



*International Civil Aviation Organization*

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

Bangkok, Thailand, 9 – 11 March 2016

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**Agenda Item 6: Future work programme**

**REVIEW MET/S WG TERMS OF REFERENCE AND WORK PROGRAMME**

(Presented by the Secretariat)

**SUMMARY**

This paper presents the terms of reference and work programme of the Meteorological Services Working Group (MET/S WG) for review by the meeting.

**1 INTRODUCTION**

1.1 The main objectives of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) may be summarised as the following: (a) development of the Asia/Pacific Regional Air Navigation Plan and other relevant regional documentation; (b) facilitation of the implementation of air navigation systems and services in the Asia/Pacific Region; and (c) rectification of deficiencies in the air navigation field.

1.2 The Meteorological Services Working Group (MET/S WG), formerly known as the Meteorological Hazards Task Force (MET/H TF) and now incorporating the functions of the former World Area Forecast System Task Force (WAFS TF), was established by the Meteorology Sub-group (MET SG) [*MET SG/19 Decision 19/2 — Expert working groups of the Meteorology Sub-group, refers*] of APANPIRG as a contributory body which assists APANPIRG in its planning and implementation work specifically related to problems requiring expert advice for their resolution.

1.3 This paper presents the terms of reference and work programme of the MET/S WG for review by the meeting.

**2 DISCUSSION**

**MET/H TF**

2.1 Prior to the establishment of the MET/S WG, the terms of reference and work programme of the (former) MET/H TF focussed on the objective to improve the quality of meteorological advisories and warnings and implement the International Airways Volcano Watch

(IAVW) and International Tropical Cyclone Watch (ITCW) in support of the Global Air Navigation Plan framework and the aviation system block upgrade (ASBUs) methodology.

2.2 A copy of the MET/H TF terms of reference and work programme document is provided at the **Attachment A** to this paper.

### **WAFS TF**

2.3 Given that the MET/S WG will also incorporate the functions of the (former) WAFS TF, it is noted that the terms of reference and work programme of the (former) WAFS TF focussed on the objective to facilitate effective utilization of World Area Forecast System (WAFS) and associated services and products in the Asia Pacific Region.

2.4 A copy of the WAFS TF terms of reference and work programme document is provided at the **Attachment B** to this paper.

### **MET/S WG**

2.5 With the establishment of MET/S WG to effectively replace both the MET/H TF and the WAFS TF, the MET SG provided the MET/S WG with terms of reference to assist APANPIRG with its planning and implementation work in close alignment with the Global Air Navigation Plan (GANP) and Aviation System Block Upgrade (ASBU) strategies and the Asia/Pacific regional priorities, and to facilitate coordination, where necessary, with the Meteorology Panel [*MET SG/19 Decision 19/2 — Expert working groups of the Meteorology Sub-group, refers*].

2.6 A copy of the MET/S WG terms of reference document referred to above is provided at the **Attachment C** to this paper.

2.7 When establishing the MET/S WG, MET SG/19 considered that the MET/S WG would undertake the tasks [previously] assigned to the MET/H TF and the WAFS TF and that it would be appropriate for the existing membership of the MET/H TF and the WAFS TF to be transferred to the MET/S WG.

2.8 In view of the above, a draft, new terms of reference and work programme document for the MET/S WG is provided at the **Attachment D** to this paper for review by the meeting.

## **3. ACTION REQUIRED BY THE MEETING**

3.1. The meeting is invited to:

- a) note the information contained in this paper;
- b) review and revise the draft, new MET/S WG terms of reference and work programme document at **Attachment D** to this paper, as necessary; and
- c) forward the draft, new MET/S WG terms of reference and work programme document to the MET SG for further review and possible adoption.

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**ICAO APAC METEOROLOGICAL HAZARDS TASK FORCE (MET/H TF)**

**TERMS OF REFERENCE AND WORK PROGRAMME**

Appencix A

**(Extracted from Appendix C to the Report from MET/H TF/5)**

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2.DESCRPTION	
Objective	Improve the quality of meteorological advisories and warnings and implement the International Airways Volcano Watch (IAVW) and International Tropical Cyclone Watch (ITCW) in support of the Global Air Navigation Plan framework and the aviation system block upgrade (ASBUs) methodology.
Benefits	<ul style="list-style-type: none"> <li>• <del>Improve in flight safety by providing information on volcanic ash, tropical cyclone and other hazardous weather.</del></li> <li>• <del>Improve pre flight planning by optimizing flight routes with respect to volcanic ash, tropical cyclone and other hazardous weather.</del></li> <li>• Improve the safety and efficiency of flight and ground operations with respect to volcanic</li> </ul>

	ash, tropical cyclone and other hazardous weather [review the wording for consistency with other ICAO definitions].
Terms of Reference	<p>Under guidance from ICAO Secretariat:</p> <ul style="list-style-type: none"> <li>• Maintain awareness of current and future requirements with respect to the issuance of meteorological advisories and warnings in support of the aviation system block upgrades (ASBUs);</li> <li>• Maintain awareness of the implementation of meteorological advisories and warnings within the ASIA/PAC Region and any deficiencies;</li> <li>• Continually seek ways to improve the operational effectiveness of the meteorological advisory and warning system; and</li> <li>• Provide advice to the MET Sub-group on the above issues.</li> </ul>
Work Program	<p>The work to be addressed by the ASIA/PAC MET/H TF includes:</p> <ul style="list-style-type: none"> <li>• Review procedures for the issuance of meteorological advisories and warnings in the region and propose actions for their improvement to related performance objectives;</li> <li>• In conjunction with ROBEX WG, investigate the deficiencies in the format and dissemination of meteorological advisories and warnings and propose remediation plans;</li> <li>• Respond to the needs of the States for guidance and/or training related to the implementation of meteorological advisories and warnings and inform ROBEX WG of changes required to the SIGMET guide;</li> <li>• In conjunction with MET/R TF and in support of the ASBUs, provide meteorological input for operational planning for specific phenomenon including Volcanic Ash, Radioactive Cloud, Tropical Cyclone, Tsunami and Space Weather;</li> <li>• Follow the developments in the States related to the improvement of meteorological advisories and warnings and provide regional input on these matters to relevant ICAO and WMO groups and to gather user requirements from ANSPs, IATA, IFATCA and IFALPA;</li> <li>• Investigate options for removal of SIGMET deficiencies in APAC States;</li> <li>• Provide support for the APAC Volcanic Ash Exercises;</li> <li>• Report on its work to the MET Sub-group of APANPIRG; and</li> <li>• Maintain a link to the Regional ATM Contingency Plan Task Force (RACP/TF).</li> </ul>

3. COMMUNICATION STRATEGIES				
Description	Target Audience	Delivery Method	Frequency/ Date	Responsibility
Work Plan	Task Force Members	Document via email and posted on ICAO Bangkok website	As required but reviewed at least quarterly	Chair
General correspondence	Task Force Members	Email	As required	Task Force Members
Task Force Meeting	Task Team Members	Meeting in conjunction with ROBEX WG	Yearly in March	Chair
Status & Milestone Reports	ICAO Secretariat and Task Team Members	Report via email	Quarterly	Chair
Task Force Report	MET/H TF and ROBEX WG	Working Paper	Yearly	Chair
Task Force Report	MET SG	Working Paper	Yearly	Secretariat

4. PERFORMANCE FRAMEWORK FORM (PFF)				
Tasks	Time Frame	Responsibility	Status	Milestone

Task 1: Monitor and provide assistance to the regional implementation of meteorological warnings and advisories that include volcanic ash (VA) and tropical cyclone (TC) advisories and meteorological warnings and advisories based on current and future requirements	2015-2019	MET/H TF	In progress	1
Task 2: Track and investigate deficiencies in the format and dissemination of meteorological advisories and warnings and propose remediation plans and provide information to ICAO and WMO groups for possible assistance	2015-2018	MET/H TF and ROBEX WG	In progress	1,2
Task 3: Review WC, WV & WS SIGMET test results and implement improvements.	2015-2018	MET/H TF	In progress	1
Task 4: Provide guidance and/or training related to the implementation of meteorological advisories and warnings, including input to the Regional SIGMET Guide as they relate to the Annex 3 amendment cycle.	2015-2016	R/O, MET/H TF and ROBEX WG	In progress	1,3
Task 5: Provide input into regional-operational plans as required for specific phenomenon, including VA, radioactive cloud, TC, Tsunami and Space Weather, with consideration to global ICAO groups and WMO developments.	2015-2018	MET/H TF and MET/R TF	In progress	3
Task 6: Investigate, and implement as appropriate, options to assist States in resolving SIGMET deficiencies.	2015-2016	MET/H TF	In progress	4

5. MILESTONES			
Milestone	Accountability	Dates	Status
<i>Milestone 1: Report on SIGMET test results and regional performance-MET SG</i>	Chair	Annually	
<i>Milestone 2: Guidance and educational material available</i>	Chair	Aug 2015	
<i>Milestone 3: MET input provided for ASIA/PAC Regional ATM Contingency Plans</i>	ad-hoc group	Next meeting	
<i>Milestone 4: Reduction in SIGMET deficiencies.</i>	States	2015	

6. WORK PLAN				
Task / Milestone	Accountability	Predecessors	Date	Status
<b>Activity 1: SIGMET TESTS</b>				
Task 1.1: Review SIGMET tests (conjoint session with ROBEX WG)	Task force	-	Annually	
Task 1.2: Develop action plan to fix identified deficiencies	Chair in conjunction with the Task Force	conjoint session with ROBEX WG	During meeting	
Task 1.3 Report back to MET SG on regional performance and action plan	Chair		Annually	
<i>Milestone 1: Report on SIGMET test results and regional performance to MET SG</i>	Chair	-	Annually	
<b>Activity 2: GUIDANCE AND EDUCATIONAL MATERIAL</b>				
Task 2.1: a) Review current SIGMET poster	Australia, Hong Kong, China and	-	a) Apr 2015	

<b>6. WORK PLAN</b>				
<b>Task / Milestone</b>	<b>Accountability</b>	<b>Predecessors</b>	<b>Date</b>	<b>Status</b>
information b) Publish information in pamphlet form c) Review with future Annex 3 amendments	New Zealand (Rapporteur) in conjunction with ICAO HQ and WMO		b) Aug 2015 c) Aug 2016	
Task 2.2: Review radioactive cloud survey results and develop guidance for inclusion in the SIGMET Guide (2 <sup>nd</sup> draft of paper for MET SG/18)	China (Rapporteur), Hong Kong, China, Japan	-	Aug 2015	
Task 2.3: Review tsunami survey results and develop guidance in line with proposal for Amendment 77 to Annex 3 (2 <sup>nd</sup> draft of paper for MET SG/18)	Japan (rapporteur), Indonesia		Aug 2015	
Task 2.4: Forward proposed amendments to the SIGMET Guide template to appropriate expert group determined by MET Panel	Secretariat		TBC	
Task 2.5: Consider the requirement for seminars/workshops (coordinate with Japan concerning possible SIGMET workshop in APAC in 2016)	Secretariat		2015	
<i>Milestone 2: Guidance and educational material available</i>	Chair		2015-2016	
<b>Activity 3: REGIONAL CONTINGENCY PLANS</b>				
Task 3.1: Get a list of requirements from RACP/TF	Secretariat	-	Next RACP/TF	
Task 3.2: Provide information on hazardous meteorological phenomena to ATM group for inclusion in the ATM contingency plan, if required (after outcome of RACPTF is known)	ad-hoc group (TBC)	-	Next meeting	
<i>Milestone 3: MET input provided for ASIA/PAC Regional ATM Contingency Plans</i>	Secretariat ad-hoc group	3.1-3.2	Next meeting	
<b>Activity 4 – SIGMET Deficiencies</b>				
Task 4.1: Investigation options to eliminate SIGMET deficiencies.	ad hoc group New Zealand (rapporteur), Australia, New Zealand, China, Japan, Indonesia		Oct 2014	Complete
Task 4.2: Assist the ICAO Secretariat in the facilitation of discussion of viable options with relevant States.	ad hoc group	4.1	Aug 2015	
Task 4.3: Monitor the implementation of the solution/s to remove deficiencies.	ad hoc group	4.2	Ongoing	
Task 4.4: Monitor global development on the establishment of a regional advisory system for hazardous weather.	ad hoc group		Ongoing	
Task 4.5: Report progress to MET SG	Ad hoc group rapporteur	4.3	Jul 2015	
<i>Milestone 4: Reduction in SIGMET deficiencies.</i>	States		2016	

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**ICAO APANPIRG /MET  
WAFS TASK FORCE (WAFS TF)**

Appendix B

**TERMS OF REFERENCE AND WORK PROGRAMME**

(Extracted from IP/10 to MET SG/19)

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## 2. DESCRIPTION

<i>Objective</i>	<i>Facilitate effective utilization of World Area Forecast System (WAFS) and associated services and products in the Asia Pacific Region.</i>
<i>Benefits</i>	<i>Improve the regional utilization of WAFS weather forecasts (including SIGWX forecasts, upper winds and upper-air temperatures, humidity, direction, speed and height of maximum winds and tropopause heights, as well as turbulence, icing, cumulonimbus clouds) used by airlines and ATM to optimize flight routes, which will enhance efficiency and reduce carbon emissions.</i>
<i>Terms of Reference</i>	<i>Under guidance from ICAO Secretariat: a) Facilitate the operational use of the WAFS in the Asia and Pacific Region; b) Promote awareness of current and future capabilities with respect to WAFS; c) Maintain awareness of the status of implementation of WAFS within the Asia and Pacific Region and any user State deficiencies; d) Monitor and evaluate the operational effectiveness of the use of WAFS datasets and products generated from those datasets; and e) Provide advice to the MET Sub-group on the above.</i>
<i>Work Program</i>	<i>The work to be addressed by the ASIA/PAC WAFS Task Force (WAFS TF) includes: a) Monitoring the operational use of GRIB2 WAFS forecasts; b) Facilitating the utilization of gridded forecasts of icing, turbulence and CB clouds and providing user's feedback on the use of the gridded forecasts; c) Establishing training requirements for WAFS products; d) Consolidating guidance and information related to the implementation of WAFS and updates to WAFS services and products for easy reference by user States in the Asia and Pacific Region; e) Providing inputs (via the MET SG) to APANPIRG on the regional planning and development of WAFS <del>for coordination with the WAFSOPSG</del>; and f) Keeping the WAFS TF Work Plan up to date.</i>

## 3. COMMUNICATION STRATEGIES

<i>Description</i>	<i>Target Audience</i>	<i>Delivery Method</i>	<i>Frequency / Date</i>	<i>Responsibility</i>
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<i>Work Plan</i>	<i>Task Force Members</i>	<i>Document via email</i>	<i>As required but reviewed at least yearly</i>	<i>Chair</i>
<i>General correspondence</i>	<i>Task Force Members</i>	<i>Email</i>	<i>As required</i>	<i>Task Force Members</i>
<i>Task Force Meeting</i>	<i>Task Force Members</i>	<i>Meeting</i>	<i>As required, supplemented by teleconference</i>	<i>Chair</i>
<i>Status &amp; Milestone Reports</i>	<i>ICAO Secretariat and Task Force Members</i>	<i>Report via email</i>	<i>At least yearly</i>	<i>Chair</i>
<i>Task Force Report</i>	<i>MET SG</i>	<i>Working/ Information Paper</i>	<i>Yearly</i>	<i>Chair</i>
<i>Task Force Report</i>	<i>APANPIRG WAFSOPSG</i>	<i>Working Paper</i>	<i>Yearly</i>	<i>Secretariat</i>

#### 4. PERFORMANCE FRAMEWORK FORM (PFF)

<i>Tasks</i>	<i>Time Frame</i>	<i>Responsibility</i>	<i>Status</i>	<i>Milestone</i>
<i>Task 1 : Monitor the operational use of GRIB2 WAFS forecasts in the ASIA/PAC Region.</i>	<i>201<del>54</del>- 20<del>20</del>19</i>	<i>WAFS TF</i>	<i>In progress</i>	<i>4</i>
<i>Task 2 : Facilitate the implementation and utilization of gridded forecasts for icing, turbulence and CB clouds in the ASIA/PAC Region.</i>	<i>201<del>45</del>- 20<del>20</del>19</i>	<i>WAFS TF</i>	<i>In progress</i>	<i>1, 3, 4</i>
<i>Task 3 : Establish training requirements in WAFS products in the ASIA/PAC Region-and <del>provide this information to the WAFSOPSG.report to MET SG</del></i>	<i>201<del>54</del>- 20<del>20</del>14</i>	<i>WAFS TF</i>	<i>In progress</i>	<i>2, 4</i>
<i>Task 4: Maintain and distribute WAFS service reference document to ASIA/PAC States</i>	<i>201<del>54</del>- 20<del>20</del>19</i>	<i>WAFS TF</i>	<i>In progress</i>	<i>3</i>
<i>Task 5: Monitor the implementation and utilization of WAFS (including SADIS/Secure SADIS FTP/WIFS services) and training needs within the ASIA/PAC Region, and report to MET SG</i>	<i>201<del>45</del>- 20<del>20</del>19</i>	<i>WAFS TF</i>	<i>In progress</i>	<i>4, 5</i>

#### 5. MILESTONES

<i>Milestone</i>	<i>Accountability</i>	<i>Dates</i>	<i>Status</i>
<i>Milestone 1: Monitor the performance and utilization of gridded forecasts for icing, turbulence and CB clouds</i>	<i>WAFS TF Chair</i>	<i>1 Jul <del>16</del>5 Annual</i>	<i>In progress</i>
<i>Milestone 2: Report WAFS training needs</i>	<i>WAFS TF Chair</i>	<i>1 Jul <del>16</del>5 Annual</i>	<i>In progress</i>
<i>Milestone 3: Maintain and distribute WAFS service reference document to ASIA/PAC States</i>	<i>WAFS TF Chair</i>	<i>31 Nov <del>15</del>6 Annual</i>	<i>In progress</i>

Milestone 4: Conduct survey on the implementation and utilization of WAFS (including SADIS/Secure SADIS FTP/WIFS services) and training needs within the ASIA/PAC Region and report to MET SG	WAFS TF Chair	1 Jul 165 Annual	In progress
Milestone 5: Update WAFS TF Work Plan	WAFS TF Chair	1 Jul 165 Annual	In progress

<b>6. WORK PLAN</b>				
<i>Activity / Milestone</i>	<i>Accountability</i>	<i>Predecessors</i>	<i>Date</i>	<i>Status</i>
<b>Activity 1: Monitoring of the performance and utilization of new gridded forecasts for icing, turbulence and CB clouds</b>				
Activity 1.1: Monitor the performance of new gridded forecasts for icing, turbulence and CB clouds	WAFS TF	-	May 165 Annual	In progress
Activity 1.2: Provide summary on performance of new gridded forecasts for icing, turbulence and CB clouds for inclusion in MET SG working/information paper	WAFS TF Chair	1.1	Jun 165 Annual	In progress
Activity 1.3: Analyse any survey results on the utilization of new gridded forecasts for icing, turbulence and CB clouds	WAFS TF	4.3	Jun 165 Annual	In progress
Activity 1.4: Present findings to MET SG	WAFS TF Chair	1.2-1.3	Jul 165 Annual	In progress
<del>Activity 1.5: When necessary, prepare WAFSOPSG working/information paper on WAFS training needs</del>	<del>WAFS TF</del>	<del>1.2-1.4</del>	<del>Mar 15 18 mthly</del>	<del>In progress</del>
<del>Activity 1.6: When necessary, present paper to WAFSOPSG</del>	<del>WAFS TF via WAFSOPSG member</del>	<del>1.5</del>	<del>Mar 15 18 mthly</del>	<del>In progress</del>
Milestone 1: Monitor the performance and utilization of new gridded forecasts for icing, turbulence and CB clouds	WAFS TF Chair	1.1-1.6	Jul 165 Annual	In progress
<b>Activity 2: Reporting of WAFS training needs</b>				
Activity 2.1: Analyse survey returns on WAFS training needs	WAFS TF Chair	4.3	May 165	In progress
Activity 2.2: Present survey finding to MET SG	WAFS TF Chair	2.1	Jul 165 Annual	In progress
<del>Activity 3.3: When necessary, prepare WAFSOPSG working/information paper on WAFS training needs</del>	<del>WAFS TF Chair</del>	<del>2.1-2.2</del>	<del>Mar 15 18 mthly</del>	<del>In progress</del>
<del>Activity 2.4: When necessary, present paper to WAFSOPSG</del>	<del>WAFS TF via WAFSOPSG members</del>	<del>2.3</del>	<del>Mar 15 18 mthly</del>	<del>In progress</del>
Milestone 2: Report WAFS training needs	WAFS TF Chair	2.2-2.4	Jul 165 Annual	In progress
<b>Activity 3: Maintenance and distribution of WAFS service reference document to ASIA/PAC States</b>				

Activity 3.1: WAFS TF to provide input on revising WAFS service reference document	WAFS TF	-	Sep 1 <del>65</del>	In progress
Activity 3.2: Update of WAFS service reference document	WAFS TF Chair	3.1	Sep 1 <del>65</del>	In progress
Activity 3.3: Upload WAFS service reference document (e-Document) to APAC web-site	ICAO Secretariat	3.2	Nov 1 <del>65</del>	In progress
<i>Milestone 3: Maintain and distribute WAFS service reference document to ASIA/PAC States</i>	<i>WAFS TF Chair</i>	<i>3.2, 4.4</i>	<i>Nov 1<del>65</del></i>	<i>In progress</i>
<b>Activity 4: Conduct survey on implementation and utilization of WAFS (including SADIS/Secure SADIS FTP/WIFS services) and training needs within the ASIA/PAC Region and report to MET SG</b>				
Activity 4.1: Develop a survey on the current and future implementation of WAFS (including SADIS/Secure SADIS FTP/WIFS services), the utilization of WAFS forecasts and WAFS training needs	WAFS TF	-	Nov 1 <del>54</del> Update annually, if necessary	In progress
Activity 4.2: Distribute the survey to States	WAFS TF Chair	4.1	Dec 1 <del>54</del> Annual	In progress
Activity 4.3: States to respond to survey	States	4.2	Feb 1 <del>65</del> Annual	In progress
Activity 4.4: Analyse survey results	WAFS TF Chair	4.3	May 1 <del>65</del> Annual	In progress
Activity 4.5: Present findings to MET SG	WAFS TF Chair	1.3, 2.1, 4.4	Jul 1 <del>65</del> Annual	In progress
<del>Activity 4.6: When necessary, prepare WAFSOPSG working/information paper</del>	<del>WAFS TF Chair</del>	<del>1.3, 2.1, 4.4-4.5</del>	<del>Mar 15 18 mthly</del>	<del>In progress</del>
<del>Activity 4.7: When necessary, present paper to WAFSOPSG</del>	<del>WAFS TF via WAFSOPSG Members</del>	<del>4.6</del>	<del>Mar 15 18 mthly</del>	<del>In progress</del>
<i>Milestone 4: Conduct survey on implementation and utilization of WAFS (including SADIS/Secure SADIS FTP/WIFS services) and training needs within the ASIA/PAC Region and report to MET SG</i>	<i>WAFS TF Chair</i>	<i>4.1-4.7</i>	<i>Jul 1<del>65</del> Annual</i>	<i>In progress</i>
<b>Activity 5: Updating of WAFS TF Work Plan</b>				
Activity 5.1: Update the WAFS TF Work Plan (including the "Indicative Timetable for Implementation of WAFS" in Attachment I) before MET SG meeting	WAFS TF Chair	-	Jun 1 <del>65</del> Annual	In progress
Activity 5.2: Report updated WAFS TF Work Plan at MET SG meeting	WAFS TF Chair	5.1	Jul 1 <del>65</del> Annual	In progress
<i>Milestone 5: Update WAFS TF Work Plan</i>	<i>WAFS TF Chair</i>	<i>5.2</i>	<i>Jul 1<del>65</del> Annual</i>	<i>In progress</i>

**TERMS OF REFERENCE FOR THE METEOROLOGICAL SERVICES  
WORKING GROUP (MET/S WG)**

(Extracted from Attachment 3 to the Report from MET SG/19)

Under guidance from ICAO APAC MET Secretariat:

- a) Identify and evaluate current and future requirements with respect to meteorological services, in particular, observations, forecasts, advisories and warnings, in support of the aviation system block upgrades (ASBUs);
- b) Promote the implementation of meteorological services;
- c) Promote the requirement for, and benefits of, QMS for MET services and competency of aeronautical meteorological personnel;
- d) Maintain awareness of, and identify new, meteorological deficiencies and formulate strategies to resolve these deficiencies;
- e) Continually seek ways to improve the quality, compliance against SARPs and operational effectiveness of the meteorological services; Monitor the implementation and use of products and services under the framework of the World Area Forecast System (WAFS), the International Airway Volcano Watch (IAVW) and the International Tropical Cyclone Watch (ITCW);
- f) Monitor the relevant activities of the MET Panel and appropriate bodies; and
- g) 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.

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**ICAO ASIA/PACIFIC  
METEOROLOGICAL SERVICES WORKING GROUP  
(MET/S WG)**

**TERMS OF REFERENCE AND WORK PROGRAMME**

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<b>2.DESCRPTION</b>	
Objective	Improve the quality of meteorological services, in particular, observations, forecasts, advisories and warnings – including facilitating implementation of the International Airways Volcano Watch (IAVW) and International Tropical Cyclone Watch (ITCW) – in support of the global air navigation plan framework and the aviation system block upgrade (ASBUs) methodology.
Benefits	Improve the safety and efficiency of flight and ground operations.
Terms of Reference	Under guidance from ICAO APAC MET Secretariat: <ol style="list-style-type: none"> <li>a) Identify and evaluate current and future requirements with respect to meteorological services, in particular, observations, forecasts, advisories and warnings, in support of the aviation system block upgrades (ASBUs);</li> <li>b) Promote the implementation of meteorological services;</li> <li>c) Promote the requirement for, and benefits of, QMS for MET services and competency of aeronautical meteorological personnel;</li> <li>d) Maintain awareness of, and identify new, meteorological deficiencies and formulate strategies to resolve these deficiencies;</li> <li>e) Continually seek ways to improve the quality, compliance against SARPs and operational effectiveness of the meteorological services; Monitor the implementation and use of products and services under the framework of the World Area Forecast System (WAFS), the International Airway Volcano Watch (IAVW) and the International Tropical Cyclone Watch (ITCW);</li> <li>f) Monitor the relevant activities of the MET Panel and appropriate bodies; and</li> <li>g) 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.</li> </ol>
Work Program	The work to be addressed by the ASIA/PAC MET/S WG includes: <ul style="list-style-type: none"> <li>• Review procedures for the issuance of meteorological observations, forecasts, advisories and warnings in the region and propose actions for their improvement to related performance objectives;</li> <li>• In conjunction with MET/IE WG, investigate the deficiencies in the format and dissemination of meteorological observations, forecasts, advisories and warnings</li> </ul>

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	<p>and propose remediation plans;</p> <ul style="list-style-type: none"> <li>• Respond to the needs of the guidance and/or training related to the implementation of meteorological observations, forecasts, advisories and warnings and inform MET/IE WG of changes required to the SIGMET guide;</li> <li>• In conjunction with MET/R WG and in support of the ASBUs, provide meteorological input for operational planning for specific phenomenon including volcanic ash, radioactive cloud, tropical cyclone, tsunami and space weather;</li> <li>• Follow the developments in the States related to the improvement of meteorological observations, forecasts, advisories and warnings and provide regional input on these matters to relevant ICAO and WMO groups and to gather user requirements from ANSPs, IATA, IFATCA and IFALPA;</li> <li>• Investigate options for rectification of air navigation deficiencies in the field of meteorological services in APAC States;</li> <li>• Provide support for the ICAO APAC volcanic ash exercises;</li> <li>• Report on its work to the MET Sub-group of APANPIRG; and</li> <li>• Maintain a link to the Regional ATM Contingency Plan Task Force (RACP/TF).</li> </ul>
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<b>3. COMMUNICATION STRATEGIES</b>				
<b>Description</b>	<b>Target Audience</b>	<b>Delivery Method</b>	<b>Frequency/ Date</b>	<b>Responsibility</b>
Work Plan	Working Group Members	Document via email and posted on ICAO Bangkok website	As required but reviewed at least quarterly	Chair
General correspondence	Working Group Members	Email	As required	Working Group Members
Working Group Meeting	Working Group Members	Meeting in conjunction with MET/IE WG	Yearly in March	Chair
Status & Milestone Reports	ICAO Secretariat and Working Group Members	Report via email	Quarterly	Chair
Working Group Report	MET/S WG and MET/IE WG	Working Paper	Yearly	Chair
Working Group Report	MET SG	Working Paper	Yearly	Secretariat

<b>4. PERFORMANCE FRAMEWORK FORM (PFF)</b>				
<b>Tasks</b>	<b>Time Frame</b>	<b>Responsibility</b>	<b>Status</b>	<b>Milestone</b>
Task 1: Monitor and provide assistance to the regional implementation of meteorological observations, forecasts, warnings and advisories	2016-2019	MET/S WG	In progress	1
Task 2: Track and investigate deficiencies in the format and dissemination of	2016-2018	MET/S WG and MET/IE	In progress	1,2

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meteorological observations, forecasts, warnings and advisories and propose corrective action and provide information to ICAO and WMO groups for possible assistance		WG		
Task 3: Review WC, WV & WS SIGMET test results and implement improvements.	2016-2018	MET/S WG	In progress	1
Task 4: Provide guidance and/or training related to the implementation of meteorological observations, forecasts, warnings and advisories, including input to the Regional SIGMET Guide as they relate to the Annex 3 amendment cycle.	2016	R/O, MET/S WG and MET/IE WG	In progress	1,3
Task 5: Provide input into regional operational plans as required for specific phenomenon, including VA, radioactive cloud, TC, Tsunami and Space Weather, with consideration to global ICAO groups and WMO developments.	2016-2018	MET/S WG and MET/R WG	In progress	3
Task 6: Investigate, and implement as appropriate, options to assist States in resolving air navigation deficiencies in the field of meteorological service.	2016	MET/S WG	In progress	4

5. MILESTONES				
Milestone	Accountability	Dates	Status	
<i>Milestone 1: Report on SIGMET test results and regional performance to MET SG</i>	<i>Chair</i>	<i>Annually</i>		
<i>Milestone 2: Guidance and educational material available</i>	<i>Chair</i>	<i>TBD</i>		
<i>Milestone 3: MET input provided for ASIA/PAC Regional ATM Contingency Plans</i>	<i>ad-hoc group</i>	<i>Next meeting</i>		
<i>Milestone 4: Reduction in air navigation deficiencies in the field of meteorological service.</i>	<i>States</i>	<i>TBD</i>		

6. WORK PLAN				
Task / Milestone	Accountability	Predecessors	Date	Status
<b>Activity 1: SIGMET TESTS</b>				
Task 1.1: Review SIGMET tests (conjoint session with MET/IE WG)	Working Group	-	Annually	
Task 1.2: Develop action plan to fix identified deficiencies	Chair in conjunction with the Working Group	conjoint session with MET/IE WG	During meeting	
Task 1.3 Report back to MET SG on regional performance and	Chair		Annually	

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<b>6. WORK PLAN</b>				
<b>Task / Milestone</b>	<b>Accountability</b>	<b>Predecessors</b>	<b>Date</b>	<b>Status</b>
action plan				
<i>Milestone 1: Report on SIGMET test results and regional performance to MET SG</i>	Chair	-	<i>Annually</i>	
<b>Activity 2: GUIDANCE AND EDUCATIONAL MATERIAL</b>				
Task 2.1: a) Review current SIGMET poster information b) Publish information in pamphlet form c) Review with future Annex 3 amendments	Australia, Hong Kong, China and New Zealand (Rapporteur) in conjunction with ICAO HQ and WMO	-	TBD	
Task 2.2: Review radioactive cloud survey results and develop guidance for inclusion in the SIGMET Guide	China (Rapporteur), Hong Kong, China, Japan	-	TBD	
Task 2.3: Review tsunami survey results and develop guidance in line with proposal for Amendment 77 to Annex 3	Japan (rapporteur), Indonesia		TBD	
Task 2.4: Forward proposed amendments to the SIGMET Guide template to appropriate expert group determined by MET Panel	Secretariat		TBD	
<i>Milestone 2: Guidance and educational material available</i>	Chair		<i>2016</i>	
<b>Activity 3: REGIONAL CONTINGENCY PLANS</b>				
Task 3.1: Get a list of requirements from RACP/TF	Secretariat	-	Next RACP/TF	
Task 3.2: Provide information on hazardous meteorological phenomena to ATM group for inclusion in the ATM contingency plan, if required (after outcome of RACPTF is known)	ad-hoc group (TBC)	-	Next meeting	
<i>Milestone 3: MET input provided for ASIA/PAC Regional ATM Contingency Plans</i>	Secretariat ad-hoc group	<i>3.1-3.2</i>	<i>Next meeting</i>	
<b>Activity 4 – SIGMET Deficiencies</b>				
Task 4.1: Investigation options to eliminate SIGMET deficiencies.	ad hoc group New Zealand (rapporteur), Australia, New Zealand, China, Japan, Indonesia		Oct 2014	Complete
Task 4.2: Assist the ICAO Secretariat in the facilitation of discussion of viable	ad hoc group	4.1	TBD	

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<b>6. WORK PLAN</b>				
<b>Task / Milestone</b>	<b>Accountability</b>	<b>Predecessors</b>	<b>Date</b>	<b>Status</b>
options with relevant States.				
Task 4.3: Monitor the implementation of the solution/s to remove deficiencies.	ad hoc group	4.2	Ongoing	
Task 4.4: Monitor global development on the establishment of a regional advisory system for hazardous weather.	ad hoc group		Ongoing	
Task 4.5: Report progress to MET SG	Ad hoc group rapporteur	4.3	Jun 2016	
<i>Milestone 4: Reduction in SIGMET deficiencies.</i>	<i>States</i>		<i>2016</i>	

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