

INTERNATIONAL CIVIL AVIATION ORGANIZATION



**REPORT OF THE FIFTH MEETING OF THE ASIA/PACIFIC METEOROLOGICAL
REQUIREMENTS WORKING GROUP (MET/R WG/5)**

Bangkok, Thailand (19 – 21 April 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

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HISTORY OF THE MEETING

1. Location and date

1.1 The Fifth Meeting of the Asia/Pacific (APAC) Meteorological Requirements Working Group (MET/R WG/5) of the APAC Air Navigation Planning and Implementation Regional Group (APANPIRG) was held at the Koitate Wing, ICAO Asia and Pacific Regional Office, Bangkok from 19 to 21 April 2016.

2. Attendance

2.1 The Meeting was attended by 30 participants from 12 States and one International Organization including Australia, Bangladesh, Cambodia, China, Hong Kong China, India, Japan, Mongolia, New Zealand, Republic of Korea, Singapore, Thailand and ICAO. A list of participants is provided at **Appendix A** to the Report

3. Chair and Secretariat

3.1 Mr. Jun Ryuzaki, Senior Coordinator for International Aeronautical Meteorology, Japan Meteorological Agency, presided as Chair of the Meeting.

3.2 Mr. Peter Dunda, Regional Officer Aeronautical Meteorology, and Mr. Shane Sumner, Regional Officer Air Traffic Management, ICAO Asia and Pacific Office, acted as the Secretariat for the Meeting.

4. Documentation and Working Language

4.1 The MET/R WG met as a plenary throughout the Meeting. The working language of the Meeting was English inclusive of all documentation and this Report. A total of 5 working papers (WP), 11 information papers (IP) and one special presentation (SP) were considered by the Meeting. The list of papers and presentations is attached at **Appendix B** to this report.

4.2 All documentation (including this Report) is available at the following website: http://www.icao.int/APAC/Meetings/Pages/2016-MET-R_WG5.aspx

REPORT ON AGENDA ITEMS

1. Opening of the meeting

1.1 Mr. Peter Dunda welcomed all participants on behalf of Mr. Arun Mishra, Regional Director, ICAO Asia and Pacific Office, Bangkok.

1.2 Mr. Jun Ryuzaki invited the meeting to observe a moment of silence and prayer in honour of the victims and survivors of the recent, devastating earthquakes on the island of Kyushu, Japan. The meeting noted the vital importance of aviation operations in the search and rescue and recovery efforts of the Japanese authorities and the communities affected.

2. Organizational Matters

Adoption of the agenda (WP/01)

2.1 The draft agenda provided in WP/01 was adopted by the meeting.

3. Review of follow-up from previous meetings

MET/R TF/4 and MET/ATM Seminar 2015 (WP/02)

3.1 The status of follow-up on the task list of 6 action items developed by the fourth meeting of the Meteorological Requirements Task Force (MET/R TF/4) and the Meteorology/Air Traffic Management (MET/ATM) Seminar in 2015 was reviewed as detailed at the Attachment to WP/02.

3.2 Follow-up to the action item 1, to invite CANSO, as a representative of air navigation service providers, to participate in the current meeting as a member of the group, was completed, but a representative from the organization was unable to attend this meeting due to other commitments at the time. Additional strategies to encourage greater participation by experts from the ATM sector were discussed by the meeting.

3.3 The meeting concurred that efforts were needed to continue to foster increased participation in the MET/R WG by experts from the ATM community and to raise the general awareness of the group and its role amongst the ATM sector. It was suggested that future meetings should be scheduled to avoid conflicts with other ATM-related forums in order to secure better participation from the ATM sector and that closer coordination with the Air Traffic Flow Management Steering Group (ATFM SG) may be helpful in raising awareness of the MET/R WG among ATM experts. In addition, the attributes of the group should ensure its relevance to the ATM community and this was considered when the meeting reviewed the terms of reference and the work programme of the MET/R WG under agenda item 6.

3.4 In view of the above discussion, the meeting formulated the following draft conclusion:

Draft Conclusion MET/R WG/5/1 — Participation of ATM Experts in the Asia/Pacific Meteorological Requirements Working Group (MET/R WG)

That, recognizing the need to enhance air traffic management (ATM) operational decisions and the importance of establishing the appropriate meteorological requirements to support such needs in the Asia Pacific region, States/Administrations are encouraged to participate, with the appropriate representation by ATM experts, in the MET/R WG.

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3.5 A regional survey of MET information provided to support ATM was conducted in accordance with the action item 2; however the results of the survey were yet to be analysed. The meeting discussed this further and developed subsequent, necessary follow-up action at paragraph 3.8 and under agenda items 5 and 6.

3.6 To facilitate progress on the other action items, including the action item 3: *to develop regional guidance for tailored MET information supporting ATM*, action item 4: *to coordinate on possible improvements to the SIGMET Guide to assist States in aligning cross-boundary SIGMET information*, and action item 5: *to identify MET information needed to support the elements of the APAC Seamless ATM Plan*, the meeting revised the group's work programme document during discussions at agenda item 6 and set appropriate deliverables, milestones and responsibilities that would address aspects of those action items requiring further follow-up work.

MET SG/19 (WP/03)

3.7 The status of follow-up on outcomes from the nineteenth meeting of the Meteorology Sub-group (MET SG/19) was reviewed by the meeting, focussing on outcomes of direct relevance to the MET/R WG.

3.8 MET SG/19 adopted Draft Conclusion MET SG/19/16 — *Survey of State MET Information Supporting ATM*, in support of and response to the MET/R TF/4 action item 2 (discussed at para. 3.5), to urge States/Administrations to provide responses to the regional survey of MET information provided to support ATM. The Draft Conclusion MET SG/19/16 was subsequently endorsed and adopted by APANPIRG/26 (Conclusion APANPIRG/26/57), and the resulting survey was conducted in October/November 2015 (State letter Ref.: T 4/3.2.7:AP152/15 (MET), dated 1 October 2015, refers).

3.9 MET SG/19 adopted Decision MET SG/19/2 — *Expert working groups of the MET SG*, to appoint a new structure for the MET-related contributory bodies (of APANPIRG), with 3 working groups (MET/IE WG, MET/S WG and MET/R WG) assigned to assist the MET SG, and ultimately the APANPIRG, in carrying out its work plan. As a result, the MET/R WG was established to replace the (former) MET/R TF. The meeting discussed and reviewed the new MET/R WG work programme and terms of reference document under agenda item 6.

3.10 MET SG/19 adopted the Decision 19/12 — *Observations including air-reports of VA*, in order to promote implementation of the ICAO provisions for air-reports, and support follow-up to the MET/R TF/4 action item 6 (which was noted in WP/02).

APANPIRG/26 (WP/04)

3.11 The status of follow-up on the action plan from the twenty-sixth meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/26) was reviewed by the meeting, as presented at the Attachment to WP/04, focussing on outcomes of direct relevance to the MET/R WG.

3.12 Follow-up on Conclusion APANPIRG/26/57 — *Survey of State MET Information Supporting ATM* was considered by the meeting to be completed insofar that a survey was conducted. The meeting also discussed this issue at paragraphs 3.5 and 3.8.

3.13 The meeting noted that follow-up on Conclusion APANPIRG/26/61 — *MET-ATM Collaboration at National and Sub-Regional Levels*, was completed with the distribution of ICAO State letter Ref.: T 4/3.2.7 — AP158/15 (MET), dated 15 October 2015, which encouraged States/Administrations to strengthen MET/ATM collaboration at the national and/or sub-regional level, while also emphasising the Annex 3 requirement for States to ensure close liaison between the designated provider/s and users of MET information.

3.14 The meeting considered that Conclusion APANPIRG/26/62 — *Cross-border MET Collaboration and Coordination*, was closely related to the MET/R TF action item 4 (discussed at paragraph 3.4) and, with further discussion under agenda item 6, incorporated appropriate follow-up work into the MET/R WG work programme.

4. MET information required to support end user systems

Australian weather services for air traffic management (IP/02)

4.1 In Australia, the designated MET authority (Bureau of Meteorology) provides a broad range of MET information and services, intended for both international and domestic users, which are distributed by the national aeronautical information service (AIS) provider (Airservices Australia). Full details are in IP/02.

4.2 Some MET information and services provided in Australia are not fully compliant with ICAO provisions, e.g.: the trend forecast validity period is 3 hours rather than 2 hours; AIRMET information uses complete words rather than the specified abbreviations; and area forecasts for low-level flights do not fully comply with ICAO Annex 3 specifications. The meeting was informed that Australia planned to either phased out the non-compliant services or replace them with compliant services in the near future.

4.3 In addition to the internationally required information and services, the meeting was informed that other types of MET services are provided in Australia to meet special, local needs, providing information such as: airport weather briefings; ditching reports, area QNH forecasts and automated (airport) thunderstorm alerts. Future improved services, currently under development, would increase the efficiency of forecast preparation and provide enhanced information to ATM users. These developments include: “aviation/airport weather matrix” – to streamline the generation of forecast information for aerodromes, “MET collaborative decision making” – to centralize the delivery of MET information for ATFM; and “low probability forecasts” – to provide enhanced support for fuel planning of long haul flights into major airports, all of which will work towards translating MET information into impacts on ATM operations.

Thunderstorm SIGMET guidance (IP/03)

4.4 The meeting was informed that Australia has developed an automated system known as “Cloud Object Tracking and Classification (COTAC)”, which is currently in use by MWOs responsible for MET watch over the Australian FIRs and provides guidance to assist MET personnel with the issuance of SIGMET information (for thunderstorms).

4.5 The COTAC system combines MET observations (from the Japan Meteorological Agency’s latest generation MET satellite, Himawari 8, and real-time lightning detection systems) with specified SIGMET criteria (based on ICAO Annex 3 provisions for thunderstorms in SIGMET information and on user consultation) to provide objective decision support guidance presented in graphical format, which is used for the issuance and monitoring of (thunderstorm) SIGMET information across the Australian FIRs.

Australian graphical products (IP/04)

4.6 In addition to the information and services presented in IP/02, the meeting noted that Australia provides currently, or is planning to provide, a range of MET information in graphical format, including: SIGMET information; significant weather forecasts (both high- and medium- level); volcanic ash and tropical cyclone advisory information; AIRMET information; and area forecasts for low-level flights. The meeting was advised that the graphical format MET information was not currently included in the MET information supplied to operators and flight crew members in the “Pilot Briefing Package” disseminated via the national AIS because the exchange of graphical format MET information is not supported by the AIS.

5. Coordination between MET and ATM services

MET services in support of ATFM (IP/08)

5.1 The meeting was informed that, in Republic of Korea the Aviation Meteorological Office (AMO) aims to support the Air Traffic Flow Management Center (ATFMC) by providing MET services that help improve the efficiency of aircraft operations. The AMO is implementing new MET services to provide information on the occurrence of hazardous MET phenomena and their impacts on airport and airspace capacity.

5.2 Tabular and graphical display of MET information will be used by AMO to highlight the probability of weather impacts on airport capacity and air routes, and to visualize MET hazards affecting the FIR.

Provision of flight-specific SIGMETS based on filed ICAO flight plans (IP/09)

5.3 The meeting was informed that, in Hong Kong, China, flight-specific SIGMET information is provided for each flight departing from the Hong Kong International Airport by using data from the filed ICAO flight plans to match flight positions with valid SIGMET information. This is a new service developed and implemented in close consultation with, and to meet the needs of the users (i.e., airline dispatchers and pilots).

5.4 The service streamlines the process of monitoring and transmitting SIGMET messages to users by identifying applicable SIGMET messages according to the FIRs and ATS routes associated with the flight plan data. In consultation with the users, the system was developed to highlight SIGMET messages according to their validity relative to the position of the flight. To further support the collaborative decision making (CDM) process, geographical display technology will be used in the future to overlay the relevant SIGMET information and other MET information (e.g., cloud and icing information) with the ATS routes concerned.

5.5 In related discussion on the importance of air-reports to support SIGMET service, some members of the meeting recognized that, in addition to special air-reports, the availability of information from routine air-reports (when issued) is important for both the pilots (using SIGMET information) and the MWOs (responsible for the provision of the SIGMET information) for confirmation of the presence (or absence) of the hazardous MET phenomenon in the SIGMET information concerned.

Effective information sharing between ATM and MET in terminal area (IP/10)

5.6 The meeting was informed that, in Japan the designated MET service provider, Japan Meteorological Agency (JMA), has implemented the Tokyo Metropolitan Area Team (TMAT) to support Traffic Management Units (TMUs) of the Japan Civil Aviation Bureau (JCAB) by providing MET information and services tailored to the special requirements of the TMUs.

5.7 The information provided includes detailed briefings focused on significant weather impacts on air traffic flow in and around the Tokyo metropolitan area and the approach control area of the Haneda and Narita Airports. Additionally, specially tailored MET information is presented in tabular and graphical format, i.e., the “Tokyo Metropolitan Area Weather Bulletin for ATM” and the “ATM Categorized Impact of weather Element prediction (ATM CIEL)”, based on specifications agreed with the TMUs. The information provides users with estimates of the level of impact of weather on air traffic flow, based on empirical data from past weather-impact events.

5.8 The use of a special “chat tool” enables TMAT to rapidly share critical MET information and estimates of possible impacts on air traffic flow with TMUs, as necessary, to enhance the effectiveness of MET support to ATM operations in the Tokyo metropolitan area. The TMUs are also able to reaffirm the contents of briefings (with TMAT) at any time. Graphical MET information can be shared using the tool, which assists the TMUs to more easily visualize and understand the weather condition/s, which otherwise may be difficult to do (e.g., by telephone). The meeting was informed that a brochure on the Air Traffic Meteorology Center (ATMetC) includes further information on the TMAT and is available on the JMA website:

http://www.jma.go.jp/jma/en/Activities/ATMetC_leaflet.pdf

Collaborative decision making (IP/05)

5.9 The meeting was informed that, in Australia the designated MET service provider (Bureau of Meteorology) and air navigation service provider (Airservices Australia), in collaboration with major airlines, have developed and implemented a MET CDM process to support ATFM operations at Australia’s major international aerodromes.

5.10 The MET CDM process specifically supports pre-tactical traffic management strategies and the optimised use of available runway capacity. The process involves direct information sharing by all stakeholders to produce a MET CDM “matrix”, which incorporates pre-defined business rules (based on the aerodrome concerned) with specially tailored MET information, and has resulted in significant traffic flow efficiencies.

MET information requirements for the future Australian civil military air traffic management systems (CMATS) (IP/07)

5.11 The meeting was informed that Australia is in the process of planning a combined Civil-Military ATM System (CMATS) to replace the existing, separate civil and military ATM systems. The CMATS will support a range of ATM applications and, hence, will require a range of MET data to suit; including GRIB 2 data (for aircraft trajectory calculation), weather radar data (for situational awareness) and OPMET information. It is envisaged that CMATS will support the exchange of OPMET information in digital format (in accordance with the provisions envisaged in Amendment 78 to Annex 3).

Aviation contingency plan (IP/06)

5.12 The meeting was informed that, in Australia the designated MET service provider (Bureau of Meteorology), in consultation with the national AIS provider (Airservices Australia), has developed a contingency plan for the delivery of MET information and services in the event of an emergency situation (at the Bureau of Meteorology), e.g., degradation/loss of power and/or communication systems, staffing emergency situation or loss of critical infrastructure.

5.13 The contingency plan ensures continuity of key or critical services by adopting a 3-tiered system of service priorities applicable according to the severity of an emergency situation. The plan also incorporates an additional list of top service priorities for use in an extreme emergency.

WMO aviation research demonstration project initiative (IP/11)

5.14 The meeting was advised that, in support of the recommendation of the ICAO Meteorology Divisional Meeting, 2014 (MET/14), to include MET services for the terminal area in the next update of Global Air Navigation Plan (GANP), the WMO is undertaking an Aviation Research Demonstration Project (AvRDP) initiative to demonstrate the capability of MET ‘nowcasting’ and mesoscale numerical weather prediction (NWP) techniques to support the specific requirements of ATM – in particular for information related to the impact of ‘convective weather’ and ‘winter weather’ on operations.

5.15 The AvRDP incorporates two phases: Phase I – focuses on MET research and development; Phase II – focuses on translation of MET information into ATM impacts, such as airport capacity, air traffic delay, etc. The project requires close collaboration between the MET and ATM communities, especially to support the project evaluation process including provision of necessary ATM and flight data needed for evaluation and validation of the MET information as well as ATM impacts.

Update on the Asia/Pacific ATFM/SG (SP/01)

5.17 The meeting was provided with an update on the activities of the Asia/Pacific Region Air Traffic Flow Management Steering Group (ATFM/SG). Information was provided on the Regional ATFM Concept of Operations, and the Asia/Pacific Framework for Collaborative ATFM

5.18 The Framework for Collaborative ATFM included information on MET information for ATM, including the performance expectation of the implementation of MET services to support ATM in the Terminal area. Such services included near-term or now-casting forecasts of convective weather activity at or affecting ATFM program airports and associated instrument approach procedures, terminal area ATS routes and holding points and other significant locations.

5.19 It was expected that the Framework for Collaborative ATFM would be amended to add performance expectations of the implementation of near-term forecasting of convective weather in en-route airspace.

Survey of State MET information supporting ATM (Flimsy/01)

5.20 The Secretariat and Chair provided information on the survey of State MET information supporting ATM that was conducted by the Asia/Pacific Regional Office in October/November 2015 as follow-up to APANPIRG Conclusion 26/57 (State letter Ref.: T 4/3.2.7: AP152/15 MET refers). The number of responses received to the survey was limited to only 20 States/Administrations, including: Australia, Bangladesh, Fiji, Hong Kong China, Macao China, Indonesia, Japan, Lao People’s Democratic Republic, Malaysia, Maldives, Mongolia, Nepal, New Zealand¹, Pakistan, Republic of Korea, Singapore, Solomon Islands, Thailand, United Kingdom and United States.

5.21 A preliminary analysis of the survey responses included some observations and suggestions, as follows: ATM-tailored MET information has been developed in some, but not all, States; in some cases, NWP systems are utilized to provide targeted MET information to support the

¹ Survey response was provided by New Zealand to ICAO, but unintentionally omitted from the Flimsy/01 presentation.

selection of air-routes or for flight planning and the meeting noted the importance of quality assurance of the information provided through continuous verification; some ATM-tailored MET information had been developed without the benefit of generic guidance or specific standards, indicating that guidance on the implementation of MET information and services in support of ATM should be developed; ATM requirements for MET information may differ from State to State; and close coordination among all stakeholders should be an essential consideration for the development ATM-tailored MET information.

5.22 The meeting agreed that further work was required to finalize the analysis of the survey responses and document the results as a resource for future reference to support MET/ATM collaboration initiatives in the Region. This was further discussed under agenda item 6.

6. Future work programme

Review terms of reference and work programme (WP/05)

6.1. The meeting noted that, in accordance with its terms of reference, the (former) MET/R TF focussed on the objective to improve safety, efficiency and sustainability of ATM and operators by providing MET information needed to meet current and future requirements. The MET/R TF terms of reference and work programme document was last updated by the MET/R TF/4 meeting held in Tokyo, Japan, from 29 June to 3 July 2015.

6.2. The meeting also noted that, with the establishment of MET/R WG to replace the MET/R TF, a revised terms of reference was provided based on the requirement to assist APANPIRG with its planning and implementation work in close alignment with the GANP, and associated Aviation System Block Upgrade (ASBU) strategies, and the Asia/Pacific regional priorities. The MET/R WG was also established to facilitate coordination, where necessary, with the ICAO Meteorology Panel and associated Working Groups (MET SG/19 Decision 19/2 – *Expert working groups of the Meteorology Sub-group*, refers).

6.3. Furthermore, when establishing the MET/R WG, MET SG/19 considered that the tasks (previously) assigned to the MET/R TF, and the existing membership, would be transferred to the MET/R WG.

6.4. In view of the above, the meeting revised the work programme document for the MET/R WG (based on the former MET/R TF work programme), and provided further revisions to the terms of reference, to provide a more concise statement on which to proceed with its work.

6.5. Picking up from earlier discussions at paragraphs 3.3, 3.6, 3.9, 3.14 and 5.18, the meeting revised the work programme of the MET/R WG to ensure appropriate deliverables and associated milestones and responsibilities are reflected to address the required follow-up on action items from MET/R TF/4.

6.6. The meeting considered that membership information in the MET/R WG work programme document should highlight the field of expertise (e.g., ATM, MET, etc.) of the respective experts. This would facilitate reference to the relative make-up of the group with respect to MET and ATM expertise. The meeting also considered that redundant contact information may be removed, such as the office address details, but necessary email and telephone contact details be retained.

6.7. The meeting requested the Secretariat to coordinate further with MET/R WG member States, including Thailand, Republic of Korea and Viet Nam, to ensure updated membership information is recorded in the MET/R WG work programme document.

6.8. In view of the discussion above, the meeting agreed to forward the revised MET/R WG terms of reference and work programme document to the MET SG for further review and possible adoption and formulated the following corresponding draft decision:

Draft Decision MET/R WG/5/2 – Terms of reference of the MET/R WG

That, the revised terms of reference of the Meteorological Requirements Work Group (MET/R TF) at **Appendix C** to the report be adopted.

6.9. The meeting also discussed the composition of the membership of the group. In order to optimize the balance between MET and ATM experts it was proposed that States should nominate, where feasible, experts from both MET and ATM fields as members for MET/R WG. The meeting formulated the following corresponding draft decision:

Draft Conclusion MET/R WG/5/3 — Nomination of MET and ATM experts as members of the MET/R WG

That, recognizing the need for both MET and ATM expertise in the MET/R WG, States/Administrations participating in the MET/R WG are encouraged to nominate, where feasible, both MET and ATM experts as members of the MET/R WG.

6.10. The meeting recalled that the definition of ATM, as provided in ICAO Doc 4444 – *Procedures for Air Navigation Services (PANS) ATM*, includes the three components of air traffic services, airspace management and air traffic flow management:

ATM – the dynamic, integrated management of air traffic and airspace including air traffic services, airspace management and air traffic flow management — safely, economically and efficiently — through the provision of facilities and seamless services in collaboration with all parties and involving airborne and ground-based functions.

7. Any other business

Next meeting

7.1 The date and location for the next meeting, and the next MET/ATM seminar, would be proposed based on further coordination between the Chair and members of the group, and with further advice from the MET SG.

**FIFTH MEETING OF THE ASIA/PACIFIC METEOROLOGICAL
REQUIREMENTS WORKING GROUP (MET/R WG/5) OF THE ASIA/PACIFIC
AIR NAVIGATION PLANNING AND IMPLEMENTATION REGIONAL GROUP (APANPIRG)**

(Bangkok, Thailand, 19 – 21 April 2016)

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MET/R WG/5
Appendix A to the Report

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International Civil Aviation Organization
FIFTH MEETING OF THE ASIA/PACIFIC METEOROLOGICAL REQUIREMENTS WORKING GROUP (MET/R WG/5) OF THE ASIA/PACIFIC AIR NAVIGATION PLANNING AND IMPLEMENTATION REGIONAL GROUP (APANPIRG)

Bangkok, Thailand, 19 – 21 April 2016

LIST OF WORKING/INFORMATION PAPERS AND PRESENTATIONS

WP/IP/ SP No.	Agenda Item	Subject	Presented by
WP/1	-	Draft Agenda for MET/R WG/5	Secretariat
WP/2	3	Review Follow-up MET/R TF/4 and MET/ATM Seminar 2015	Secretariat
WP/3	3	Review Follow-up from MET SG/19	Secretariat
WP/4	3	Review Follow-up from APANPIRG/26	Secretariat
WP/5	6	Review Terms of Reference and Work Programme	Secretariat
LIST OF INFORMATION PAPERS			
IP/1		Meeting Bulletin	Secretariat
IP/2	4	Australian Aviation Weather Services for Air Traffic Management	Australia
IP/3	4	Automated Thunderstorm SIGMET Guidance	Australia
IP/4	4	Australian Graphical Products	Australia
IP/5	5	Meteorological Collaborative Decision Making	Australia
IP/6	5	Aviation Contingency Plan	Australia
IP/7	5	MET Information Requirements for the Future Australian Civil Military Air Traffic Management Systems (CMATS)	Australia
IP/8	5	MET Services in Support of ATFM	Republic of Korea
IP/9	4	Provision of Flight-specific SIGMETS based on Filed ICAO Flight Plans	Hong Kong, China
IP/10	5	Effective Meteorological Information Sharing between ATM and MET in Terminal Area	Japan

WP/IP/ SP No.	Agenda Item	Subject	Presented by
IP/11	5	Update on the WMO Aviation Research Demonstration Project Initiative	Hong Kong, China

LIST OF PRESENTATION

SP/1	Update Asia /Pacific Region – Air Traffic Flow Management Steering Group (ATFM/SG)	Secretariat
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**REVISED TERMS OF REFERENCE and WORK PROGRAMME
METEOROLOGICAL REQUIREMENTS WORKING GROUP (MET/R WG)**

DESCRIPTION	
Name and establishment of group	The Meteorological Requirements Working Group (MET/R WG) was established by the Meteorology Sub-group (MET SG) of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) [MET SG/19, Decision 19/2 refers].
Administrative arrangements	The membership and appointment of members, chairing, frequency of meetings and quorum, and recording of meetings shall be determined and conducted in accordance with the working arrangements and instructions provided in the APANPIRG Procedural Handbook.
Reporting mechanism	The MET/R WG shall report its work progress and co-ordination requirements to the MET SG, normally in the form of a report to the MET SG meeting presented by the chairperson of the MET/R WG. Reports may also be provided to other relevant bodies as necessary (e.g., contributory bodies of APANPIRG) with assistance from the ICAO Secretariat.
Objective	Improve safety, efficiency and sustainability of air traffic management (ATM ¹) operations by providing meteorological (MET) information needed to meet current and future requirements of the ATM system.
Benefits	Increase safety – optimize safety risk management Increase efficiency – save time and fuel Increase sustainability – reduce carbon emissions
Functions and delegated authority	Under guidance from the ICAO Secretariat, support the MET SG to assist APANPIRG in its planning and implementation work by carrying out designated tasks on specifically defined problems including: <ul style="list-style-type: none"> a) Recommend updates to the Asia/Pacific Regional Air Navigation Plan and other regional guidance material as necessary, based on analyses and evaluation of the current and future requirements for MET information in support of ATM, as well as ATM information required to support the provision of MET services; b) Facilitate the exchange of expertise in the Asia/Pacific Region on the integration of MET information into ATM systems to support collaborative decision making (CDM); c) Facilitate the monitoring and implementation of sub-regional exchange of MET information (including in digital format) and associated inter-agency agreements that support the integration of MET information in ATM operations in line with the priorities defined in the ASIA/PAC Seamless ATM Plan; d) Promote coordination between the MET and ATM communities in the Asia/Pacific Region to enhance the level of understanding of MET requirements and capabilities in support of ATM; and e) Report to the MET SG for further co-ordination through the ICAO Secretariat with APANPIRG and other relevant bodies.

¹ ATM: the dynamic, integrated management of air traffic and airspace including air traffic services, airspace management and air traffic flow management — safely, economically and efficiently — through the provision of facilities and seamless services in collaboration with all parties and involving airborne and ground-based functions [ICAO Doc 4444, PANS ATM]

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COMMUNICATION STRATEGIES				
Description	Target Audience	Delivery Method	Frequency / Date	Responsibility
Work Plan	MET/R WG, MET SG	Document via email and MET/R WG meeting	As required, but reviewed at MET/R WG and MET SG meetings	Chair and Secretariat
General correspondence	MET/R WG Members	Email	As required	MET/R WG Members
MET/R WG Meeting	MET/R WG Members	Meeting	As required; may be supplemented by tele- / web- conference	Chair and Secretariat
Status and Milestone Reports	MET/R WG Members	Email and working paper at MET/R WG meeting	At least annually	Chair and Secretariat
MET/R WG Report	MET SG and all APAC States	ICAO website and working paper at MET SG meeting	Following each MET/R WG meeting	Chair and Secretariat

DELIVERABLES
1. Input to the draft update to the Regional SIGMET Guide to assist States in aligning cross-FIR-boundary SIGMET information in coordination with MET/S WG
2. Documented analysis of MET information used in the Region specifically to support ATM operations
3. Draft regional guidance material on MET information needed to support the elements of the APAC Seamless ATM Plan
4. Draft regional guidance material for tailored MET information supporting ATM operations
5. Seminar on regional implementation of MET information to support ATM operations

MILESTONES	By date	Responsibility	Status
Deliverable 1: Input to the draft update to the Regional SIGMET Guide to assist States in aligning cross-FIR-boundary SIGMET information in coordination with MET/S WG			
1.1 Input to First draft of guidance for inclusion in Regional SIGMET Guide for review by MET/R WG members	May 2016	Secretariat in coordination with MET/S WG	In progress
1.2 Input to First draft of guidance for inclusion in Regional SIGMET Guide for review by MET SG	Jun 2016	Secretariat in coordination with MET/S WG, MET SG	
Deliverable 2: Analysis of MET information used in the Region specifically to support ATM operations			
2.1 Survey on regional requirements for MET information to support ATM operations	Oct/Nov 2015	Secretariat	Completed
2.2 Preliminary draft documented analysis of MET information used in the Region specifically to support ATM operations	Jun 2016	Secretariat and Chair	In progress
2.3 Final draft documented analysis of MET information used in the Region specifically to support ATM operations	Next meeting	Ad hoc group: Australia (Rapporteur), Singapore, New Zealand, China, Japan, Thailand, Hong Kong China	

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Deliverable 3: Draft regional guidance material on MET information needed to support the elements of the APAC Seamless ATM Plan			
3.1 First draft of a list on the MET information or services necessary to support implementation of each element of the Asia/Pacific Seamless ATM Plan	Jul 2016 ATM/SG	Ad hoc group: Australia, China, Hong Kong, China, and Japan, Thailand, Singapore (Rapporteur)	In progress
Deliverable 4: Draft regional guidance material for tailored MET information supporting ATM operations			
4.1 List of tailored MET information or services used in the region to support ATM operations	Jun 2016	Ad hoc group: Australia, China, Hong Kong, China, Japan (Rapporteur), Republic of Korea, Singapore, Thailand and Viet Nam	In progress
4.2 List of sub-regional exchange of MET information and associated agreements that facilitate ATM operations, particularly where major traffic flows affect multiple FIRs	Jun 2016	As above	In progress
4.3 First draft of regional guidance material for tailored MET information supporting ATM operations	Aug 2016	As above	In progress
Deliverable 5: Seminar on regional implementation of MET information to support ATM operations			
5.1 Propose date/location for seminar on regional implementation of MET information to support ATM operations for consideration by MET SG	Jun 2016	Chair and Secretariat	In progress
5.2 Plan for seminar on regional implementation of MET information to support ATM operations	TBA	Chair and Secretariat	In progress
