



International Civil Aviation Organization

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

Bangkok, Thailand, 9 – 11 March 2016

Agenda Item 5: Review and rectification of deficiencies in meteorological services

REVIEW OF DEFICIENCIES IN METEOROLOGICAL SERVICES

(Presented by the Secretariat)

SUMMARY

This paper presents a review of air navigation deficiencies in the meteorology (MET) field listed in the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) database, urges States concerned to assign the highest priority to the resolution of the deficiencies, as well as to providing updates on progress of corrective action to the upcoming APANPIRG and (MET) Sub-Group meetings, and invites the meeting to consider the conduct of SIGMET monitoring to assist with validation of deficiency corrective actions.

1 INTRODUCTION

1.1 The definition of (an air navigation) deficiency (as adopted by ICAO Council, 30 November 2001) is a situation where a facility, service or procedure does not comply with a regional air navigation plan approved by the Council, or with related ICAO Standards and Recommended Practices (SARPs), and which situation has a negative impact on the safety, regularity and/or efficiency of international civil aviation.

1.2 This paper reviews the air navigation deficiencies in the field of MET, as currently listed in the APANPIRG database, highlights the long-term lack of progress in resolving the deficiencies, urges States concerned to assign the highest priority to the resolution of the deficiencies, as well as to providing updates on progress of corrective action to the upcoming APANPIRG and (MET) Sub-Group meetings, and invites the meeting to consider further assistance such as SIGMET performance monitoring to help validate any progress that is made by States concerned.

2 DISCUSSION

2.1 There are twenty (20) air navigation deficiencies in the MET field in the APANPIRG list of air navigation deficiencies. These are listed against eleven (11) Asia/Pacific States and are related to the following facilities, services or procedures: SIGMET information; WAFS forecasts for flight briefings; aerodrome meteorological observations; and volcanic ash/activity information.

2.2 The complete APANPIRG deficiencies database can be accessed through the ICAO Secure Portal. A copy of the air navigation deficiencies in the MET field in the Asia/Pacific Region is also provided at **the Attachment** to this paper.

2.3 Overall, progress towards resolution of the MET deficiencies in the Asia/Pacific Region, and removal from the APANPIRG database, has been negligible for several years – as indicated by the ‘date first reported’ field of all the MET deficiencies, which in some instances dates back to 1995.

2.4 Noting that the resolution of air navigation deficiencies has been given the highest priority by APANPIRG, it is clear that this persistent, long-term lack of significant progress in resolving the Asia/Pacific MET deficiencies continues to represent an unacceptable situation for APANPIRG.

2.5 Although some updates to the status of corrective action have been provided by States concerned with a few of the MET deficiencies (note: the most recent updates were provided prior to MET SG/19 in 2015), in general the descriptions of corrective action plans are not concise and lack defined target dates.

2.6 In view of the above, States concerned are reminded that the highest priority should be given to the resolution of air navigation deficiencies. To support this, the highest priority should also be given to the provision of periodic updates to the ICAO Regional Office, which at the least should be provided annually, preferably no later than April each year to be available for review by APANPIRG and its Sub-Groups.

2.7 In its review of Asia/Pacific air navigation deficiencies, APANPIRG/26 urged States with deficiencies to put in additional resources to resolve the deficiencies and inform the Regional Office on the action taken, noting that it is the responsibility of States with deficiencies to provide updates to the information in the deficiency database. The Regional Office will update the deficiencies based on written confirmation provided by the respective Administrations.

2.8 With respect to the rectification of air navigation deficiencies and their removal from the (open) list, the APANPIRG Procedural Handbook provides the following guidance:

States, on reporting that a deficiency has been rectified, will submit in writing an official report to the Regional Office providing full details of the action taken. On receipt of a report, the Regional Office will validate the action taken with the User who made the report. In the event that the User does not agree with the action taken, the deficiency will remain open until confirmation has been gained by all concerned. Once confirmation is made, APANPIRG will be informed, the status of the deficiency reviewed and removed from the open list of air navigation deficiencies.

2.9 To further assist States, APANPIRG (and its contributory bodies), in accordance with its terms of reference, shall facilitate the conduct of any necessary systems performance monitoring to identify specific deficiencies in the air navigation field, especially in the context of safety, and propose corrective action, and facilitate the development and implementation of action plans by States to resolve identified deficiencies, where necessary.

2.10 In view of the above, to help provide more up-to-date information on the current status of SIGMET provision in areas with listed SIGMET deficiencies and where some corrective action has been reported, it may be beneficial to conduct SIGMET performance monitoring to assist States concerned with validating the corrective action.

2.11 In relation specifically to assisting States with improvement of SIGMET provision, and resolution of deficiencies in SIGMET provision, APANPIRG/26 adopted the following conclusion:

Conclusion APANPIRG/26/51 — SIGMET Training

That, ICAO, in coordination with the WMO and relevant States and organizations, considers facilitating urgent, targeted training for aeronautical meteorological service providers designated by States in the APAC Region to improve the quality, reliability and availability of SIGMET information, particularly in States with identified SIGMET deficiencies.

Notes: the following specific recommendations are provided:

1) Follow-up training programme on SIGMET provision for the Solomon Islands (similar to the TAF training programme conducted on a bilateral basis in 2014);

2) Follow-up on recommendations from previous investigations into SIGMET provision in Pacific Island States (e.g., the diagnostic of MET service provision in Papua New Guinea conducted on a bilateral basis in 2014);

3) Encourage APAC States, in particular Papua New Guinea and the Solomon Islands, to participate in the Japan/WMO SIGMET Seminar planned for 2016, in coordination with WMO RAI/RAV; and

4) Coordinate with WMO on the inclusion of possible additional training on SIGMET issuance in the training workshop under the WMO Severe Weather Forecasting Demonstration Project (SWFDP) program.

3. ACTION REQUIRED BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper and discuss any relevant matters as appropriate;
- b) provide updates to the status/progress on corrective action to resolve air navigation deficiencies in the MET field (in time for review by MET SG); and
- c) consider to conduct an ad-hoc SIGMET monitoring activity in April/May 2016 to target a SIGMET deficiency area (or areas).

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION								
Identification		Deficiencies			Corrective action			
Requirements	States/ facilities	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action *
Meteorological observations and reports. (Annex 3, Chapter 4)	Solomon Islands AP-MET-01	Weather information is inadequate and not provided on a regular basis	1996 Confirmed 2006 SOA	Reported by airlines operating to Solomon I.	<p>Equipment to be upgraded and arrangements to be made for regular observations.</p> <p>TC expert recommendation to replace and/or calibrate MET obs. equipment AGGH – 2008.</p> <p>State made aware of MET Services gaps identified by ICAO TC Project, CAEMSA-SP, in late 2008.</p> <p>CAEMSA-SP Phase II plan for Donors and associated remedies.</p> <p>Activation of WIFS will assist in overcoming deficiency.</p> <p>AWS was installed (2012) at Honiara (Henderson), AGGH, by New Zealand, including training of Solomon Is. technical personnel in the maintenance of the equipment.</p> <p>Responsibility for ongoing system calibration and verification may need to be determined.</p> <p>Secure transmission of weather information to the appropriate RODB may need to be verified (noting that transmission via email to the Australian Bureau of Meteorology may not be appropriate).</p> <p>[APANPIRG/25] Solomon Is. expected to address issues concerning calibration and verification of meteorological observation systems and proper/secure transmission of information.</p> <p>Solomon Islands advised that with the assistance from the WMO and Australia (Bureau of Met), Solomon Islands is now ready to take back these responsibilities – then these deficiencies will be addressed.</p>	Ministry of Transport, Works and Aviation, Solomon I. <i>Note: OPMET/MTF to carry out survey</i>	2011	A

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Meteorological observations and reports. (Annex 3, Chapter 4)	Kiribati AP-MET-02	METAR from Kiribati not available on regular basis.	1998 Confirmed 2005 SIP	Reported by airlines	State's MET authority to consider urgent action to be taken for providing regular observations and reports. TC expert recommendation to purchase/install AWOS – 2008. ICAO SIP conducted in 2005. State made aware of MET Services gaps identified by ICAO TC Project CAEMSA-SP, in late 2008. CAEMSA-SP Phase II plan for Donors and associated remedies. Activation of WIFS will assist in overcoming deficiency. [APANPIRG/25] Kiribati requested assistance from New Zealand with respect to the supply of a new/replacement meteorological observing system. Kiribati was considering funding options for a new meteorological observing system and a full meteorological observing programme.	Directorate of Civil Aviation, Kiribati. <i>Note: OPMET/M TF to carry out survey</i>	2011	A
Reporting of information on volcanic eruptions to civil aviation units. (Annex 3, 3.6, 4.8)	Indonesia AP-MET-03	Information on volcanic activity not provided regularly to ATS units and MWOs.	1995 Confirmed by ICAO SIP mission Dec 2003	Observed by States concerned. Reported at the WMO/ICAO Workshop on Volcanic Ash Hazards (Darwin, 1995)	Three-party LOA to be signed between the MGA, DGCA and DVGHM. Information exchange between CVGHM & ABA in draft form. VSAT comms. installed to improve the monitoring in E Nusa Tenggara – provides direct transfer of data to CVGHM HQ full time. (AusAID-funded project). Bilingual reporting form based on VONA to improve comm. to VAAC in Sulawesi. [APANPIRG/25] Indonesia submitted an official report to the RO (August 2014) on corrective action taken: (a) BMKG and DGCA signed a MoU to strengthen the dissemination of volcanic ash activity reports and to improve management of	DGCA, MGA Indonesia	2014	A

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					<p>flight operations during volcanic eruptions; (b) CVGHM, NOTAM office–DGCA, MWOs and BMKG implemented a volcanic activity report dissemination system (1 May 2012) to ensure information on volcanic activity is provided regularly to ATS units and MWOs; and (c) Indonesia (BMKG, DGCA, and CVGHM) and VAAC (Darwin) held a coordination meeting (June 2014) to strengthen the coordination of volcanic ash information between Indonesia and VAAC. ICAO to validate the action taken and then inform APANPIRG on the status of the deficiency for possible removal from the Open List.</p> <p>[Secretariat] Future volcanic ash exercises in the APAC region would facilitate the validation of action taken with respect to provision of information on volcanic ash.</p>			
Reporting of information on volcanic eruptions to civil aviation units. (Annex 3, 3.6, 4.8)	Papua New Guinea AP-MET-04	Information on volcanic activity not provided regularly to ATS units and MWOs.	1995 Confirmed by ICAO SIP mission Dec 2003	Observed by States concerned. Reported at the WMO/ICAO Workshop on Volcanic Ash Hazards (Darwin, 1995)	<p>Procedures to be set up for exchange of data between NWS, ATS and Rabaul Volcano Observatory (RVO) and a LOA to be signed</p> <p>Discussion of an agreement between RVO & PNG CAA to provide volcanic information to aviation through cost recovery is underway.</p> <p>[APANPIRG/25] Recent analysis of meteorological services provided in PNG (conducted by PNG, Australia and the ICAO) produced a number of recommendations for actions that would strengthen services and help rectify MET deficiencies. Future volcanic ash exercises in the APAC region would facilitate reporting of information on volcanic eruptions to civil aviation units in States concerned.</p>	NWS, ATS PNG <i>Note: ICAO Regional Office to monitor</i>	TBD (no action plan submitted to RO)	A
Provision of SIGMET for volcanic ash (Annex 3, Chapter 7;	Indonesia AP-MET-06	Requirements for issuance and proper dissemination of	ICAO SIP mission Dec 2003	a) Reported by airlines b) Noted by	a) ICAO to carry out a Special Implementation Project (SIP) with the primary objective to improve implementation of SIGMET	a) State's Met authorities b) ICAO to	2014 (AP-MET-06), To be advised	U

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ASIA/PAC FASID Table MET 1B)	Philippines AP-MET-07 Papua New Guinea AP-MET-08	SIGMET, including SIGMET for volcanic ash, have not been fully implemented		Volcanic Ash Advisory Centres	<p>procedures, especially for VA.</p> <p>b) State to take urgent actions to implement the SIGMET procedures.</p> <p>Note. ICAO SIP carried out in 2003, progress in issuance of SIGMET for VA is noted; the outstanding problems to be resolved within 1-year (progress reported by VAAC Darwin)</p> <p>LOA between ATO, PHIVOCS & PAGASA signed in 2004 to make reporting part of information dissemination practice. LOA is undergoing periodic review (ref. letter of PAGASA dated March 12, 2008)</p> <p>VAAC Darwin trained forecasters in PNG and Philippines to prepare VA SIGMET</p> <p>Participated in VA SIGMET test 17 Nov 2009</p> <p>SIGMET monitoring over a period of 2 months in August and September 2012 indicated that no SIGMET was received from PNG (MET SG/17, 8.4.3 & 13.9 refers).</p> <p>Indonesia advised (MET SG/17) that procedures were developed for the issuance of SIGMET (WS, WV and WC) compliant with ICAO provisions and that MWO Jakarta (WIII) and MWO Ujung Pandang (WAAF) have issued SIGMET according to the requirements since April 2013.</p> <p>MET SG/17 noted that validation of SIGMET receipt at RODBs and WIFS/SADIS gateways would be necessary and may require additional SIGMET monitoring and participation in SIGMET tests.</p> <p>[APANPIRG/25] Indonesia submitted an official report to the RO (August 2014) on corrective action taken: (a) BMKG implemented national procedures</p>	<p>implement the SIP.</p> <p>c) ICAO Regional Office to co-ordinate and monitor.</p>	(AP-MET-07 and 08)	

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					<p>for issuance of SIGMET (April 2013) at both MWOs (Jakarta/WIII and Ujung Pandang/WAAA); and (b) MWOs successfully participated in SIGMET tests. ICAO to validate the action taken and then inform APANPIRG on the status of the deficiency for possible removal from the Open List.</p> <p>PNG did not participate in 2013 SIGMET tests. A recent analysis of the meteorological services provided in PNG (conducted by PNG, Australia and the ICAO) produced a number of recommendations for actions that would strengthen services and help rectify MET deficiencies. Future volcanic ash exercises in the APAC region would facilitate provision of SIGMET for volcanic ash in States concerned.</p> <p>Philippines participated in ICAO APAC SIGMET tests in November 2014 and has since requested assistance (from ICAO) with an assessment or evaluation in order to facilitate rectification of the deficiency. Philippines participated in first ICAO APAC volcanic ash exercise (VOLPHIN15/01), which tested SIGMET issuance. Debrief of VOLPHIN15/01, including assessment of SIGMET information, will be done in September 2015 (VOLCEX/SG/2).</p>			
<p>a) Service for operators and flight crew members. (Annex 3, Chapter 9).</p> <p>b) WAFS products for flight documentation. (ASIA/PAC FASID Table MET 1A).</p>	Cambodia AP-MET-09	<p>Briefing and flight documentation not provided as required.</p> <p>WAFS products not available</p>	1999	Airlines do not receive the required flight documentation including WAFS forecasts.	<p>States to consider urgent action for installation of SADIS VSAT for receiving WAFS products and OPMET information.</p> <p>Action plan proposed by ICAO MET mission 2003</p> <p>A TC project proposal submitted to SSCA, Cambodia</p> <p>Cambodia expects to have SADIS FTP operational in 2011 and may require training from a nearby</p>	State's MET authorities	End 2011	A

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					<p>State</p> <p>Cambodia informed MET SG/17 that the Secure SADIS FTP system was installed but further action was required in relation to training of personnel to use the system.</p> <p>[APANPIRG/25] Specific training necessary for the personnel to provide the WAFS products for flight documentation was expected to be addressed by Cambodia.</p>			
<p>MWO for Phnom Penh FIR and SIGMET</p> <p>(Annex 3, Chapter 3 & 7; ASIA/PAC FASID Table MET 1B)</p>	<p>Cambodia</p> <p>AP-MET-11</p>	<p>Requirements for meteorological watch office (MWO) to be established at Phnom-Penh international airport have not been met.</p>		<p>MWO not established due to lack of trained personnel and technical facilities. No SIGMET service for Phnom Penh FIR</p>	<p>Establishment of MWO currently not feasible. SIGMET service is provided under bilateral agreement with China to meet requirements.</p> <p>A TC project proposal submitted to SSCA, Cambodia</p> <p>Cambodia is in process of establishing its own MWO with target date end of 2011.</p> <p>[APANPIRG/25] Bilateral arrangement with China has successfully addressed part of the deficiency (SIGMET issuance).</p>	<p>SSCA, Cambodia</p>	<p>TBD</p> <p>End 2011</p>	<p>A</p>
<p>Provision of SIGMET information</p> <p>(Annex 3, Chapter 7; ASIA/PAC FASID Table MET 1B)</p>	<p>Lao PDR</p> <p>AP-MET-12</p>	<p>Requirements for issuance and dissemination of SIGMET have not been fully implemented.</p>	<p>2000</p>	<p>SIGMET frequently not available</p> <p>Reported by airlines</p>	<p>State's MET authority to take urgent actions to implement the SIGMET procedures.</p> <p>Lao PDR has established MWO in 2010 and started issuing SIGMET since March 2011. As a result of monitoring by RODB Bangkok, LAO PDR was advised to correct noted formatting problem and to issue SIGMET on a regular basis to meet requirements.</p> <p>Lao PDR is expected to issue SIGMET regularly by the end of 2011. This deficiency can be considered for removal after correcting the above problems.</p> <p>SIGMET monitoring by RODB Bangkok in</p>	<p>State's MET authorities</p>	<p>End 2011</p>	<p>A</p>

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					<p>February 2012 failed to identify the issuance of any SIGMET by Lao PDR, indicating that the deficiency is still to be properly rectified (ROBEX WG/11, 2.1.4 refers).</p> <p>[APANPIRG/25] Lao PDR did not successfully participate in each of the three 2013 SIGMET tests. Lao PDR established a special MET Improvement Task Force to address deficiencies and is expected to report back to ICAO in due course on the status of implementation of corrective action.</p>			
<p>Provision of SIGMET information for Kathmandu FIR.</p> <p>(Annex 3, Chapter 7; ASIA/PAC FASID Table MET 1B)</p>	Nepal AP-MET-14	Requirements for issuance and dissemination of SIGMET have not been met.	2000	Not established due to lack of technical facilities. No SIGMET service for Kathmandu FIR	<p>Issuance of SIGMET currently not feasible.</p> <p>Action being taken to have SIGMET service provided under bilateral agreement with a neighbouring country to meet immediate requirement.</p> <p>Nepal is also planning to issue its own SIGMET.</p> <p>[APANPIRG/25] Nepal informed the RO of progress: now able to issue SIGMET when necessary; training was conducted by WMO (Nov 2013); SIGMET issuance in operation (July 2013); SIGMET information transmitted to ATS units and other CA units concerned; participated in 2013 SIGMET tests. Nepal expected to submit in writing an official report to the RO providing details of the corrective action taken.</p>	MET Authority Nepal	2014	A
<p>MWO for Pyongyang FIR and SIGMET</p> <p>(Annex 3, Chapter 3 & 7; ASIA/PAC FASID Table MET 1B)</p>	Democratic Peoples' Republic of Korea AP-MET-16	Requirements for meteorological watch office (MWO) to be established at Pyongyang international airport have not been met.	2008	MWO not established due to lack of trained personnel and lack of resources. No SIGMET service for Pyongyang FIR Reported by RO	<p>MWO established in February 2009 as reported by State.</p> <p>DPRK is subsequently producing SIGMET on a regular basis and is routing SIGMET to RODB Tokyo.</p> <p>It is required for Sunan MWO to participate the APAC SIGMET test in November 2011.</p>	General Administration of Civil Aviation (GACA) DPRK	2014	A

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				mission	<p>This deficiency can be removed if SIGMET is continued to be issued regularly for another six months.</p> <p>DPRK informed RO that SIGMET were issued in May 2013; RO to coordinate confirmation of receipt of SIGMETs at required offices.</p> <p>[APANPIRG/25] DPRK to submit official report to RO providing details of corrective action taken. Validation would necessarily require SIGMET monitoring to confirm receipt at required offices. Test SIGMETs were not received from DPRK in 2013; assistance to be coordinated by ROBEX WG to resolve the communication issues.</p>			
Volcanic activity information to be provided to ATS units, MWOs, and VAAC (Annex 3, 3.6 and 4.8)	Tonga AP-MET-17	Information on volcanic activity not provided regularly to ATS units, MWOs, and VAAC	2008	Reported by TCB CAEMSA-SP technical expert	<p>Agreement drafted for the dissemination of volcanic ash information from MLSNRKT to MTKT for distribution to ACCs, MWOs and VAACs (under consideration)</p> <p>Tonga submitted official report to RO (10 May 2013) advising that MOU between the Ministry of Infrastructure (MOI) and the Ministry of Lands, Environment, Climate Change and Natural Resources (MLECCNR) signed 9 May 2013 for coordination procedures of the dissemination of detection of volcanic ash information to the appropriate ACC, VAAC and MWO.</p> <p>[APANPIRG/25] ICAO to validate the action taken (with assistance from VAAC Wellington) and then inform APANPIRG on the status of the deficiency for possible removal from the Open List.</p> <p>[Secretariat] Future volcanic ash exercises in the APAC region would facilitate the validation of action taken with respect to provision of information on volcanic ash.</p>	Ministry of Transport of the Kingdom of Tonga (MTKT) Ministry of Lands, Survey and Natural Resources of the Kingdom of Tonga (MLSNRKT)	2014	U

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Briefing and flight documentation (Annex 3, Chapter 9, Appendix 2 & 8)	Kiribati AP-MET-18 Nauru AP-MET-19 Solomon Islands AP-MET-20	WAFS products not accessed and therefore not available for inclusion in flight briefings and documentation	2008	Reported by TCB CAEMSA-SP Technical Expert	WAFS Internet File Service (WIFS) allows for the retrieval of WAFS forecasts for flight briefings and documentation (versus more expensive satellite dish) – available for operations since May 2010 Will seek donor ship for installation and training on WIFS as part of CAEMSA-SP Phase II Solomon Islands advised that with the assistance from the WMO and Australia (Bureau of Met), Solomon Islands is now ready to take back these responsibilities – then these deficiencies will be addressed.	MET Services, TCB, Donor, ISCS Provider State	2012	U
Provision of meteorological observations (Annex 3, 4.3.1, 4.5, 4.6)	Nauru AP-MET-21	No METAR/SPECI observing programme in place (no calibrated and maintained equipment available)	2008	Reported by TCB CAEMSA-SP Technical Expert	Automatic observing station needed as well as maintenance programme Will seek donor for observing system and maintenance contract and/or training as part of CAEMSA-SP Phase II	MET Service, TCB, Donor	2012	U
Provision of SIGMET information (Annex 3, Chapter 7)	Papua New Guinea AP-MET-22 Solomon Islands AP-MET-23 Nauru AP-MET-24	Lack of SIGMET issued for the Port Moresby, Honiara, and Nauru FIRs.	9/09/2011	IATA emphasized the importance of having hazards reported in this large sub-regional area that straddles the equator and deemed this situation unsafe and unacceptable to airline operations.	ICAO: States concerned are urged to take urgent action to seek assistance from a State in a position to do so to provide the service until such time the States concerned can provide their own SIGMET. SIGMET monitoring over a period of 2 months in August and September 2012 indicated that no SIGMET was received (MET SG/17, 8.4.3 & 13.9 refers). [APANPIRG/25] Arrangement for issuance of SIGMET by PNG on behalf of Solomon Is. and Nauru has not been successful. APANPIRG/24 Conclusion 24/51 to further investigate and assess the feasibility of bilateral agreements for the provision of SIGMET. PNG did not participate in 2013 SIGMET tests. A recent analysis of the meteorological services provided in PNG (conducted by PNG, Australia and the ICAO)			U

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					<p>produced a number of recommendations for actions that would strengthen services and help rectify MET deficiencies. Future volcanic ash exercises in the APAC region would facilitate provision of SIGMET for volcanic ash in States concerned.</p> <p>Solomon Islands advised that with the assistance from the WMO and Australia (Bureau of Met), Solomon Islands is now ready to take back these responsibilities – then these deficiencies will be addressed.</p>			