in the ASIA/PAC Regional SIGMET Guide is not part of the ROBEX exchange and should be arranged by the States outside the ROBEX scheme.

8.3 SIGMET messages should be distributed to other ICAO regions and made available for redistribution through SADIS and WIFS. This distribution should be carried out through the relevant IROGs.

8.4 Detailed information on the format of the SIGMET messages is provided in the *ASIA/PAC Regional SIGMET Guide*.

8.5 Tropical cyclone advisories (TCA) and volcanic ash advisories (VAA) should be issued by the designated tropical cyclone and volcanic ash advisory centres (TCAC and VAAC), as indicated in *FASID Table MET 3A and MET 3B*.

8.6 The TCACs and VAACs should send their advisories to the APAC RODBs. The RODBs should make TCAs and VAAs messages available on request. In order to facilitate that, the originating TCACs and VAACs should use the WMO headings given in the *ASIA/PAC Regional SIGMET Guide, Appendix D*.

8.7 VAA and TCA messages should be distributed to other ICAO regions and made available for redistribution through SADIS and WIFS. This distribution should be carried out either directly by the VAACs and TCACs or through the relevant IROGs.

9. DISSEMINATION OF SPACE WEATHER (SWX) ADVISORIES

9.1 Message Routing – Originating Region

Space Weather Advisory Centre (SWXC)

9.1.1 The SWXCs are the data originator. They produce the SWX Advisories in TAC form and in IWXXM form. They will send the SWX Advisories to their associated NOCs.

National OPMET Centre (NOC)

9.1.2 The role of the NOC is to gather OPMET messages, compile national data into bulletins, validate the bulletin structure and distribute them according to the regional distribution schema. As necessary, the NOC associated with the SWXC (the Originating NOC) will add the Bulletin (WMO) header and send it to all other SWXCs. The Originating NOC will also send the SWX Advisories to its associated ROC via the AFS and will distribute, or make available via agreed State briefing services, the SWX Advisories to users within its national area of responsibility (AOR).

Regional OPMET Centre (ROC)

9.1.3 An originating ROC is responsible for the collection of the SWX Advisories from the originating NOC and for the validation of the SWX Advisories' message format. The originating ROC will then disseminate the SWX Advisories, via AFS, to the IROGs, RODBs, and all other ROCs within its Region, and to SADIS/WIFS.

Inter-Regional OPMET Gateway (IROG)

9.1.4 The IROGs in the originating Regions are responsible for the collection of the SWX Advisories and dissemination of the SWX Advisories to their partner IROGs in other Regions.

9.2 Message Routing – Receiving Region

Inter-Regional OPMET Gateway (IROG)

9.2.1 The receiving IROG is responsible for the collection of the SWX Advisories and dissemination of the SWX Advisories to its associated ROCs and RODBs in its Region.

Regional OPMET Centre (ROC)

9.2.2 A ROC will receive SWX Advisories from other Regions via its associated IROG. In turn, the ROC will distribute the SWX Advisories to all its associated NOCs.

National OPMET Centre (NOC)

9.2.3 The NOC will distribute the SWX Advisories, or make them available via agreed State briefing services, to users within its national area of responsibility (AOR). The distribution may be via a "Push" service (e.g. AFTN, AMHS), a "pull" service (e.g. an internet-based briefing service) or by other methods agreed to within the State.

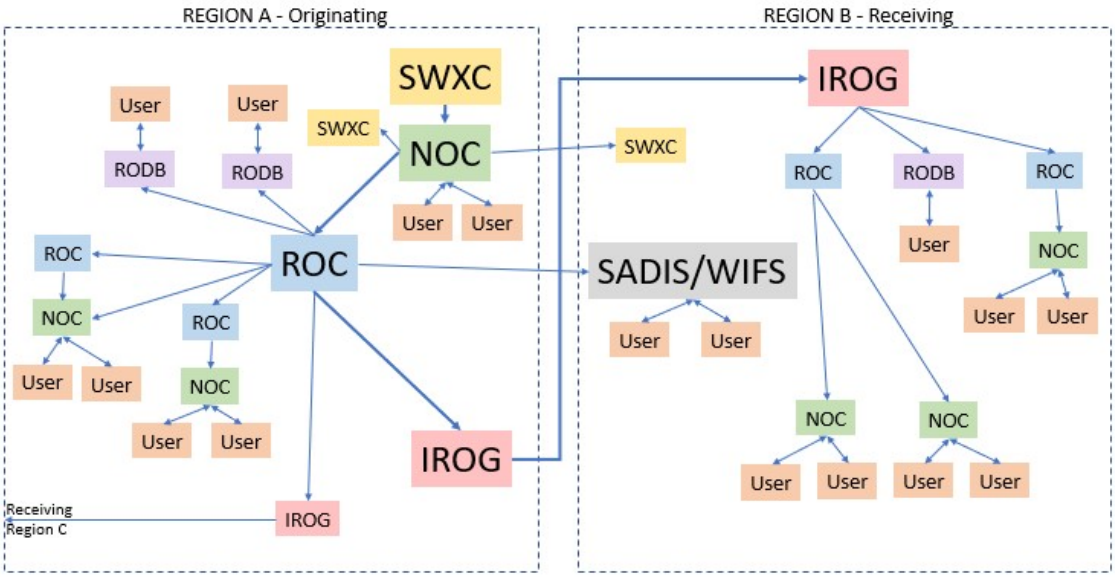
9.3 Data Access

User

9.3.1 Users are responsible for arranging access to SWX Advisories through their associated NOC or SADIS/WIFS.

Regional OPMET Date Bank (RODB)

9.3.2 RODBs should provide the capability for users to interrogate information, such as SWX Advisories, through the AFS.



10. AIREP/AIREP SPECIAL EXCHANGE

10.1 Routine voice air-reports are not required and therefore are not exchanged under the ROBEX scheme (refer to Annex 3, Appendix 4).

10.2 Routine air-reports received by data-link communications should be relayed directly to the WAFCs by the ATS units.

10.3 Special voice air-reports received by MWOs are to be sent to WAFCs without delay.

10.4 Special air-reports of pre-eruption volcanic activity should also be sent to the appropriate VAAC. Special air-reports received at the meteorological watch office, which are deemed not to warrant issuance of a SIGMET, shall be disseminated in the same way as SIGMET messages.

10.5 When supplementary dissemination of air-reports is required to satisfy special aeronautical or meteorological requirements, such dissemination should be arranged and agreed upon between the meteorological authorities concerned.

An example AIREP SPECIAL is given below:

FF EGRRVANW KWBCYMYX EGZZMASI RJTDYPYX RKSIYPYX VTBBYPYX
WSZZWWBX YBBBYPYX YPDNYMYX ZJSYYMYX
090726 WSSSYMYX
UASR71 WSSS 090700
ARS QFA129 0328N 12831E 0639 FL380 VOLCANO DUKONO 0608-01
DRIFT OF VA SE PLUME HGT EST FL100 OR LOWER SUP INFO REPORTS
GOOD VISIBILITY=

11. REGIONAL OPMET DATA BANKS (RODB)

11.1 The ASIA/PAC Regional OPMET Data Banks and the AFTN addresses[1] to be used for direct access to the data banks are shown below:

RODB	AFTN ADDRESS	ROCs IN THE AREA OF RESPONSIBILITY
Bangkok	VTBBYZYX	Bangkok/VTBB Mumbai/VABB Colombo/VCCC Delhi/VIDP Karachi/OPKC Kolkata/VECC
Brisbane	YBBBYZYX	Brisbane/YBBN Wellington/NZKL
Nadi	NFFNYZYX	Nadi/NFFN
Singapore	WSSSYZYX	Jakarta/WIII Kuala Lumpur/WMKK Singapore/WSSS
Tokyo	RJTDYZYX	Beijing/ZBBB Hong Kong/VHHH Incheon/RKSI Tokyo/RJTD

11.2 **Responsibilities**

11.2.1 Collect OPMET bulletins from the ROCs in the area of responsibility and store them in a database.

11.2.2 Handle all types of OPMET bulletins, as described in *3.1.1*.

11.2.3 Provide facilities for "request-reply" service to the authorized users.

11.2.4 Maintain a catalogue of bulletins and introduce changes to the bulletins when necessary according to the established procedures.

11.2.5 Quality-control the incoming bulletins and inform the ROCs of any discrepancies or shortfalls.

11.2.6 Monitor the OPMET traffic by carrying out regular tests on the availability and timeliness of the bulletins; report to the ICAO Regional Office on the results.

11.2.7 The interrogation procedures applicable to the designated RODBs are provided in *Appendix H*.

[1] Paragraph 11.1. shows the RODB AFTN addresses for the request and reply facility. The RODB AFTN addresses for collecting and disseminating METAR and TAF bulletins are shown in Appendix A and B, respectively.

11.2.8 Guidance on the management and quality control is provided in *Chapter 12* of this Handbook.

12. INTER-REGIONAL OPMET EXCHANGE

12.1 Inter-regional OPMET Gateways (IROGs) are designated for the purpose of exchanging OPMET data between ASIA/PAC and the other ICAO Regions, as shown in the table below.

ROBEX IROG	For exchange of OPMET data between Regions
Bangkok (VTBB)	ASIA/PAC and MID (OEJD, OBBI*) ASIA and AFI (FAPR, GOOY)
Brisbane (YBBN)	ASIA/PAC and SAM (SBBR) PAC and AFI (FAPR, GOOY)
Nadi (NFFN)	S. PAC and NAM (KWBC)
Singapore (WSSS)	ASIA/PAC and EUR (EGZZ)
Tokyo (RJTD)	ASIA/PAC and NAM (KWBC)

* Backup to OEJD

12.2 IROGs arrange for relaying all ROBEX bulletins to a corresponding OPMET Gateway in the other ICAO regions concerned. In this regard, detailed OPMET exchange arrangements should be developed by each IROG based on the requirements indicated in the APAC ANP.

12.3 The following principles are applied to IROGs:

IROGs should;

a) Have reliable and efficient AFTN/AMHS connection to the regions, for which they have exchange responsibilities, with adequate capacity to handle the OPMET data flow between the regions;

b) Be associated with AFTN/AMHS relay centres capable of handling efficiently the volume of traffic anticipated; and

c) Be capable of handling all OPMET data types, as described in *3.1.1*.

12.4 In order to avoid duplication of the OPMET traffic and information, all inter-regional OPMET exchange should be directed through the IROGs. Inter-regional exchange via direct AFTN/AMHS addressing from the originator or ROC to recipients in the other ICAO Regions should be avoided, except when bilateral or other agreements require such direct exchanges.

12.5 In order to ensure the global availability of all ROBEX bulletins at the SADIS and WIFS gateways, IROG Singapore should relay all APAC bulletins to the SADIS gateway (London), and IROGs Tokyo and Nadi should relay the bulletins to the WIFS gateway (Washington).

13. MANAGEMENT OF OPMET EXCHANGE

13.1. Changes to OPMET Bulletin Procedures

13.1.1 Information about changes to ROBEX bulletins should be disseminated to all ROCs, and national OPMET centres (NOC) concerned well in advance in order to allow the centres to introduce the necessary changes to their message handling systems. In this regard, a lead time of two months (or two AIRAC cycles) is considered appropriate.

13.1.2 The ROC planning the change should send a notification by e-mail to the ICAO Office, Bangkok, with a copy to all ROBEX Focal Points. The notification should include detailed information about the changes and the proposed time schedule. The Regional Office should inform all other ICAO Regional Offices of the changes to be introduced and the effective date of implementation.

13.1.3 Notification via AFTN/AMHS should be done by means of a METNO message, which is to be sent by the originating ROC to all other ROCs and to the respective IROGs in the other ICAO regions two weeks prior to the implementation date. The format of the METNO message is given in *Appendix E*.

13.1.4 All requests by users for changes to ROBEX bulletins should be addressed to the ICAO Regional Office. The Regional Office should carry out the necessary coordination with the States and ROCs concerned. The duration of the coordination process should be minimized so that the period between the user request and the implementation of the change (if agreed) should normally be less than three months.

13.2. Quality Management - OPMET Exchange

13.2.1 **Objectives and Scope**

13.2.1.1 **Objectives:** Develop a management system that provides general guidance on procedures applied to OPMET exchange, which includes quality control aspects and introduces non-real-time monitoring for OPMET exchange.

13.2.1.2 **Scope:** Management of OPMET data exchange will be organized in the following sections:

Quality Control	*Data quality control applies to OPMET validation and correction during data processing and during the preparation of messages.*
OPMET Monitoring	*Monitor and evaluate the performance indicators for the scheduled OPMET data.*

13.2.2 **Quality Control – general requirements**

13.2.2.1 **Quality control (QC) consists of the examination of OPMET data at NOCs, ROCs and** RODBs to check the messages for formatting and coding errors, as well as for time and space consistency.

13.2.2.2 OPMET data should be checked in real-time or as close to it as possible, at the first point, i.e., the originator, which may be: meteorological station, aerodrome meteorological office or meteorological watch office. Errors may occur during the coding or transcription of meteorological messages by the observer or forecaster. The originating office should apply quality control procedures during data processing and preparation of messages in order to eliminate the main sources of errors.

13.2.2.3 The National OPMET centre (NOC) should apply QC procedures on the incoming messages from national sources and on the compiled national bulletins.

13.2.2.4 It is also advisable to apply QC checks at the ROC, where the ROBEX bulletins are received or compiled. If automation is available, it should be used or partly assisted by computing facilities. The principle is that every message should be checked, preferably at the various points along the data chain.

13.2.2.5 The checks that have already been performed by originating offices and ROCs are usually repeated at the OPMET data banks. Erroneous messages found by the RODB should be either rejected or corrected by reference back to the source or by the databank itself. Data corrected by the databanks should be flagged in the database for record purposes.

13.2.2.6 As a result of the quality control process described above, OPMET data of established quality will be used in the exchange and stored in the databanks. The RODBs should compile information with regard to errors that were found and compile records, such as the numbers and types of errors detected during quality control. Such non-conformities should be reported to ICAO Regional Office, Bangkok, for follow-up action.

13.2.3 **Quality Control Procedures**

13.2.3.1 General guidance on the quality control procedures for each type of OPMET is outlined in *Appendix F*.

13.3. OPMET Monitoring

13.3.1 **Monitoring of Scheduled OPMET data**

13.3.1.1 The monitoring shall focus on the measurement of ~~three~~ two performance indicators (PIs) (~~Compliance,~~ Availability and ~~Regularity~~Timeliness indices) of the scheduled, routine METAR and TAF OPMET data (TAC - SA and FT; IWXXM – LA and LT)) exchanged in the region. The PIs are described in detail in *Appendix F*.

13.3.1.2 Monitoring Reference: The monitoring shall involve the recording and analysis of data provided by the AFTN/AMHS circuit. The ~~three~~ two PIs should be monitored against the respective ROBEX Tables.

13.3.1.3 Methodology: Data is monitored with reference to the procedures defined in *Appendix F*.

13.3.2 **Monitoring of Non-Scheduled OPMET data**

13.3.2.1 Monitoring of non-routine OPMET data shall include:

a) TAC - TCA (FK), VAA (FV) and SIGMET (WC, WS, and WV); and

b) IWXXM – TCA (LK), VAA (LU), SIGMET (LY, LS, LV).

13.3.2.2 Monitoring of SIGMET, VAA and TCA should be performed during the scheduled regional SIGMET tests in accordance with the procedures published by the APAC Office, Bangkok.

13.3.2.3 Additional monitoring of SIGMET issuance may be scheduled as necessary to monitor the issuance of SIGMET in specific FIRs over specific periods when such monitoring would be useful to support the rectification of deficiencies in the provision of SIGMET services.

13.3.2.4 The monitoring results shall be presented in a bulletin-oriented format, one line per bulletin indicating the abbreviated header (TTAAii CCCC YGGgg), the FIR/UIR where applicable, receipt time and originator.

13.3.3 **Reporting OPMET monitoring results**

13.3.3.1 OPMET monitoring reports should provide data for all locations where OPMET is required (i.e. locations in *ANP Table MET II-1* and *Table MET II-2*) and additional locations where States have been consulted and agreed to provide this additional information.

13.3.3.2 OPMET monitoring reports should provide sufficient data to help States identify problems in OPMET issuance, e.g., the actual number of messages received per day at locations where OPMET monitoring identifies that the number of messages received does not meet the given percentage of the total number of messages expected.

13.3.3.3 Reports of the results of OPMET monitoring conducted in accordance with the guidelines in this Handbook should be presented in a format that enables ease of comparison between the reports from the various designated OPMET monitoring entities (e.g., IATA and RODBs) and ease of interpretation of the data by States and users concerned.

13.4. ROBEX Focal Points

13.4.1 In order to facilitate the exchange of information between the ROCs a system of ROBEX focal points has been developed. Contact details of the persons designated as ROBEX focal points by the relevant State's authorities are provided in *Appendix I*.

— END OF SECTION —

APPENDICES

APPENDIX A — Collection and Dissemination of METAR (SA) Bulletins

Table A : METAR

Explanation of Table

Col.1: Name and ICAO location indicator of the ROC compiling the bulletin.

Col.2: Description of the METAR Bulletin

Col.3: Official observation time of the bulletin

Col.4: Time when bulletin available
Note: O/R indicates Bulletin available on request and NR indicates no report is available

Col.5: Dissemination of the bulletin to other ROCs and RODBs

Notes: 1 *Aerodromes not listed in Table AOP 1-1 indicated in italics*

2 *METAR included in VOLMET broadcasts are listed in APAC, ANP, VOL II, Table MET II-3, VOLMET Broadcasts*

Table A : Collection and Dissemination of METAR (SA) Bulletins

1		2			3	4	5	
ROC		METAR Bulletin			Bul. Time	Available	DISSEMINATION TO	
Name	CCCC	BUL No.	CCCC	Aerodrome			RODB/ROC	AFTN Address
ASIA/PAC REGION								
Bangkok	**VTBB**	**SAAE31**	VTBD	BANGKOK/Don Mueang Intl Airport	HH+00/30		BANGKOK	VTBBYPYX
			VTBS	BANGKOK/Suvarnabhumi Intl Airport	HH+00/30		BRISBANE	YBBBYPYX
			VTBU	RAYONG/U-Taphao Intl Airport	HH+00/30		NADI	NFFNYPYX
			VTCC	CHIANG MAI/Chiang Mai Intl. Airport	HH+00/30		SINGAPORE	WSZZYPYM
			VTSP	PHUKET/Phuket Intl Airport	HH+00/30		TOKYO	RJTDYPYX
			VTSS	SONGKHLA/Hat Yai Intl Airport	HH+00/30		Beijing	ZBBBYPYX
							Colombo	VCCCYPYX
							Delhi	VIDPYPYX
							Hong Kong	VHZZYPYX
							Incheon	RKSIYPYX
							Jakarta	WIZZMCMC
							Kolkata	VECCYPYX
							Kuala Lumpur	WMZZYPYR
							Mumbai	VABBYPYX
		SAAE32	VDPP	PHNOM PENH	HH+00/30		BANGKOK	VTBBYPYX
			VDSV	SIHANOUK	HH+00/30		BRISBANE	YBBBYPYX
			VDSA	SIEM REAP/Siem Reap Angkor Intl	HH+00/30		NADI	NFFNYPYX
			VLVT	VIENTIANE (Wattay)	HH+00/30		SINGAPORE	WSZZYPYM
			VYMD	MANDALAY INTERNATIONAL	HH+00/30		TOKYO	RJTDYPYX
			VYNT	NAYPYITAW INTERNATIONAL	HH+00/30		Beijing	ZBBBYPYX
			VYYY	YANGON INTERNATIONAL	HH+00/30		Colombo	VCCCYPYX
							Delhi	VIDPYPYX
							Hong Kong	VHZZYPYX
							Incheon	RKSIYPYX
							Jakarta	WIZZMCMC
							Kolkata	VECCYPYX
							Kuala Lumpur	WMZZYPYR
							Mumbai	VABYPYX
		SAAE33	VLLB	LUANG PRABANG	HH+00	2300-1400	BANGKOK	VTBBYPYX
			VLLN	*LUANG NAMTHA*	HH+00	2300-1400	BRISBANE	YBBBYPYX
			VLPS	PAKSE	HH+00	2300-1400	NADI	NFFNYPYX
			VLSK	SAVANNAKHET	HH+00	2300-1400	SINGAPORE	WSZZYPYM
							TOKYO	RJTDYPYX
							Beijing	ZBBBYPYX
		SAAE34	VVCI	CAT BI	HH+00/30		BANGKOK	VTBBYPYX
			VVCR	KHANH HOA/Cam Ranh	HH+00/30		NADI	NFFNYPYX
			VVCT	CAN THO	HH+00/30		BRISBANE	YBBBYPYX
			VVDN	DA NANG	HH+00/30		SINGAPORE	WSZZYPYM
			VVNB	HA NOI/Noi bai	HH+00/30		TOKYO	RJTDYPYX
			VVPB	HUE/Phu Bai	HH+00/30		Beijing	ZBBBYPYX
			VVPQ	KIEN GIANG/Phu Quoc	HH+00/30		Colombo	VCCCYPYX
			VVTS	HO CHI MINH/Tan Son Nhat	HH+00/30		Delhi	VIDPYPYX
			VVVD	Van Don Int'l	HH+00/30		Hong Kong	VHZZYPYX
							Incheon	RKSIYPYX
							Jakarta	WIZZMCMC
							Kolkata	VECCYPYX
							Kuala Lumpur	WMZZYPYR

Table A : Collection and Dissemination of METAR (SA) Bulletins

1		2			3	4	5	
ROC		METAR Bulletin			Bul. Time	Available	DISSEMINATION TO	
Name	CCCC	BUL No.	CCCC	Aerodrome			RODB/ROC	AFTN Address
							Mumbai	VABYPYX
		SATH31	*VTBO*	*TRAT/Khao Sming*	HH+00	2200-1100	BANGKOK	VTBBYPYX
			VTCH	*MAE HONG SON*	HH+00	2200-1100	BRISBANE	YBBBYPYX
			VTCL	*LAMPANG*	HH+00	2300-1300	NADI	NFFNYPYX
			VTCN	*NAN*	HH+00	2200-1300	SINGAPORE	WSZZYPYM
			VTCP	*PHRAE*	HH+00	2200-1100	TOKYO	RJTDYPYX
			VTCT	CHIANG RAI/Chiang Rai Intl Airport	HH+00		Beijing	ZBBBYPYX
			VTPB	*PHETCHABUN*	HH+00	2200-1100		
			VTPH	*PRACHUAP KHIRI KHAN/Hua Hin*	HH+00	2200-1100		
			VTPM	*TAK/Mae Sot*	HH+00	2200-1100		
			VTPO	*SUKHOTHAI*	HH+00	2200-1100		
			VTPP	PHITSANULOK	HH+00	2200-1500		
			VTPT	*TAK*	HH+00	2200-1100		
		SATH32	VTSB	SURAT TANI	HH+00	2200-1500	BANGKOK	VTBBYPYX
			VTSC	*NARATHIWAT*	HH+00	2200-1100	BRISBANE	YBBBYPYX
			VTSE	*CHUMPHON/Tab Gai*	HH+00	2300-1100	NADI	NFFNYPYX
			VTSF	*NAKHON SI THAMMARAT*	HH+00	2200-1500	SINGAPORE	WSZZYPYM
			VTSG	KRABI	HH+00		TOKYO	RJTDYPYX
			VTSM	SURAT THANI/Samui	HH+00	2200-1500	Beijing	ZBBBYPYX
			VTSR	*RANONG*	HH+00	2200-1100		
			VTST	*TRANG*	HH+00	2200-1300		
			VTSY	*BATONG*	HH+00	0000-1000		
		SATH33	*VTUD*	*UDON THANI*	HH+00	2200-1500	BANGKOK	VTBBYPYX
			VTUI	*SAKON NAKHON/Ban Khai*	HH+00	2200-1500	BRISBANE	YBBBYPYX
			VTUK	KHON KAEN	HH+00		NADI	NFFNYPYX
			VTUL	*LOEI*	HH+00	2200-1200	SINGAPORE	WSZZYPYM
			VTUO	*BURI RAM*	HH+00	2200-1300	TOKYO	RJTDYPYX
			VTUQ	*NAKHON RATCHASIMA*	HH+00	2200-1400	Beijing	ZBBBYPYX
			VTUU	UBON RATCHATHANI	HH+00			
			VTUV	*ROI ET*	HH+00	2200-1400		
			VTUW	*NAKHON PHANOM*	HH+00	2200-1400		
Beijing	**ZBBB**	**SACI31**	ZBAA	BEIJING/Capital	HH+00/30		BANGKOK	VTBBYPYX
			ZBAD	*BEIJING/Daxing*	HH+00/30		BRISBANE	YBBBYPYX
			ZBTJ	TIANJIN/Binhai	HH+00/30		NADI	NFFNYPYX
			ZBYN	TAIYUAN/Wusu	HH+00/30		SINGAPORE	WSZZYPYM
			ZGGG	GUANGZHOU/Baiyun	HH+00/30		TOKYO	RJTDYPYX
			ZMCK	ULAANBAATAR/Chinggis Khaan	HH+00/30		Hong Kong	VHZZYPYX
			ZSHC	HANGZHOU/Xiaoshan	HH+00/30		Jakarta	WIZZMZBB
			ZSPD	SHANGHAI/Pudong	HH+00/30		Karachi	OPZZYPYX
			ZSSS	SHANGHAI/Hongqiao	HH+00/30		Mumbai	VABBYPYX
			ZWWW	URUMQI/Diwopu	HH+00/30		Incheon	RKSIYPYX
			ZYTL	DALIAN/Zhoushuizi	HH+00/30		Ulaanbaatar	ZMUBYMYX
			ZYTX	SHENYANG/Taoxian	HH+00/30			
		SACI32	ZGKL	GUILIN/Liangjiang	HH+00		BANGKOK	VTBBYPYX
			ZGNN	NANNING/Wuxu	HH+00		BRISBANE	YBBBYPYX
			ZGOW	*SHANTOU/Waisha*	HH+00		NADI	NFFNYPYX
			ZGSZ	SHENZHEN/Baoan	HH+00		SINGAPORE	WSZZYPYM
			ZLXY	XI'AN/Xianyang	HH+00		TOKYO	RJTDYPYX

Table A : Collection and Dissemination of METAR (SA) Bulletins

1		2			3	4	5	
ROC		METAR Bulletin			Bul. Time	Available	DISSEMINATION TO	
Name	CCCC	BUL No.	CCCC	Aerodrome			RODB/ROC	AFTN Address
			ZMUB	ULAANBAATAR / Buyant-Ukhaa	HH+00		Hong Kong	VHZZYPYX
			ZPPP	KUNMING/Wujiaba	HH+00		Jakarta	WIZZMZBB
			ZSAM	XIAMEN/Gaoqi	HH+00		Kuala Lumpur	WMZZYPYX
			ZSFZ	FUZHOU/Changle	HH+00		Incheon	RKSIYPYX
			ZSNB	*NINGBO/Lishe*	HH+00		Wellington	NZZZYPYX
			ZSQD	QINGDAO/Liuting	HH+00			
			ZUUU	CHENGDU/Shuangliu	HH+00			
			ZUTF	*CHENGDU/Tianfu*	HH+00			
			ZBSJ	*SHIJIAZHUANG/Zhengding*	HH+00			
			ZWSH	KASHI/Kashi	HH+00			
		SACI41	ZBHH	HOHHOT/Baita	HH+00		BANGKOK	VTBBYPYX
			ZGHA	CHANGSHA/Huanghua	HH+00		BRISBANE	YBBBYPYX
			ZHCC	*ZHENGZHOU/Xinzheng*	HH+00		NADI	NFFNYPYX
			ZHHH	WUHAN/Tianhe	HH+00		SINGAPORE	WSZZYPYM
			ZJHK	*HAIKOU/Meilan*	HH+00		TOKYO	RJTDYPYX
			ZJSY	SANYA/Phoenix	HH+00		Hong Kong	VHZZYPYX
			ZLLL	LANZHOU/Zhongchuan	HH+00		Jakarta	WIZZMZBB
			ZSNJ	NANJING/Lukou	HH+00		Karachi	OPZZYPYX
			ZSOF	HEFEI/Luogang	HH+00		Mumbai	VABBYPYX
			ZUCK	CHONGQING/Jiangbei	HH+00		Incheon	RKSIYPYX
			ZYCC	*CHANGCHUN/Longjia*	HH+00		Ulaanbaatar	ZMUBYMYX
			ZYHB	HARBIN/Taiping	HH+00		Wellington	NZZZYPYX
Brisbane	**YBBN**	**SAAU31**	YPAD	ADELAIDE/Adelaide Intl	HH+00/30		BANGKOK	VTBBYPYX
			YBBN	BRISBANE/Brisbane Intl	HH+00/30		BRISBANE	YBBBYPYX
			YBCS	CAIRNS/Cairns Intl	HH+00/30		NADI	NFFNYPYX
			YSCB	CANBERRA	HH+00/30		SINGAPORE	WSZZYPYX
			YPDN	DARWIN/Darwin Intl	HH+00/30		TOKYO	RJTDYPYX
			YBCG	GOLD COAST	HH+00/30		Beijing	ZBBBYPYX
			YMHB	HOBART	HH+00/30		Hong Kong	VHZZYPYX
			YMML	MELBOURNE/Melbourne Intl	HH+00/30		Incheon	RKSIYPYS
			YPPH	PERTH/Perth Intl	HH+00/30		Jakarta	WIZZYPYX
			YSSY	SYDNEY/Sydney (Kingsford Smith) Intl	HH+00/30		Manila	RPLLYPYX
							Mumbai	VABBYPYX
							Wellington	NZZZYPYX
		SAAU32	YBAS	ALICE SPRINGS	HH+00/30		BANGKOK	VTBBYPYX
			YMAV	AVALON	HH+00/30		BRISBANE	YBBBYPYX
			YBWW	Brisbane West Wellcamp	HH+00/30		NADI	NFFNYPYX
			YBRM	BROOME/Broome Intl	HH+00/30		SINGAPORE	WSZZYPYX
			YBLN	Busselton	HH+00/30		TOKYO	RJTDYPYX
			YPXM	CHRISTMAS ISLAND	HH+00/30		Beijing	ZBBBYPYX
			YPCC	COCOS (KEELING) ISLAND Intl	HH+00/30		Hong Kong	VHZZYPYX
			YCFS	COFFS HARBOUR	HH+00/30		Incheon	RKSIYPYS
			YPKG	KALGOORLIE-BOULDER	HH+00/30		Jakarta	WIZZYPYX
			YMLT	LAUNCESTON	HH+00/30		Manila	RPLLYPYX
			YPLM	LEARMONTH	HH+00/30		Mumbai	VABBYPYX
			YLHI	LORD HOWE ISLAND	HH+00/30		Wellington	NZZZYPYX
			YSNF	NORFOLK ISLAND Intl	HH+00/30			
			YPPD	PORT HEDLAND	HH+00/30			

Table A : Collection and Dissemination of METAR (SA) Bulletins

1		2			3	4	5	
ROC		METAR Bulletin			Bul. Time	Available	DISSEMINATION TO	
Name	CCCC	BUL No.	CCCC	Aerodrome			RODB/ROC	AFTN Address
			YBRK	ROCKHAMPTON	HH+00/30			
			YBSU	SUNSHINE COAST AIRPORT	HH+00/30			
		SAAU33	YGEL	GERALDTON	HH+00/30		BANGKOK	VTBBYPYX
			YGLA	*GLADSTONE*	HH+00/30		BRISBANE	YBBBYPYX
			YHID	HORN ISLAND	HH+00/30		NADI	NFFNYPYX
			YPJT	*PERTH/Jandakot*	HH+00/30		SINGAPORE	WSZZYPYX
			YPWR	*WOOMERA*	HH+00/30		TOKYO	RJTDYPYX
			YSDU	*DUBBO*	HH+00/30		Beijing	ZBBBYPYX
			YSRI	*RICHMOND, NSW*	HH+00/30		Hong Kong	VHZZYPYX
			YSTW	*TAMWORTH*	HH+00/30		Incheon	RKSIYPYS
							Jakarta	WIZZYPYX
							Manila	RPLLYPYX
							Mumbai	VABBYPYX
							Wellington	NZZZYPYX
		SAAU34	*YBHM*	*HAMILTON ISLAND*	HH+00/30		BANGKOK	VTBBYPYX
			YBMA	*MOUNT ISA*	HH+00/30		BRISBANE	YBBBYPYX
							NADI	NFFNYPYX
							SINGAPORE	WSZZYPYX
							TOKYO	RJTDYPYX
							Hong Kong	VHZZYPYX
							Incheon	RKSIYPYS
							Jakarta	WIZZYPYX
							Wellington	NZZZYPYX
		SAAU35	*YCIN*	*CURTIN*	HH+00/30		BANGKOK	VTBBYPYX
			YFRT	*FORREST*	HH+00/30		BRISBANE	YBBBYPYX
			YPKU	*KUNUNURRA*	HH+00/30		NADI	NFFNYPYX
			YPGV	*GOVE*	HH+00/30		SINGAPORE	WSZZYPYX
							TOKYO	RJTDYPYX
							Hong Kong	VHZZYPYX
							Incheon	RKSIYPYS
							Jakarta	WIZZYPYX
							Wellington	NZZZYPYX
		SAAU36	*YAMB*	*AMBERLEY*	HH+00/30		BANGKOK	VTBBYPYX
			YPEA	*PEARCE*	HH+00/30		BRISBANE	YBBBYPYX
			YPTN	TINDAL	HH+00/30		NADI	NFFNYPYX
			YBTL	TOWNSVILLE/Townsville Intl	HH+00/30		SINGAPORE	WSZZYPYX
			YWLM	WILLIAMTOWN	HH+00/30		TOKYO	RJTDYPYX
							Beijing	ZBBBYPYX
							Hong Kong	VHZZYPYX
							Incheon	RKSIYPYS
							Jakarta	WIZZYPYX
							Manila	RPLLYPYX
							Mumbai	VABBYPYX
							Wellington	NZZZYPYX
		SATM31	WPDL	DILI/Presidente Nicolau Lobato Intl	HH+00/30		BANGKOK	VTBBYPYX
							BRISBANE	YBBBYPYX
							NADI	NFFNYPYX
							SINGAPORE	WSZZYPYX

Table A : Collection and Dissemination of METAR (SA) Bulletins

1		2			3	4	5	
ROC		METAR Bulletin			Bul. Time	Available	DISSEMINATION TO	
Name	CCCC	BUL No.	CCCC	Aerodrome			RODB/ROC	AFTN Address
							TOKYO	RJTDYPYX
							Beijing	ZBBBYPYX
							Hong Kong	VHZZYPYX
							Incheon	RKSIYPYS
							Jakarta	WIZZYPYX
							Manila	RPLLYPYX
							Mumbai	VABBYPYX
							Wellington	NZZZYPYX
		SANG31	AYPY	PORT MORESBY Intl	HH+00		BANGKOK	VTBBYPYX
			AYWK	*WEWAK*	HH+00	NR	BRISBANE	YBBBYPYX
			AYVN	VANIMO	HH+00	NR	NADI	NFFNYPYX
			AYNZ	*NADZAB*	HH+00	NR	SINGAPORE	WSZZYPYM
			AYMH	*MOUNT HAGEN*	HH+00	NR	TOKYO	RJTDYPYX
			AYGN	*GURNEY*	HH+00	NR	Beijing	ZBBBYPYX
			AYMO	*MOMOTE*	HH+00	NR	Hong Kong	VHZZYPYX
			ANYN	NAURU I.	HH+00		Jakarta	WIZZMIMI
			AGGH	HONIARA (HENDERSON)	HH+00		Wellington	NZZZYPYX
Colombo	**VCCC**	**SASB31**	VCBI	BANDARANAIKE INTL AP COLOMBO	HH+10		BANGKOK	VTBBYPYX
			VCRI	MATTALA RAJAPAKSA INTERNATIONAL AIRPORT	HH+10		BRISBANE	YBBBYPYX
			VCCH	HINGURAKGODA/MINNERIYA	HH+10		NADI	NFFNYPYX
		SAMV31	VRMG	GAN INTERNATIONAL AIRPORT	HH+10		SINGAPORE	WSZZYPYM
			VRMH	HANIMAADHOO INTERNATIONAL AIRPORT	HH+10		TOKYO	RJTDYPYX
			VRMM	MALE INTERNATIONAL AIRPORT	HH+10		Beijing	ZBBBYPYX
							Hong Kong	VHZZYPYX
							Kuala Lumpur	WMZZYPYR
							Mumbai	VABBYPYX
Delhi	**VIDP**	**SAIN32**	VIDP	DELHI/Indira Gandhi Intl	HH+00/30		BANGKOK	VTBBYPYX
			VILK	LUCKNOW	HH+00/30		BRISBANE	YBBBYPYX
			VIAR	AMRITSAR	HH+00/30		NADI	NFFNYPYX
			VEBN	*VARANASI*	HH+00/30		SINGAPORE	WSZZYPYM
			VIJP	JAIPUR	HH+00/30		TOKYO	RJTDYPYX
			VIBN	VARANASI/Lal Bahadur Shastri	HH+00/30		Beijing	ZBBBYPYX
							Kolkata	VECCYPYX
							Hong Kong	VHZZYPYX
							Karachi	OPZZYPYX
							Mumbai	VABBYPYX
Hong Kong	**VHHH**	**SAHK31**	VHHH	HONG KONG/Int	HH+00/30		BANGKOK	VTBBYPYX
			RCTP	TAIBEI CITY/Taibei Intl	HH+00/30		BRISBANE	YBBBYPYX
			RCKH	GAOXIONG	HH+00/30		NADI	NFFNYPYX
			RCSS	TABEI/Songshan	HH+00/30		SINGAPORE	WSZZYPYM
			RCMQ	*TAICHUNG/Qingquangang*	HH+00/30		TOKYO	RJTDYPYX
			RCNN	*TAINAN*	HH+00/30		Beijing	ZBBBYPYX
			RCFN	*TAIDONG/Fengnian*	HH+00/30	2200-1200	Kuala Lumpur	WMZZYPYR
			VMMC	MACAO/Intl	HH+00/30		Incheon	RKSIYPYX
			RPLL	MANILA/Ninoy Aquino Intl	HH+00		Wellington	NZZZYPYX
			RPVM	LAPU-LAPU/Mactan-Cebu	HH+00			
			RPMD	DAVAO/Francisco Bangoy Intl	HH+00			

Table A : Collection and Dissemination of METAR (SA) Bulletins

1		2			3	4	5	
ROC		METAR Bulletin			Bul. Time	Available	DISSEMINATION TO	
Name	CCCC	BUL No.	CCCC	Aerodrome			RODB/ROC	AFTN Address
			RPLB	SUBIC BAY, Subic Bay Intl	HH+00			
			RPLI	LAOAG/Intl	HH+00	2100-1200, 1500, 1800		
			RPMZ	ZAMBOANGA/Intl	HH+00	2100-1200, 1500, 1800		
			RPLC	PAMPANGA/Clark Intl	HH+00			
			RPVP	PUERTO PRINCESA/Intl	HH+00	2100-1200, 1500, 1800		
Incheon	**RKSI**	**SAKO31**	RKSI	INCHEON	HH+00/30		BANGKOK	VTBBYPYX
			RKSS	GIMPO	HH+00		BRISBANE	YBBBYPYX
			RKPC	JEJU	HH+00		NADI	NFFNYPYX
			RKPK	GIMHAE	HH+00		SINGAPORE	WSZZYPYM
			RKTU	CHEONGJU	HH+00		TOKYO	RJTDYPYX
			RKNY	YANGYANG	HH+00		Beijing	ZBBBYPYX
			RKTN	DAEGU	HH+00		Hong Kong	VHZZYPYX
			RKJB	MUAN	HH+00		Singapore	WSZZYPYM
							Tokyo	RJTDYPYX
							Wellington	NZZZYPYX
							Mumbai	VABBYPYX
Jakarta	**WIII**	**SAID31**	WAAA	MAKASSAR-/Sultan Hasanuddin	HH+00/30		BANGKOK	VTBBYPYX
			WABB	BIAK/Frans Kaisiepo	HH+00/30		BRISBANE	YBBBYPYX
			WIHH	JAKARTA/Halimperdana Kusuma	HH+00/30		NADI	NFFNYPYX
			WIII	JAKARTA/Soekarno Hatta (COMM CENTER)	HH+00/30		SINGAPORE	WSZZYPYM
			WIDD	BATAM/Hang Nadim	HH+00/30		TOKYO	RJTDYPYX
			WIMM	MEDAN/Kualanamu	HH+00/30		Beijing	ZBBBYPYX
			WADD	BALI/I Gusti Ngurah Rai	HH+00/30		Hong Kong	VHZZYPYX
			WARR	SURABAYA/Juanda	HH+00/30		Kuala Lumpur	WMZZYPYR
							Wellington	NZZZYPYX
		SAID32	WAMM	MANADO/Sam Ratulangi	HH+00/30		BANGKOK	VTBBYPYX
			WIBB	PEKANBARU/Sultan Syarif Kasim II	HH+00/30		BRISBANE	YBBBYPYX
			WIDN	TANJUNG PINANG/Raja Haji Fisabilillah Int'l	HH+00/30	0000-1200	NADI	NFFNYPYX
			WIEE	PANDANG PARIAMAN/Minangkabau international	HH+00/30		SINGAPORE	WSZZYPYM
			WIOO	PONTIANAK/Supadio	HH+00/30		TOKYO	RJTDYPYX
			WIPP	PALEMBANG/Sultan Mahmud Badaruddin II	HH+00/30		Beijing	ZBBBYPYX
			WAOO	BANJARMASIN/Syamsuddin Noor	HH+00/30		Hong Kong	VHZZYPYX
			WALL	BALIKPAPAN/Sultan Aji Muhammad Sulaiman Sepinggan	HH+00/30		Kuala Lumpur	WMZZYPYR
			WADL	PRAYA/Zainuddin Abdul Madjid	HH+00/30		Wellington	NZZZYPYX
			WITT	BANDA ACEH/Sultan Iskandar Muda	HH+00/30	2300-1500		
			WAHI	KULON PROGO/Internasional Yogyakarta	HH+00/30			
		SAID33	WAJJ	JAYAPURA/Sentani	HH+00/30		BANGKOK	VTBBYPYX
			WAKK	MERAUKE/Mopah	HH+00/30	2200-0500	BRISBANE	YBBBYPYX
			WAPP	AMBON/Pattimura	HH+00/30		NADI	NFFNYPYX
			WAHS	SEMARANG/Jenderal Ahmad Yani International	HH+00/30	2300-1700	SINGAPORE	WSZZYPYM
			WILL	BANDAR LAMPUNG/Radin Inten II	HH+00/30		TOKYO	RJTDYPYX
			WATT	KUPANG/El Tari	HH+00/30		Beijing	ZBBBYPYX
			WAQQ	TARAKAN/Juwata	HH+00/30	2200-1200	Hong Kong	VHZZYPYX
			WADY	BANYUWANGI/Banyuwangi	HH+00/30	2300-1100	Kuala Lumpur	WMZZYPYR

Table A : Collection and Dissemination of METAR (SA) Bulletins

1		2			3	4	5	
ROC		METAR Bulletin			Bul. Time	Available	DISSEMINATION TO	
Name	CCCC	BUL No.	CCCC	Aerodrome			RODB/ROC	AFTN Address
			WIMN	SIBORONGBORONG/Raja Sisingamangaraja XII	HH+00/30	0100-0800	Wellington	NZZZYPYX
Karachi	**OPKC**	**SAPK31**	OPKC	KARACHI/Jinnah Int'l	HH+00/30		BANGKOK	VTBBYPYX
			OPIS	Islamabad International Airport	HH+00/30		BRISBANE	YBBBYPYX
			OPLA	LAHORE/Allama Iqbal Int'l	HH+00/30		NADI	NFFNYPYX
			OPNH	NAWABSHAH	HH+00/30		SINGAPORE	WSZZYPYM
			OPGW	*New Gwadar International Airport*	HH+00/30		TOKYO	RJTDYPYX
			OPPS	PESHAWAR	HH+00/30		Abu Dhabi	OMZZYPYX
			OPSK	*SUKKUR*	HH+00/30		Bahrain	OBZZYPYX
			OPMT	Multan	HH+00/30		Beijing	ZBBBYPYX
			OPST	*Sialkot*	HH+00/30		Kolkata	VECCYPYX
			OPFA	Faisalabad	HH+00/30		Delhi	VIDDYPYX
							Hong Kong	VHZZYPYX
							Mumbai	VABBYPYX
							Tehran	OIZZYPYX
Kolkata	**VECC**	**SAIN33**	VECC	NETAJI SUBHASH CHANDRA BOSE INTERNATIONAL AIRPORT, KOLKATA	HH+00/30		BANGKOK	VTBBYPYX
			VEPT	PATNA	HH+00/30		BRISBANE	YBBBYPYX
			VEGY	GAYA	HH+00/30		NADI	NFFNYPYX
			VEGT	GUWAHATI	HH+00/30		SINGAPORE	WSZZYPYM
		SABW31	VGEG	M.A. HANNAN INTL. CHITTAGONG	HH+00/30		TOKYO	RJTDYPYX
			VGHS	HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	HH+00/30		Beijing	ZBBBYPYX
			VGSY	OSMANI INTERNATIONAL AIRPORT,SYLHET	HH+00/30		Colombo	VCCCYPYX
		SAAS31	VNKT	KATHMANDU	HH+00/30		Delhi	VIDPYPYX
			VQPR	PARO/Intl.	HH+00/30		Hong Kong	VHZZYPYX
							Karachi	OPZZYPYX
							Mumbai	VABBYPYX
Kuala Lumpur	**WMKK**	**SAMS31**	WBGG	KUCHING/Intl	HH+00/30		BANGKOK	VTBBYPYX
			WBKK	KOTA KINABALU/Intl	HH+00/30		BRISBANE	YBBBYPYX
			WBSB	BRUNEI/Intl	HH+00/30		NADI	NFFNYPYX
			WMKK	SEPANG/KL International Airport	HH+00/30		SINGAPORE	WSZZYPYM
			WMKP	PENANG/Intl	HH+00/30		TOKYO	RJTDYPYX
			WSSS	SINGAPORE/Changi	HH+00/30		Beijing	ZBBBYPYX
			WSSL	SELETAR	HH+00/30		Colombo	VCCCYPYX
			WMSA	SUBANG/Sultan Abdul Aziz Shah	HH+00/30		Hong Kong	VHZZYPYX
			WSAP	PAYA LEBAR (RSAF)	HH+00/30		Jakarta	WIZZMBMB
							Manila	RPLLYPYX
							Mumbai	VABBYPYX
							Incheon	RKSIYPYX
							Wellington	NZZZYPYX
		SAMS38	*WBGB*	*BINTULU*	HH+00		BANGKOK	VTBBYPYX
			WBGR	MIRI	HH+00		BRISBANE	YBBBYPYX
			WBGS	SIBU	HH+00		NADI	NFFNYPYX
			WBKL	LABUAN	HH+00		SINGAPORE	WSZZYPYM
			WBKS	SANDAKAN	HH+00		TOKYO	RJTDYPYX
			WBKW	TAWAU	HH+00		Beijing	ZBBBYPYX
			WMKD	KUANTAN	HH+00		Colombo	VCCCYPYX

Table A : Collection and Dissemination of METAR (SA) Bulletins

1		2			3	4	5	
ROC		METAR Bulletin			Bul. Time	Available	DISSEMINATION TO	
Name	CCCC	BUL No.	CCCC	Aerodrome			RODB/ROC	AFTN Address
			WMKL	PULAU LANGKAWI/Intl	HH+00		Hong Kong	VHZZYPYX
			WMKM	MALACCA	HH+00		Jakarta	WIZZMBMB
			WMKJ	JOHOR BAHRU/Sultan Ismail	HH+00		Manila	RPLLYPYX
							Mumbai	VABBYPYX
							Incheon	RKSIYPYX
							Wellington	NZZZYPYX
Mumbai	**VABB**	**SAIN31**	VAAH	AHMEDABAD	HH+00/30		BANGKOK	VTBBYPYX
			VABB	MUMBAI/Chhatrapati Shivaji Intl.	HH+00/30		BRISBANE	YBBBYPYX
			VANP	NAGPUR	HH+00/30		NADI	NFFNYPYX
			VOMM	CHENNAI	HH+00/30		SINGAPORE	WSZZYPYM
			VOTR	TIRUCHCHIRAPPALLI	HH+00/30		TOKYO	RJTDYPYX
			VOTV	TRIVANDRUM	HH+00/30		Abu Dhabi	OMZZYPYX
			VOHS	HYDERABAD	HH+00/30		Bahrain	OBZZYPYX
			VOBL	BANGALORE INTL APT	HH+00/30		Beijing	ZBBBYPYX
			VOCL	CALICUT	HH+00/30		Colombo	VCCCYPYX
			VOCI	COCHIN INTERNATIONAL	HH+00/30		Delhi	VIDPYPYX
			VOCB	COIMBATORE	HH+00/30		Hong Kong	VHZZYPYX
			VOML	MANGALORE	HH+00/30		Karachi	OPZZYPYX
							Kolkata	VECCYPYX
							Tehran	OIZZYPYX
Nadi	**NFFN**	**SAPS31**	NCRG	RAROTONGA Intl.	HH+00		BANGKOK	VTBBYPYX
			NFFN	NADI/Intl	HH+00		BRISBANE	YBBBYPYX
			NFNA	NAUSORI/Intl	HH+00		NADI	NFFNYPYX
			NFTF	FUA'AMOTU INTL.	HH+00		SINGAPORE	WSZZYPYM
			NFTV	VAVA'U	HH+00		TOKYO	RJTDYPYX
			NGFU	FUNAFUTI/Intl	HH+00		Wellington	NZZZYPYX
			NGTA	TARAWA/Bonriki Intl	HH+00			
			NIUE	NIUE Intl	HH+00			
			NSFA	FALEOLO/Intl	HH+00			
			NVSS	SANTO/Pekoa	HH+00			
			NVVV	PORT VILA/Bauerfield	HH+00			
			PLCH	CHRISTMAS ISLAND	HH+00			
			NFTL	HA'APAI	HH+00			
		SAPS32	NLWW	WALLIS HIHIFO	HH+00			
			NWWW	NOUMEA LA TANTOUTA	HH+00			
		SAPS33	NTAA	TAHITI FAAA	HH+00			
Tokyo	**RJTD**	**SAJP31**	RJAA	NARITA Intl	HH+00		BANGKOK	VTBBYPYX
			RJBB	KANSAI Intl	HH+00		BRISBANE	YBBBYPYX
			RJCH	HAKODATE	HH+00	22:00-11:00	NADI	NFFNYPYX
			RJGG	CHUBU CENTRAIR Intl	HH+00		SINGAPORE	WSZZYPYM
			RJOO	OSAKA Intl	HH+00	20:00-11:00	TOKYO	RJTDYPYX
			RJSS	SENDAI	HH+00	21:00-12:00	Beijing	ZBBBYPYX
			RJTT	TOKYO Intl	HH+00		Guam	PGUMCOAX
			ROAH	NAHA	HH+00		Hong Kong	VHZZYPYX
							Incheon	RKSIYPYX
							London	EGZZMASI
							Wellington	NZZZYPYX
		SAJP32	RJCC	SAPPORO/New Chitose	HH+00		BANGKOK	VTBBYPYX

Table A : Collection and Dissemination of METAR (SA) Bulletins

1		2			3	4	5	
ROC		METAR Bulletin			Bul. Time	Available	DISSEMINATION TO	
Name	CCCC	BUL No.	CCCC	Aerodrome			RODB/ROC	AFTN Address
			RJFF	FUKUOKA	HH+00		BRISBANE	YBBBYPYX
			RJFK	KAGOSHIMA	HH+00	21:00-12:00	NADI	NFFNYPYX
			RJFU	NAGASAKI	HH+00	22:00-12:00	SINGAPORE	WSZZYPYM
			RJOA	HIROSHIMA	HH+00	22:00-13:00	TOKYO	RJTDYPYX
			RJFT	KUMAMOTO	HH+00	22:00-12:00	Beijing	ZBBBYPYX
			RJSN	NIIGATA	HH+00	22:00-12:00	Guam	PGUMCOAX
			RJFO	OITA	HH+00	22:00-13:00	Hong Kong	VHZZYPYX
			RJOB	OKAYAMA	HH+00	22:00-12:00	Incheon	RKSIYPYX
			RJOT	TAKAMATSU	HH+00	22:00-12:00	London	EGZZMASI
			RJNK	*KANAZAWA/Komatsu*	HH+00		Wellington	NZZZYPYX
			RJNT	*TOYAMA*	HH+00	22:00-12:00		
		SAJP38	RJCK	KUSHIRO	HH+00	22:00-11:00	BANGKOK	VTBBYPYX
			RJCM	*MEMANBETSU*	HH+00	23:00-11:00	BRISBANE	YBBBYPYX
			RJCB	*OBIHIRO*	HH+00	23:00-11:00	NADI	NFFNYPYX
			RJOC	*IZUMO*	HH+00	22:00-11:00	SINGAPORE	WSZZYPYM
			RJOH	*MIHO*	HH+00		TOKYO	RJTDYPYX
			RJOK	*KOCHI*	HH+00	22:00-11:00	Beijing	ZBBBYPYX
			RJFM	MIYAZAKI	HH+00	22:00-12:00	Brasilia	SBBRYZYX
			ROIG	NEW ISHIGAKI	HH+00	21:00-11:00	Hong Kong	VHZZYPYX
			RJNS	SHIZUOKA	HH+00	23:00-12:00	Incheon	RKSIYPYX
			RJSA	AOMORI	HH+00	22:00-12:00	London	EGZZMASI
			RJSF	FUKUSHIMA	HH+00	22:00-11:00	Rayong	VTBUYMYX
			RJOM	MATSUYAMA	HH+00	22:00-12:00		
			RJEC	ASAHIKAWA	HH+00	22:00-11:00		
			RJSK	AKITA	HH+00	22:00-12:00		
			RJAH	*HYAKURI*	HH+00			
			RJFR	KITAKYUSHU	HH+00			
			RJFS	SAGA	HH+00	22:00-14:00		
			RJSI	HANAMAKI	HH+00	23:00-10:00		
Wellington	**NZKL**	**SANZ31**	NZWN	WELLINGTON Intl	HH+00/30		BANGKOK	VTBBYPYX
			NZAA	AUCKLAND Intl	HH+00/30		BRISBANE	YBBBYPYX
			NZCH	CHRISTCHURCH Intl			NADI	NFFNYPYX
		SANZ32	NZQN	QUEENSTOWN	HH+00/30		SINGAPORE	WSZZYPYM
					HH+00/30		TOKYO	RJTDYPYX
							Beijing	ZBBBYPYX
							Hong Kong	VHZZYPYX
							Incheon	RKSIYPYX
							Jakarta	WIZZYPYX

— END OF SECTION —

APPENDIX B — Collection and Dissemination of TAF (FT) Bulletins

Table B : FT TAF

Explanation of the Table

Col. 1: Name and ICAO location indicator of the ROC compiling the bulletin

Col. 2: Description of the TAF Bulletin

Col. 3: Dissemination of the bulletin to other ROCs and RODBs

Notes:

1 *The TAF filing time should be not earlier than 1 hour before the start of the period of validity.*

2 *TAF that do not meet 24- and 30-hour IATA requirements are indicated in the TAF validity column with the required validity shown in parenthesis.*

3 *TAF included in VOLMET broadcasts are listed in APAC, ANP, VOL II, Table MET II-3, VOLMET Broadcasts.*

4 *Aerodromes not listed in Table AOP 1 are indicated in italics.*

Table B : Collection and Dissemination of TAF (FT) Bulletins									
1 ROC		2 TAF Bulletin						3 Dissemination	
Name	CCCC	BUL No.	CCCC	Aerodrome	Filing time	Start of validity	TAF validity	RODB/ROC	AFTN address
ASIA/PAC REGION									
Bangkok	**VTBB**	**FTAE31**	VTBD	BANGKOK/Don Mueang Intl Airport	0535	0600	30	BANGKOK	VTBBYPYX
			VTBS	BANGKOK/Suvarnabhumi Intl Airport	1135	1200	30	BRISBANE	YBBBYPYX
			VTBU	RAYONG/U-Tapao Intl	1735	1800	24	NADI	NFFNYPYX
			VTCC	CHIANG MAI/Chiang Mai Intl. Airport	2335	0000	30	SINGAPORE	WSZZYPYX
			VTSP	PHUKET/Phuket Intl			30	TOKYO	RJTDYPYX
			VTSS	SONGKHLA/Hat Yai Intl			24	Abu Dhabi	OMZZYPYX
								Bahrain	OBZZYPYX
								Beijing	ZBBBYPYX
								Beirut	OLLLYPYX
								Hong Kong	VHZZYPYX
								Jeddah	OEJDYPYX
								Karachi	OPZZYPYX
								Kuala Lumpur	WMZZYPYR
								Mumbai	VABBYPYX
								Incheon	RKSIYPYX
								Tehran	OIIIYPYX
								Wellington	NZZZYPYX
		FTAE32	VDPP	PHNOM PENH	0535	0600	18 (24)	BANGKOK	VTBBYPYX
			VDSV	SIHANOUK	1135	1200	18 (24)	BRISBANE	YBBBYPYX
			VDSA	SIEM REAP/Siem Reap Angkor Intl	1735	1800	18 (24)	NADI	NFFNYPYX
			VGHS	HAZRAT SHAHJALAL INTL APT	2335	0000	30	SINGAPORE	WSZZYPYX
			VLVT	VIENTIANE (Wattay)			24	TOKYO	RJTDYPYX
			VYMD	MANDALAY INTERNATIONAL*			24	Bahrain	OBZZYPYX
			VYNT	NAYPYITAW INTERNATIONAL			24	Beijing	ZBBBYPYX
			VYYY	YANGON INTERNATIONAL			24	Beirut	OLLLYPYX
								Hong Kong	VHZZYPYX
				*Issued 0500/1100				Jeddah	OEJDYPYX
								Karachi	OPZZYPYX
								Kuala Lumpur	WMZZYPYR
								Mumbai	VABBYPYX
								Incheon	RKSIYPYX
								Tehran	OIIIYPYX
								Wellington	NZZZYPYX
		FTAE33	VLLB	LUANG PRABANG	0535	0600	24	BANGKOK	VTBBYPYX
			VLLN	*LUANG NAMTHA*	1135	1200	24	BRISBANE	YBBBYPYX
			VLPS	PAKSE	2335	0000	24	NADI	NFFNYPYX
			VLSK	SAVANNAKHET			24	SINGAPORE	WSZZYPYX
								TOKYO	RJTDYPYX
								Bahrain	OBZZYPYX
								Beijing	ZBBBYPYX
								Beirut	OLLLYPYX
								Hong Kong	VHZZYPYX
								Jeddah	OEJDYPYX
								Karachi	OPZZYPYX
								Kuala Lumpur	WMZZYPYR
								Mumbai	VABBYPYX
								Incheon	RKSIYPYX

Table B : Collection and Dissemination of TAF (FT) Bulletins

1 ROC		2 TAF Bulletin						3 Dissemination	
Name	**CCCC**	**BUL No.**	**CCCC**	**Aerodrome**	**Filing time**	**Start of validity**	**TAF validity**	**RODB/ROC**	**AFTN address**
								Tehran	OIIIYPYX
								Wellington	NZZZYPYX
		FTAE34	VVCI	CAT BI	0535	0600	24	BANGKOK	VTBBYPYX
			VVCR	KHANH HOA/Cam Ranh Int'l	1135	1200	24	BRISBANE	YBBBYPYX
			VVCT	CAN THO/Can Tho Int'l	1735	1800	24	NADI	NFFNYPYX
			VVDN	DA NANG	2335	0000	24	SINGAPORE	WSZZYPYX
			VVNB	HA NOI/Noi Bai			24	TOKYO	RJTDYPYX
			VVPB	HUE/Phu Bai			24	Abu Dhabi	OMZZYPYX
			VVPQ	KIEN GIANG/Phu Quoc Int'l			24	Bahrain	OBZZYPYX
			VVTS	HO CHI MINH/Tan Son Nhat			30	Beijing	ZBBBYPYX
			VVVD	Van Don Int'l			24	Beirut	OLLLYPYX
								Hong Kong	VHZZYPYX
								Jeddah	OEJDYPYX
								Karachi	OPZZYPYX
								Kuala Lumpur	WMZZYPYR
								Mumbai	VABBYPYX
								Incheon	RKSIYPYX
								Tehran	OIIIYPYX
								Wellington	NZZZYPYX
		FTTH31	*VTBO*	*TRAT/Khao Sming*	0535	0600	24	BANGKOK	VTBBYPYX
			VTCH	*MAE HONG SON*	1135	1200	24	BRISBANE	YBBBYPYX
			VTCL	*LAMPANG*	1735	1800	24	NADI	NFFNYPYX
			VTCN	*NAN*	2335	0000	24	SINGAPORE	WSZZYPYX
			VTCP	*PHRAE*			24	TOKYO	RJTDYPYX
			VTCT	CHIANG RAI/Chiang Rai Intl Airport			30	Beijing	ZBBBYPYX
			VTPB	*PHETCHABUN*			24		
			VTPH	*PRACHUAP KHIRI KHAN/Hua Hin*			24		
			VTPM	*TAK/MAE SOT*			24		
			VTPO	*SUKHOTHAI*			24		
			VTPP	*PHITSANULOK*			24		
			VTPT	*TAK*			24		
		FTTH32	VTSB	SURAT THANI	0535	0600	24	BANGKOK	VTBBYPYX
			VTSC	*NARATHIWAT*	1135	1200	24	BRISBANE	YBBBYPYX
			VTSE	*CHUMPHON/Tab Gai*	1735	1800	24	NADI	NFFNYPYX
			VTSF	*NAKHON SI THAMMARAT*	2335	0000	24	SINGAPORE	WSZZYPYX
			VTSG	KRABI			24	TOKYO	RJTDYPYX
			VTSM	SURAT THANI/Samui			24	Beijing	ZBBBYPYX
			VTSR	*RANONG*			24		
			VTST	*TRANG*			24		
			VTSY	*BATONG*			24		
		FTTH33	*VTUD*	*UDON THANI*	0535	0600	24	BANGKOK	VTBBYPYX
			VTUI	*SAKON NAKHON/Ban Khai*	1135	1200	24	BRISBANE	YBBBYPYX
			VTUK	KHON KAEN	1735	1800	24	NADI	NFFNYPYX
			VTUL	*LOEI*	2335	0000	24	SINGAPORE	WSZZYPYX
			VTUO	*BURI RAM*			24	TOKYO	RJTDYPYX
			VTUQ	*NAKHON RATCHASIMA*			24	Beijing	ZBBBYPYX
			VTUU	UBON RATCHATHANI			24		
			VTUV	*ROI ET*			24		
			VTUW	*NAKHON PHANOM*			24		
Beijing	**ZBBB**	**FTCI31**	ZBAA	BEIJING/Capital	0535	0600	30	BANGKOK	VTBBYPYX

Table B : Collection and Dissemination of TAF (FT) Bulletins									
1 ROC		2 TAF Bulletin						3 Dissemination	
Name	CCCC	BUL No.	CCCC	Aerodrome	Filing time	Start of validity	TAF validity	RODB/ROC	AFTN address
			ZBAD	*BEIJING/Daxing*	1135	1200	24	BRISBANE	YBBBYPYX
			ZBTJ	TIANJIN/Binhai	1735	1800	24 (30)	NADI	NFFNYPYX
			ZBYN	TAIYUAN/Wusu	2335	0000	24	SINGAPORE	WSZZYPYX
			ZGGG	GUANGZHOU/Baiyun			30	TOKYO	RJTDYPYX
			ZMCK	ULAANBAATAR/Chinggis Khaan			30	Hong Kong	VHZZYPYX
			ZSHC	HANGZHOU/Xiaoshan			24	Karachi	OPZZYPYX
			ZSPD	SHANGHAI/Pu Dong			30	Mumbai	VABBYPYX
			ZSSS	SHANGHAI/Hongqiao			24	Incheon	RKSIYPYX
			ZWWW	URUMQI/Diwopu			24 (30)	Ulan Bator	ZMUBYMYX
			ZYTL	DALIAN/Zhoushuizi			24	Wellington	NZZZYPYX
			ZYTX	SHENYANG/Taoxian			24		
		FTCI32	ZGKL	GUILIN/Lianjiang	0535	0600	24	BANGKOK	VTBBYPYX
			ZGNN	NANNING/Wuxu	1135	1200	24	BRISBANE	YBBBYPYX
			ZGOW	*SHANTOU/Waisha*	1735	1800	24	NADI	NFFNYPYX
			ZGSZ	SHENZHEN/Baoan	2335	0000	24 (30)	SINGAPORE	WSZZYPYX
			ZLXY	XI'AN/Xianyang			24	TOKYO	RJTDYPYX
			ZMUB	ULAANBAATAR/Buyant-Ukhaa			30	Hong Kong	VHZZYPYX
			ZPPP	KUNMING/Wujiaba			24 (30)	Jakarta	WIZZYPYX
			ZSAM	XIAMEN/Gaoqi			24	Karachi	OPZZYPYX
			ZSFZ	FUZHOU/Changle			24	Kuala Lumpur	WMZZYPYR
			ZSNB	*NINGBO/Lishe*			24	Mumbai	VABBYPYX
			ZSQD	QINGDAO/Liuting			24	Wellington	NZZZYPYX
			ZUUU	CHENGDU/Shuangliu			24		
			ZUTF	*CHENGDU/Tianfu*			24		
			ZBSJ	*SHIJIAZHUANG/Zhengding*			24		
			ZWSH	KASHI/Kashi			24 (30)		
		FTCI41	ZBHH	HUHHOT/Baita	0535	0600	24	BANGKOK	VTBBYPYX
			ZGHA	CHANGSHA/Huanghua	1135	1200	24	BRISBANE	YBBBYPYX
			ZHCC	*ZHENGZHOU/Xinzheng*	1735	1800	24	NADI	NFFNYPYX
			ZHHH	WUHAN/Tianhe	2335	0000	24	SINGAPORE	WSZZYPYX
			ZJHK	*HAIKOU/Meilan*			24 (30)	TOKYO	RJTDYPYX
			ZJSY	SANYA/Phoenix			24	Hong Kong	VHZZYPYX
			ZLLL	LANZHOU/Zhongchuan			24	Jakarta	WIZZYPYX
			ZSNJ	NANJING/Lukou			24	Karachi	OPZZYPYX
			ZSOF	HEFEI/Luogang			24	Mumbai	VABBYPYX
			ZUCK	CHONGQING/Jiangbei			24	Incheon	RKSIYPYX
			ZYCC	*CHANGCHUN/Longjia*			24	Ulan Bator	ZMUBYMYX
			ZYHB	HARBIN/Taiping			24	Wellington	NZZZYPYX
Brisbane	**YBBN**	**FTAU31**	YPAD	ADELAIDE/Adelaide Intl	0235	0300	30	BANGKOK	VTBBYPYX
			YBBN	BRISBANE/Brisbane Intl	0535	0600	30	BRISBANE	YBBBYPYX
			YBCS	CAIRNS/Cairns Intl	0835	0900	24	NADI	NFFNYPYX
			YSCB	CANBERRA	1135	1200	24	SINGAPORE	WSZZYPYX
			YPDN	DARWIN/Darwin Intl	1435	1500	30	TOKYO	RJTDYPYX
			YBCG	GOLD COAST	1735	1800	24	Beijing	ZBBBYPYX
			YMHB	HOBART	2035	2100	24	Hong Kong	VHZZYPYX
			YMML	MELBOURNE/Melbourne Intl	2335	0000	30	Jakarta	WIZZYPYX
			YPPH	PERTH/Perth Intl			30	Manila	RPLLYPYX
			YSSY	SYDNEY/Sydney (Kingsford Smith) Intl			30	Mumbai	VABBYPYX
								Wellington	NZZZYPYX
		FTAU32	YBAS	ALICE SPRINGS	0535	0600	24	BANGKOK	VTBBYPYX

Table B : Collection and Dissemination of TAF (FT) Bulletins									
1 ROC		2 TAF Bulletin						3 Dissemination	
Name	CCCC	BUL No.	CCCC	Aerodrome	Filing time	Start of validity	TAF validity	RODB/ROC	AFTN address
			YMAV	AVALON	1135	1200	24	BRISBANE	YBBBYPYX
			YBWW	Brisbane West Wellcamp	1735	1800	24	NADI	NFFNYPYX
			YBRM	BROOME/Broome Intl	2335	0000	24	SINGAPORE	WSZZYPYX
			YBLN	Busselton			24	TOKYO	RJTDYPYX
			YPXM	CHRISTMAS ISLAND			24	Beijing	ZBBBYPYX
			YPCC	COCOS (KEELING) ISLAND Intl			24	Hong Kong	VHZZYPYX
			YCFS	COFFS HARBOUR			24	Jakarta	WIZZYPYX
			YPKG	KALGOORLIE-BOULDER			24	Manila	RPLLYPYX
			YMLT	LAUNCESTON			24	Mumbai	VABBYPYX
			YPLM	LEARMONTH			24	Wellington	NZZZYPYX
			YLHI	LORD HOWE ISLAND			24		
			YSNF	NORFOLK ISLAND Intl			24		
			YPPD	PORT HEDLAND			24		
			YBRK	ROCKHAMPTON			24		
			YBSU	SUNSHINE COAST AIRPORT			24		
		FTAU33	*YSDU*	*DUBBO*	0535	0600	18	BANGKOK	VTBBYPYX
			YGEL	GERALDTON	1135	1200	18	BRISBANE	YBBBYPYX
			YGLA	*GLADSTONE*	1735	1800	18	NADI	NFFNYPYX
			YHID	HORN ISLAND	2335	0000	18	SINGAPORE	WSZZYPYX
			YPJT	*PERTH/Jandakot*			18	TOKYO	RJTDYPYX
			YSRI	*RICHMOND, NSW*			18	Beijing	ZBBBYPYX
			YSTW	*TAMWORTH*			18	Hong Kong	VHZZYPYX
			YPWR	*WOOMERA*			18	Jakarta	WIZZYPYX
								Manila	RPLLYPYX
								Mumbai	VABBYPYX
								Wellington	NZZZYPYX
		FTAU34	*YBHM*	*HAMILTON ISLAND*	0500	0600	12	BANGKOK	VTBBYPYX
			YBMA	*MOUNT ISA*	1100	1200	12	BRISBANE	YBBBYPYX
					1700	1800		NADI	NFFNYPYX
					2300	0000		SINGAPORE	WSZZYPYX
								TOKYO	RJTDYPYX
								Beijing	ZBBBYPYX
								Hong Kong	VHZZYPYX
								Jakarta	WIZZYPYX
								Manila	RPLLYPYX
								Mumbai	VABBYPYX
								Wellington	NZZZYPYX
		FTAU35	*YCIN*	*CURTIN*	0100	0200	12	BANGKOK	VTBBYPYX
			YFRT	*FORREST*	0700	0800	12	BRISBANE	YBBBYPYX
			YPGV	*GOVE*	1300	1400	12	NADI	NFFNYPYX
			YPKU	*KUNUNURRA*	1900	2000	12	SINGAPORE	WSZZYPYX
								TOKYO	RJTDYPYX
								Beijing	ZBBBYPYX
								Hong Kong	VHZZYPYX
								Jakarta	WIZZYPYX
								Manila	RPLLYPYX
								Mumbai	VABBYPYX
								Wellington	NZZZYPYX
		FTAU36	*YAMB*	*AMBERLEY*	0235 (M-F)	0300 (M-F)	24	BANGKOK	VTBBYPYX
			YPEA	*PEARCE*	0535	0600	18	BRISBANE	YBBBYPYX

Table B : Collection and Dissemination of TAF (FT) Bulletins

1 ROC		2 TAF Bulletin						3 Dissemination	
Name	**CCCC**	**BUL No.**	**CCCC**	**Aerodrome**	**Filing time**	**Start of validity**	**TAF validity**	**RODB/ROC**	**AFTN address**
			YPTN	TINDAL	1135	1200	24	NADI	NFFNYPYX
			YBTL	TOWNSVILLE/Townsville Intl	1735	1800	24	SINGAPORE	WSZZYPYX
			YWLM	WILLIAMTOWN	2035 (M-F)	2100 (M-F)	24	TOKYO	RJTDYPYX
					2335	0000		Beijing	ZBBBYPYX
								Hong Kong	VHZZYPYX
								Jakarta	WIZZYPYX
								Manila	RPLLYPYX
								Mumbai	VABBYPYX
								Wellington	NZZZYPYX
		FTTM31	WPDL	DILI/Presidente Nicolau Lobato Intl	0535	0600	12	BANGKOK	VTBBYPYX
					1135	1200		BRISBANE	YBBBYPYX
					1735	1800		NADI	NFFNYPYX
					2335	0000		SINGAPORE	WSZZYPYX
								TOKYO	RJTDYPYX
								Beijing	ZBBBYPYX
								Hong Kong	VHZZYPYX
								Jakarta	WIZZYPYX
								Manila	RPLLYPYX
								Mumbai	VABBYPYX
								Wellington	NZZZYPYX
		FTNG31	AYPY	PORT MORESBY Intl	0535	0600	24	BANGKOK	VTBBYPYX
			AYWK	*WEWAK*	1135	1200	24	BRISBANE	YBBBYPYX
			AYVN	VANIMO	1735	1800	24	NADI	NFFNYPYX
			AYNZ	*NADZAB*	2335	0000	24	SINGAPORE	WSZZYPYX
			AYMH	*MOUNT HAGEN*			24	TOKYO	RJTDYPYX
			AYMO	*MOMOTE*			24	Beijing	ZBBBYPYX
			ANYN	NAURU I.			24	Hong Kong	VHZZYPYX
			AGGH	HONIARA (HENDERSON)			24	Jakarta	WIZZYPYX
								Manila	RPLLYPYX
								Mumbai	VABBYPYX
								Wellington	NZZZYPYX
Hong Kong	**VHHH**	**FTHK31**	VHHH	HONG KONG/International	0235	0300	30	BANGKOK	VTBBYPYX
					0535	0600		BRISBANE	YBBBYPYX
					0835	0900		NADI	NFFNYPYX
					1135	1200		SINGAPORE	WSZZYPYX
					1435	1500		TOKYO	RJTDYPYX
					1735	1800		Beijing	ZBBBYPYX
					2035	2100		Mumbai	VABBYPYX
					2335	0000		Incheon	RKSIYPYX
		FTHK32	VMMC	MACAO/Intl	0535	0600	30	Wellington	NZZZYPYX
			RCTP	TAIBEI CITY/Taibei Intl	1135	1200	30	London	EGZZMASI
			RCKH	GAOXIONG	1735	1800	30	Washington	KWBCYMYX
			RPLL	MANILA/Ninoy Aquino Intl	2335	0000	30		
			RPVM	LAPU-LAPU/Mactan, Cebu			30		
			RPLC	PAMPANGA/Clark Intl			30		
		FTHK33	RCSS	TAIBEI/Songshan	0535	0600	24		
			RCMQ	*TAICHUNG/Qingquangang*	1135	1200	24		
			RCNN	*TAINAN*	1735	1800	24		
			RCFN	*TAIDONG/Fengnian*	2335	0000	24		
			RPMD	DAVAO/Francisco Bangoy Intl			24		

Table B : Collection and Dissemination of TAF (FT) Bulletins									
1 ROC		2 TAF Bulletin						3 Dissemination	
Name	CCCC	BUL No.	CCCC	Aerodrome	Filing time	Start of validity	TAF validity	RODB/ROC	AFTN address
			RPLB	SUBIC BAY/Intl			24		
			RPLI	LAOAG/Intl			24		
			RPMZ	ZAMBOANGA/Intl			24		
			RPVP	PUERTO PRINCESA/Intl			24		
Incheon	**RKSI**	**FTKO31**	RKSI	INCHEON Intl	0535	0600	30	BANGKOK	VTBBYPYX
			RKSS	GIMPO Intl	1135	1200	30	BRISBANE	YBBBYPYX
			RKPC	JEJU Intl	1735	1800	30	NADI	NFFNYPYX
			RKPK	GIMHAE Intl	2335	0000	30	SINGAPORE	WSZZYPYX
			RKTU	CHEONGJU Intl			30	TOKYO	RJTDYPYX
			RKNY	YANGYANG Intl			30	Hong Kong	VHZZYPYX
			RKTN	DAEGU INTL			30	Karachi	OPZZYPYX
			RKJB	MUAN Intl			30	Wellington	NZZZYPYX
Jakarta	**WIII**	**FTID32**	WAMM	MANADO/Sam Ratulangi	0535	0600	24	BANGKOK	VTBBYPYX
			WIBB	PEKANBARU/Sultan Syarif Kasim II	1135	1200	24	BRISBANE	YBBBYPYX
			WIDN	TANJUNG PINANG/Raja Haji Fisabilillah Int'l	1735	1800	24	NADI	NFFNYPYX
			WIEE	PADANG PARIAMAN/Minangkabau international	2335	0000	24	SINGAPORE	WSZZYPYM
			WIOO	PONTIANAK/Supadio			24	TOKYO	RJTDYPYX
			WIPP	PALEMBANG/Sultan Mahmud Badaruddin II			24	Beijing	ZBBBYPYX
			WAOO	BANJARMASIN/Syamsuddin Noor			24	Hong Kong	VHZZYPYX
			WALL	BALIKPAPAN/Sultan Aji Muhammad Sulaiman Sepinggan			24	Kuala Lumpur	WMZZYPYR
			WADL	PRAYA/Zainuddin Abdul Madjid			24	Wellington	NZZZYPYX
			WITT	BANDA ACEH/Sultan Iskandar Muda			24		
			WAHI	KULON PROGO/Internasional Yogyakarta			24		
		FTID33	WAJJ	JAYAPURA/Sentani	0535	0600	24		
			WAPP	AMBON/Pattimura	1135	1200	24		
			WAHS	SEMARANG/Jenderal Ahmad Yani International	1735	1800	24		
			WILL	BANDAR LAMPUNG/Radin Inten II	2335	0000	24		
			WATT	KUPANG/El Tari			24		
			WAQQ	TARAKAN/Juwata			24		
			WADY	BANYUWANGI/Banyuwangi			24		
			WIMN	SIBORONGBORONG/Raja Sisingamangaraja XII			24		
Karachi	**OPKC**	**FTPK31**	OPKC	KARACHI/Jinnah Intl	0535	0600	30	BANGKOK	VTBBYPYX
			OPIS	Islamabad International Airport	1135	1200	30	BRISBANE	YBBBYPYX
			OPLA	LAHORE/Allama Iqbal Int'l	1735	1800	30	NADI	NFFNYPYX
			OPNH	NAWABSHAH	2335	0000	30	SINGAPORE	WSZZYPYX
			OPPS	PESHAWAR			30	TOKYO	RJTDYPYX
			OPGW	*New Gwadar International Airport*			24	Abu Dhabi	OMZZYPYX
			OPSK	SUKKAR			24	Bahrain	OBZZYPYX
			OPMT	Multan			24	Beijing	ZBBBYPYX
			OPST	*Sialkot*			24	Beirut	OLLLYPYX
			OPFA	Faisalabad			24	Hong Kong	VHZZYPYX
								Jeddah	OEJDYPYX
								Karachi	OPZZYPYX
								Tehran	OIIIYPYX
Mumbai	**VABB**	**FTIN31**	VAAH	AHMEDABAD	0535	0600	30	BANGKOK	VTBBYPYX
			VABB	MUMBAI/Chhatrapati Shivaji Intl.	1135	1200	30	BRISBANE	YBBBYPYX
			VANP	NAGPUR	1735	1800	30	NADI	NFFNYPYX

Table B : Collection and Dissemination of TAF (FT) Bulletins									
1 ROC		2 TAF Bulletin						3 Dissemination	
Name	CCCC	BUL No.	CCCC	Aerodrome	Filing time	Start of validity	TAF validity	RODB/ROC	AFTN address
			VOBL	BANGALORE INTL APT	2335	0000	30	SINGAPORE	WSZZYPYX
			VOCB	COIMBATORE			30	TOKYO	RJTDYPYX
			VOCI	COCHIN INTERNATIONAL AIRPORT			30	Abu Dhabi	OMZZYPYX
			VOCL	CALICUT			30	Bahrain	OBZZYPYX
			VOHS	HYDERABAD INTERNATIONAL AIRPORT			30	Beijing	ZBBBYPYX
			VOML	MANGALORE			30	Beirut	OLLLYPYX
			VOMM	CHENNAI			30	Hong Kong	VHZZYPYX
			VOTR	TIRUCHCHIRAPPALLI			30	Jeddah	OEJDYPYX
			VOTV	TRIVANDRUM			30	Karachi	OPZZYPYX
		FTIN32	VIDP	DELHI/Indira Gandhi Intl	0535	0600	30	Tehran	OIIIYPYX
			VEBN	*VARANASI*	1135	1200	30		
			VIAR	AMRITSAR	1735	1800	30		
			VIJP	JAIPUR	2335	0000	30		
			VILK	LUCKNOW			30		
			VIBN	VARANASI/Lal Bahadur Shastri			30		
		FTIN33	VECC	NETAJI SUBHASH CHANDRA BOSE INTERNATIONAL AIRPORT, KOLKATA	0535	0600	30		
			VEPT	PATNA	1135	1200	30		
			VEGY	GAYA	1735	1800	30		
			VEGT	GUWAHATI	2335	0000	30		
		FTSB31	VCBI	BANDARANAIKE INTL AP COLOMBO	0535	0600	30		
			VCRI	MATTALA RAJAPAKSA INTERNATIONAL AIRPORT	1135	1200	30		
			VCCH	HINGURAKGODA/MINNERIYA	1735	1800	30		
					2335	0000			
		FTMV31	VRMG	GAN INTERNATIONAL AIRPORT	0535	0600	30		
			VRMH	HANIMAADHOO INTERNATIONAL AIRPORT	1135	1200	30		
			VRMM	MALE INTERNATIONAL AIRPORT	1735	1800	30		
					2335	0000			
Kolkata	**VECC**	**FTBW31**	VGEG	M.A. HANNAN INTL. CHITTAGONG	0535	0600	30		
			VGHS	HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	1135	1200	30		
			VGSY	OSMANI INTERNATIONAL AIRPORT,SYLHET	1735	1800	30		
					2335	0000			
		FTAS31	VNKT	KATHMANDU	0535	0600	30		
			VQPR	PARO/Intl.	1135	1200	30		
					1735	1800			
					2335	0000			
Nadi	**NFFN**	**FTPS31**	NCRG	RAROTONGA INTL.	0535	0600	24	BANGKOK	VTBBYPYX
			NFFN	NADI/Intl	1135	1200	24	BRISBANE	YBBBYPYX
			NFTF	FUA'AMOTU INTL.	1735	1800	24	NADI	NFFNYPYX
			NFTV	VAVA'U	2335	0000	24	SINGAPORE	WSZZYPYX
			NGFU	FUNAFUTI/Intl			24	TOKYO	RJTDYPYX
			NGTA	TARAWA/Bonriki Intl			24	Hong Kong	VHZZYPYX
			NIUE	NIUE Intl			24	Wellington	NZZZYPYX
			NVSS	SANTO/Pekoa			24		
			NVVV	PORT VILA/Bauerfield			24		
			PLCH	CHRISTMAS ISLAND			24		
			NFNA	NAUSOR/Intl			24		

Table B : Collection and Dissemination of TAF (FT) Bulletins									
1 ROC		2 TAF Bulletin						3 Dissemination	
Name	CCCC	BUL No.	CCCC	Aerodrome	Filing time	Start of validity	TAF validity	RODB/ROC	AFTN address
			NSFA	FALEOLO/Intl			24		
		FTPS32	NLWW	WALLIS HIHIFO			24		
			NWWW	NOUMEA LA TANTOUTA			24		
		FTPS33	NTAA	TAHITI FAAA			24		
Singapore	WSSS	FTSR31	WSSS	SINGAPORE/Changi	0535	0600	30	BANGKOK	VTBBYPYX
			WSAP	PAYA LEBAR (RSAF)	1135	1200	30	BRISBANE	YBBBYPYX
			WSSL	SELETAR	1735	1800	30	NADI	NFFNYPYX
			WAAA	MAKASSAR-/Sultan Hasanuddin	2335	0000	30	SINGAPORE	WSZZYPYX
			WABB	BIAK/Frans Kaisiepo			30	TOKYO	RJTDYPYX
			WADD	BALI/I Gusti Ngurah Rai			24 (30)	Abu Dhabi	OMZZYPYX
			WARR	SURABAYA/Juanda			24	Bahrain	OBZZYPYX
			WIHH	JAKARTA/Halimperdana Kusuma			24	Beijing	ZBBBYPYX
			WIII	JAKARTA/Soekarno Hatta (COMM CENTER)			30	Beirut	OLLLYPYX
			WIMM	MEDAN/Kualanamu			24	Colombo	VCCCYPYX
								Hong Kong	VHZZYPYX
								Karachi	OPZZYPYX
								Manila	RPLLYPYX
								Mumbai	VABBYPYX
								Incheon	RKSIYPYX
								Tehran	OIIIYPYX
								Wellington	NZZZYPYX
		FTSR32	WMKJ	JOHOR BAHRU/Sultan Ismail	0535	0600	24	BANGKOK	VTBBYPYX
			WMKK	SEPANG/KL International Airport	1135	1200	30	BRISBANE	YBBBYPYX
			WMKL	PULAU LANGKAWI/Intl	1735	1800	24	NADI	NFFNYPYX
			WMKM	MALACCA	2335	0000	24	SINGAPORE	WSZZYPYX
			WMKP	PENANG/Intl			24	TOKYO	RJTDYPYX
			WMSA	SUBANG/Sultan Abdul Aziz Shah			24 (30)	Beirut	OLLLYPYX
			WMKD	KUANTAN			24	Hong Kong	VHZZYPYX
		FTSR33	WBSB	BRUNEI/Intl	0535	0600	30	Manila	RPLLYMYX
			WBGB	*BINTULU*	1135	1200	24	Mumbai	VABBYPYX
			WBGG	KUCHING/Intl	1735	1800	24	Wellington	NZZZYPYX
			WBGR	MIRI	2335	0000	24		
			WBGS	SIBU			24		
			WBKK	KOTA KINABALU/Intl			24		
			WBKL	LABUAN (RMAF)			24		
			WBKS	SANDAKAN			24		
			WBKW	TAWAU			24		
Tokyo	RJTD	FTJP31	RJAA	NARITA Intl	0525	0600	30	BANGKOK	VTBBYPYX
			RJBB	KANSAI Intl	1125	1200	30	BRISBANE	YBBBYPYX
			RJCH	HAKODATE	1725	1800	30	NADI	NFFNYPYX
			RJGG	CHUBU CENTRAIR Intl	2325	0000	30	SINGAPORE	WSZZYPYX
			RJOO	OSAKA Intl			30	TOKYO	RJTDYPYX
			RJSS	SENDAI			30	Beijing	ZBBBYPYX
			RJTT	TOKYO Intl			30	Beirut	OLLLYPYX
			ROAH	NAHA			30	Brasilia	SBBRYZYX
								Colombo	VCBIYMYX
								Guam	PGUMCOAX
								Hong Kong	VHZZYPYX
								Karachi	OPZZYPYX

Table B : Collection and Dissemination of TAF (FT) Bulletins									
1 ROC		2 TAF Bulletin						3 Dissemination	
Name	CCCC	BUL No.	CCCC	Aerodrome	Filing time	Start of validity	TAF validity	RODB/ROC	AFTN address
								London	EGZZMASI
								Mumbai	VABBYPYX
								Noumea	NWCCYMYX
								Rome	LIIBYMYX
								Saipan	PGSNYMYX
								Incheon	RKSIYPYX
								Washington	KWBCYMYX
								Wellington	NZZZYPYX
		FTJP32	RJCC	SAPPORO/New Chitose	0525	0600	30	BANGKOK	VTBBYPYX
			RJFF	FUKUOKA/Fukuoka	1125	1200	30	BRISBANE	YBBBYPYX
			RJFK	KAGOSHIMA	1725	1800	30	NADI	NFFNYPYX
			RJFO	OITA	2325	0000	30	SINGAPORE	WSZZYPYX
			RJFT	KUMAMOTO			30	TOKYO	RJTDYPYX
			RJFU	NAGASAKI			30	Beijing	ZBBBYPYX
			RJNK	*KANAZAWA/Komatsu*			30	Beirut	OLLLYPYX
			RJNT	*TOYAMA*			30	Brasilia	SBBRYZYX
			RJOA	HIROSHIMA			30	Colombo	VCBIYMYX
			RJOB	OKAYAMA			30	Guam	PGUMCOAX
			RJOT	TAKAMATSU			30	Hong Kong	VHZZYPYX
			RJSN	NIIGATA			30	Incheon	RKSIYPYX
								Karachi	OPZZYPYX
								London	EGZZMASI
								Mumbai	VABBYPYX
								Noumea	NWCCYMYX
								Saipan	PGSNYMYX
								Washington	KWBCYMYX
								Wellington	NZZZYPYX
		FTJP38	RJSA	AOMORI	0525	0600	30	BANGKOK	VTBBYPYX
			RJSF	FUKUSHIMA	1125	1200	30	BRISBANE	YBBBYPYX
			RJSK	AKITA	1725	1800	30	NADI	NFFNYPYX
			RJOM	MATSUYAMA	2325	0000	30	SINGAPORE	WSZZYPYX
			RJNS	SHIZUOKA			30	TOKYO	RJTDYPYX
			RJEC	ASAHIKAWA (civil)			30	Beijing	ZBBBYPYX
			RJAH	*HYAKURI*			30	Incheon	RKSIYPYX
			RJCM	*MEMANBETSU*			30		
			RJCK	KUSHIRO			30		
			RJCB	*OBIHIRO*			30		
			RJOC	*IZUMO*			30		
			RJOH	*MIHO*			30		
			RJOK	*KOCHI*			30		
			RJFM	MIYAZAKI			30		
			ROIG	NEW ISHIGAKI			30		
			RJFR	KITAKYUSHU			30		
			RJFS	SAGA			30		
			RJSI	HANAMAKI			30		
Wellington	**NZKL**	**FTNZ31**	NZAA	AUCKLAND Intl	0235	0300	30*	BANGKOK	VTBBYPYX
			NZCH	CHRISTCHURCH Intl	0535	0600	30*	BRISBANE	YBBBYPYX
			NZWN	WELLINGTON Intl	0835	0900	30*	NADI	NFFNYPYX
					1135	1200		SINGAPORE	WSZZYPYX
					1435	1500		TOKYO	RJTDYPYX

Table B : Collection and Dissemination of TAF (FT) Bulletins									
1 ROC		2 TAF Bulletin						3 Dissemination	
Name	**CCCC**	**BUL No.**	**CCCC**	**Aerodrome**	**Filing time**	**Start of validity**	**TAF validity**	**RODB/ROC**	**AFTN address**
					1735 2035 2335	1800 2100 0000		Beijing Hong Kong	ZBBBYPYX VHZZYPYX
				** For validities starting at 0300, 0900, 1500 and 2100, all TAFs will have a validity 3 hours shorter than indicated.*					
		FTNZ32	NZQN	Queenstown	1130 1730	1200 1800	18		

— END OF SECTION —

APPENDIX C — IROG Back-up Procedures

1. Introduction

1.1 In order to ensure the continuity of OPMET exchange with the European Region (EUR), and the availability of the ASIA/PAC OPMET on the SADIS Gateway, Bangkok RODB will take over the role of the Singapore RODB whenever an operational interruption occurs at the Singapore RODB.

1.2 Both RODBs, in coordination with the Secretariat and London IROG, should perform a real-time test of the procedures in order to practice and maintain regularity and currency in the event of an outage affecting OPMET exchange with EUR.

1.3 The Bangkok and Singapore RODBs have developed a mutual back-up arrangement that includes procedures for undertaking a back-up test.

2. Purpose

2.1 The purpose of the back-up test is to validate the dissemination process for notification messages between IROGs and ensure that the Procedures for handover and takeover of responsibility are functional.

3. Procedures

3.1 Singapore IROG provides the ASIA/PAC OPMET bulletins information to Bangkok IROG to establish the back-up distribution arrangement. Both IROGs are responsible for updating the distribution list as and when required.

3.2 To activate the back-up plan, both IROGs will communicate through facsimile and email.

3.3 Bangkok IROG will provide the contact points information and periodically update if required.

3.4 Both IROGs will review the back-up procedures and identify areas for improvement.

4. Real-time Back-up Test Procedure

4.1 As the back-up test and monitoring could consume considerable resources, both IROGs have agreed to monitor a list of selected ASIA/PAC OPMET bulletins. IROG back-up procedures are to be tested at least annually and will normally be of 6 hours duration, between 0200 and 0800 UTC.

4.2 Communication test

4.2.1 The communication test between the IROGs should be conducted through facsimile and email and advised two days before the test.

4.3 Real-time back-up exercise

4.3.1 On the day of exercise, Singapore IROG shall inform Bangkok IROG to take over its role when it stops sending the selected OPMET messages on the AFTN.

4.3.2 Bangkok IROG shall acknowledge the notification messages and start relaying Asia Pac OPMET Information to WAFC, London.

4.3.3 Both IROGs shall record the reception and transmission of the monitored OPMET bulletins during the exercise.

4.3.4 At the end of back-up test, both IROGs shall resume message switching as per normal after exercising stand-down procedures.

5. Assessment

5.1 Both IROGs shall evaluate the monitoring result and address the following issues during the ROBEX WG meeting:

(i) Monitoring result in terms of message throughput (comparison of the percentage of messages received against messages relayed);
(ii) Transit time of the relayed messages;
(iii) Undertake the necessary follow-up of issues that arose from the exercise; and
(iv) Verify and develop existing procedures.

— END OF SECTION —

APPENDIX D — Use of WMO Abbreviated Heading

(For use in ROBEX Messages and Bulletins)

1. Each ROBEX bulletin should have a WMO abbreviated heading in accordance with *WMO No. 386, Manual on the Global Telecommunication System, Part II – Operational Procedures for the GTS*. The symbolic form of the WMO abbreviated heading is as follows:

$T_1T_2A_1A_2$ii CCCC YYGGgg (BBB)

2. Explanation of the symbols

2.1. **$T_1T_2A_1A_2$ii** – this group is used in accordance with *WMO No. 386, Manual on the Global Telecommunication System, Part II – Operational Procedures for the GTS, Attachment II-5*.

2.1.1. **T_1T_2** - Data type designator, used for OPMET data as follows:

Data type	Abbreviated name	WMO data type designator	
		TAC	IWXXM
Aerodrome reports	METAR SPECI	SA SP	LA LP
Aerodrome forecasts	TAF: 12 to 30 hour	FT	LT
SIGMET information	SIGMET SIGMET for TC SIGMET for VA	WS WC WV	LS LY LV
AIRMET information	AIRMET	WA	LW
Volcanic Ash and Tropical Cyclone Advisories	Volcanic Ash Advisory Tropical Cyclone Advisory	FV FK	LU LK
Air-reports	AIREP SPECIAL (ARS)	UA	N/A
Space Weather Advisory	SWX Advisory	FN	LN
Administrative	METNO	NO	N/A

Note: IATA TAF requirements in the ASIA/PAC region are for TAF validity of either 24 or 30 hours. Some States issue 12- and 18-hour TAFs, which do not meet requirements but are nevertheless classified as FT for the WMO data type designator.

2.1.2. **A_1A_2** - Geographical designator, composed of two letters, according to WMO No. 386, Manual on the Global Telecommunication System, Part II – Operational Procedures for the GTS, Attachment II-5, Table C1. The following principles shall apply:

a) For ROBEX bulletins containing OPMET data from a single State or territory, the A_1A_2 designator should be chosen from Table C1, Part I – Country or territory designator;

b) For ROBEX bulletins containing OPMET data from more than one State or territory, a suitable A_1A_2 designator should be chosen from Table C1, Part II – Area Designators;

c) For ROBEX bulletins containing SWX Advisories from the designated SWXCs, the A_1A_2 designator XX is used (see also, paragraph 2.3.).

2.1.3. **ii** - series number of the bulletin. It shall be a number with two digits used to differentiate two or more bulletins with the same TTAA issued by an originator or a compiler of bulletins. "ii" will be unique to each bulletin.

2.1.3.1 The assignment of "ii" to bulletins should be selected from within the following sets:

ii = 01-19 inclusive for global distribution
ii = 20-39 inclusive for regional and inter-regional distribution
ii = 40-89 inclusive for national and bilaterally agreed distribution

2.1.3.2 For most of the ROBEX bulletins, "ii" should be selected from the set "20 – 39". In the case of METAR/TAF bulletins, ROCs issuing only one bulletin should use "31", whilst ROCs issuing more than one bulletin should use "31", "32", etc.

2.1.3.3 For ROBEX bulletins containing SWX Advisories from the designated SWXCs, the ii designators used are based on each impact type as follows (see also, paragraph 2.3.):

ii = 01 for GNSS;
ii = 02 for HF COM;
ii = 03 for Radiation; and
ii = 04 for SATCOM.

2.2. **CCCC** – ICAO location indicator, according to Location Indicators, ICAO Doc 7910, of the ROBEX centre preparing the ROBEX Bulletin, or of the originator (e.g., aeronautical meteorological station, aerodrome meteorological office or NOC).

2.3. For ROBEX bulletins containing SWX Advisories from the designated SWXCs, the **$T_1T_2A_1A_2$ii CCCC** designators used, based on SWX impact type [ii], SWXC originator location indicator [CCCC], and data type/message form [T_1T_2], are as follows:

SWXC	SWX impact	$T_1T_2A_1A_2$ii CCCC	
		TAC form	IWXXM form
ACFJ – Australia	GNSS	FNXX01 YMMC	LNXX01 YMMC
	HF COM	FNXX02 YMMC	LNXX02 YMMC
	RADIATION	FNXX03 YMMC	LNXX03 YMMC
	SATCOM	FNXX04 YMMC	LNXX04 YMMC
ACFJ – France	GNSS	FNXX01 LFPW	LNXX01 LFPW

SWXC	SWX impact	$T_1T_2A_1A_2ii$ CCCC	
		TAC form	IWXXM form
	HF COM	FNXX02 LFPW	LNXX02 LFPW
	RADIATION	FNXX03 LFPW	LNXX03 LFPW
	SATCOM	FNXX04 LFPW	LNXX04 LFPW
CRC – China	GNSS	FNXX01 ZBBB	LNXX01 ZBBB
	HF COM	FNXX02 ZBBB	LNXX02 ZBBB
	RADIATION	FNXX03 ZBBB	LNXX03 ZBBB
	SATCOM	FNXX04 ZBBB	LNXX04 ZBBB
CRC – Russian Federation	GNSS	FNXX01 UUAG	LNXX01 UUAG
	HF COM	FNXX02 UUAG	LNXX02 UUAG
	RADIATION	FNXX03 UUAG	LNXX03 UUAG
	SATCOM	FNXX04 UUAG	LNXX04 UUAG
PECASUS – Finland	GNSS	FNXX01 EFKL	LNXX01 EFKL
	HF COM	FNXX02 EFKL	LNXX02 EFKL
	RADIATION	FNXX03 EFKL	LNXX03 EFKL
	SATCOM	FNXX04 EFKL	LNXX04 EFKL
PECASUS – United Kingdom	GNSS	FNXX01 EGRR	LNXX01 EGRR
	HF COM	FNXX02 EGRR	LNXX02 EGRR
	RADIATION	FNXX03 EGRR	LNXX03 EGRR
	SATCOM	FNXX04 EGRR	LNXX04 EGRR
United States	GNSS	FNXX01 KWNP	LNXX01 KWNP
	HF COM	FNXX02 KWNP	LNXX02 KWNP
	RADIATION	FNXX03 KWNP	LNXX03 KWNP
	SATCOM	FNXX04 KWNP	LNXX04 KWNP

2.4. **YYGGgg –** Date-time group as follows:

2.4.1. YY – Day of the month.

2.4.2. GGgg – Hours and minutes:

- For METAR bulletins: the standard time of observation in UTC.
- For TAF bulletins: the full hour in UTC (the last two digits shall be 00) preceding the transmission time.
- For all other bulletin/messages: the time of compilation in UTC.

2.5. **BBB –** Optional group indicating an amended, corrected or delayed bulletin.

2.5.1. An abbreviated heading defined by TTAAii CCCC YYGGgg shall be used only once. Consequently, if this abbreviated heading has to be used again for an addition, a correction or an amendment, it is mandatory to add an appropriate BBB indicator, which shall be added after the date-time group. The indicator BBB shall be used as follows:

- RRx - for delayed routine meteorological messages/bulletins, and for segmenting a large set of information into several bulletins;
- CCx - for corrections to previously relayed messages/bulletins;

- AAx - for amendments to TAF messages/bulletins;

The "x" above is an alphabetic character of A through X, indicating the sequential number of the irregular bulletin of a certain type. For instance, for amended TAFs, AAA is used for the first amendment, AAB for the second, AAC for the third, etc.; for delayed METARs or TAFs, RRA is used for the first delayed message, RRB for the second, etc.; and, for corrections to any OPMET bulletin, CCA is used for the first correction, CCB for the second, etc.

2.5.2. The current limitation of the AFTN regarding the length of the bulletins is up to 1800 characters (note that the WMO Header and spaces are counted as characters). Bulletins longer than this will be split into two parts; in such a case, the optional group RRx is used for additional or subsequent issuances of messages with the same abbreviated heading line, including the YYGGgg regardless of whether these reports are on time, late or delayed. In the ASIA/PAC Region, RRA is used for the second part of a split bulletin. An example of a split bulletin using RRA is shown below.

Example

First Part

GG WSSSYMYX
171000 VABBYMYX
FTIN32 VABB 170900
TAF VCBI 170940Z 1712/1812 23012KT 9999 SCT016 TX30/1808Z
TN27/1723Z TEMPO 1714/1718 7000 -SHRA FEW010 SCT016
TEMPO 1723/1802 7000 -SHRA SCT010 BKN016=
TAF VNKT 170900Z NIL=
TAF VOCI 170900Z 1712/1818 29005KT 4000 -RA/HZ SCT015 SCT020 FEW025CB BKN100 BECMG 1716/1717 3000 -RA/HZ TEMPO 1712/1721 1500 TSRA/SHRA SCT008 SCT012 FEW025CB OVC080 BECMG 1804/1805 30005KT 4000 HZ BECMG 1806/1807 27010KT 5000 -RA/HZ TEMPO 1809/1815 1500 TSRA/SHRA SCT008 SCT012 FEW025CB OVC080 BECMG 1816/1817 3000 HZ=
TAF VOCL 170900Z 1712/1818 33005KT 4000 -RA/HZ SCT015 SCT020 FEW025CB BKN100 BECMG 1716/1717 3000 -RA/HZ TEMPO 1712/1721 2000 TSRA/SHRA SCT008 SCT012 FEW025CB OVC080 BECMG 1804/1805 35005KT 5000 HZ BECMG 1806/1807 32010KT 5000 -RA/HZ TEMPO 1809/1815 2000 TSRA/SHRA SCT008 SCT012 FEW025CB OVC080 BECMG 1816/1817 3000 HZ=
TAF VOHS 170900Z 1712/1818 27010G20KT 6000 SCT020 SCT100 TEMPO 1712/1718 3000 -TSRA/RA SCT015 FEW025CB BKN080 TEMPO 1721/1803 3000 -TSRA/RA/HZ SCT015 FEW025CB BKN080 TEMPO 1809/1818 3000 -TSRA/RA SCT015 FEW025CB BKN080=
TAF VOHY 170900Z NIL=
TAF VOMM 170900Z 1712/1818 17010KT 6000 SCT020 BKN100 TEMPO
1712/1718 SCT015 FEW025CB BKN100 BECMG 1720/1721 21010KT SCT020 BECMG 1803/1804 27010KT 8000 FEW020 SCT100 BECMG 1810/1811 13010KT TEMPO 1812/1815 SCT015 FEW025CB BKN100 BECMG 1813/1814 6000=

TAF VOTR 170900Z 1712/1818 27010KT 6000 SCT020 SCT100 TEMPO 1712/1715 SCT015 FEW025CB BKN100 BECMG 1716/1717 33005KT FEW020 BECMG 1803/1804 27010G20KT 8000 FEW020 SCT250 BECMG 1812/1813 27005KT 6000 TEMPO 1812/1815 SCT015 FEW025CB BKN100=

Second Part

GG WSSSYMYX
171000 VABBYMYX
FTIN31 VABB 170900 **RRA**
TAF VIJP 170900Z 1712/1818 28006KT 4000 HZ FEW030 BECMG 1803/1805 29005G15KT 3000 HZ FEW030 SCT100 TEMPO 1712/1716 FEW030CB=
TAF VILK 170900Z 1712/1721 34005KT 6000 NSC BEC 1716/1718 VRB02KT 5000 HZ=

— END OF SECTION —

APPENDIX E — Procedure and Format of METNO bulletin for APAC ROBEX Bulletins

1. METNO Procedure – General rules

1.1. Modification requests to the production of national OPMET-data shall be reported by the NOC (National OPMET Centre) to the Regional OPMET Centre (ROC). The ROC then forwards the requests to the regional Focal point (FP) or regional Team for publication, evaluation and FP processing accepted changes.

1.1.1. The regional FP or regional Team verifies the conformity of the change proposal against ICAO DOC 7910 (only registered Location Indicators can be accepted), ANP Volume II – MET tables, WMO No. 386 documents, and the syntax conforms to the METNO procedure. Implementation of IWXXM data: no IWXXM without TAC will be accepted. In addition, separated bulletins will be produced for AOP airport and agreed exchanged non-AOP airports OPMET data.

1.2. Modification requests for an upcoming AIRAC date have to be sent at the latest by the preceding AIRAC date. This will guarantee that all subsequent steps can be performed in time. For planning purposes, modification requests should be provided well in advance (between 30 and 60 days before the AIRAC date) to allow full assessment by the regional FP (or regional group in charge of OPMET) and to provide confirmation to the originator that all changes will be made at the required date.

1.3. The regional FP will summarize all requests and present those via email to the regional group in charge of OPMET at the latest seven days after the preceding AIRAC date.

1.4. The regional group members will review the requests and shall communicate any comments to the FP at the latest 14 days after the preceding (14 days before the upcoming) AIRAC date. Nil comments shall be considered as a positive response.

1.5. At 21 days after the preceding (7 days before the upcoming) AIRAC date, the FP shall announce the list of accepted amendments to the ICAO Regional Office, the NOCs by means of a standard formatted METNO message for routine meteorological information sent via Aeronautical Fixed Service (AFS - SADIS and WIFS by their regional associated ROC).

1.6. The involved NOCs, in turn, shall notify users in their State about their requested modifications.

1.7. In addition, regional contacts (as agreed during regional MET meetings) will receive a confirmation by email. Motivated subscription to (or to unsubscribe from) the METNO Bulletins can be submitted via the regional MET Group or directly by utilizing the contact form provided on the regional Website (where available).

1.8. The modifications shall be implemented by all affected centres on AIRAC date, at 02:00 UTC or when a new bulletin header is created, on opening hours the day before the implementation date.

1.9. The AIRAC OPMET data updates shall be applied by: The ROCs and IROGs for routing the current OPMET data in accordance with the regional dissemination Schema.

1.10. In order to avoid difficulties in processing OPMET Data modifications during major holidays, it can be decided to skip a particular AIRAC Cycle occurring in these periods.

1.11. For urgent modification, it can be decided with the explicit agreement of the regional METNO focal point/regional team to proceed more quickly by a deviation to the normal schedule. The FP/regional team will compile AIRAC METNO, or EXTRA METNO for intermediate updates with immediate implementation of new or expiring bulletins.

1.12. Key issues to be considered for the management of AFS data traffic volumes are:

- Avoid data duplication
- Authenticated data only
- ANP required data (AOP)
- Agreed exchanged Non-AOP data

1.13. Standardized Regional OPMET Data Catalogues, including METNO-registered data, can be compiled from the database of METNO-registered OPMET data: TAC & IWXXM, on AFS:

- Regional OPMET Database (RODB) catalogue
- Regional and Global OPMET data catalogues

2. Format and Content of the METNO-message

2.1. The METNO Syntax: The syntax of a METNO statement is presented hereafter. It may also include the list of AFS addressees actually used as well as examples for the various OPMET data update METNO statements.

2.2. The METNO Header: The header of the METNO bulletin is NOXX31 CCCC YYGGgg, where:

- XX is a general area designator (example: EU for EUR, AF for AFI …)
- CCCC is the AFTN location indicator of the regional FP Centre (example: EBBR for EUR)

2.3. The METNO statements for registration and updating of OPMET / IWXXM data are:

- ADDRPT/RMVRPT: for adding/removing Routine OPMET data in an already registered bulletin
- NEWBUL/DELBUL: for registering a new/unregistering an expiring (Non-)Routine OPMET bulletin and its contained data

2.3.1. ADDRPT

2.3.1.1. This statement is used when a new location indicator is added to an already registered bulletin. It can be used in combination with METAR or TAF bulletins.

2.3.1.2. Adding TAC-formatted METARs/TAFs to a registered bulletin does not automatically register the IWXXM equivalent data. TAC data can exist without an IWXXM until November 2020.

2.3.1.3. Adding IWXXM METARs/TAFs to a registered bulletin will, by default, result in adding the equivalent TAC METARs/TAFs for their parallel distribution. There can be no IWXXM data without any equivalent TAC-formatted version of the data.

2.3.2. RMVRPT

2.3.2.1. This statement is used for METARs/TAFs planned to be removed from an already registered bulletin. Removed reports can possibly be registered for all locations in other existing or in newly registered bulletins.

2.3.2.2. Removing TAC-formatted METARs/TAFs from a registered bulletin will also remove the equivalent IWXXM data from the OPMET data register in case it has already been registered. There is no IWXXM data without equivalent TAC-formatted data.

2.3.2.3. Removing IWXXM METARs/TAFs will by default result in removing equivalent TAC METARs/TAFs from the OPMET data register. If the TAC data need to be continued, it has to be re-registered explicitly, using ADDRPT.

2.3.3. NEWBUL

2.3.3.1. This statement is used for the registration of a new bulletin. It can be used for all supported data.

2.3.3.2. The registration of a new IWXXM bulletin by default implies the introduction of the TAC equivalent.

2.3.4. DELBUL

2.3.4.1. This statement is used for the deletion of a registered bulletin. It can be used for all supported data types.

2.3.4.2. The deletion of a registered IWXXM bulletin automatically implies the deletion of the TAC equivalent. TAC equivalents that are meant to be continued have to be re-introduced explicitly by applying NEWBUL.

2.3.4.3. Deletion of a TAC OPMET bulletin, by default, also deletes the IWXXM equivalent.

3. METNO Focal Point – Prerequisites and Actions

3.1. The Focal Point (FP)/regional group prerequisites are:

- Generic email address (including FP persons and backups)
- AFS connection address
- Access to ICAO references (documents and Regional contacts)
- Data management software for processing basic lists of METNO-registered data to be shared inter-regionally in standardized international data formats (*.csv, *.txt)

3.2. The FP/regional group receives update requests any time by email:

- Preferably via ROC, but also from NOCs
- After authentication, sort updates based on the suggested implementation date (AIRAC if no date proposed)
- Compiles AIRAC METNO or EXTRA METNO for intermediate updates with immediate implementation of new or expiring bulletins

3.3. Forward requests for ANP additional OPMET data via email to the Regional ICAO Office contact.

3.4. Co-ordination and evaluation of received update requests via email.

3.5. Compilation of AIRAC / EXTRA METNO bulletin for distribution to regional ROCs / IROGs.

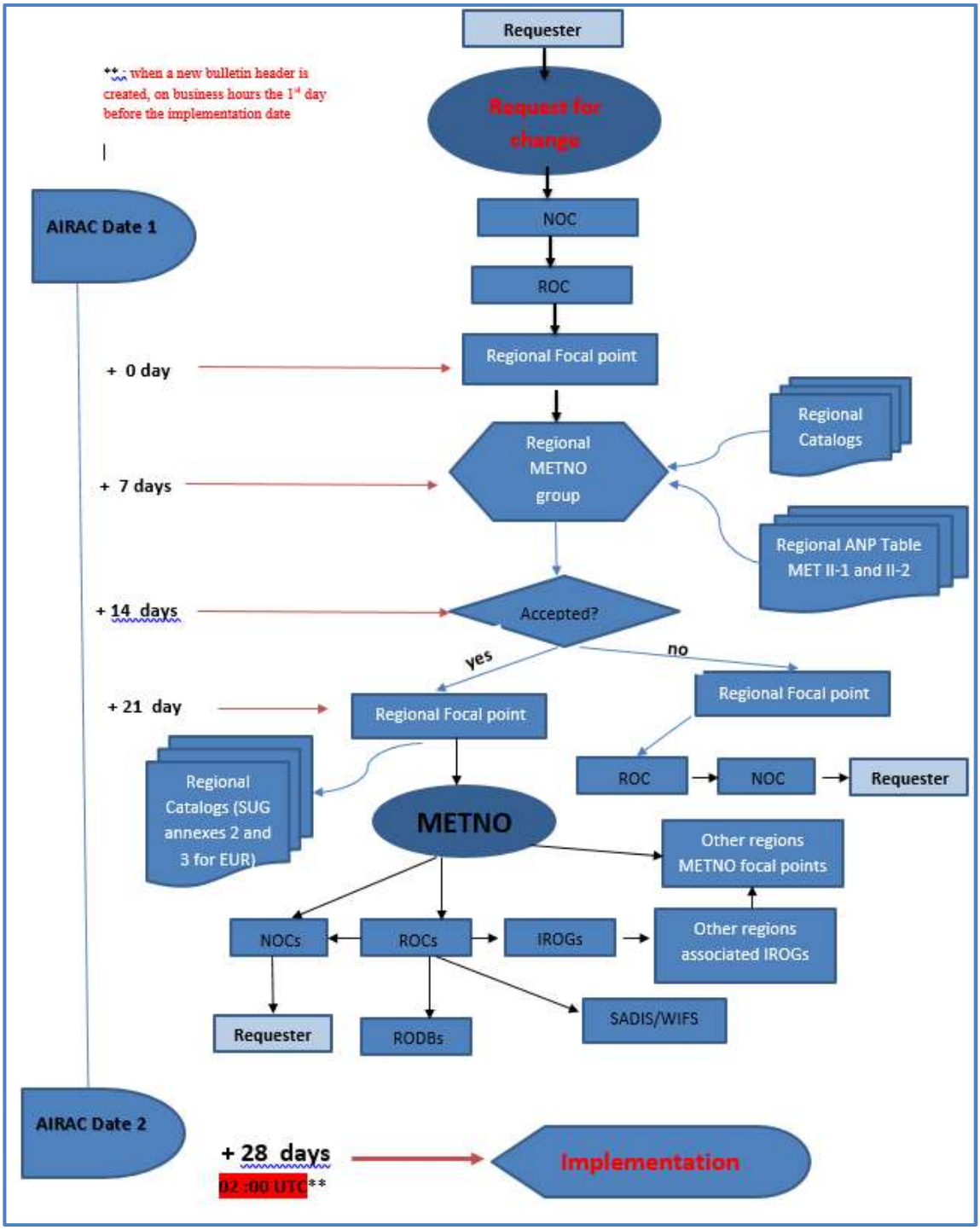
3.6. Maintenance of regional METNOs and registered OPMET data.

3.7. Reports to OPMET regional group.

3.8. Facilitates OPMET data monitoring.

3.9. The regional focal point and team for management of the METNO process would include the relevant ICAO Regional Officer and ROBEX Focal Points from Australia, Hong Kong, China, Japan and Singapore.

4. METNO Process Diagram



— END OF SECTION —

APPENDIX F — OPMET Quality Control and Monitoring Procedures

1 Quality Control Procedures

1.1 *OPMET Data Validation*

1.1.1 The ROCs and RODBs should not modify the content of the meteorological data, e.g. visibility, QNH etc., but only items contained in the WMO bulletin headings, such as location indicators or observation times.

1.1.2 WMO Abbreviated Heading (TTAAii CCCC YYGGgg BBB) Validation

TT	Message Type; shall comprise two alphabetical characters
AA	Location Indicator; shall comprise two alphabetical characters
ii	comprise two digits, from 01 to 99
CCCC	A 4-letter ICAO location indicator shall comprise four alphabetical characters.
YYGGgg	The date-time group of the bulletin shall be configured to validate it with the current time
BBB	BBB is an optional group. The use of the BBB group shall comply with the rules in the WMO abbreviated heading in regard to delayed, corrected and amended bulletins.

Examples	After QC check
METAR with incorrect YYGGgg: SABM31 VYMD 100830 **UTC** VYMD 100830Z 18005KT 8000 FEW025 31/18 Q1000 =	 SABM31 VYMD **100830** VYMD 100830Z 18005KT 8000 FEW025 31/18 Q1000 =
TAF without AHL: 112324 WIDDYMYX TAF WIDD 112324Z 1200/1224 00000KT 4000 RA BKNT017 BECMG 1203/1205 20010KT 9000 SCT017=	 **FTID31 WIDD 112300** TAF WIDD 112324Z 1200/1224 00000KT 4000 RA BKNT017 BECMG 1203/1205 20010KT 9000 SCT017=
TAF with invalid BBB: FTBN31 OBBI 030525 **AMD** TAF AMD OBBI 030525Z 0306/0406 16010KT CAVOK BECMG 0308/0312 33017KT 5000 PROB30 TEMPO 0308/0314 0800 DU=	 FTBN31 OBBI 030525 **AAA** TAF AMD OBBI 030525Z 0306/0406 16010KT CAVOK BECMG 0308/0312 33017KT 5000 PROB30 TEMPO 0308/0314 0800 DU=

1.1.3 METAR/SPECI Validation

For each individual METAR or SPECI within a bulletin, the following additional fields shall be validated:

Prefix checks	METAR METAR COR SPECI SPECI COR	SA SA SP SP
Observation Time YYGGggZ	The report shall have a valid date and time of observation, including the character 'Z'. In a SPECI bulletin, this group will be the same as (or very close to) the YYGGgg, part of the abbreviated bulletin heading.	
End-of-message format "=""	Each METAR or SPECI report shall be terminated by the "=" character.	

Examples:	After QC check
METAR with Observation Time error: SAPK31 OPKC **030159** RRA OPKC **030200** 26004 8000 BKN020 27/23 Q1007 NOSIG=	 SAPK31 OPKC **030200** RRA OPKC **030200** 26004 8000 BKN020 27/23 Q1007 NOSIG=
METAR with mistyped observation time: SAID31 WADD **120100** METAR WADD **121000Z** 17004KT 9999 FEW018CB SCT120 BKN300 28/26 Q1005=	 SAXX31 WADD **120100** METAR WADD **120100Z** 17004KT 9999 FEW018CB SCT120 BKN300 28/26 Q1005=
SPECI with incorrect Message Type, TT: **SANZ31** NZKL 040000 **SPECI** NZWP 040000Z 17005KT 010V240 25KM FEW020 FEW020CB SCT035 BKN050 18/15 Q1018 NOSIG=	 **SPNZ31** NZKL 040000 AAA **SPECI** NZWP 040000Z 17005KT 010V240 25KM FEW020 FEW020CB SCT035 BKN050 18/15 Q1018 NOSIG=

1.1.4 TAF Validation

For each individual TAF within a bulletin, the following additional items shall be validated:

Prefix checks	TAF TAF COR TAF AMD	FT or FC FT or FC FT or FC
Issue Time YYGGggZ	If the field is included, it shall have a valid date and time of origin of the forecast, including 'Z'.	
Validity $Y_1Y_1G_1G_1/Y_2Y_2G_2G_2$	Some TAFs are still produced with a 4-digit validity period. These shall be corrected by inserting a date consistent with the current date and the date-time group of the bulletin header. If a TAF is received without a validity period, it shall be discarded.	
End-of-Message format "=""	Each forecast shall be terminated by the "=" character.	

Examples:	After QC check
TAF with issue time error (wrong date): FCID31 WIII 181630 TAF WIII **041630Z** 0418/0503 00000KT 9000 FEW025 BECMG 0422/0424 16005KT=	 FCID31 WIII 181630 TAF WIII **181630Z** 0418/0503 00000KT 9000 FEW025 BECMG 0422/0424 16005KT=
TAF with mistyped Validity Period: FTPH31 RPLL 132200 TAF RPLC 132200Z **1400/1428** 04006KT 9999 SCT036 BKN300 TEMPO 1400/1406 02010KT 5000 –SHRA FEW020 BKN270 TX32/1405Z TN22/1421Z=	 FTPH31 RPLL 132200 TAF RPLC 132200Z **1400/1424** 04006KT 9999 SCT036 BKN300 TEMPO 1400/1406 02010KT 5000 –SHRA FEW020 BKN270 TX32/1405Z TN22/1421Z=
TAF with Validity error (wrong date): FCMS33 WMKK 170748 TAF WMKK 170700Z **3009/3018** 30005KT 9999 FEW017CB SCT140 BKN270=	 FCMS33 WMKK 170748 TAF WMKK 170700Z **1709/1718** 30005KT 9999 FEW017CB SCT140 BKN270=
TAF with 4-digit Validity period: FTXX31 WIDD 170121 TAF WIDD **0618** 06010G20KT 9999 SCT018 BECMG 1712/1714 00000KT 7000=	 FTXX31 WIDD 170121 TAF WIDD **1706/1718** 06010G20KT 9999 SCT018 BECMG 1712/1714 00000KT 7000=

1.1.5 SIGMET Validation

CCCC on the AHL	A valid 4-letter ICAO location indicator indicating the FIR for which the SIGMET was.	
Prefix checks	SIGMET for TS, TURB, ICE, MTW, DS, SS and RDOACT CLD	WS
	SIGMET for VA	WV
	SIGMET for TC	WC
Validity Period DDHHMM/DDHHMM	Shall have a valid period of validity. Validity periods may be corrected if: • Missing VALID string • Incorrect SIGMET number format • Incorrectly formatted validity period	
Note: For SIGMET validation, please refer to the format described in the ASIA/PAC Regional SIGMET Guide.		

Examples:	After QC check
SIGMET without TTAAii: **SIGMET** OYSN 121525Z OYSC SIGMET 1 VALID 121530/122130 OYSN- SANAA FIR EMBD TS OBS/FCST OVER WESTERN AND SOUTHWESTERN MOUNTAINS AND COASTAL AREAS CB TOPS FL36 NC=	 **WSXX31** OYSN 121525Z OYSC SIGMET 1 VALID 121530/122130 OYSN- SANAA FIR EMBD TS OBS/FCST OVER WESTERN AND SOUTHWESTERN MOUNTAINS AND COASTAL AREAS CB TOPS FL36 NC=
SIGMET with incorrect number format WCPH30 RPLL 210445 SIGMET **NO 01** VALID 210000/210600 RPLL TC OBS N0830 E12900 ….=	 WCPH30 RPLL 210445 SIGMET **01** VALID 210000/210600 RPLL TC OBS N0830 E12900 … =
SIGMET with incorrectly formatted validity period: WSIN90 VIDP 181800 VIDP SIGMET 06 VALID **18/1600 TO 18/2000 UTC** VIDP- DELHI FIR EMBD TS … = WSSD20 OEJD 220503 OEJD SIGMET 01 VALID **220500 TO 220900** OEJN- JEDDAH FIR ….=	 WSIN90 VIDP 181800 VIDP SIGMET 06 VALID **181600/182000** VIDP- DELHI FIR EMBD TS … = WSSD20 OEJD 220503 OEJD SIGMET 01 VALID **220500/220900** OEJN- JEDDAH FIR … =

1.2 Quality Control Methods

OPMET Data	Elements Defining	Control Methods
METAR METAR COR SPECI (SA,SP)	• AHL • Code name • Observation date/time	Software verification Manual validate Periodic Quality Control & PI Monitoring
TAF TAF AMD TAF COR (FT,FC)	• AHL • Code name • Originating station ICAO location indicator • Date/time of issue • Date, time of starting, time of the end of the period the forecast refers to	Software verification Manual validate Periodic Quality Control & PI Monitoring
SIGMET (WS, WC, WV)	• AHL • SIGMET Sequence No	Software verification Manual validate

	• Date/time groups indicating the period of validity Additional Checks (recommended): • Name of the FIR or the CTA the message is issued for • Location indicator of the MWO originating the message	Periodic SIGMET Quality Control Monitoring
Volcanic Ash Advisory FV	• Type of message • Issue date and time Additional Checks (recommended): • Location indicator or name of the VAAC centre originating the message	Software verification Manual validate Periodic VA Quality Control Monitoring
Tropical Cyclone Advisory FK	• Type of message • Issue date and time Additional Checks (recommended): • Location indicator or name of the TCAC centre originating the message	Software verification Manual validate Periodic TC Quality Control Monitoring

2 OPMET Monitoring

~~2.1 Monitoring of Scheduled OPMET data~~

~~2.1.1 Performance Indicators (PIs). The indices to be used by the RODBs are based on those developed by the European Bulletin Management Group BMG) (refer to the *EUR OPMET Data Management Handbook, Appendix F, Output Performance Indices*).~~

~~***(i) Compliance Index***~~

~~The ROBEX Compliance index can be calculated from:~~

$$V_{bul\ compliance} = \frac{No\ of\ reports\ received\ for\ a\ bulletin}{No\ of\ reports\ required\ for\ the\ bulletin}$$

~~The Compliance Index is to assess the level of compliance to the ROBEX scheme. The determination of the compliance index is performed as follows:~~

- ~~The total number of reports received for ROBEX bulletin during the monitoring period, including reports in the retard bulletins.~~

- ~~Weed out correction and amendment bulletins, as these are re-transmitted messages, can be disregarded.~~

Explanation:

No. of reports received for a bulletin is the number of reports that are not "NIL." In other words, do not count the reports that are "NIL." In addition, do not count reports that are corrections and amendments in nature. However, the assessment should include the delayed reports in the retard bulletins.

No. of reports required for a bulletin is the number of reports that each RODB should expect to receive within each particular bulletin.

Procedure:

1. For each day, run through the aerodromes within each bulletin. Count the number of reports that do not contain optional elements and are not "NIL." Alternatively, count the number of reports that contain "Optional RRX
2. For each day, calculate the required number of reports for each bulletin by adding the number of required reports for each aerodrome listed in each bulletin.
3. For each day, calculate the compliance index by taking the ratio of the No. of reports received for a bulletin (calculated in 1.) and the number of reports required for a bulletin (calculated in 2.).
4. To calculate the monthly compliance index, add up the compliance index (calculated in 3.) of all the days in a month and divide by the number of days in the month, e.g., 288/288+240/288+288/288+.....+288/288 => (31 elements for 31 days)
5. Alternatively, to calculate the monthly compliance index, add up the number of reports received for a bulletin (calculated in 1.) for all the days in a month and divide by the number of reports required for a bulletin (calculated in 2.) in that month.

Example 1:

Bulletin SAIN33 includes six aerodromes (VECC, VEPT, VGEG, VGHS, VNKT and VQPR). For each aerodrome, the number of reports required for a bulletin equals 2*24 = 48 reports. Because the official observation time of the bulletin is at every hour and half hour (i.e., HH+00 and HH+30), resulting in two reports for each of the 24 hours in each day. If only on the 2nd of March, the RODB does not receive reports from one aerodrome. Calculate the compliance index for Bulletin SAIN33 in March.

Answer:

No. of reports received for a bulletin
= (6 aerodromes*48 reports*30 days)+(5 aerodromes*48 reports*1 day)
= 8,640+240
= 8,880
No. of reports required for a bulletin
= (6 aerodromes*48 reports*31 days) = 8,928
March compliance index = 8,880/8,928 = 0.9946

(ii) Availability Index

The availability index measures the current coverage of the OPMET distribution against the ROBEX exchange requirements. The determination of the availability index

is performed on a daily basis from the data captured during the monitoring period. If at least one non-NIL report is received from the aerodrome during the 24-hour period, that aerodrome is considered to have been available. The daily availability index of a particular bulletin can be calculated as:

$$V_{bul\ availability} = \frac{No\ of\ aerodromes\ for\ which\ one\ or\ more\ non\text{-}NIL\ data\ type\ are\ received}{No\ of\ aerodromes\ required\ in\ the\ bulletins}$$

NIL data type is defined as a data element that reports there are no observations (SA) or forecasts (FT).

Non-NIL data type is defined as a data element that is not "NIL", i.e. not (METAR VTBD 270200Z NIL=).

No of aerodromes for which one or more non-NIL data types are received is the number of aerodromes that receive one or more Non-NIL data types within a period of one day or 24 hours.

No of aerodromes required in the bulletins is the total number of aerodromes listed in the bulletin from which RODB should receive data.

For example, the Bulletin SAIN33:
SAIN33 VECC 012350
METAR VECC 012350Z 16004KT 2500 HZ SCT018 BKN100 28/26 Q0996 NOSIG=
METAR VEPT 012350Z NIL=
METAR VGEG 012350Z 14007KT 6000 SCT015 BKN100 27/26 Q0998 NOSIG=
METAR VGHS 012350Z 17005KT 4000 HZ BKN010 OVC100 28/25 Q0997 TEMPO RA=
METAR VNKT 012350Z NIL=
METAR VQPR 012350Z NIL=

The number of aerodromes required in the bulletin SASD31 for that particular day is 6 aerodromes.

Procedure:
1. For each day or the period of 24 hours, obtain the number of aerodromes required in the bulletin.
2. For each day or the period of 24 hours, run through the aerodromes within each bulletin. Count the numbers of reports received from each aerodrome that contain Non-NIL data type. If the number exceeds zero, then that aerodrome receives one point, else zero points. Add up the points of each aerodrome to obtain the number of aerodromes for which one or more non-NIL data type is received.
3. For each day, calculate the availability index by taking the ratio of the number of aerodromes for which one or more non-NIL data types are received (calculated in 2.) and the number of aerodromes required in the bulletin (calculated in 1.).

4. To calculate the monthly availability index, add up the daily availability index (calculated in 3.) of all the days in a month and divide by the number of days in the month, e.g., 6/6+6/6+6/6+5/6+4/6+6/6+.....+2/6 => (31 elements for 31 days).
5. Alternatively, to calculate the monthly availability index, add up the number of aerodromes for which one or more non-NIL data types are received (calculated in 2.) for all the days in a month and divide by the number of aerodromes required in the bulletin (calculated in 1.) in that month.

Example 2:
Bulletin SAIN33 continued from example 1.
Calculate the availability index for Bulleting SAIN33 in March.?
Answer:
No. of aerodromes required in the bulletin
= 6 aerodromes *31 days
= 186
No of aerodromes for which one or more non-NIL data type are received
= (6 aerodromes*30 days)+(5 aerodromes*1 day)
= 180+5
= 185
March availability index = 185/186 = 0.9946

(iii) Regularity Index

The regularity index measures the consistency in the number of reports provided by an aerodrome. The computation of the Regularity Index assumes that the number of reports follows a normal distribution and attempts to ascertain the distribution characteristics (mean and standard deviation) from a set of data. These characteristics are used to determine if the subsequent number of reports from an aerodrome is "regular".

Denoting mean and standard deviation by μ and σ, a threshold report numbers (τ) can be established as:

$$\tau = \mu - \sigma$$

The threshold is a reporting characteristic of an aerodrome. If the subsequent daily number of reports meets or exceeds the threshold, it is considered "regular". The daily regularity index for a bulletin can be expressed as:

$$V_{bul\ regularity} = \frac{\textit{No of aerodromes for which the number of reports equals or exceeds the threshold}}{\textit{No of aerodromes required in the bulletin}}$$

The **threshold** is the number of reports provided by the aerodrome, which is considered "regular." This number is defined by calculating the statistics (mean and standard deviation) of the number of reports provided by the aerodrome within a time frame, e.g., six months, one year, or five years.

No of aerodromes which the number of reports exceeds the threshold is the number of aerodromes that provide more than τ reports within a period of one day or 24 hours.

No of aerodromes required in the bulletin is the total number of aerodromes listed in the bulletin from which RODB should receive data from.

Procedure:

1. Calculate the threshold for each aerodrome within the RODB's responsibility by collecting the number of reports each aerodrome receives within the given time frame.
2. For each aerodrome, find the mean (average) and standard deviation (deviation from the mean), e.g., for a time frame of five days (for simplicity), VECC provides daily 10, 7, 10, 8, and 9 reports respectively, therefore, Mean = (10+7+10+8+9)/5 = 8.8 and Standard deviation = sqrt [(10-8.8)^2+(7-8.8)^2+(10-8.8)^2+(8-8.8)^2+(9-8.8)^2] / 5 = 1.304
3. Calculate the threshold by subtracting the standard deviation from the mean. From the above example, the threshold τ = 8.8-1.304 = 7.45 reports.
4. For each day or the period of 24 hours, run through the aerodromes within each bulletin. Count the number of reports received from each. If the number exceeds τ, then that aerodrome receives one point, else zero point. Add up the points of each aerodrome to obtain the No of aerodromes which the number of reports exceeds the threshold.
5. For each day or the period of 24 hours, obtain the number of aerodromes required in the bulletin.
6. For each day, calculate the regularity index by taking the ratio of the number of aerodromes which the number of reports exceeds the threshold (calculated in 4) and the number of aerodromes required in the bulletin (calculated in 5).
7. To calculate monthly regularity index, add up the daily availability index (calculated in 3) of all the days in a month and divide by the number of days in month, e.g., 6/6+6/6+6/6+5/6+4/6+6/6+.....+2/6 => (31 elements for 31 days).
8. Alternatively, to calculate the monthly availability index, add up the number of aerodromes in which the number of reports exceeds the threshold (calculated in 4) for all the days in a month and divide by the number of aerodromes required in the bulletin (calculated in 5) in that month.

Example 3:

Bulletin SAIN33 continued from example 1.

Aerodrome	**Threshold**
VECC	10 reports
VEPT	10 reports
VGEG	10 reports
VGHS	10 reports
VNKT	10 reports
VQPR	10 reports

If on the 2nd and 15th of March, the RODB does not receive reports from VQPR and on 15th of March, the RODB does not receive reports from VGEG. On any other days, all the aerodromes provided more than ten reports. Calculate the regularity index for Bulletin SAIN33 in March.

Answer:

No. of aerodromes required in the bulletin = 6 aerodromes *31 days = 186

No of aerodromes which the number of reports exceeds the threshold

= (6 aerodromes*29 days)+(5 aerodromes*2 days)

= 174+10 = 184

March regularity index = 184/186 = 0.9892

2.2 Monitoring of non-scheduled OPMET data

2.2.1 Monitoring of non-scheduled OPMET data should be executed for FK, FV, WC, WS, and WV types of bulletins.

2.2.2 The monitoring results should be presented in a bulletin-oriented format, one line per bulletin indicating the abbreviated header (TTAAii CCCC YGGgg), the FIR/UIR where applicable, receipt time and originator.

2.2.3 Example non-routine OPMET monitoring result file formats:

TT	AAii	CCCC	YYGGgg	FIR/UIR	Rx Time	Origin
WS	PF21	NTAA	271004	NTTT	271004	NTAAYMYX
WS	IN90	VIDP	271000	VIDP	271007	VECCYMYX
WS	BW20	VGZR	271100	VGZR	271030	VGZRYMYX
WS	CI31	RCTP	271150	RCTP	271150	RCTPYMYX
WS	MS31	WMKK	272013	WBFC	272013	WMKKYMYX
WS	CI35	ZGGG	272225	ZGZU	272228	ZGGGYZYX
FV	AU01	ADRM	270323		270330	YMMCYMYX
FK	PQ30	RJTD	270500		270504	RJTDYMYX

Explanation of the table:

- *TT: Type of bulletin FK, FV, WC, WS, WV*
- *AAii: Bulletin ID*
- *CCCC: Compiling Station*
- *YYGGgg: Standard time of the report*
- *FIR/UIR: ICAO Location indicator of the FIR/UIR or blank (4 spaces) as applicable*
- *RxTime: Time of receipt*
- *Origin: Originator address.*

2.2.4 Analysis of Monitoring Results:

2.2.4.1 Each RODB collects and analyses the relevant result in order to determine the effectiveness and suitability of the quality management system and to highlight any possible improvement to the ICAO Office, Bangkok.

2.3 Examples of Monitoring Results – PI Measurements

The following tables show values of Compliance, Availability and Regularity Index for ASIA/PAC OPMET bulletins compiled by the Singapore RODB in March 2005:

TABLE A	ROBEX Compliance Index		
	SA	FT	FC
AE31 VECC	0.81	—	-
AS31 VABB	—	0.99	-
AS31 VTBB	0.96	0.99	-
SA32 VABB	—	0.98	-
AS32 VTBB	—	0.85	-
AU31 YBBN	1.00	0.99	0.97
AU32 YBBN	0.98	0.94	-
BN31 OBBI	0.96	0.92	-
BN32 OBBI	0.94	0.95	-
CI31 ZBBB	0.99	0.99	-
CI32 ZBBB	0.99	0.99	-
CI41 ZBBB	0.93	0.99	-
EG31 HECA	—	0.85	-
HK31 VHHH	0.99	0.99	1.00
ID31 WIII	0.74	—	-
IN31 VIDP	—	0.97	-
IN31 VABB	0.74	—	0.97
IN32 VIDP	0.73	—	-
IR31 OIII	0.84	0.93	-
JP31 RJTD	1.00	1.00	1.00
JP32 RJTD	1.00	1.00	1.00
KO31 RKSI	1.00	0.96	-
ME31 OLBA	—	0.86	-
MS31 WMKK	1.00	—	-
NZ31 NZKL	0.95	1.00	-
PK31 OPKC	0.91	0.80	-
SB31 VCCC	0.97	—	-
SD31 OEJD	0.95	—	-
SR31 WSSS	—	0.98	0.99
SR32 WSSS	—	1.00	-
TH31 VTBB	0.67	1.00	-
TH32 VTBB	0.76	0.91	-
TH33 VTBB	0.75	0.94	-

Note: *Entry dashed out (–) means no reports of this type (SA or FT) are required*

TABLE B	Availability Index

-	SA	FT	FC
AE31 VECC	0.98	—	-
AS31 VABB	—	1.00	-
AS31 VTBB	0.99	1.00	-
SA32 VABB	—	0.99	-
AS32 VTBB	—	0.96	-
AU31 YBBN	1.00	1.00	1.00
AU32 YBBN	1.00	1.00	-
BN31 OBBI	1.00	1.00	-
BN32 OBBI	1.00	0.99	-
CI31 ZBBB	1.00	1.00	-
CI32 ZBBB	1.00	1.00	-
CI41 ZBBB	1.00	1.00	-
EG31 HECA	—	1.00	-
HK31 VHHH	1.00	1.00	1.00
ID31 WIII	0.98	—	-
IN31 VIDP	—	1.00	-
IN31 VABB	1.00	—	1.00
IN32 VIDP	0.98	—	-
IR31 OIII	1.00	1.00	-
JP31 RJTD	1.00	1.00	1.00
JP32 RJTD	1.00	1.00	1.00
KO31 RKSI	1.00	1.00	-
ME31 OLBA	—	0.99	-
MS31 WMKK	1.00	—	-
NZ31 NZKL	—	1.00	-
PK31 OPKC	1.00	0.99	-
SB31 VCCC	1.00	—	-
SD31 OEJD	1.00	—	-
SR31 WSSS	—	1.00	1.00
SR32 WSSS	—	1.00	-
TH31 VTBB	0.97	1.00	-
TH32 VTBB	0.88	1.00	-
TH33 VTBB	0.83	1.00	-

TABLE C	**Regularity Index**		
-	SA	FT	FC
AE31 VECC	0.86	—	-
AS31 VABB	—	0.96	-
AS31 VTBB	0.93	0.96	-
AS32 VABB	—	0.96	-
AS32 VTBB	—	0.96	-
AU31 YBBN	0.90	0.90	0.96
AU32 YBBN	0.93	0.91	-
BN31 OBBI	0.93	0.94	-
BN32 OBBI	0.82	0.89	-

~~TABLE C~~	~~Regularity Index~~		
~~CI31 ZBBB~~	~~0.96~~	~~0.94~~	-
~~CI32 ZBBB~~	~~0.93~~	~~0.91~~	-
~~CI41 ZBBB~~	~~0.94~~	~~0.97~~	-
~~EG31 HECA~~	~~—~~	~~0.77~~	-
~~HK31 VHHH~~	~~0.93~~	~~0.97~~	~~0.85~~
~~ID31 WIII~~	~~0.92~~	~~—~~	-
~~IN31 VIDP~~	~~—~~	~~0.84~~	-
~~IN31 VABB~~	~~0.84~~	~~—~~	~~0.97~~
~~IN32 VIDP~~	~~0.88~~	~~—~~	-
~~IR31 OIII~~	~~0.71~~	~~1.00~~	-
~~JP31 RJTD~~	~~1.00~~	~~1.00~~	~~1.00~~
~~JP32 RJTD~~	~~1.00~~	~~1.00~~	~~1.00~~
~~KO31 RKSI~~	~~0.84~~	~~1.00~~	-
~~ME31 OLBA~~	~~—~~	~~0.97~~	-
~~MS31 WMKK~~	~~0.98~~	~~—~~	-
~~NZ31 NZKL~~	~~0.82~~	~~1.00~~	-
~~PK31 OPKC~~	~~0.84~~	~~0.97~~	-
~~SB31 VCCC~~	~~0.96~~	~~—~~	-
~~SD31 OEJD~~	~~0.89~~	~~—~~	-
~~SR31 WSSS~~	~~—~~	~~0.99~~	~~0.95~~
~~SR32 WSSS~~	~~—~~	~~0.99~~	-
~~TH31 VTBB~~	~~0.92~~	~~1.00~~	-
~~TH32 VTBB~~	~~0.85~~	~~0.96~~	-
~~TH33 VTBB~~	~~0.89~~	~~0.94~~	-

2.1 Introduction Performance Index Calculation

2.1.1 A management system has been tasked to observe and monitor the OPMET distribution over the APAC AFS (AFTN/AMHS) network in terms of:

2.1.1.1 the coverage of the distribution and the consistency of the distribution;

2.1.1.2 availability and timeliness for APAC eANP Vol II Table MET II-2 required Routine OPMET data: METARs and TAFs;

2.1.1.3 APAC SIGMET availability and format as per requirements listed in the eANP Vol II Table MET II-1.

2.1.2 The Routine OPMET data Availability and Timeliness indices that have been defined by the MET/IE provide a measure of the performance of the OPMET data. Each index is produced individually for each scheduled OPMET data type: METAR and TAF.

2.1.2.1 The Routine OPMET data monitoring is performed each year during 1-30 November by a management system - provided that the monitoring results are compliant with the guidelines in this Handbook.

2.1.3 The inventory of SIGMETs issued by States in are listed in the Asia/Pacific Regional SIGMET Guide. The APAC SIGMET Availability index observes and monitors OPMET deficiencies in terms of:

2.1.3.1 WS, WC and WV-SIGMET production and distribution.

2.1.3.2 The SIGMET monitoring is performed by a management system.

2.1.4 A management system is tasked to report the OPMET Performance Indices yearly to the MET/IE and MET/SG for initiating remedial actions by States against deficiencies of:

2.1.4.1 Availability and Timeliness of eANP Vol II Table MET II-2 listed required METAR and TAF of full operational aerodromes.

2.2 Performance Indices

2.2.1 Definitions

eANP = The ICAO International electronic Air Navigation Plan.

eANP Volume II Table MET II-2 = ICAO Doc 7754 including the Routine OPMET Data, METAR and TAF requirements for AOP aerodromes; full time or partial operational.

eANP_Av = Aerodrome operability as reported in eANP Volume II Table MET II-2: "F" = Full time, "P" = Partially.

AOP = Aerodrome Operational Planning.

AHL = OPMET Bulletin Abbreviated Header Line (TTAAii CCCC YYGGgg BBB)

YYGGgg = The date-time group in the OPMET bulletin Abbreviated Header Line.

RXTime = Time of receipt (HH:MM:SS) of the bulletin (TTAAii CCCC BBB) containing the aerodrome METAR Observation of TAF Report

ICAO APAC OPMET Performance Indices:

– The ICAO APAC OPMET METAR and TAF Performance Indices: Availability and Timeliness, are calculated for eANP Vol II, Table MET II-2 fully available aerodromes (ref.: Table MET II-2, column 12 = “F”) and shall be reported per State. eANP partially available AOP aerodromes (based on Table MET II-2, column 12 = “P”) are not included in the statistics.

– The METAR and TAF Performance Indices are generated per eANP full-available aerodrome (Table MET II-2, column 12 = "F") day by day over a monitoring period of n days (n = 30). The average Performance Indices for the monitoring period are calculated for States from the daily results of its eANP full-available aerodromes.

– METAR Availability = for eANP required aerodromes where METAR is issued full-time every half hour, on average over a monitoring period of n days (n=30) 45.6 (=95%) of 48 observations should be available

For eANP-listed aerodromes where METAR is issued full-time every hour, on average over a monitoring period of n days (n=30) 22.8 (=95%) of 24 observations should be available at each aerodrome.

For a partial operational eANP aerodrome producing METAR, regardless of how frequently it is issued, at least 1 observation must be available each day. Partial operational aerodromes are not considered for generating the overall average State METAR Availability.

NIL METARs and METAR bulletins where in the Abbreviated Header (TTAAii CCCC YYGGgg BBB) BBB = CC@ (COR) are ignored, thus excluded.

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

– TAF Availability = for eANP required aerodromes where 24- or 30-hour TAF is issued full-time (based on eANP VOL II, Table MET II-2, column 12), on average 3.8 (= 95%) TAF should be available each day.

For eANP aerodromes where 9-hour TAF is issued full-time, on average 7.6 (= 95%) TAF reports should be available each day.

For eANP-listed aerodromes where TAF is available partially, at least 1 TAF (COR) report not NIL, not AMD must be available each day. Partial operational aerodromes are not considered for generating the overall average State TAF Availability.

NIL TAF reports and TAF bulletins where in the Abbreviated Header (TTAAii CCCC YYGGgg BBB) BBB = AA@ (AMD) or BBB = CC@ (COR) are not included, thus ignored.

– TAF Timeliness = on average 95% eANP required and available TAF (excluding NIL and TAF reports with BBB = AMD; inclusive BBB = COR reports) is received within 60 minutes before the start period of validity of TAF (TAF validity period = GGGG based on monitoring): (GGGG – 60') ≤ RX-Time ≤ (GGGG + 0').

VPeriodx = GGGG-TAF Validity Period (1 .. x) based on monitoring.

Obsx = MM-METAR Observation Time (1 .. x) based on the monitored DDHHMM YYGGgg-Group in the Abbreviated Header Line (AHL).

REP_EXP = For an eANP aerodrome, the number of TAF reports and METAR observations expected according to the aerodrome operational hours indicated in the eANP Volume II Table MET II-2 column 12; "F" full or "P" partial.

EP_RX = Per eANP aerodrome, the number of received TAF VPeriodx reports: not NIL and not counting amendments (BBB = A@@), and the number of received METAR Obsx observations: not NIL and not including amendments (BBB = A@@).

FROM – TILL = For eANP aerodromes, operational hours observed by monitoring TAF-reports (also NIL and including BBB = C@@ but no BBB = A@@) and METAR-observations (also NIL, no BBBRemark), reading the YYGGgg-Group of first till last received report/observation per day of the monitoring reference period.

2.2.2 Metrics for calculating the ICAO APAC OPMET Performance Indices

2.2.2.1 General

2.2.2.1.1 A management system processing stages for generating the Routine OPMET Data Performance Indices are described next: Availability and Timelines Indices
– Thirty days AFTN/AMHS OPMET monitoring against the eANP Volume II Table MET II-2 OPMET Data Requirements.
– Step 1: Determination of METAR MM-Observation Times / TAF GGGG-Validity Periods per eANP aerodrome per day based on monitoring.
– Step 2: Per day, for every eANP aerodrome generation of the METAR, FC-and FT-TAF ICAO OPMET Performance Indices.
– Step 3: Per day, per State generation of the METAR, FC- and FT-TAF ICAO OPMET Performance Indices based on the monitored eANP aerodrome performance.
– Step 4: Calculation of the averages for the State's daily OPMET Performance Indices: FC/FT/SA-Availability and -Timeliness, over the 30-day monitoring period.
– Step 5: Merge of FC- and FT-Indices to TAF-Indices per Station and per day. Generation of the final average State TAF Performance Indices per State for the (x = 30) days of the reference monitoring period = 01-30/11/YYYY.

2.2.2.2 OPMET Data Monitoring

2.2.2.2.1 The multiple purpose APAC OPMET monitoring exercise is applied for the development of the metrics for calculating the ICAO APAC OPMET Performance Indices:
– Monitoring period: 01 – 30 November YYYY.
– Monitoring Centre: EBBB AFTN/AMHS COM Centre or any other Centre

2.2.2.2.2 Special database scripts are being developed for analysing the resulting OPMET monitoring files for catalogue aerodromes, such as the eANP.

2.2.2.3 eANP Aerodrome METAR Observation Times and TAF Validity Periods (Step1)

2.2.2.3.1 For the eANP aerodromes regular METAR Observation Times (Obsx) and FC/FT TAF Validity Periods (VPeriodx) are being determined from the daily monitoring result files.
– METAR Observation Times: per day, per eANP aerodrome, if METAR required according to eANP.
Observed MM-Observation times: Obs1 … Obs16, from the YYGGgg-Group (where occurring) of received METARs (BBB = Blank). From the observed MM = Obsx, only the regular ones are retained for further processing:

- eANP aerodromes with eANP_Av= "F": number of observed Obsx > 14 per day or Obsx not determined.
- eANP aerodromes with eANP_Av = "P": number of observed Obsx > 7 per day or Obsx not determined.
- FROM_TILL Operational hours: FROM = HHMM from first received, TILL = HHMM from last received aerodrome METAR Report-Date-Time per day.

– TAF Validity Periods: per day, per eANP aerodrome, if FC/FT-TAF required according to eANP.
From the received FC/FT-TAF Reports per eANP aerodrome (BBB != A@@): the G1G1G2G2 VPeriod1 … Vperiod15 of the TAF-report Validity Period Group. Only validated VPeriods are retained for further processing: valid VPeriodx = per monitored G1G1G2G2

- The GG in the (FC/FT)AAii CCCC YYGGgg Bulletin Header of the (FC/FT)-
  report must be <= G1G1 in VPeriodx = G1G1G2G2.
- FROM_TILL Operational hours: FROM = HHMM from first received, TILL = HHMM from last received aerodrome (FC/FT)-report Report-Date-Time per day.

– The number of (regular) METAR Observation Times (Obsx) and the number of (regular) FC/FT TAF Validity Periods (VPeriodx) can vary day by day, depending on the aerodrome operations.

2.2.2.4 eANP Aerodrome OPMET Performance (Step 2)

2.2.2.4.1 Per eANP aerodrome, the ICAO METAR/TAF Availability and Timeliness are calculated per day of the referenced OPMET monitoring period.

2.2.2.4.2 Per monitoring day, only METAR observations and TAF reports from Bulletins with YY in YYGGgg from the Abbreviated Header Line (TTAAii CCCC YYGGgg) = that day are considered. Others are discarded for processing.

2.2.2.4.3 The aerodrome OPMET Performance (re-)considers the operational hours on a daily basis.
– eANP Aerodrome METAR Availability: Per monitoring day, only METAR observations from Bulletins with YY in YYGGgg from the Abbreviated Header Line (TTAAii CCCC YYGGgg) = that day are considered. Others are discarded for processing.

For every Obsx = MM the total number of received not NIL observations REP_RX is determined, BBB != A@@, excluding duplications
REP_EXP Depends on the eANP_Av in the eANP: "F" or "P":

- o eANP_Av = "F" => REP_EXP = 48 for METARs issued every half hour; REP_EXP = 24 where METAR issued once per hour.
- o eANP_Av = "P" => REP_EXP = 1.

The aerodrome METAR Availability for the monitoring day becomes:

- o (REP_RX / REP_EXP) * 100,00 or 0,00 %. The maximum METAR Availability for an aerodrome = 100,00%.
- o If for an aerodrome, there are more Obsx than expected and the Availability Indix exceeds 100,00%, it becomes rounded down to 100,00%.

– eANP Aerodrome METAR Timeliness: RXTime and/or Obs
Δt = RXTime (HH:MM:SS) – HHMM in the observation Report-Date-Time Group.

An aerodrome METAR received later than 10 minutes after the HHMM from the YYGGgg- Group (DDHHMM) is too late Δt > 10'): **reports**.
Per monitoring day (=YY in YYGGgg of the AHL), for all Obsx of the aerodrome, the number of METAR observations for day = YY received on time, i.e. RXTime (HH:MM:SS) no later than 10 minutes after the observation time HHMM(00) in the AHL YYGGgg-Group (Δt ≤ 10'):

- o The aerodrome timeliness on the monitored day becomes: Aerodrome METAR Timeliness = ((REP_RX - reports) / REP_RX) * 100,00 % and maximum 100,00% or 0,00%
- o Per METAR Obsx, the earliest received is considered for the timeliness. Obsx duplications received later are discarded.
- o If for an aerodrome, there are more Obsx than expected, even the exceeding observations are being evaluated for the Aerodrome METAR Timeliness.

– eANP Aerodrome (FC/FT) TAF Availability: For each VPeriodx = GGGG the number of received not NIL (FC/FT)-reports REP_RX is determined, BBB != A@@, excluding duplications.

REP_EXP Depends on the TAF type TT = FC or FT and the eANP_Av in the eANP: "F" or "P":

- o For TAF TT = FC and
  - eANP_Av = "F" => REP_EXP = 8
  - eANP_Av = "P" => REP_EXP = 1

- o For TAF TT = FT
  - eANP_Av = "F" => REP_EXP = 4
  - eANP_Av = "P" => REP_EXP = 1

The aerodrome (FC/FT) Availability for the monitoring day becomes:

- o (REP_RX / REP_EXP) * 100,00 or 0,00 %. The maximum (FC/FT) Availability for an aerodrome = 100,00%.
- o Per aerodrome the most optimized series of VPeriodx determined in Step 1 is applied for the calculation of its Availability Index. For FT-TAFs, the

VPeriodx in the row are to start every 6 hours, maximum 24hours/6 = 4 per day. In a series of VPeriods, each VPeriod has the same result for G1G1 modulo 6. Maximum two series of VPeriods are considered (FT TAF every 3 hours, 8 per day). Per aerodrome the series with all VPeriods for the same day of monitoring is retained for the calculation of the Availability Index (also for the Timeliness Index), or else the longest series having the most 6 hourly VPeriods. Other FT VPeriodx are ignored.

– eANP Aerodrome (FC/FT) TAF Timeliness
Per monitoring day (=YY in YYGGgg of the AHL), only VPeriodx of the aerodrome from that day: Validity Period = YY@@/@@@@ or (YY+1)00/@@@@ are considered. Others are discarded for processing.

Δt = RXTime (HH:MM:SS) – start time of TAF Validity Period.

An Aerodrome TAF (FC or FT) received more than 60 minutes before the Validity Period is too early (Δt < -60') ; received later than the start of the Validity Period is too late (Δt > GGGG + 0') = **reports**.
A TAF-report received between 60 minutes (- 60' ≤ Δt ≤ GGGG) before, and till the start of its Validity Period is on time.
For all VPeriodx of the aerodrome, the number of reports received on time:

- o Aerodrome FC/FT Timeliness = ((REP_RX – reports) /REP_RX) * 100,00 %
- o Per FC- and FT-TAF, the earliest received is considered for the Timeliness. VPeriodx duplications received later are discarded.
- o Per aerodrome the most optimized row of VPeriodx determined in Step 1 is applied for the calculation of its Timeliness Index. For FT-TAFs, the VPeriodx in the row are to start every 6 hours, maximum 24hours/6 = 4 per day and each having the same result for G1G1 modulo 6. The series with the most VPeriodx G1G1 starting on the day of monitoring or else the longest series is applied for the calculation of the aerodrome FT-Timeliness (idem dito FT-Availability) Index. Other FT VPeriodx are ignored.

2.2.2.5 State OPMET Performance (Step 3)

2.2.2.5.1 After generating the eANP aerodrome ICAO OPMET Performance Indices, the Performance Indices are calculated per State as the average of its eANP aerodromes' Performance Indices per day for the number of days of the monitoring period.
– State METAR Availability: Per State, the average of METAR Availability of its eANP aerodromes is calculated day by day:

$$\frac{\text{SUM (\% Availability of eANP METAR required Aerodromes of the State)}}{\text{Number of eANP METAR required Aerodromes of the State}}$$

– State METAR Timeliness: Per State, the average of METAR Timeliness of its eANP Aerodromes, is calculated per day:

$$\frac{\text{SUM (\% Timeliness of eANP METAR required Aerodromes of the State)}}{\text{Number of eANP METAR required Aerodromes of the State}}$$

– State (FC/FT) TAF Availability: Per State, the average of FC/FT Availability of its eANP aerodromes is calculated per day:

$$\frac{\text{SUM(\% Availability of eANP FC or FT required Aerodromes of the State)}}{\text{Number of eANP METAR required Aerodromes of the State}}$$

- State (FC/FT) TAF Timeliness: Per State, the average of FC/FT Timeliness of its eANP aerodromes is calculated day by day:

$$\frac{\text{SUM (\% Timeliness of eANP FC or FT required Aerodromes of the State)}}{\text{Number of eANP METAR required Aerodromes of the State}}$$

2.2.2.6 Average State FC/FT/SA-Availability and –Timeliness (Step 4)

2.2.2.6.1 After generating the daily averages for the State's ICAO OPMET Performance Indices for all its eANP required locations, for each State the overall averages are calculated for the thirty-day monitoring period referred to.

2.2.2.7 Average State TAF Performance Indices per State (Step 5)

2.2.2.7.1 Merge of FC- and FT-Indices to TAF-Indices per Station and per day. For every Station, occurring FC-Performance is discarded where FT-TAFs are produced also. Hence, for those Locations the TAF-Performances in fact are the FT-Performances since the FC- Performances are discarded. From the daily TAF (FC and FT, FT where both FCs and FTs are issued) Location Availability and Timeliness Indices, for each day the State Performance Indices are getting generated. Then, the State average TAF Availability and Timeliness Indices are produced for the referenced monitoring period.

TAF = TT = FC and FT

2.2.2.7.2 TAF Availability per State

Aerodrome = Aerodrome Full operational.

REP_RX = FC / FT TAF-Reports received per day not NIL; not counting BBB=A@@.

REP_EXP = TAF-Reports expected per day = 8 for TT = FC and 4 for TT = FT for Full operational aerodrome.

N = Number of aerodromes (Full operational) per State.

Day = monitoring day starting at 1 till 30.

$\text{Availability}_{\text{aerodrome}}$ = Aerodrome Availability per Day = $\left(\frac{\#REP\_RX}{\#REP\_EXP}\right) * 100.00\%$, minimum 0,00% and maximum 100,00%

$\text{Availability}_{\text{state}}$ = Average State Availability for number of monitoring days.

$$\text{Availability}_{\text{state}} = \frac{\Sigma_{aerodrome=}^{N}\left(\Sigma_{day=1}^{30}\left((Availability_{aerodrome})_{day}\right)\right)}{\frac{N}{Day}}\%$$

2.2.2.7.3 TAF Timeliness per State

Aerodrome = Aerodrome Full operational.

REP_RX = Received TAF-Reports per day, not NIL and not counting BBB=A@@.

reports = TAF-Reports per day received too early or too late: RXTime > 60' too early against the TAF Validity Period (@@G1 G1 G1 G1/@@ G2 G2 G2 G2) or TXTime later than the start of the TAF Validity Period @@G1 G1 G1 G1.

$\text{Timeliness}_{\text{aerodrome}}$ = Aerodrome Timeliness per Day = $\left(\frac{\#REP\_RX - reports}{\#REP\_RX}\right) * 100.00\%$

$\text{Timeliness}_{\text{state}}$ = Average State Timeliness for number of monitoring days.

$$\text{Timeliness}_{\text{state}} = \frac{\Sigma_{aerodrome=1}^{N}\left(\Sigma_{day=1}^{30}\left((Timeliness_{aerodrome})_{day}\right)\right)}{\frac{N}{Day}}\%$$

2.2.2.7.4 METAR Availability per State

Aerodrome = Aerodrome Full operational.

REP_RX = Observations received per day not NIL; not counting BBB=C@@; not counting BBB=A@@.

REP_EXP = Observation expected per day = 24 or 48 for Full operational aerodrome.

N = Number of aerodromes (Full operational) per State.

day = monitoring day starting at 1 till 30.

$\text{Availability}_{\text{aerodrome}}$ = Aerodrome Availability per Day = $\left(\frac{\#REP\_RX}{\#REP\_EXP}\right) * 100.00\%$, minimum 0,00% and maximum 100,00%

$\text{Availability}_{\text{state}}$ = Average State Availability for number of monitoring days.

$$\text{Availability}_{\text{state}} = \frac{\Sigma_{aerodrome=1}^{N}\left(\Sigma_{day=1}^{30}\left((Availability_{aerodrome})_{day}\right)\right)}{\frac{N}{Day}}\%$$

2.2.2.7.5 METAR Timeliness per State

Aerodrome = Aerodrome Full operational.

REP_RX = Observations received per day not NIL; not counting BBB=C@@; not counting BBB=A@@.

REP_EXP = Observation expected per day = 24 or 48 for Full operational aerodrome.

N = Number of aerodromes (Full operational) per State.

day = monitoring day starting at 1 till 14.

reports = Observations per day received too late: RXTime > 10' too late against the HHMM in the Report-Date-Time Group (DDHHMMZ).

$\text{Timeliness}_{\text{aerodrome}}$ = Aerodrome Timeliness per Day = $\left(\frac{\#REP\_RX - report}{\#REP\_RX}\right) * 100.00\%$

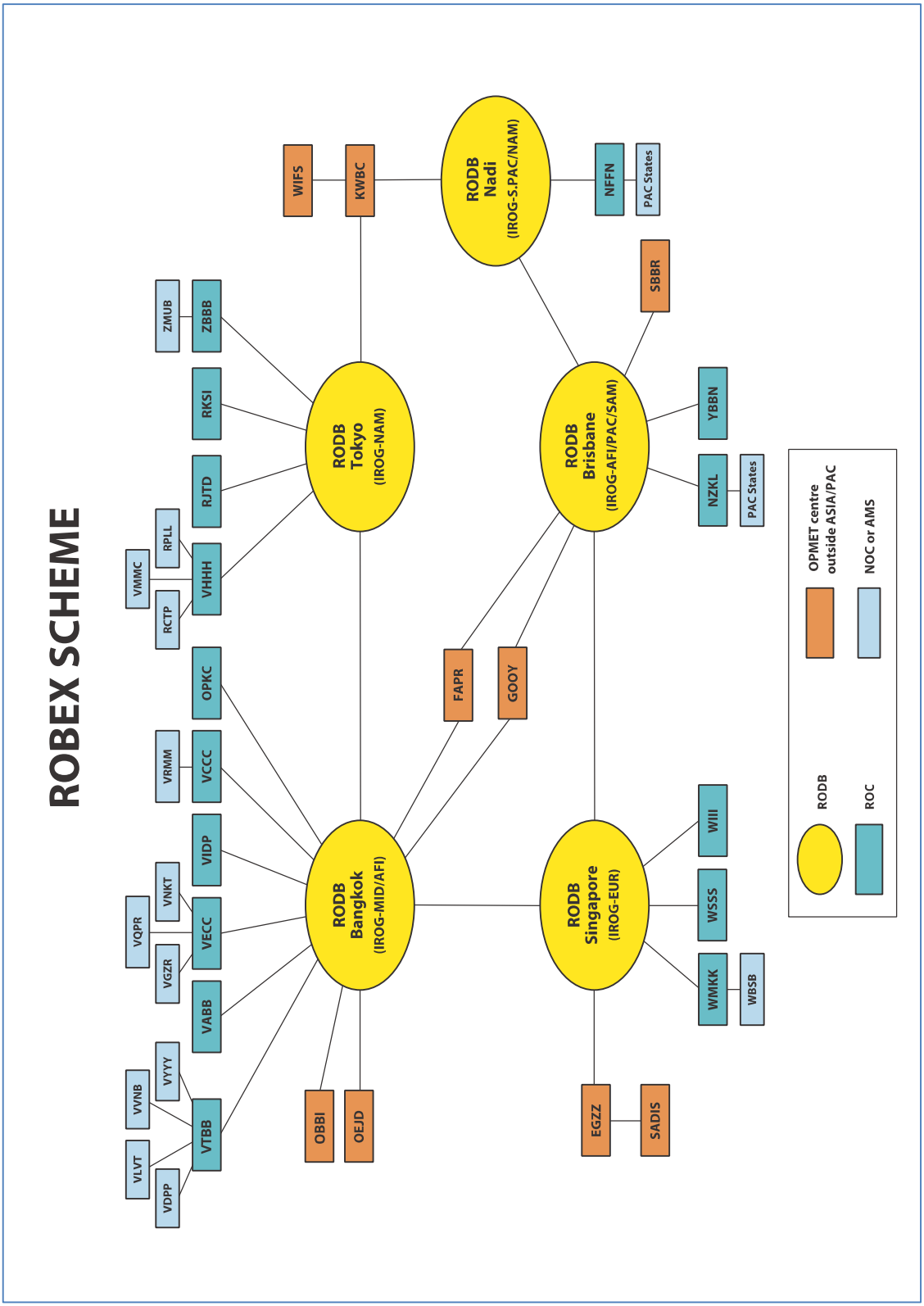
$\text{Timeliness}_{\text{state}}$ = Average State Timeliness for number of monitoring days.

$$\text{Timeliness}_{\text{state}} = \frac{\Sigma_{aerodrome=}^{N} \left(\Sigma_{day=1}^{30}\left((Timeliness_{aerodrome})_{day}\right)\right)}{\frac{N}{Day}}\%$$

2.2.2.8 Average State TAF Performance Indices per State

2.2.2.8.1 Merge of FC- and FT-Indices to TAF-Indices per Station and per day. For every Station, occurring FC-Performance is discarded where FT-TAFs are produced also. Hence, for those Locations the TAF-Performances in fact are the FT-Performances since the FC-Performances are discarded. From the daily TAF (FC and FT, FT where both FCs and FTs are issued) Location Availability and Timeliness Indices, for each day the State Performance Indices are getting generated. Then, the State average TAF Availability and Timeliness Indices are produced for the referenced monitoring period.

— END OF SECTION —



APPENDIX G — ROBEX Scheme Diagram

— END OF SECTION —

APPENDIX H — RODB OPMET Interrogation Procedures

This Appendix describes the standard interrogation procedures for access to the designated Regional OPMET Databanks (RODB) in the ASIA/PAC Region. This information was previously provided in the ASIA/PACIFIC OPMET DATA BANKS INTERFACE CONTROL DOCUMENT.

Note: The provision by RODBs of facilities for request/response type of access to the stored OPMET data is primarily for users to obtain non-regular or occasional information and is not intended for routine requests, which should be arranged through the efficient implementation of predetermined, regular OPMET exchange.

REQUEST/REPLY MESSAGE FORMAT

1. Request messages

1.1 Request messages should follow the AFTN standard telecommunication procedures as defined in Annex 10, Volume II. The text part of the messages should be as defined in this Appendix.

Note: The standard AFTN message start and end characters and alignment characters (SOH, STX and ETX for ITA-5 format or ZCZC and NNNN for ITA-2 format) have been omitted for clarity in the following examples.

1.2 Request messages should use the AFTN priority **GG.**

1.3 The general format of the request message is as follows:

GG xxxxYZYX
YYGGgg yyyyyyyy
RQM/TTCCCC,(report(s)).../TTAAii, (bulletin(s))...=
RQM/TTCCCC,(report(s)).../TTAAii, (bulletin(s))...=
….

The meaning of the groups and symbols in the request message is as follows:

1.3.1 In the AFTN heading:

GG	priority indicator
xxxxYZYX	AFTN address of the databank
YYGGgg	date-time group specifying the filing time of the request message
yyyyyyyy	AFTN address of the originator of the request

1.3.2 Each data request line is composed of the following elements:

RQM/	indicates the start of a data request line
TT	WMO data type identifier (*refer to 2.7*)
CCCC	4-letter location indicator (as per *ICAO Doc 7910 – Location Indicators*)
	or
AAii	bulletin identifier (*WMO manual 386, table C1 for AA*)
=	indicator of the end of a request line.

1.3.3 Delimiters can be used within a request line as follows:

,	indicates more requests for reports or bulletins for the same data type or different data types for one location;
/	indicates a new data type request within the same data request line.

1.3.4 The length of the request line should not exceed 69 characters, including 'RQM' and the '=' signal. Up to ten request lines can be included in one AFTN request message unless otherwise specified by the RODB.

1.3.5 **Examples of request types**

1.3.5.1 ***Request for one data type at one location***

The format of the request line to obtain one meteorological data type for one location is as follows:

RQM/TTCCCC=

Examples:

1. RQM/SAYSSY=
2. RQM/FCWSSS=

1.3.5.2 ***Request for one data type at two or more locations***

The format of the request line to obtain one meteorological data type for two or more locations is as follows:

RQM/TTCCCC$_1$,CCCC$_2$,.....,CCCC$_n$=

Note: Up to ten locations can be included in a request line.

Examples:

1. RQM/SAYSSY,YBBN,YMML=
2. RQM/FTNZAA,NZCH=

1.3.5.3 ***Request for two or more data types at one location***

The format of the request line to obtain two or more meteorological data types for one location is as follows:

RQM/TT_1CCCC,TT_2,.....,TT_n=

Examples:

1. RQM/SAYMML,FC=
2. RQM/FTNFFN,SA,WC=

1.3.5.4 ***Request for different data types at different locations***

The format of the request line to obtain different meteorological data types for a number of locations is as follows:

RQM/TT_1CCCC,CCCC,…/TT_2CCCC,CCCC,…/...../TT_nCCCC,CCCC, …=

Example:

1. RQM/SAYSSY/FCYBBN,YMML/FTYMML=

1.3.5.5 ***Request for a meteorological bulletin***

The format of the request line to obtain a Meteorological Bulletin is as follows:

RQM/TTAAii=

Examples:

1. RQM/FTAE31=
2. RQM/SATH33=

Note: Only one bulletin can be requested in an RQM request line. Up to six bulletins can be included in a request message

2. Reply messages

2.1 If the AFTN address of the originator of a request is authorised, the databank should automatically reply to the AFTN originator address given in the request message.

2.2 Valid requests for bulletins and/or messages should produce an answer, which should be returned in a standard WMO bulletin format embedded as text in a standard AFTN message. Each bulletin should be sent as a separate message.

2.3 For valid requested bulletin or message(s) belonging to the same type and concerning valid stored messages, one or more reply bulletins should be generated. Non-valid

requested groups should be replied to by an appropriate *Information* or *Error* reply message.

2.4 In preparing the reply messages by the RODBs, the following should apply:

2.4.1 A reply to a METAR request should consist of the latest METAR and/or SPECI reports available for the requested station.

2.4.2 When a request for SIGMET of any type (WS, WC or WV) is received, the reply should contain all valid WS, WV and WC SIGMETs that are available for the FIR concerned.

2.5 Format of the reply message

2.5.1 The WMO abbreviated heading of a reply message will be constructed as:

TTAAii CCCC YYGGgg

where,

TT	the requested (e.g., SA)
AA	**XX** : fixed geographical designator for database reply or as specified by the RODB
ii	**99** : fixed bulletin number for database reply or as specified by the RODB
CCCC	location indicator of the reply database (e.g. VTBB, WSSS, etc.)
YYGGgg	date-time group (DTG) depending on the original DTG of the bulletin header

Note: For the issuing time of TAF and the observation time of METAR, the user should refer to the DTG in the reports, which might be different from the DTG in the header.

Example:

SAXX99 VTBB 031200
METAR CCCC 031200Z …
METAR CCCC 031200Z …
…

2.6 Format of the *Information* and *Error* reply messages

2.6.1 RODBs send to the originator of the request an *Information* or *Error* message when a RODB is not in a position to send back valid OPMET data.

2.7 OPMET Data Types

The following meteorological data types, as defined by the WMO data designator indicator, are stored and available on request from the RODBs:

TT	Message Type
SA	METAR
SP	SPECI
FT	12 to 30 HR TAF
WS	SIGMET
WC	Tropical Cyclone SIGMET
WV	Volcanic Ash SIGMET
FV	Volcanic Ash Advisory (VAA)
FK	Tropical Cyclone Advisory (TCA)

— END OF SECTION —

APPENDIX I — ROBEX FOCAL POINTS

State/ ADMINISTRATION	NAME/DESIGNATION AND ADDRESS	Tel/Fax/e-mail
AUSTRALIA	Mr. Tim Hailes National Manager Regional Aviation Weather Services Weather Policy Branch Australian Bureau of Meteorology GPO Box 1289 Melbourne VIC 3001	Tel: +61 (0) 3 9669 4273 Fax: +61 (0) 4 2784 0175 e-mail: tim.hailes@bom.gov.au, sral@bom.gov.au
	Mr. Warren YOUNG ATM Information Specialist National Operations Management Centre Airservices Australia PO Box 1093 Tullamarine, VIC, 3043, Australia	e-mail: YBBBYPYX@airservicesaustralia.com (primary) / warren.young@airservicesaustralia.com (secondary)
CHINA	Ms. ZOU Juan Meteorologist Meteorology Division Air Traffic Management Bureau Civil Aviation Administration of China (CAAC) No.12 East San-huan Road Middle Chaoyang District Beijing 100022	Tel: +86 (10) 87786826 Fax: +86 (10) 87786820 e-mail: zoujuan@atmb.net.cn
HONG KONG CHINA	Mr. Patrick Lam Senior Aeronautical Communications Supervisor, Telecommunications Unit of Air Traffic, Management Division Room 315, 3/F, Office Building, Civil Aviation Department Headquarters 1 Tung Fai Road, Hong Kong International Airport, Lantau, Hong Kong, China	Tel: +852 2910 6200 Fax: +852 2910 1160 e-mail: hhlam@cad.gov.hk
	Mr. B.L. Choy Hong Kong Observatory	Tel : +852 2926 8350 Fax : +852 2311 9448 e-mail : blchoy@hko.gov.hk

State/ ADMINISTRATION	NAME/DESIGNATION AND ADDRESS	Tel/Fax/e-mail
FIJI	Mr. William L. REECE Aeronautical Technical Officer – ATM Airports Fiji Limited P.O. Box 9210 Nadi Airport	Tel: +679 (6) 731198 Fax: +679 e-mail: williamr@afl.com.fj
INDIA	Shri Gajendra Kumar Scientist-E India Meteorological Dept. New Delhi ***Administration units OPMET/ROBEX*** Director General of Meteorology India Meteorological Department Lodi Road, New Delhi – 110 003 India	Tel: +91 (11) 2462 5547 Fax: +91 (11) 24615371 e-mail: gkumarimd@gmail.com; gajendra71.kumar@imd.gov.in
INDONESIA	Mrs. Herlina Head of Sub Division for Dissemination of Aeronautical Meteorological Information Indonesian Agency for Meteorology Climatology and Geophysics Jalan Angkasa I No.2 Kemayoran, Jakarta, Indonesia - 10720 Mrs. Ni Ketut Feny P Staff of Sub Division for Dissemination of Aeronautical Meteorological Information Indonesian Meteorological Climatological and Geophysical Agency Jalan Angkasa I No.2 Kemayoran, Jakarta, Indonesia - 10720	Tel : +62 (21) 4246321 Fax : +62 (21) 6546315 e-mail: herlina@bmkg.go.id; herlina_270963@yahoo.com Tel : +62 (21) 424 6321 Fax : +62 (21) 6546315 e-mail : fenypermatasari@bmkg.go.id; fenypermatasari@gmail.com
JAPAN	Mr. Kentaro Tsuboi Scientific Officer Information and Communications Technology Division Information Infrastructure Department Japan Meteorological Agency (JMA) 3-6-9 Toranomon, Minato City Tokyo 105-8431	Tel: +81 (3) 3434-9098 Fax: +81 (3) 3434-9097 e-mail: k-tsuboi@met.kishou.go.jp

State/ ADMINISTRATION	NAME/DESIGNATION AND ADDRESS	Tel/Fax/e-mail
MALAYISIA	Mr. Muhammad Nazri Noordin Principal Assistant Director of National Aviation Meteorological Centre Malaysian Meteorological Department ***Administration units OPMET/ROBEX*** Dr. Chai Mui Fatt Principal Assistant Director of Sabah Weather and Earthquake Operation Centre Sabah, Tingkat 7, Wisma Dang Bandang 8800 Kota Kinabalu Sabah Malaysian Meteorological Department	Tel: +60 (3) 8787 2161 Fax: +60 (3) 8787 1019 e-mail: mnazri@met.gov.my Tel: +60 (88) 413340 Fax: +60 (88) 413696 e-mail: chai@met.gov.my
MONGOLIA	Mr Banidsuren Byambaa Director of Aviation Meteorological center, National Agency for Meteorology and Environment Monitoring, Mongolia 17120 Buyant-Ukhaa, Khan-Uul district, Ulaanbaatar,Mongolia	Tel: +976 71285024 Fax: +976 70049869 e-mail: amc@namem.gov.mn
NEW ZEALAND	Ms. Paula Acethorp Chief Meteorological Officer Civil Aviation Authority of New Zealand PO Box 3555 Wellington 6140 NEW ZEALAND	Tel: +64 4 830 2611 e-mail: paula.acethorp@caa.govt.nz
PAKISTAN	Mr Shamsuddin Hakro Addtional Director Com Ops Communication Operations Branch Operations Directorate Terminal 1, HQ CAA JIAP Karchi ***Administration units OPMET/ROBEX*** Senior Joint Director Communication Operations Branch Operations Directorate Terminal 1, HQ CAA JIAP Karchi	Tel: +92 (21) 9907 2351 Fax: +92 (21) 9924 2187 e-mail: adld.comops@caapakistan.com.pk

State/ ADMINISTRATION	NAME/DESIGNATION AND ADDRESS	Tel/Fax/e-mail
	Mr. Akhlaq Ahmed Senior Meteorologist Meteorological Office Room No. 3106 JTC, Jinnah International Airport Karachi ***Administration units OPMET/ROBEX*** Main Meteorological Office Jinnah International Airport Karachi	Tel: +92 (21) 9907 1300 +92 (21) 9907 1302 Fax: +92 (21) 9924 8282 e-mail: pmdmmokarachi@gmail.com
PAPUA NEW GUINEA	Mr. Tau Gabi National Weather Service Port Moresby PNG	Tel: Fax: e-mail: tgabi@png.met.gov.pg
REPUBLIC OF KOREA	Mr. Kim Yeong-hun Assistant Director Aviation Meteorological Office of Korea Meteorological Administration (AMO/KMA) Planning and General Affairs Division 444 Je2terminal-daero, Jung-gu Incheon, 22382 Mr. Lee Dong-Won Assistant Director Aviation Meteorological Office of Korea Meteorological Administration (AMO/KMA) Information and Technology Division 444 Je2terminal-daero, Jung-gu Incheon, 22832 ***Administration units OPMET/ROBEX*** Aviation Meteorological Office of Korea Meteorological Administration (AMO/KMA) 444 Je2terminal-daero, Jung-gu Incheon, 22382 (Location Indicator : RKSIYPYX)	Tel: +82 (32) 222 3030 Fax: +82 (32) 740 2807 e-mail: av_pod@korea.kr; kyh13@korea.kr Tel: +82 (32) 222 3030 Fax: +82 (32) 740 2807 e-mail: dwlee5@korea.kr

State/ ADMINISTRATION	NAME/DESIGNATION AND ADDRESS	Tel/Fax/e-mail
SINGAPORE	Mr. **Chiam** Keng Oon Senior Meteorologist, Meteorological Service Singapore, P.O. Box 8 Singapore Changi Airport Singapore 918141	Tel: +65 6244 6133 Fax: +65 6542 5026 e-mail: chiam_keng_oon@nea.gov.sg
	Mr. **Goh** Wee Poh Head, Customer Services Meteorological Service Singapore, P.O. Box 8, Singapore Changi Airport, Singapore 918141 SINGAPORE	Tel: +65 6542 9224 Fax: +65 6542 5026 Email: goh_wee_poh@nea.gov.sg
	Administration units OPMET/ROBEX	
	Central Forecast Office/Weather Services Division P.O. Box 8 Singapore Changi Airport Singapore 918141	
SRI LANKA	Mr. E. S. Silva Meteorologist in charge Katunayake International Airport Colombo Sri Lanka	Tel: +94 11 2252721 Fax: +94 11 2252319 e-mail: meteo3@sltnet.lk
THAILAND	Mr. Bunpot Kujaphun Director, Aeronautical Information and Flight Data Management Centre Aeronautical Radio of Thailand Ltd., 102 Soi Ngamduplee, Tunkmahamek Sathorn, Bangkok 10120	Tel: +66 (2) 2859083 Fax: +66 (2) 2878538 e-mail: bunpot.ku@aerothai.co.th
	Mr. Wanchalearm Petsuwan Computer Technical Officer Thai Meteorological Department 4353 Sukhumvit Road Bangna, Bangkok 10260	Tel: +66 (2) 399 4596 Fax: +66 (2) 744 6240 e-mail: wpetsuwan@hotmail.com
USA	Mr. Michael Graf National Weather Service	Tel: +1 (301) 427 9109 Fax: +1 (301) 713 1520 e-mail: michael.graf@noaa.gov
	Karen Shelton-Mur Federal Aviation Administration	Tel: +1 (202) 267 7985 e-mail: Karen.shelton-mur@faa.gov

— END OF DOCUMENT —