INTERNATIONAL CIVIL AVIATION ORGANIZATION

REPORT OF FOURTEENTH MEETING OF THE ASIA/PACIFIC METEOROLOGICAL INFORMATION EXCHANGE WORKING GROUP (MET/IE WG/14)

Bangkok, Thailand, 7 – 9 March 2016

The views expressed in this Report should be taken as those of the Meeting and not the Organization

Approved by the Meeting
and published by the ICAO Asia and Pacific Office, Bangkok

CONTENTS

INTRODUCTION

1. Meeting

1.1 The Fourteenth Meeting of the Asia/Pacific (APAC) Meteorological Information Exchange Working Group (MET/IE WG/14) of the APAC Air Navigation Planning and Implementation Regional Group (APANPIRG) was held at the Koitate Wing, ICAO Asia and Pacific Regional Office, Bangkok, Thailand from 7 – 9 March 2016.

1.2 The MET/IE WG was established at the Nineteenth Meeting of the Meteorology Sub-group of APANPIRG (MET SG/19), Decision 19/2 — *Expert working groups of the Meteorology Sub-group (MET SG)*, refers, and replaces the former expert group known as the Regional OPMET[1] Bulletin Exchange Working Group (ROBEX WG).

1.3 The meeting included a conjoint session on 9 March 2016 with the Sixth Meeting of the APAC Meteorological Services Working Group (MET/S WG/6) to discuss items of interest to both groups. A report on discussions from the conjoint session is included at the end of this Report.

2. Attendance

2.1 The meeting was attended by 55 participants from 16 States and two International Organizations, including Australia, Bangladesh, Bhutan, Cambodia, China, Hong Kong China, Japan, Lao People's Democratic Republic (Lao PDR), Malaysia, New Zealand, Philippines, Republic of Korea, Singapore, Thailand, United States, Viet Nam, the International Air Transport Association (IATA) and ICAO. A list of participants is provided at **Attachment 1** to this Report.

3. Officers and Secretariat

3.1 Mr. Tim Hailes, acting Head of Aviation and Defence Weather Services, Bureau of Meteorology, Australia, presided as Chair of the meeting.

3.2 Mr. Peter Dunda, Regional Officer Aeronautical Meteorology, ICAO Asia and Pacific Office, acted as Secretary for the meeting.

4. Language and Documentation

4.1 The MET/IE WG met as a plenary throughout the meeting, including the conjoint session with the MET/S WG. The working language of the meeting was English inclusive of all documentation and this Report. A total of 19 Working Papers (WP) and 9 Information Papers (IP) were considered by the meeting. An additional 7 WPs and 6 IPs were considered during the conjoint session. The list of working and information papers is provided at **Attachment 2** to this Report.

[1] Operational meteorological (information)

Agenda Item 1: Organizational matters

1.1 On behalf of Mr. Arun Mishra, Regional Director of the ICAO Asia and Pacific Office, Mr. Peter Dunda opened the meeting.

WP/1 – Adoption of the agenda

1.2 The meeting adopted the provisional agenda as circulated prior to the meeting and shown below:

Agenda Item 1: Organizational matters

Agenda Item 2: Review of follow-up from previous meetings

Agenda Item 3: Review and optimization of OPMET exchange schemes

Agenda Item 4: Planning and implementation of digital exchange of meteorological information

Agenda Item 5: Quality control, monitoring and management of meteorological information exchange

Agenda Item 6: Guidance material related to meteorological information exchange

Agenda Item 7: Future work programme

Agenda Item 8: Any other business

Conjoint session: MET/IE WG/14 and MET/S WG/6

Agenda Item 1: Review and optimization of VAAC Backup Tests

Agenda Item 2: SIGMET and (volcanic ash and tropical cyclone) advisory information (including SIGMET tests)

Agenda Item 3: Any other business

Agenda Item 2: Review of follow-up from previous meetings

WP/2 – follow-up of action items from ROBEX WG/13

2.1 The previous meeting, i.e., thirteenth meeting of the Regional OPMET Bulletin Exchange Working Group (ROBEX WG/13), developed a task list of 7 action items. Following a further review by the meeting, 3 action items were considered as completed, 3 were in progress and 1 was yet to commence. The meeting updated the task list showing the status of the action items, a copy of which is provided at the **Attachment 3** to this Report. The corresponding tasks in the MET/IE WG work programme were also updated by the meeting (under agenda item 7), as necessary.

Agenda Item 3: Review and optimization of OPMET exchange schemes

WP/3 – IROG back-up

3.1 The eleventh, annual real-time back-up exercise was conducted by Regional OPMET Databank (RODB)/Inter-Regional OPMET Gateway (IROG) Singapore and RODB/IROG Bangkok on 11 February 2016 to test the procedure for dissemination of APAC OPMET data to the World Area Forecast Centre (WAFC) London by RODB/IROG Bangkok in the event that RODB/IROG Singapore experiences technical problems.

3.2 The success rate of transmission (of OPMET bulletins during the exercise) was marginally lower (i.e., 2.5 % lower) than the previous year's perfect score (i.e., 2016: 97.5% vs. 2015: 100%). This was attributed to network inefficiency in the Mumbai-Bangkok ATS[2] message handling system (AMHS) circuit, which affected the transmission of OPMET bulletins containing aerodrome meteorological reports (in METAR code), also known as 'SA bulletins', and internal system inefficiencies, which affected the transmission of the OPMET bulletins containing aerodrome forecasts (in TAF code), also known as 'FT bulletins'.

3.3 Based on the results of the back-up exercise, the meeting did not consider it necessary to propose changes to the existing back-up procedure between RODB/IROG Singapore and RODB/IROG Bangkok.

WP/4 – Inter-regional OPMET exchange (APAC-MID)

3.4 Since 15 May 2015, IROG Bangkok has commenced the regular relay of APAC OPMET bulletins to the ICAO Middle East (MID) Region, via IROG Jeddah and (backup IROG) Bahrain, on behalf of the APAC Region to take advantage of enhancements to the MID Region OPMET Centres (MIDANPIRG/14[3] conclusion 14/30 refers).

3.5 Following review of the new arrangement discussed above, IROG Bangkok and IROG Singapore have agreed to further improvements to ensure the continuity of OPMET exchange between the MID and APAC Regions (through a back-up arrangement between IROG Bangkok and IROG Singapore) and to eliminate duplicate data sent from other addresses in the APAC Region (by relaying all MID OPMET data via IROG Bangkok).

3.6 The meeting agreed that the description and schematics of the new arrangement (as provided in WP/4) should be considered for inclusion in future updates of the (APAC) Regional OPMET Bulletin Exchange (ROBEX) Handbook.

ACTION – Arrange an update to the IROG schematics in the ROBEX Handbook [Secretariat with assistance from Thailand].

WP/5 – Re-alignment of ROBEX OPMET bulletins (ROBEX Centre Bangkok)

3.7 In accordance with the recommendation from ROBEX WG/13 (Decision 13/3 – *Alignment of ROBEX OPMET bulletins*), and the associated *Activity 9* of the ROBEX WG work programme, ROBEX Centre Bangkok has re-aligned the (locations contained within) OPMET bulletins which it is responsible for compiling (under the ROBEX scheme). The changes implemented by ROBEX Centre Bangkok became effective on 30 October 2015.

[2] Air traffic service
[3] Fourteenth Meeting of the (ICAO) Middle East Air Navigation Planning and Implementation Regional Group

3.8 Given that the changes discussed above were already implemented, the meeting agreed that the corresponding data in the ROBEX Handbook (i.e., in Tables A, B and C) should be updated accordingly, and at the soonest opportunity.

ACTION – Process a rapid amendment to the ROBEX Handbook, Tables A, B and C, to reflect the current requirements for OPMET bulletins compiled by ROBEX Centre Bangkok [Secretariat with assistance from Thailand].

Agenda Item 4: Planning and implementation of digital exchange of meteorological information

IP/6 –RODB Brisbane changes

4.1 Australia has implemented changes to improve the compliance of the format of international OPMET bulletins generated by RODB Brisbane with applicable ICAO provisions.

WP/6 – Status and plans for IWXXM and AMHS within APAC

4.2 In order to assess the status and plans for implementation of both the ICAO Meteorological Information Exchange Model (IWXXM) and AMHS within the APAC Region, a survey of States was conducted from 30 September to 30 October 2015. In total, 21 States have responded to the survey. The information provided by responding States is encouraging, insofar that at least half are aware of the anticipated requirement to exchange OPMET data in IWXXM format with applicability of Amendment 78 to Annex 3 in November 2018. Furthermore, a vast majority of the responding States indicated they were already in the planning, procuring, testing or operational stage with regard to the digital exchange of OPMET information. All but one of the responding States indicated they had either already implemented an AMHS connection or that an AMHS connection would be implemented by 2018, though only half the responding States confirmed their systems would support extended AMHS communications (which are necessary to support the digital exchange of OPMET information in IWXXM format).

4.3 Since responses to the survey had only been received from half the APAC States, there was concern that it is likely many of the non-responding States would require additional support (e.g., information, guidance, etc.) to plan and implement the systems required for the digital exchange of OPMET information in IWXXM format. Additionally, responses to the survey highlighted possible uncertainty in some States about the technology and the systems required to support IWXXM. The meeting agreed to request ICAO to re-distribute the survey on behalf of the group, possibly seeking World Meteorological Organization (WMO) assistance in reaching out to non-responding States, in order to obtain additional information about the status of planning and implementation of IWXXM and AMHS in the APAC Region.

ACTION – Re-distribute the survey on the status of planning and implementation of IWXXM and AMHS.

IP/2, IP/9, IP/7, WP/9 – Status and plans for IWXXM in Republic of Korea, Australia, Thailand and Singapore

4.4 Further details of the planning and implementation of digital exchange of OPMET information using IWXXM were provided by Republic of Korea, Australia, Thailand and Singapore.

4.5 The meeting noted that issues raised in the discussion, such as those of a global nature including: (a) the possible provision of an official website for information such as the latest application tools, Extensible Markup Language/Geography Markup Language (XML/GML) models / schemas and IWXXM announcements and training materials; (b) the provision of a validator to test the compliance of IWXXM data; and (c) the roles of the ROBEX Bulletin Compiling Centres (BCCs), RODBs and IROGs with respect to the regional and inter-regional exchange of digital meteorological information (WP/9 refers), should be forwarded to the ICAO Meteorology Panel (METP), Working Group on Meteorological Information Exchange (WG-MIE) as that is the body responsible for development of the ICAO provisions for IWXXM OPMET information and the guidance material required to support implementation of the ICAO provisions.

IP/4 – Summary on development of IWXXM

4.6 The WMO Task Team on Aviation XML (TT-AvXML), which is responsible for the development of an XML/GML representation of meteorological information for use by the international civil aviation community, is expected to publish the latest version *IWXXM 2.x* around May 2016. In addition to bug fixes and improvements on the previous release (*version 1.1*), as suggested by the aviation community, XML/GML representations of AIRMET and volcanic ash and tropical cyclone advisory information will also be introduced in *IWXXM 2.x* to meet the proposed additional requirements for digital exchange of meteorological information that will become applicable with Amendment 77 to ICAO Annex 3.

4.7 In view of the relatively short period between the expected availability of *IWXXM 2.x* and the applicability date of Amendment 77 to Annex 3, it could be expected that the implementation of the necessary system changes to support the new IWXXM-related provisions would be difficult for many States to achieve in time to meet the applicability of the Amendment 77 to Annex 3 provisions.

WP/12 – Update on the ICAO METP WG-MIE

4.8 The METP WG-MIE is primarily responsible for the METP Job Card – *Inclusion of aeronautical meteorological information in the SWIM-enabled environment and further development of the SWIM concept relating to meteorology*. Its work plan is organized into 6 work streams: *1) Extensions; 2) Annex 3; 3) SWIM[4] plan; 4) IWXXM guidance; 5) Governance and IMP[5]; and 6) Support and Coordination*.

4.9 To promote coordination among States and Regions and facilitate assistance to States with respect to planning and implementation of digital exchange of meteorological information, it is important that the work programme of the (APAC) MET/IE WG takes into consideration the responsibilities and work plan of the METP WG-MIE.

IP/5 – Test plan for exchanging MET through AMHS in Hong Kong, China

4.10 Hong Kong, China was developing a test plan for exchanging digital meteorological information via AMHS infrastructure connecting to neighbouring States; initially working with Singapore to develop and conduct tests on the exchange of IWXXM messages with AMHS extended service, making use of the direct connection via a virtual private network (VPN), but with the goal of exchanging IWXXM messages on the operational AMHS connection via Bangkok, Thailand to Singapore. Thailand and Hong Kong, China are planning to conduct tests on the exchange of IWXXM sample messages using AMHS extended services.

[4] System Wide Information Management [a concept introduced in the ICAO global air navigation plan to support the modernization of the air traffic system]
[5] ICAO Information Management Panel

4.11 Such testing conducted between States and the subsequent reporting back to the MET/IE WG was considered a very useful activity supporting a coordinated regional approach to planning and implementation of digital exchange of OPMET information using the IWXXM format.

WP/10 – OPMET additional parameters

4.12 The MET/P WG-MIE, in its work stream *1) Extensions*, is consulting users on optional parameters provided in traditional alphanumeric code (TAC) OPMET messages with a view to documenting the management of these additional parameters and extensions in IWXXM. Benefits of doing this would include a globally consistent method of including such parameters in IWXXM exchanged data. To assist this work, feedback that is provided by States directly to the advisor to the Australian member[6] of METP WG-MIE would be forwarded to the METP WG-MIE for further consideration.

4.13 The meeting noted that while there is currently no ICAO requirement for additional parameters to be included as a remark (e.g., in a RMK field) within TAC messages, the introduction of additional parameters might be necessary in future versions of IWXXM, e.g., if new ICAO requirements for additional parameters in OPMET were to be adopted to meet potential future user needs.

WP/11 – Capacity building for implementation of digital exchange of OPMET

4.14 An ICAO inter-regional *Workshop on implementing IWXXM for exchange of OPMET data* will be held at the ICAO European and North Atlantic (EUR/NAT) Regional Office in Paris, France, from 31 May to 2 June 2016. The workshop will be dedicated to the regional OPMET data exchange hubs in all ICAO Regions, the WMO, Eurocontrol and other appropriate organisations and experts deemed necessary, and is expected to be the first in a series of regional workshops addressing training and capacity building aspects related to the migration to IWXXM.

4.15 In addition to targeting experts from RODBs, the meeting considered that future capacity building initiatives may need to involve a more diverse audience, such as the high-level decision makers and project managers of the service providers concerned, airline operators and other users of aeronautical meteorological information in the APAC Region.

4.16 Organization and conducting of the workshop will address the APANPIRG/26 Conclusion 26/56 – *Capacity building workshop to facilitate planning and implementation of digital exchange of aeronautical meteorological information* (as well as the European Air Navigation Planning Group (EANPG) Conclusion 57/23).

4.17 The workshop objectives include the presentation of the *"Guidelines for the Implementation of OPMET Data Exchange using IWXXM"*, which may be adopted in the future as regional guidance material, and the development of regional implementation plans for IWXXM – which may include subsequent or follow-up workshops to address States' training and capacity building requirements.

4.18 Advice from the organizing ICAO Office, i.e., the EUR/NAT Office, was that one or two experts representing the communications and meteorological information aspects of the RODBs would be ideal to support the workshop. The meeting noted that 4 APAC RODBs, i.e., Brisbane, Bangkok, Singapore and Tokyo, indicated the intention, or serious consideration, to participate in the workshop. The meeting was not provided with information on Fiji's position with respect to participation at the workshop by RODB Nadi, or of the status of planning and implementation of

[6] Advisor to the Australian member of METP WG-MIE is also the Chair of the MET/IE WG

IWXXM at RODB Nadi. Furthermore, the meeting noted that the chair (of MET/IE WG) did seek this information from RODB Nadi prior to the meeting, but received no response.

ACTION – [Secretariat] Seek confirmation from Fiji on:
a) The status of planning and implementation of IWXXM at RODB Nadi; and
b) Fiji's intentions with respect to supporting and participating in the IWXXM workshop.

ACTION – Seek further advice from the MET SG with respect to any necessary follow-up action for the MET/IE WG related to capacity building for the planning and implementation of digital exchange of meteorological information [Chair and Secretariat].

Agenda Item 5: Quality control, monitoring and management of meteorological information exchange

WP/13, WP/14, WP/15 – OPMET monitoring by IATA

5.1 Results of IATA monitoring of APAC OPMET data in 2016 indicated further improvement in overall availability of OPMET over previous years, though there were still some locations where potential problems were highlighted with respect to OPMET availability at the Satellite Distribution System [for meteorological information] (SADIS) and the World Area Forecast System Internet File Service (WIFS). The monitoring also identified locations where the timeliness and regularity of OPMET information may not conform to requirements.

5.2 The meeting agreed that the IATA OPMET monitoring data should be promulgated to States concerned to help improve the availability, timeliness and regularity of OPMET provided by APAC States.

ACTION – Forward OPMET monitoring information to States concerned, and SADIS/WIFS providers, to highlight and facilitate the resolution of identified issues (Note: this is related to the work programme, Activity 1.8: *Advise States of OPMET deficiencies*) [Secretariat with assistance from IATA].

IP/03 – Quality improvement of MET information

5.3 Republic of Korea has a planned to improve the quality of aeronautical meteorological information provided to users including enhanced access to more reliable information.

WP/16 – APAC OPMET performance indices

5.4 RODB Bangkok has computed and analysed OPMET performance indices of incoming OPMET data derived from 4 RODBs: Bangkok, Brisbane, Singapore and Tokyo during the period 1-31 January 2016. The analysis indicated that the compliance index at a number of locations was lower than 0.5 (note: 1.0 represents perfect compliance).

5.5 In contrast to the 4 APAC RODBs listed above, which have been very supportive of the OPMET monitoring activities, no data was provided by RODB Nadi to support the above analysis. Lack of participation and support from RODB Nadi in the OPMET monitoring activities, which are conducted under the auspices of APANPIRG, over a period of several years has not been helpful towards the MET/IE WG objectives to assist the APANPIRG work programme.

ACTION – Raise the significant concerns with Fiji of the MET/IE WG with respect to the lack of participation by RODB Nadi in the meetings of MET/IE WG and the OPMET monitoring activities [Secretariat].

5.6 Further to the discussion at paragraph 5.4, further investigation would be required to determine the cause(s) of the low compliance of OPMET at the locations identified in the Appendixes to WP/16.

ACTION – Coordinated assistance to the States concerned to facilitate resolution of OPMET performance (low compliance) issues (Note: this is related to the work programme, Activity 1.9: *Provide support for States to rectify deficiencies if requested*) [Secretariat with assistance from RODBs].

IP/8 – Web-based OPMET performance indices analyser

5.7 Thailand has developed a new way to analyse OPMET monitoring data using a web-based performance indices analyser to calculate three OPMET performance indices: availability, compliance, and regularity. This system will be made available to facilitate RODBs in analysing OPMET monitoring data and producing reports for future use.

Agenda Item 6: Guidance material related to meteorological information exchange

WP/18 – Guidelines for the implementation of OPMET data exchange using IWXXM

6.1 The draft document "*Guidelines for the Implementation of OPMET data exchange using IWXXM*" is being developed by METP WG-MIE under the work stream *4) IWXXM guidance*. Some of the issues being addressed in the document are significant to Regions such as the use of terminology, use of File Transfer Body Part (FTBP) and how Region-specific information will be recorded. To assist this work, feedback on the draft document that is provided by States directly to the advisor to the Australian member[7] of METP WG-MIE would be forwarded to the METP WG-MIE for further consideration.

6.2 For various possible reasons, including lack of technical capability, resources and understanding, some States may experience difficulties in the development, planning and implementation of IWXXM. Given the relatively limited time frame to address such issues (before applicability of related ICAO Annex 3 provisions), a short-term or interim solution may involve arrangements between States with RODBs performing TAC-to-IWXXM translation on behalf of other States – however the meeting noted that no APAC RODB has currently committed to performing TAC-to-IWXXM translation. In the longer term, however, all States should consider the escalating need to support the generation of IWXXM-formatted meteorological information, as it is anticipated that there would be future capabilities developed in IWXXM that will not be developed in TAC – making the translation of TAC-to-IWXXM increasingly obsolete.

6.3 Noting that the IWXXM workshop (discussed in WP/11; and at paragraphs 4.14-18 of this Report) would identify and address issues related to the implementation of IWXXM, the meeting considered that a list of potential suppliers or vendors of technological solutions to support the generation of IWXXM, which could be provided for optional use by States as necessary, may be a desirable outcome from the workshop or from similar, future IWXXM supporting activities.

[7] Advisor to the Australian member of METP WG-MIE is also the Chair of the MET/IE WG

6.4 As the regional implementation of AMHS is a key enabler for the future regional implementation of IWXXM for exchange of MET information, the meeting noted that coordination among the ICAO APAC regional groups supporting AMHS implementation and IWXXM implementation will be of importance – especially so with respect to ensuring that the requirements and timelines related to IWXXM implementation are made well known to the expert groups and the service providers concerned with the planning and implementation of the necessary, supporting AMHS systems.

ACTION – Provide further advice on appropriate links to regional (communications-related) expert groups as a mechanism to communicate the requirements (for AMHS with extended services) and timelines to support IWXXM [Secretariat and chair]

ACTION – Present to MET SG the need for States to implement AMHS connection between MET service and the national AMHS connection to support IWXXM transfer [Secretariat and chair]

WP19 – ROBEX Handbook updates

6.5 The last 'major' amendment of the ROBEX Handbook was published in October 2015 (ICAO letter Ref.: T 4/8.3.2 & T 4/10.2: AP155/15 (MET), dated 6 October 2015, refers). A subsequent 'minor' amended was published in December 2015 incorporating updates to reflect current requirements for OPMET at some locations in India (ICAO email; Subject: Re: Updated Guidance Material – ROBEX Handbook and ICD, dated 8 December 2015, refers).

6.6 New draft amendments to the ROBEX Handbook were presented to the meeting for review, and in some cases were revised with additional input provided by the meeting, to address a number of issues raised by the previous meeting (ROBEX WG/13) or identified during the present meeting. The revised draft amendments to the ROBEX Handbook are provided at the **Attachment 4** to this Report.

6.7 Some further development of the draft amendments to the ROBEX Handbook would be required to fully address the issues identified (as annotated at the **Attachment 4** to this Report) prior to submission of the draft amendments as a mature document for further review and possible approval by the MET SG for onward distribution to and use by States.

ACTION – Coordinate further development of the draft amendments to the ROBEX Handbook based on the revised draft amendment at the **Attachment 4** to this Report with assistance from the MET/IE WG members and the individual States concerned, and presentation of the final draft to MET SG for review and possible approval [Secretariat]

WP/20 – APAC ICD updates

6.8 The APAC OPMET Data Banks Interface Control Document (ICD) was last amended in October 2015 (ICAO letter Ref.: T 4/8.3.2 & T 4/10.2: AP155/15 (MET), dated 6 October 2015, refers).

6.9 Noting that the RODBs should notify regularly the Regional Office of any changes in the procedures or content of the respective data banks (in the Appendices to the ICD), and that the ICD should be examined for possible updates annually, a draft amendment to the ICD should be presented to the MET SG for review and possible approval for further distribution to and use by States.

6.10 Related discussion at WP/2 referred to outstanding action item 13/6 at ROBEX WG/13; to eliminate unnecessary duplication of information in both the ROBEX Handbook and ICD.

ACTION – Coordinate development and presentation of draft amendments of the ICD to the MET SG, with assistance from RODBs, to align the procedures and content of the respective data banks with the current requirements and to address the issues arising from action item 13/6 from ROBEX WG/13 [Secretariat].

WP/21 – APAC ANP updates

6.11 Subsequent to APANPIRG endorsement of a draft new format for the APAC Regional Air Navigation Plan (ANP), which is based on the common, new template approved by Council in 2014 (APANPIRG 26 Conclusion 26/2 Refers), proposals for amendment of the APAC ANP, Volumes I and II, were circulated by ICAO to States for comment (i.e., for objection/acceptance of the amendments) in December 2015 and January 2016, respectively (ICAO letters Ref.: T 11/2.1-AP0170/15 (AGA), dated 10 December 2015 and Ref.: T 11/2.1-AP010/16 (AGA), dated 18 January 2016, refer).

6.12 The necessary updates to the Regional ANP data, currently contained in the Facilities and Services Implementation Document (FASID) Tables MET 1A and 1B, which were already discussed at MET SG/19 and related to the responsible MET office for the provision of OPMET information for Honiara, Solomon Islands, and the now redundant reference to meteorological watch office (MWO) requirements at Cairns, Australia, were incorporated into the proposal for amendment of the APAC Regional ANP, Volume II (at Tables MET II-2 and MET II-1), which was circulated to States for comment in January 2016.

6.13 However, the other necessary updates to the Regional ANP data, currently contained in FASID Tables MET 3A and 3B, which were also discussed at MET SG/19 and related to the area of responsibility of tropical cyclone advisory centres and the recipients of information from volcanic ash advisory centres, were not able to be processed in an amendment proposal to the Regional ANP.

6.14 This was because: (a) a moratorium on other amendments to data in the Regional ANPs was in place to facilitate a smooth transition from the ‘old’ format of the Regional ANPs to the ‘new’, common Regional ANP format; and (b) the information related to tropical cyclone advisory centres and volcanic ash advisory centres (previously contained in FASID Tables MET 3A and 3B) was not incorporated in the new Regional ANP format, at Volumes I and II.

6.15 Nonetheless, the necessary updates to the tropical cyclone advisory centre and volcanic ash advisory centre data previously discussed at MET SG/19 should be accessible to States in a temporary arrangement until the eventual location for such data (possibly in the new Volume III of the Regional ANP) is finalised by APANPIRG.

ACTION – Determine an appropriate method to make available to States the required updates to information concerning tropical cyclone advisory centres and volcanic ash advisory centres (in FASID Tables MET 3A and 3B), which were discussed previously at MET SG [Secretariat].

ACTION – Confirm where the information contained in FASID Tables MET 3A, 3B, 3C, 5 and 6 and Charts MET 1 and 2 will be available longer term [Secretariat].

Agenda Item 7: Future work programme

WP/22 – Review MET/IE WG terms of reference and work programme

7.1 Terms of reference for the MET/IE WG were provided by the MET SG when it established the MET/IE WG as the replacement for the ROBEX WG (MET SG/19 Decision 19/2 **—** *Expert working groups of the Meteorology Sub-group*, refers).

7.2 The meeting reviewed and revised a work programme document for the MET/IE WG, incorporating the terms of reference provided by the MET SG and the existing membership, tasks and work programme of the (former) ROBEX WG. A copy of the revised terms of reference and work programme document of the MET/IE WG is provided at **the Attachment 5** to this Report.

Agenda Item 8: Any other business

8.1 No papers were submitted for discussion under this agenda item.

Task List

8.2 The meeting agreed to the action items as recorded in the task list at the **Attachment 3** to this Report.

Next Meeting

8.3 The next meeting was tentatively scheduled for 20 to 22 March 2017 in Bangkok, Thailand, with the inclusion of a conjoint session with the MET/S WG on 22 March 2017.

Report on Conjoint Session

Agenda Item 1: Review and optimization of VAAC Backup Tests

WP/C6 – Follow-up from previous meetings

1.1 The previous conjoint session, i.e., of the thirteenth meeting of the Regional OPMET[8] Bulletin Exchange Working Group (ROBEX WG/13) and the fifth meeting of the Meteorological Hazards Task Force (MET/H TF/5), developed a task list of 8 action items. The meeting considered that 5 action items were completed; 1 was on hold; 1 was in progress; and 1 was yet to commence. An updated task list showing the status of the action items is contained at the **Attachment C1** to this report.

1.2 Although the action item number 7 concerning guidance supporting clarity and consistency of information within tropical cyclone advisory and SIGMET[9] messages in the Region was completed, insofar as the proposed draft conclusion was adopted at the 26th meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/26), the follow-up on the resultant APANPIRG Conclusion 26/53, which was envisaged to be assigned by ICAO to the Meteorology Panel (METP) for further action, should be expedited to meet the timeframe for possible Annex 3 amendments to be considered.

[8] Operational meteorological (information)
[9] Information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en-route weather phenomena which may affect the safety of aircraft operations

1.3 Advisers or members of the METP from Australia and Japan were encouraged to raise the issues discussed above at the earliest opportunity with the METP and/or appropriate working groups of the METP so that the proposals concerning clarity and consistency of information within tropical cyclone advisory and SIGMET messages may be considered for incorporation in the development of proposals for future Amendments to Annex 3. **Note:** The meeting discussed a related paper, IP/C5, at paragraphs 2.24 – 2.25 of this report, which pointed out that (within the context of current Annex 3 provisions) careful consideration would be required in the preparation of SIGMET information based on tropical cyclone advisory information in graphical format (TCG) when the extent of frequent cumulonimbus clouds (FRQ CB) depicted in the TCG does not exhibit a uniform radius from the centre of the tropical cyclone concerned.

ACTION – Secretariat to provide further information with respect to the possible actions related to APANPIRG Conclusion 26/53, noting the information provided in IP/C5 as supporting information.

1.4 Follow-up on the action item number 8 (promotion of the requirements for issuance of special air-reports) was considered to be important and warranted progress as soon as possible.

1.5 Action item 6 was considered to be closed based on discussion at the meeting, which indicated that Australia, Japan and New Zealand considered it would not be feasible for volcano observatory notice for aviation (VONA) information to be distributed onwards (via social media or other channels) by the volcanic ash advisory centres (VAACs).

1.6 With respect to action item 1 (VAAC back-up test State letter invitations and supporting documentation), the VAACs indicated that direct email notification from VAACs would be sufficient to advise those concerned about the conducting of back-up tests.

1.7 With respect to the action item 4 (SIGMET workshop), Japan advised that planning was underway and dates for a proposed 2016 workshop would be available in due course.

WP/C1 – Back-up operations between VAACs Tokyo and Darwin

1.8 Mutual back-up test was conducted between the VAAC Darwin and VAAC Tokyo on 25 November 2015 and 27 January 2016. Recommendations arising from the back-up test included:

a) VAACs (Darwin and Tokyo) continue to promote the implementation and understanding of the International Airways Volcano Watch (IAVW) through active engagement with regional meteorological watch offices (MWOs);

b) VAACs use test results to identify the necessity to update the list of aeronautical fixed telecommunication network (AFTN) addresses used for the provision of volcanic ash (VA) advisory information; and use airlines' feedback concerning the provision of VA advisory information in graphical format (VAG) to enhance the back-up operations performance; and

c) VAACs continue to conduct annual back-up testing.

1.9 Future back-up test reports should include responses received to the volcanic ash test message; listed by State, and should the list of email addresses to which the notice of the back-up test was disseminated.

Agenda Item 2: SIGMET and (volcanic ash and tropical cyclone) advisory information (including SIGMET tests)

WP/C2 and WP/C3 – SIGMET tests

2.1 Annual SIGMET tests were conducted in the APAC Region on 4 November 2015 (WC SIGMET test for tropical cyclone), 11 November 2015 (WV SIGMET test for volcanic ash) and 18 November 2015 (WS SIGMET test for phenomena other than tropical cyclone and volcanic ash).

2.2 The meeting noted that a relatively short lead time was provided by the ICAO State letter invitation to participate in the SIGMET tests and considered that this would have resulted in some MWOs having insufficient time to prepare for and hence participate in the tests (in particular the WC SIGMET test on 4 November), which would have contributed to the significantly lower level of participation (20%) recorded in the SIGMET test results as compared with the previous year.

2.3 In view of the above, the feasibility of re-conducting the WC SIGMET test was discussed, but it was not considered this would be useful or necessary as the next, scheduled annual SIGMET tests (WC, WV and WS) were due to be held in 2016. For future SIGMET tests, however, the formal notification of the conduct of SIGMET tests should be distributed to States no later than 1 month prior to the scheduled test.

2.4 In addition to the discussion above, an unexpected delay in the issuance of the triggering test tropical cyclone advisory message from tropical cyclone advisory centre (TCAC) Tokyo, at the start of the WC SIGMET test, which was attributed to an internal TCAC system error, was considered to also have contributed to the lower level of participation of MWOs that was highlighted in the WC SIGMET test results.

2.5 In general, the errors recorded in the test SIGMET messages issued by some States included incorrect usage of codes, namely the message priority code, abbreviated header information, SIGMET message sequence number and the flight information region (FIR) identifier. Australia noted that it had implemented some internal system changes since the SIGMET tests were conducted and that this would have resolved the errors reported in test SIGMET messages issued from Australia.

2.6 Some MWOs issued multiple SIGMET bulletins (during the WC SIGMET test) containing the same test SIGMET messages, which was not desirable as it could result in confusion for the recipients, including Regional OPMET Databanks (RODBs) that analyse the SIGMET test data.

2.7 In accordance with expectations for the SIGMET test for volcanic ash, test WV SIGMET messages were issued by and received from the 9 designated MWOs in the Russian Federation – located in the neighbouring ICAO European (EUR) Region.

2.8 4 States (i.e., Democratic People's Republic of Korea, Maldives, Republic of Korea and Sri Lanka), including 11 MWOs, did not participate in the WS SIGMET test on 18 November 2015.

2.9 Notwithstanding the shorter lead time provided by the invitation letter for the SIGMET tests (as already discussed at 2.2), 2 States and 2 MWOs, namely Afghanistan (MWO Kabul) and Papua New Guinea (MWO Port Moresby), have not participated in any of the SIGMET tests conducted in the APAC Region since 2006.

2.10 The WS SIGMET test results showed that the rate of reception of SIGMET test messages at the APAC RODBs and the EUR Regional OPMET Centres (ROCs) and RODBs, varied, with fewer WS SIGMET test messages being received at the EUR ROC/RODBs than at the APAC RODBs.

2.11 Clarification of the responsibilities and the correct path for the relay of SIGMET messages (from the source) to the Satellite Distribution System [for meteorological information] (SADIS) and the World Area Forecast System Internet File Service (WIFS) gateways may help to address the discrepancies in SIGMET message reception discussed above.

2.12 The overall reception rate of WS SIGMET test messages at the APAC RODBs was slightly higher than the previous year.

ACTION – Advise States concerned about the 2015 SIGMET test results to facilitate resolution of SIGMET test non-participation and/or rectification of errors identified in the SIGMET test messages

IP/C6 – Cooperation on SIGMET tests between Japan, Lao PDR and Myanmar

2.13 The meteorological service provider for Japan[10] has been providing cooperative technical assistance to the meteorological service providers in Lao People's Democratic Republic[11] (Lao PDR) and Myanmar[12] since 2014 to support improvement in the issuance of SIGMET information in Lao PDR and Myanmar.

2.14 The cooperative assistance resulted in improved SIGMET test participation for both Lao PDR and Myanmar, which indicated that cooperative technical assistance (between States) can be a most effective way to support improvement in the provision of aeronautical meteorological services, such as SIGMET information.

WP/C4 – SIGMET Guide

2.15 Proposed amendments to the Regional SIGMET Guide drafted by the previous conjoint session (ROBEX WG/13 and MET/H TF/5) were reviewed and expanded by MET SG/19 and finally endorsed by APANPIRG/26 (APANPIRG/26 Conclusion 26/60 refers). Subsequently, the new [5th Edition] APAC Regional SIGMET Guide was published by ICAO (State letter Ref.: T 4/8.3.2 & T 4/10.2: AP155/15 (MET), dated 06 October 2015, refers).

2.16 To assist the MET SG with the regular review and update of the Regional SIGMET Guide, consideration should be given to the need to reflect any changes necessary for alignment with Amendment 77 to Annex 3. The meeting noted that coordination with other ICAO Regions would be important to maintain consistency with other Regional SIGMET Guides and assistance should be sought from the ad-hoc group members that developed the common Regional SIGMET Guide template, which included a member from the SADIS Provider State.

ACTION – Prepare draft amendment to the APAC Regional SIGMET Guide to align with Amendment 77 to Annex 3.

[10] Japan Meteorological Agency (JMA)
[11] Lao PDR Department of Meteorology and Hydrology (LDMH)
[12] Myanmar Department of Meteorology and Hydrology (MDMH)

WP/C5 – SIGMET pamphlets

2.17 As follow-up to the decision made by the MET/H TF/5 meeting (Decision 5/1 – *Regional guidance material: SIGMET pamphlets*, refers) the SIGMET pamphlets developed by the ad-hoc group of MET/H TF, which were intended as a quick reference guide for States to use in the preparation of [WC and WS] SIGMET messages, were approved by APANPIRG/26 (Conclusion APANPIRG/26/59 refers) and published by ICAO (and are now available on the ICAO APAC website, under "APAC eDocuments").

2.18 Also, a draft new SIGMET pamphlet was developed as a quick reference guide for States to use in the preparation of [WV] SIGMET messages. The ad-hoc group will present the final draft of the new WV SIGMET pamphlet for review by the MET SG and possible adoption and distribution for use by States.

2.19 In view of the above, the meeting formulated the following draft conclusion for the MET SG:

MET SG/20 Draft Conclusion 20/X – SIGMET Pamphlets

That, ICAO be invited to adopt the SIGMET Pamphlet, provided by the ad-hoc group (in WP/C5), as Regional guidance material and distribute to States to facilitate improved format of SIGMET information for volcanic ash

WP/C7 – Regional guidance on SIGMET for radioactive cloud

2.20 Draft regional guidance material on the issuance of SIGMET for radioactive cloud, for possible inclusion in the Regional SIGMET Guide, developed by the ad-hoc group specially assigned by MET/H TF, was presented to MET SG for further review and consideration and subsequently forwarded to the Meteorology Panel (METP) Meteorological Information and Service Development Working Group (WG-MISD) held in Washington D.C., United States, from 16 to 19 November 2015, which is the global group primarily responsible for developing the guidance material to support Annex 3 provisions.

2.21 Further work by the (MET/H TF) ad-hoc group would not be necessary as the ad-hoc group would wait for global developments in this area, which may be expected within 1 year, and further advice from the MET SG as necessary, which would follow the MET SG's review of the outcomes from the METP WG-MISD activities.

IP/C4 – Automated guidance for SIGMET information on thunderstorms

2.22 Australia has developed a thunderstorm decision support tool, referred to as the "Cloud Object Tracking and Classification" or COTAC software, which utilises a machine learning algorithm, coupled with meteorological satellite imagery and lightning detection technology to detect and track areas of thunderstorm activity, and is used to support the issuance of SIGMET information.

2.23 Criteria used in conjunction with the tool, to determine whether the detected and tracked thunderstorm activity warrants issuance of SIGMET information, are provided in detail in the IP/C4.

IP/C5 – Issuance of tropical cyclone advisory information in graphical format by TCAC Tokyo

2.24 The issuance of tropical cyclone advisory information in graphical format (TCG) by TCAC Tokyo commenced from 06 UTC 26 August 2015. The TCG information is prepared in accordance with Annex 3 requirements and is made available at the TCAC Tokyo website and via the World Area Forecast Centre (WAFC) information services.

2.25 The system used to generate the TCG is not limited to the use of a circle-shaped area for the depiction of the geographical extent of [frequent] cumulonimbus (CB) clouds. Rather, it is enabled to more precisely reflect the true shape of the observed extent of CB clouds associated with a tropical cyclone.

IP/C3 – Darwin VAAC Management Report

2.26 Darwin VAAC issued in total 2592 volcanic ash advisory messages in abbreviated plain language (VAA), and corresponding VAG, in the 12 months from 1 February 2015 to 31 January 2016 – representing a substantial increase in the provision of VAA/VAG compared with previous years.

2.27 Several factors were attributed to the increase in VAA/VAG issuance, including: introduction of a more frequent updating cycle for VAA/VAG (i.e., during significant events, routine issuance increased from 6-hourly to 3-hourly); increased availability and quality of observational data (such as meteorological satellite imagery) resulted in more detections of VA; and an overall increase in the level volcanic activity that occurred in the VAAC's area of responsibility.

IP/C1 – Monthly VONA issuance drill between PHIVOLCS and VAAC Tokyo

2.28 The national provider of volcano observatories in Philippines (PHIVOLCS[13]) and the VAAC Tokyo have established and implemented a cooperative, monthly VONA issuance drill to facilitate improved issuance of VONA by all the volcano observatories of PHIVOLCS and, hence, to support the issuance and exchange of timely volcanic ash advisory information in the Region and safety of aviation in volcanic ash events.

IP/C2 – Report of VOLKAM15 and aim of VOLKAM16

2.29 The third ICAO EUR (EAST) volcanic ash exercise (VOLKAM15) was conducted during 15-16 April 2015, and demonstrated the exchange of VONA, SIGMET information for VA, VAA and Notice to Airmen (NOTAM), issued via AFTN and/or via email, and the responses of aircraft operators, meteorological offices and Air Traffic Services (ATS) units. VAACs Tokyo and Anchorage demonstrated enhanced communication and coordination with the practice of VAAC handover procedures. More detailed discussion on highlights from VOLKAM15 is provided in IP/C2.

2.30 The fourth ICAO EUR (EAST) volcanic ash exercise (VOLKAM16) will be conducted during 21-22 April 2016, and then reviewed in May 2016 by the EUR (EAST) VOLCEX/SG.

[13] Philippine Institute of Volcanology and Seismology

Agenda Item 3: Any other business

Task List

3.1 The meeting agreed to the tasks as recorded in the task list at the **Attachment C1** to this report.

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FOURTEENTH MEETING OF THE ASIA/PACIFIC METEOROLOGICAL INFORMATION EXCHANGE WORKING GROUP (MET/IE WG/14)

(Bangkok, Thailand, 7 – 9 March 2016)

SIXTH MEETING OF THE ASIA/PACIFIC METEOROLOGICAL SERVICES WORKING GROUP (MET/S WG/6)

(Bangkok, Thailand, 7 – 9 March 2016)

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Attachment 2 to the Report

International Civil Aviation Organization

FOURTEENTH MEETING OF THE ASIA/PACIFIC METEOROLOGICAL INFORMATION EXCHANGE WORKING GROUP (MET/IE WG/14)

Bangkok, Thailand, 7 – 9 March 2016

LIST OF WORKING AND INFORMATION PAPERS

WP/IP No.	Agenda Item	Subject	Presented by
WP/1		Provisional Agenda	Secretariat
WP/2	2	Review of follow-up from previous Meetings	Secretariat
WP/3	3	ASIA/PAC Inter-Regional OPMET Gateway Backup Exercise between RODB Bangkok and Singapore	Thailand
WP/4	3	OPMET Exchange between ASIA/PAC and Middle East Region	Thailand and Singapore
WP/5	3	Alignment of Bangkok METAR/TAF Bulletins	Thailand
WP/6	4	Status and Plans for IWXXM and AMHS within APAC	Chair MET/IE
WP/7		Intentionally left blank	
WP/8		Intentionally left blank	
WP/9	4	Status and Plans of IWXXM in Singapore	Singapore
WP/10	4	OPMET Additional Parameters	Australia
WP/11	4	Capacity Building for Implementation of Digital OPMET	Secretariat
WP/12	4	Update on the ICAO METP WG-MIE	Australia
WP/13	5	Availability of OPMET Data from ASIAPAC	IATA
WP/14	5	Availabilty of Non-Scheduled OPMET Data from ASIAPAC	IATA
WP/15	5	Timeliness and Regularity of OPMET data from ASIAPAC	IATA
WP/16	5	ASIA/PAC Performance Indices	Thailand
WP/8		Intentionally left blank	

WP/IP No.	Agenda Item	Subject	Presented by
WP/18	6	Guidelines for the Implementation of OPMET Data Exchange IWXXM	Australia
WP/19	6	ROBEX Handbook Updates	Secretariat
WP/20	6	ASIA/PAC ICD Updates	Secretariat
WP/21	6	ASIA/PAC ANP Updates	Secretariat
WP/22	7	Review MET/IE WG Terms of Reference and Work Programme	Secretariat
		LIST OF INFORMATION PAPERS	
IP/1		Meeting Bulletin	Secretariat
IP/2	4	Status and Plans for Implementation of Digital Exchange of OPMET Using XML	Republic of Korea
IP/3	5	The Quality Improvement and Disclosure of Aeronautical Meteorological Information	Republic of Korea
IP/4	4	A Summary on the Latest Development of IWXXM	Hong Kong, China
IP/5	4	Test Plan for Exchanging Meteorological Information through AMHS in Hong Kong, China	Hong Kong, China
IP/6	4	Brisbane RODB Changes	Australia
IP/7	4	Status and Plans for IWXXM in Thailand	Thailand
IP/8	5	Web-based Performance Indices Analyser	Thailand
IP/9	4	Plans for IWXXM in Australia	Australia
		CONJOINT WORKING PAPERS	
WP/C1	1	Mutual back-up Operations between VAACS Tokyo and Darwin	Australia and Japan
WP/C2	2	Review of WS SIGMET Test 11	Singapore RODB
WP/C3	2	Progress with SIGMET Tests – WC and WV	Japan
WP/C4	2	Regional SIGMET Guide	Secretariat
WP/C5	2	SIGMET Pamphlets	MET/S WG Ad Hoc Group

WP/IP No.	Agenda Item	Subject	Presented by
WP/C6	1 & 2	Review of Follow-up from Previous Meetings	Secretariat
WP/C7	2	The Asia/Pacific Regional Guidance on the Issuance of SIGMET for Radioactive Cloud	Rapporteur, MET/S WG, Ad Hoc Group
		CONJOINT INFORMATION PAPERS	
IP/C1	2	Monthly VONA Issuance Drill between PHIVOLCS and VAAC Tokyo	Japan
IP/C2	2	Report of VOLKAM 15 and Aim of VOLKAM 16	Japan
IP/C3	2	Darwin VAAC Management Report	Australia
IP/C4	2	Automated Thunderstorm SIGMET Guidance	Australia
IP/C5	2	Issuance of Graphical Tropical Cyclone Advisory by TCAC Tokyo	Japan
IP/C6	2	Cooperation on SIGMET Tests between Japan, Lao PDR and Myanmar	Japan, Lao PDR and Myanmar

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TASK LIST

ROBEX WG/13 – Adapted from Appendix D to the Report of ROBEX WG/13
(Highlighted text indicates updated information)

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
13/1	Post the list of WIFS accounts and approving officials in the APAC Region on the ICAO Regional Office web site (http://www.icao.int/apac/pages/default.aspx), e.g., with a link to APAC eDocuments.	June 2015	Secretariat	COMPLETED Related to ROBEX WG/13 Decision 13/1
13/2	Draft revisions to the guidance for OPMET monitoring (e.g., in the ROBEX Handbook and IATA OPMET monitoring practices) to address the specific requirements in ROBEX WG/13 Decision 13/2 and present to MET SG/20.	June 2016	Secretariat and ROBEX WG	IN PROGRESS Related to ROBEX WG/13 Decision 13/2
13/3	Consider the feasibility of realigning the locations in corresponding METAR (SA) and TAF (FT) bulletins and report to MET SG/20.	June 2016	Secretariat and ROBEX WG	IN PROGRESS Related to ROBEX WG/13 Decision 13/3
13/4	Forward the Draft Conclusion 13/4 – *Capacity building workshop to facilitate planning and implementation of digital exchange of aeronautical meteorological information*, to MET SG/19 for further consideration.	July 2015	Secretariat and Chair (ROBEX WG)	COMPLETED Related to ROBEX WG/13 Draft Conclusion 13/4
13/5	Present a WP to MET SG/19 on the current status of planning and implementation by States (including Fiji/RODB Nadi), and their needs and requirements to support planning and implementation of IWXXM.	July 2015	Secretariat and ROBEX WG	COMPLETED Related to ROBEX WG/13 Decision 13/5
13/6	Draft revisions to the ROBEX Handbook to address the specific requirements in ROBEX WG/13 Decision 13/6 and present to MET SG/20.	June 2016	Secretariat and ROBEX WG	IN PROGRESS Related to ROBEX WG/13 Decision 13/6

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
13/7	Investigate feasibility of including provisions in the regional guidance material related to the issuance of routine TAF at intervals of three (3) hours; present draft material to MET SG/20.	June 2016	Secretariat and ROBEX WG	To begin Related to ROBEX WG/13 Decision 13/7

MET/IE WG/14 – Adapted from the Report of MET/IE WG/14

TASK	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
14/1	Draft an updated IROG schematic for the ROBEX Handbook	Jun 2016	Secretary, Thailand	TO BEGIN [Ref: MET/IE WG/14 Report para. 3.6]
14/2	Process amendment to the ROBEX Handbook, Tables A, B and C, to reflect the updated OPMET bulletins compiled by RODB Bangkok	Jun 2016	Secretary, Thailand	TO BEGIN [Ref: MET/IE WG/14 Report para. 3.8]
14/3	Re-distribute the survey on the status of planning and implementation of IWXXM and AMHS	Jun 2016	Secretary	TO BEGIN [Ref: MET/IE WG/14 Report para. 4.3]
14/4	Obtain confirmation from Fiji on: a) The status of planning and implementation of IWXXM at RODB Nadi; and b) Fiji's intentions with respect to supporting and participating in the IWXXM workshop	Apr 2016	Secretary	TO BEGIN [Ref: MET/IE WG/14 Report para. 4.18]
14/5	Obtain instruction from MET SG on any necessary follow-up action related to capacity building for the planning and implementation of digital exchange of meteorological information	Jun 2016	Chair, Secretary	TO BEGIN [Ref: MET/IE WG/14 Report para. 4.18]
14/6	Forward OPMET monitoring information to States concerned and SADIS/WIFS providers	Jun 2016	Secretary	TO BEGIN [Ref: MET/IE WG/14 Report para. 5.2; work programme, Activity 1.8]
14/7	Notify Fiji of the MET/IE WG's significant concerns regarding RODB Nadi representation at the WG and participation in OPMET monitoring	Jun 2016	Secretary	TO BEGIN [Ref: MET/IE WG/14 Report para. 5.5]
14/8	Coordinate corrective action with States concerned to facilitate resolution of OPMET performance (low compliance) issues	Jun 2016	Secretary, RODBs	TO BEGIN [Ref: MET/IE WG/14 Report para. 5.6; work programme, Activity 1.9]

TASK	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
14/9	Recommend appropriate links to other regional (communications-related) expert groups to promote the requirements for AMHS with extended services and timelines to support IWXXM and to promote the requirement for connection between MET service and national AMHS connection to support IWXXM transfer	Jun 2016	Chair, Secretary	TO BEGIN [Ref: MET/IE WG/14 Report para. 6.4]
14/10	Complete the revised draft amendments to the ROBEX Handbook	Jun 2016	Secretary	TO BEGIN [Ref: MET/IE WG/14 Report para. 6.7]
14/11	Complete the draft amendments to the ICD	Jun 2016	Secretary, RODBs	TO BEGIN [Ref: MET/IE WG/14 Report para. 6.10]
14/12	Publish agreed updates to information in FASID Tables MET 3A and 3B and confirm the future location for the information contained in FASID Tables MET 3A, 3B, 3C, 5 and 6 and Charts MET 1 and 2	Jun 2016	Secretary	TO BEGIN [Ref: MET/IE WG/14 Report para. 6.15]

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Draft amendments to the ROBEX Handbook

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11. INTER-REGIONAL OPMET EXCHANGE

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11.4 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 or AMHS addressing from the originator or ROBEX centre to recipients in the other ICAO Regions should be avoided, except when bilateral or other agreements require such direct exchanges.

11.5 In order to ensure the global availability of all ROBEX bulletins at the SADIS and WIFS gateways, the IROG Singapore should arrange for relaying of all Asia/Pacific bulletins to the SADIS gateway (London) and the IROG Tokyo should arrange for relaying of all Asia/Pacific bulletins to the WIFS gateway (Washington). Note: Revise this paragraph to better clarify the responsibility for addressing bulletins to SADIS and WIFS, i.e., is it the IROGs' responsibility or the RCCs'?

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12. MANAGEMENT OF OPMET EXCHANGE UNDER THE ROBEX SCHEME

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

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

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

12.3.3 Reporting OPMET monitoring results

12.3.3.1 OPMET monitoring reports should provide data for all locations where OPMET is required (i.e., locations in Regional 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 (i.e., locations in SUG Annex 1). Note: To be confirmed

12.3.3.2 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 a given percentage of the total number of messages expected.

12.3.3.3 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.

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APPENDIX H

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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 BMG for monitoring the SADIS distribution (ref. SADISOPSG/8, IP/5 – *SADIS OPMET Performance Indices*).

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Example 1:

Bulletin SAIN33 includes 6 aerodromes: VECC, VEPT, VGHS, VGEG, VNKT and VQPR. For each aerodrome, the No. of reports required for a bulletin equals 2*24 = 48 reports, because the official observation time of the bulletins is at every hour and half-hour (i.e., HH+00 and HH+30) resulting in 2 reports for each of the 24 hours in each day. If only on the 2nd of March, RODB does not receive reports from one aerodrome. Calculate the compliance index for Bulleting SAIN33 in March.?

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APPENDIX I

ROBEX FOCAL POINTS

STATE/ ADMINISTRATION	NAME/DESIGNATION AND ADDRESS	TEL/FAX AND E-MAIL
….		
MALAYSIA	Dr.Wan Azli Wan Hassan Director National Meteorological Aviation Centre ~~Mr. Tan Huvi VEIN~~ ~~Director~~ ~~KLIA Meteorological Office~~ 1st Floor, Airport Administration Centre Kuala Lumpur International Airport 64000 Sepang, Selangor Darul Ehsan Malaysia	Tel: +60 (3) 8787239~~86~~ Fax: +60 (3) 87871019 e-mail: ~~thv@kjc.gov.my~~ wanazli@met.gov.my
	Mr. Lim Ze Hui Assistant Director Sabah Meteorological Sabah, Tingkat 7, Wisma Dang Bandang 88000 Kota Kinabalu, Sabah Malaysia	Tel: +60 (88) 256054 Fax: +60 (88) 211019 e-mail: zhlim@met.gov.my

STATE/ ADMINISTRATION	NAME/DESIGNATION AND ADDRESS	TEL/FAX AND E-MAIL
….		
	~~***Administration units OPMET/ROBEX***~~ ~~KLIA Meteorological Office~~ ~~Kuala Lumpur International Airport~~ ~~1st Floor, Airport Management~~ ~~64000 Sepang~~ ~~Selangor Darul Ehsan~~	
….		
REPUBLIC OF KOREA	~~Ms. Park Jieun~~ Ms, Lee Min Ja Senior Meteorologist ~~Korea Aviation Meteorological Agency (KAMA)~~ Aviation Meteorological Office (AMO) Korea Meteorological Administration Observation and Forecast Division 272 Gonghang-ro, Jung-gu Incheon, 400720 (P.O. Box 43)	Tel: +82 (32) 7402820 Fax: +82 (32) 7402807 e-mail: ~~jieuni@korea.kr~~ manja78@korea.kr
	Ms. Kim Youn-jeong Assistant Director ~~Korea Aviation Meteorological Agency (KAMA)~~Aviation Meteorological Office (AMO) Korea Meteorological Administration Information and Technology Division 272 Gonghang-ro, Jung-gu Incheon, 400720 (P.O. Box 43)	Tel: +82 (32) 740 2850 Fax: +82 (32) 740 2847 e-mail: bj414@korea.kr
	Administration units OPMET/ROBEX ~~Korea Aviation Meteorological Agency (KAMA)~~Aviation Meteorological Office (AMO) 272 Gonghang-ro, Jung-gu Incheon, 400720 (P.O. Box 43) (Location Indicator : RKSIYPYX)	
….		

PROPOSED RE-ALIGNMENT OF LOCATIONS WITHIN ROBEX BULLETINS

TABLE A		TABLE B	
SANG31		**FTNG31**	
AYPY	PORT MORESBY Intl	AYPY	PORT MORESBY Intl
AYWK	WEWAK	*AYWK*	*WEWAK*
AYVN	VANIMO	AYVN	VANIMO
AYNZ	NADZAB	*AYNZ*	*NADZAB*

TABLE A		TABLE B	
AYMH	MOUNT HAGEN	*AYMH*	*MOUNT HAGEN*
AYGN	GURNEY	–	–
AYMO	MOMOTE	*AYMO*	*MOMOTE*
ANYN	NAURU I.	ANYN	NAURU I.
AGGH	HONIARA (HENDERSON)	AGGH	HONIARA (HENDERSON)
SASB31		**FTSB31**	
VCBI	BANDARANAIKE INTL AP COLOMBO	VCBI	BANDARANAIKE INTL AP COLOMBO
VCRI	MATTALA RAJAPAKSA INTERNATIONAL AIRPORT	VCRI	MATTALA RAJAPAKSA INTERNATIONAL AIRPORT
VCCH	HINGURAKGODA/MINNERIYA	–	–
~~VRMM~~	~~MALE/Intl~~	–	–
SAMV31		**FTMV31**	
VRMG	GAN INTERNATIONAL AIRPORT	VRMG	GAN INTERNATIONAL AIRPORT
VRMH	HANIMAADHOO INTERNATIONAL AIRPORT	VRMH	HANIMAADHOO INTERNATIONAL AIRPORT
VRMM	MALE INTERNATIONAL AIRPORT	VRMM	MALE INTERNATIONAL AIRPORT
SAIN31		**FTIN31**	
VAAH	AHMEDABAD	VAAH	AHMEDABAD
VABB	MUMBAI/Chhatrapati Shivaji Intl.	VABB	MUMBAI/Chhatrapati Shivaji Intl.
VANP	NAGPUR	VANP	NAGPUR
VOBL	BANGALORE INTL APT	VOBL	BANGALORE INTL APT
VOCB	COIMBATORE	VOCB	COIMBATORE
VOCI	COCHIN INTERNATIONAL	VOCI	COCHIN INTERNATIONAL AIRPORT
VOCL	CALICUT	VOCL	CALICUT
VOHS	HYDERABAD	VOHS	HYDERABAD INTERNATIONAL AIRPORT
VOHY	*HYDERABAD*	*VOHY*	*HYDERABAD*
VOML	MANGALORE	VOML	MANGALORE
VOMM	CHENNAI	VOMM	CHENNAI
VOTR	TIRUCHCHIRAPPALLI	VOTR	TIRUCHCHIRAPPALLI
VOTV	TRIVANDRUM	VOTV	TRIVANDRUM
–	–	~~VEBN~~	~~VARANASI~~
–	–	~~VECC~~	~~NETAJI SUBHASH CHANDRA BOSE INTL AP, Kolkata~~
–	–	~~VEGT~~	~~Guwahati~~
–	–	~~VEGY~~	~~Gaya~~
–	–	~~VEPT~~	~~PATNA~~
–	–	~~VIAR~~	~~AMRITSAR~~
–	–	~~VIDP~~	~~DELHI/Indira Gandhi Intl~~
–	–	~~VIJP~~	~~JAIPUR~~
–	–	~~VILK~~	~~LUCKNOW~~
SAIN32		**FTIN32**	
VIDP	DELHI/Indira Gandhi Intl	VIDP	DELHI/Indira Gandhi Intl
VEBN	VARANASI	VEBN	VARANASI
VIAR	AMRITSAR	VIAR	AMRITSAR
VIJP	JAIPUR	VIJP	JAIPUR
VILK	LUCKNOW	VILK	LUCKNOW
–	–	~~VCBI~~	~~BANDARANAIKE INTL AP COLOMBO~~
–	–	~~VCRI~~	~~MATTALA RAJAPAKSA~~

TABLE A		TABLE B	
			~~INTERNATIONAL AIRPORT~~
–	–	~~VNKT~~	~~KATHMANDU~~
–	–	~~VRMG~~	~~GAN INTERNATIONAL AIRPORT~~
–	–	~~VRMM~~	~~MALE INTERNATIONAL AIRPORT~~
–	–	~~VOBL~~	~~BANGALORE INTL APT~~
–	–	~~VOCB~~	~~COIMBATORE~~
–	–	~~VOCI~~	~~COCHIN INTERNATIONAL AIRPORT~~
–	–	~~VOCL~~	~~CALICUT~~
–	–	~~VOHS~~	~~HYDERABAD INTERNATIONAL AIRPORT~~
–	–	~~*VOHY*~~	~~*HYDERABAD*~~
–	–	~~VOML~~	~~MANGALORE~~
–	–	~~VOMM~~	~~CHENNAI~~
–	–	~~VOTR~~	~~TIRUCHCHIRAPPALLI~~
–	–	~~VOTV~~	~~TRIVANDRUM~~
~~SAIN33~~		–	
~~VGHS~~	~~HAZRAT SHAHJALAL INTERNATIONAL AIRPORT~~	–	–
~~VNKT~~	~~KATHMANDU~~	–	–
~~VQPR~~	~~PARO/Intl.~~	–	–
~~VECC~~	~~NETAJI SUBHASH CHANDRA BOSE INTERNATIONAL AIRPORT, KOLKATA~~	–	–
~~VEGT~~	~~GUWAHATI~~	–	–
~~VEGY~~	~~GAYA~~	–	–
~~VEPT~~	~~PATNA~~	–	–
SABW31		**FTBW31**	
VGEG	M.A. HANNAN INTL. CHITTAGONG	VGEG	M.A. HANNAN INTL. CHITTAGONG
VGHS	HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	VGHS	HAZRAT SHAHJALAL INTERNATIONAL AIRPORT
VGSY	*OSMANI INTERNATIONAL AIRPORT,SYLHET*	*VGSY*	*OSMANI INTERNATIONAL AIRPORT,SYLHET*
SAAS31		**FTAS31**	
VNKT	KATHMANDU	VNKT	KATHMANDU
VQPR	PARO/Intl.	–	–
SAPS31		**FTPS31**	
NCRG	RAROTONGA Intl.	NCRG	RAROTONGA Intl.
NFFN	NADI/Intl	NFFN	NADI/Intl
NFNA	*NAUSORI/Intl*	*NFNA*	*NAUSORI/Intl*
NFTF	FUA'AMOTU INTL.	NFTF	FUA'AMOTU INTL.
NFTV	VAVA'U	NFTV	VAVA'U
NGFU	FUNAFUTI/Intl	NGFU	FUNAFUTI/Intl
NGTA	TARAWA/Bonriki Intl	NGTA	TARAWA/Bonriki Intl
NIUE	NIUE Intl	NIUE	NIUE Intl
NLWW	WALLIS HIHIFO	NLWW	WALLIS HIHIFO
NSFA	FALEOLO/Intl	NSFA	FALEOLO/Intl
NSTU	PAGO PAGO Intl, Tutuila I.	NSTU	PAGO PAGO Intl, Tutuila I.
NTAA	TAHITI FAAA	NTAA	TAHITI FAAA
NVSS	SANTO/Pekoa	NVSS	SANTO/Pekoa

TABLE A		TABLE B	
NVVV	PORT VILA/Bauerfield	NVVV	PORT VILA/Bauerfield
NWWW	NOUMEA LA TANTOUTA	NWWW	NOUMEA LA TANTOUTA
PLCH	CHRISTMAS ISLAND	PLCH	CHRISTMAS ISLAND
SAPS31		**–**	
~~NFTF~~	~~FUA'AMOTU Intl.~~	–	–
NFTL	*HA'APAI*	–	–
~~NFTV~~	~~VAVA'U~~	–	–
~~NLWW~~	~~WALLIS HIHIFO~~	–	–
~~NVSS~~	~~SANTO/Pekoa~~	–	–
~~NVVV~~	~~PORT VILA/Bauerfield~~	–	–
SAJP31		**FTJP31**	
RJAA	NARITA Intl	RJAA	NARITA Intl
RJBB	KANSAI Intl	RJBB	KANSAI Intl
RJCH	HAKODATE	RJCH	HAKODATE
RJGG	CHUBU CENTRAIR Intl	RJGG	CHUBU CENTRAIR Intl
RJOO	OSAKA Intl	RJOO	OSAKA Intl
RJSS	SENDAI	RJSS	SENDAI
RJTT	TOKYO Intl	RJTT	TOKYO Intl
ROAH	NAHA	ROAH	NAHA
SAJP32		**FTJP32**	
RJCC	SAPPORO/New Chitose	RJCC	SAPPORO/New Chitose
~~RJCH~~	~~HAKODATE~~	–	–
RJFF	FUKUOKA	RJFF	FUKUOKA/Fukuoka
RJFK	KAGOSHIMA	RJFK	KAGOSHIMA
RJFO	OITA	RJFO	OITA
RJFT	KUMAMOTO	RJFT	KUMAMOTO
RJFU	NAGASAKI	RJFU	NAGASAKI
–	–	~~RJGG~~	~~CHUBU CENTRAIR INTL~~
RJNK	*KANAZAWA/Komatsu*	*RJNK*	*KANAZAWA/Komatsu*
RJNT	*TOYAMA*	*RJNT*	*TOYAMA*
RJOA	HIROSHIMA	RJOA	HIROSHIMA
RJOB	OKAYAMA	RJOB	OKAYAMA
RJOT	TAKAMATSU	RJOT	TAKAMATSU
RJSN	NIIGATA	RJSN	NIIGATA
~~RJSS~~	~~SENDAI~~	–	–
SAJP38		**FTJP38**	
RJAH	*HYAKURI*	*RJAH*	*HYAKURI*
RJCB	*OBIHIRO*	*RJCB*	*OBIHIRO*
RJCK	*KUSHIRO*	*RJCK*	*KUSHIRO*
RJCM	*MEMANBETSU*	*RJCM*	*MEMANBETSU*
RJEC	*ASAHIKAWA*	*RJEC*	*ASAHIKAWA (civil)*
RJFM	*MIYAZAKI*	*RJFM*	*MIYAZAKI*
RJFR	*NEW KITAKYUSHU*	*RJFR*	*NEW KITAKYUSHU*
RJFS	*SAGA*	*RJFS*	*SAGA*
~~*RJNK*~~	~~*KANAZAWA/Komatsu*~~	–	–
RJNS	*SHIZUOKA*	*RJNS*	*SHIZUOKA*
~~*RJNT*~~	~~*TOYAMA*~~	–	–
RJOC	*IZUMO*	*RJOC*	*IZUMO*

TABLE A		TABLE B	
RJOH	*MIHO*	*RJOH*	*MIHO*
RJOK	*KOCHI*	*RJOK*	*KOCHI*
RJOM	*MATSUYAMA*	*RJOM*	*MATSUYAMA*
RJSA	*AOMORI*	*RJSA*	*AOMORI*
RJSF	*FUKUSHIMA*	*RJSF*	*FUKUSHIMA*
RJSK	*AKITA*	*RJSK*	*AKITA*
ROIG	*ISHIGAKI JIMA*	*ROIG*	*ISHIGAKI JIMA*

ICAO ASIA/PACIFIC METEOROLOGICAL INFORMATION EXCHANGE WORKING GROUP (MET/IE WG)

TERMS OF REFERENCE AND WORK PROGRAMME

1. COMPOSITION

The MET/IE WG is made up of members from States representing the five APAC Regional OPMET Data Banks (RODBs): *Australia/Brisbane, Fiji/Nadi, Japan/Tokyo, Singapore and Thailand/Bangkok*; the World Area Forecast System (WAFS), Secure Aviation Data Information Service ~~Satellite Distribution System~~ (SADIS) and WAFS Internet File System (WIFS) Provider States: *United Kingdom and United States*; the three APAC Volcanic Ash Advisory Centres (VAACs): *Australia/Darwin, Japan/Tokyo and New Zealand/Wellington*; the designated focal points for SIGMET tests and regional OPMET bulletin exchange (ROBEX); and the International Air Transport Association (IATA).

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2. DESCRIPTION	
Objective	Increase OPMET availability and reliability needed for flight planning (efficiency) and in-flight re-planning (safety) in support of the Global Air Navigation Plan framework and the aviation system block upgrade (ASBUs) methodology.
Benefits	Increase in safety and efficiency (time and fuel savings).
Terms of Reference	Under guidance from the ICAO Secretariat:

	a) Review the OPMET exchange schemes in the APAC and other regions and develop proposals for their optimization, taking into account the requirements by the aviation users and global OPMET exchange; b) Monitor and participate in trials of digital aeronautical meteorological information exchange inter- and intra- regionally; c) Develop standardized quality control, monitoring and management procedures related to exchange of IWXXM and TAC OPMET information; d) Review the regional guidance material related to OPMET exchange; e) Liaise and consult with other appropriate bodies within ICAO and WMO dealing with communication and/or management aspects of the OPMET exchange; and f) Provide advice and report to the MET Sub-group on the above issues for further co-ordination through the ICAO Secretariat with other appropriate bodies.
Work Programme	The work to be addressed by the MET/IE WG includes: - Examine new and existing requirements for OPMET exchange in APAC~~, MID~~ and other neighbouring regions along with the WAFS Provider States and assess the feasibility of satisfying these requirements, taking into account the availability of the data; - Keep the ROBEX scheme and other OPMET exchange schemes under review and prepare proposals for updating and optimizing the schemes; - Review and update of the procedures for inter-regional OPMET exchange and ensure the availability of the required APAC ~~and MID~~ OPMET data for ~~Secure~~ SADIS ~~FTP~~ and WIFS; - Review the regional guidance material on OPMET exchange to ensure procedures are provided for the exchange of all required OPMET data ~~types: SA, SP, FT, WA, WS, WC, WV, FK, FV and UA~~; - Conduct trials and develop procedures for quality control, monitoring and management of the OPMET exchange to foster implementation of quality management of OPMET data by the ROBEX centres and the RODBs; - Develop quality control guidance material and promote implementation of quality control for OPMET management - Report on deficiencies in the format and dissemination of OPMET messages; - Participate in the ~~testing,~~ implementation and promote awareness of the transition to digital exchange of OPMET using a code form based on IWXXM; - Conduct regular regional VAAC back-up and SIGMET tests; and - Provide support for the APAC Volcanic Ash Exercises - ~~Develop quality control guidance material and promote implementation of quality control for OPMET management~~.

3. COMMUNICATION STRATEGIES				
Description	**Target Audience**	**Delivery Method**	**Frequency / Date**	**Responsibility**
Work Plan	MET/IE WG Members	Document via email & MET/IE WG Meeting	As required but reviewed at the MET/IE WG Meeting and the MET SG	Chair
General correspondence	MET/IE WG Members	Email	As required	MET/IE WG Members
Working Group	MET/IE WG	Meeting	Annually	Chair

Meeting	Members			
Status & Milestone Reports	ICAO Secretariat and MET/IE WG Members	Report via email & WP at MET/IE WG Meeting	Annually	Chair
Task Force Report	All APAC States	Working Paper at MET SG	Annually	Chair

4. PERFORMANCE FRAMEWORK FORM (PFF)				
Tasks	**Time Frame**	**Responsibility**	**Status**	**Milestone**
Task 1: Improve the availability of OPMET data	Ongoing	MET/IE WG		1
Task 2: Improve timeliness, compliance and regularity of OPMET exchange	Ongoing	MET/IE WG		2
Task 3: Identify gaps and errors in processes, procedures and OPMET exchange	Ongoing	MET/IE WG		3, 4, 5
Task 4: Review regional guidance material related to OPMET data	Ongoing	MET/IE WG		3, 4, 5, 6
Task 5: Facilitate and monitor the migration to IWXXM in support of SWIM	2016-2018	MET/IE WG		7
Task 6: Review the ~~RODB~~ OPMET Exchange structure	2017	MET/IE WG		8

5. MILESTONES			
Milestone	**Accountability**	**Dates**	**Status**
Milestone 1: Achieve 95% (90%) or greater OPMET availability for AOP (non-AOP) aerodromes where OPMET information is required at RODBs, ~~Secure~~ SADIS ~~FTP~~ and WIFS (i.e., aerodromes listed in former FASID Table MET 2A).	MET/IE WG	Annually Jun	
Milestone 2: Achieve OPMET timeliness, compliance and regularity index of 0.95 (0.90) for AOP (non-AOP) aerodromes where OPMET information is required at RODBs, Secure SADIS FTP and WIFS (i.e., aerodromes listed in former FASID Table MET 2A).	MET/IE WG	Annually Jun	
Milestone 3: SIGMETs tests conducted, analysed and report complete.	MET/IE WG	Annually Jun	
Milestone 4: VAAC Back-up tests conducted, analysed and report complete.	VAAC Back-up Focal Points	Annually Jun	
Milestone 5: IROG Back-up tests conducted, analysed and report complete.	Bangkok RODB	Annually Mar	
Milestone 6: RODB Monitoring procedures updated in ROBEX Handbook.	Secretariat	Jun 2014	

Milestone 7: Report to MET/IE WG & MET SG on IWXXM exchange & testing.	Secretariat & Chair	Annually Mar & May	
Milestone 8: ~~RODB~~ OPMET Exchange structure review complete.	MET/IE WG	2017	
Milestone 9: Improved efficiency and effectiveness of ROBEX scheme.	RODBs	Annually Jun	

6. WORK PLAN				
Activity / Milestone	**Accountability**	**Predecessors**	**Date**	**Status**
Activity 1: Increasing OPMET availability for aerodromes where OPMET information is required at RODBs, Secure SADIS FTP and WIFS (i.e., aerodromes listed in former FASID Table MET 2A)				
~~Activity 1.1: Tokyo RODB to investigate providing Bangkok RODB data in standard format~~	~~Tokyo RODB~~	~~-~~	~~TBA~~	
Activity 1.1: Perform real time monitoring if required	RODBs & IATA	-	If required	
Activity 1.2: Monitor RODB OPMET reception in Jan and use Dec as PI threshold.	RODBs	-	Annually Dec/Jan	
Activity 1.3: Monitor SADIS/WIFS OPMET reception.	IATA	-	Annually Jan	
Activity 1.4: Score against ANP Table MET II-2 (and former FASID Table MET 2A).	~~Singapore, Tokyo,~~ RODB Bangkok ~~RODBs~~ & IATA	1.3 & 1.4	Annually Feb	
Activity 1.5: Prepare ROBEX paper and report results and deficiencies to MET/IE WG meeting.	RODB Bangkok & IATA	1.5	Annually Mar	
Activity 1.7: Report summary of OPMET availability results to MET SG	Secretariat & Chair	1.6	Annually May	
Activity 1.8: Advise States of OPMET deficiencies.	Secretariat	1.7	Annually Jun	
Activity 1.9: Provide support for States to rectify deficiencies if requested.	RODBs	1.8	As required	
~~Activity 1.10: Exchange a common dataset and assess the consistency between RODBs of the 'availability' calculation and standardise.~~	~~Singapore, Tokyo, Bangkok RODBs~~	~~-~~	~~TBA~~	
Milestone 1: Achieve 95% (90%) or greater OPMET availability for AOP (non-AOP) aerodromes at RODBs & WAFS.	MET/IE WG	1.9	Annually Jun	

6. WORK PLAN				
Activity / Milestone	**Accountability**	**Predecessors**	**Date**	**Status**
Activity 2: Improving OPMET timeliness, compliance and regularity at RODBs and WAFS Internet based Services				
~~Activity 2.1: Investigate the ingestion of AMHS data into analysis~~	~~Bangkok & Tokyo RODB~~	~~-~~	~~TBA~~	
Activity 2.1: Monitor & collate OPMET data ~~timeliness, compliance and regularity in Jan and use Dec as PI threshold~~.	RODBs & IATA	-	Annually Dec/Jan	
Activity 2.2: ~~Collate and~~ Analyse data	~~Singapore, Tokyo,~~ Bangkok RODB & IATA	2.1	Annually Feb	
Activity 2.3: Prepare paper and report State irregularities to MET/IE WG meeting	Bangkok RODB & IATA	2.2	Annually Mar	
Activity 2.4: Report summary of OPMET timeliness, compliance and regularity results to METSG	Chair	2.3	Annually May	
Activity 2.5: Inform States of compliance	Secretariat	2.4	Annually Jun	
Activity 2.6: Provide support for States to rectify deficiencies if requested.	RODBs	2.5	As required	
~~Activity 2.7: Exchange a common dataset and assess the consistency between RODBs of the timeliness, compliance and regularity calculation and standardise.~~	~~Singapore, Tokyo, Bangkok RODBs~~	~~-~~	~~TBA~~	
~~Activity 2.8: Correct identified issues relating to inconsistencies identified.~~	~~Singapore, Tokyo, Bangkok RODBs~~	~~2.7~~	~~TBA~~	
Milestone 2: Achieve 95% (90%) or greater OPMET timeliness, compliance and regularity for AOP (non-AOP) aerodromes at RODBs & WAFCs.	MET/IE WG	2.6	Annually Jun	
Activity 3: SIGMET Tests				
Activity 3.1: Review SIGMET Test procedures	MET/IE WG	-	Annually Aug	
Activity 3.2: State Letter regarding SIGMET Tests	Secretariat	3.1	Annually Sep	
Activity 3.3: Conduct WC SIGMET Tests	RODBs	3.2	Annually 1st Wed in Nov	To be conducted on 2 Nov 2016

6. WORK PLAN				
Activity / Milestone	**Accountability**	**Predecessors**	**Date**	**Status**
Activity 3.4: Conduct WV SIGMET Tests	RODBs	3.2	Annually 2nd Wed in Nov	To be conducted on 9 Nov 2016
Activity 3.5: Conduct WS SIGMET Tests	RODBs	3.2	Annually 3rd Wed in Nov	To be conducted on 16 Nov 2016
Activity 3.6: Collate and analyse test data against ANP Table MET II-2 (and former FASID Table MET 2A)	RODBs	3.3 - 3.5	Annually Jan	
Activity 3.7: Report to MET/IE WG	SIGMET Focal Points	3.6	Annually Mar	
Activity 3.8: Report on SIGMET Test Results to MET SG.	Chair	3.7	Annually May	
Activity 3.9: Advise States of SIGMET deficiencies	Secretariat	3.8	Annually Jun	
Milestone 3: Improved issuance and compliance of test SIGMETs	MET/IE WG	3.9	Annually Jun	
Activity 4: VAAC Back-up Tests				
Activity 4.1: Review VAAC Back-up Test procedures	MET/IE WG and VAACs		Annually Jan	
Activity 4.2: Update VAAC Back-up Procedures	Secretariat	4.1	Annually May	
Activity 4.3: Issue Notice of ~~State Letter regarding~~ VAAC Back-up Tests	Secretariat/VAACs	4.1	Annually Aug	
Activity 4.4: Conduct VAAC Back-up Test between Darwin and Tokyo	VAACs	4.3	Annually Oct – TBC	
Activity 4.5: Conduct VAAC Back-up Test between Darwin and Wellington	VAACs	4.3	Annually Oct – TBC	
Activity 4.6: Collect test results and send to VAAC Provider State members	RODBs	4.4	Annually Oct – TBC	
Activity 4.7: Analyse Test results	VAAC Back-up Focal Points Members	4.5	Annually Nov	
Activity 4.8: Report to MET/IE WG	VAAC Back-up Focal Points Members	4.6	Annually Feb	
Activity 4.9: Report to MET SG.	Chair	4.8	Annually May	
Activity 4.10: Advise relevant States, VAACs and RODBs of any deficiencies.	Secretariat	4.7	Annually Jun	

6. WORK PLAN				
Activity / Milestone	**Accountability**	**Predecessors**	**Date**	**Status**
Milestone 4: VAAC Back-up Tests conducted, analysed and report complete.	VAAC Back-up Focal Points Members	4.8	Annually Jun	
Activity 5: IROG Back-up Tests				
Activity 5.1: Investigate back-up arrangements of IROG Tokyo & Brisbane	Secretariat	-	TBA	
Activity 5.2: Review IROG Back-up Test procedures to include all IROG.	All IROGs	-	Annually Feb	
Activity 5.3: Updated IROG Back-up Procedures in ROBEX Handbook.	Secretariat	5.2	Annually May	
Activity 5.4: Identify list of MET Bulletins to monitor.	All IROGs	-	Annually Jan/Feb	
Activity 5.5: Conduct IROG Back-up Tests	All IROGs	5.4	Annually Jan/Feb	
Activity 5.6: Collect & analyse test results	All IROGs	5.5	Annually Feb	
Activity 5.7: Report to MET/IE WG	Bangkok RODB	5.6	Annually Mar	
Milestone 5: IROG Back-up Tests conducted, analysed and report complete.	Bangkok RODB	5.7	Annually Mar	
Activity 6: APAC RODB Monitoring procedures				
Activity 6.1: Letter to ROBEX Centres requesting confirmation that ROBEX Handbook Appendix A, B & C has the correct information regarding the Bulletins. Also ask for Hours of Operation and Issue Times of METAR and TAF.	Secretariat	-	Annually May	
~~Activity 6.2: Review ROBEX Handbook Appendix A & B table structure to include columns for Hours of Operation and Issue Times.~~	~~Chair~~	~~6.1~~	~~Annually Jul~~	
Activity 6.2: Review monitoring procedure in ROBEX Handbook and update as necessary.	All RODBs	-	Annually Aug	
~~Activity 6.3: RODBs to indicate differences in procedures and resolve these differences.~~	~~All RODBs~~	~~6.2~~	~~Annually Aug~~	

6. WORK PLAN				
Activity / Milestone	**Accountability**	**Predecessors**	**Date**	**Status**
Activity 6.3: Any changes to RODB monitoring procedures and updates to Appendix A, B and C in ROBEX Handbook.	Secretariat	6.1 & 6.2	Annually Sep	
Milestone 6: RODB Monitoring procedures updated in ROBEX Handbook	Secretariat	6.4	Annually Sep	
Activity 7: New OPMET Exchange Formats				
Activity 7.1: Monitor migration to IWXXM.	~~Secretariat~~ WG	-	As required	
Activity 7.2: Undertake IWXXM tests with other centres.	~~Singapore RODB~~ WG		~~TBA~~ 2018	
Activity 7.3: Report to MET SG on plans for implementation of XML schema at APAC RODBs.	Secretariat		Next meeting MET SG	
~~Activity 7.4: Conduct a trial of IWXXM.~~	~~Singapore RODB~~	~~7.2~~	~~Mar 2016~~	
Activity 7.4: Consider options and strategies for the exchange of OPMET data in IWXXM format ~~within its area of responsibility~~.	WG		Feb 2016	
Activity 7.5: Increase awareness of the requirement for States to exchange of OPMET data in IWXXM format and the impact of inability to do so.	WG		As required	
Activity 7.6: Report to MET/IE WG on the status of the testing and implementation of digital OPMET exchange.	RODBs		Annually Mar	
Activity 7.7: Report to MET/IE WG regarding testing and implementation of digital OPMET exchange internationally.	Secretariat		Annually Mar	
Activity 7.8: Prepare information (e.g. issues, CONOPS) for MET/P WG-MIE ~~ICAO international IWXXM Working Group~~	WG		Feb 2016	
~~Activity 7.9: Participate in the ICAO international IWXXM Working Group.~~	~~WG~~		~~Mar 2016~~	
Milestone 7: Report to MET/IE WG & MET SG on IWXXM exchange & testing.	Secretariat & Chair	7.7	Annually May	
Activity 8: Review OPMET Exchange ~~RODB~~ Structure				

6. WORK PLAN				
Activity / Milestone	**Accountability**	**Predecessors**	**Date**	**Status**
Activity 8.1: Review ROBEX Scheme diagram vs Table in 11.1 of ROBEX Handbook.	All RODBs		May Annually ~~2016~~	
Activity 8.2: Review AFTN network diagram and add an AMHS diagram in the ROBEX Handbook.	Secretariat	-	May Annually ~~TBA~~	Note: a replacement CNS Chart is not available.
Activity 8.3: Review role and responsibilities of OPMET exchange ~~RODB structure~~ taking into account: ○ Capability; ○ IWXXM readiness; ○ Delivery methods (internet, AMHS); ○ New Products (i.e. ATM requirements); ○ International consistency.	~~MET/IE~~ WG	-	2017	
Activity 8.4: Investigate the necessity to include guidance related to IWXXM in the ROBEX Handbook.	WG		June 2016	
Milestone 8: RODB structure review complete.	MET/IE WG	-	2017	
Activity 9: Improve Efficiency and effectiveness of ROBEX Scheme				
Activity 9.1: Align content of SA bulletins with FT bulletins, where appropriate	All RODBs	-	May 2016	
Activity 9.2: Adjust FT bulletin filing time, where appropriate	All RODBs	-	TBA	
Activity 9.3: Advise States who issue TAFs early of ICAO required lead times	Secretariat	-	June 2016	
Activity 9.4: Review ANP Table MET II-2 and ensure all necessary aerodromes are contained in OPMET bulletins	All RODBs	-	May Annually	
Activity 9.5: Review and update ROBEX HB and ICD to align with OPMET bulletin contents	All RODBs	-	Feb Annually	
Activity 9.6: Review and update ROBEX HB and ICD to eliminate duplication of OPMET bulletin information.	MET/IE WG	-	June 2016	
Milestone 9: Improved efficiency and effectiveness of ROBEX Scheme	MET/IE WG	-	2017	

TASK LIST

CONJOINT SESSION OF ROBEX WG/13 AND MET/H TF/5 – Adapted from Appendix C to the Report of the Conjoint Session of ROBEX WG/13 and MET/H TF/5 (Highlighted text indicates updated information)

ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS/REMARKS
1	Review and update, as necessary, the distribution list for the VAAC back-up test State letter invitations and supporting documentation.	Jun 2015	Secretariat in consultation with VAACs and States	ON HOLD Related to Decision (ROBEX WG/13-MET/H TF/5)/1
2	Review and update the lists of AFTN addresses used for MWOs and ACCs in VAAC back-up tests, including in VAAC Wellington's area of responsibility.	Jun 2016	Secretariat in consultation with VAACs and States	IN PROGRESS Related to Decision (ROBEX WG/13-MET/H TF/5)/2
3	Promulgate the detailed data in Appendices 1 and 2 to WP/C2, Tables 1 and 2 in WP/C3 and Tables 1 and 2 in WP/C4 to highlight problems in test SIGMET issuance to the States/MWOs concerned.	Nov 2015	Secretariat	COMPLETED Related to Decision (ROBEX WG/13-MET/H TF/5)/3
4	Investigate and report (to MET SG/19) on the feasibility of collaboration between ICAO, Japan and WMO with respect to a proposed SIGMET workshop (hosted by Japan in 2016) to facilitate improved issuance of SIGMET in the Asia/Pacific.	Jul 2015	Secretariat in consultation with Japan	COMPLETED Related to Decision (ROBEX WG/13-MET/H TF/5)/4
5	Review the draft Regional SIGMET Guide provided in the revised Attachments 1 and 2 in WP/C5 then submit for final approval process and dissemination to States for use as Regional guidance.	Oct 2015	Secretariat and ad hoc group: Australia (Rapporteur), Hong Kong-China, Japan, New Zealand	COMPLETED Related to Decision (ROBEX WG/13-MET/H TF/5)/5
6	Further investigate the feasibility of the use of social media sites to make the VONA information accessible to users.	Mar 2016	Secretariat in consultation with VAACs	COMPLETED Related to Decision (ROBEX WG/13-MET/H TF/5)/6
7	Develop a working paper for MET SG/19 (highlighting the issues raised in WP/C8 and IP/C5) with proposal(s) for the improvement of guidance supporting clarity and consistency of information within tropical cyclone advisory and SIGMET messages in the Region.	Jul 2015	Ad hoc group: Australia (rapporteur), Hong Kong-China and Japan (note: Secretariat to invite India), IATA and/or IFALPA	COMPLETED Related to Decision (ROBEX WG/13-MET/H TF/5)/7

ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS/REMARKS
8	Consider the promotion of the issuance of special air-reports to support information sharing, especially with respect to hazardous phenomena, in a consistent manner as required throughout the Region.	Jun 2016	Secretariat in consultation with IFALPA	To commence Related to Decision (ROBEX WG/13-MET/H TF/5)/8

CONJOINT SESSION OF MET/IE WG/14 AND MET/S WG/6 – Adapted from the Report of the Conjoint Session of MET/IE WG/14 and MET/S WG/6

TASK	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
1	Report on follow-up related to APANPIRG Conclusion 26/53	Jun 2016	Secretary	TO BEGIN [Ref: Conjoint Session Report para. 1.3]
2	Promulgate results of the 2015 SIGMET test to States concerned	Jun 2016	Secretary	TO BEGIN [Ref: Conjoint Session Report para. 2.12; MET/IE WG work programme Activity 3.9]
3	Prepare draft amendment to the APAC Regional SIGMET Guide to align with Amendment 77 to Annex 3.	Jun 2016	Chairs, Secretary	TO BEGIN [Ref: Conjoint Session Report para. 2.16]