



ICAO

*International Civil Aviation Organization***WORKING PAPER****Eleventh Meeting of the Meteorological Services Working Group (MET/S WG/11)**

Virtual meeting, 24 to 26 March 2021

Agenda Item 5: Deficiencies in the provision of meteorological services**REVIEW OF AIR NAVIGATION DEFICIENCIES IN THE MET FIELD**

(Presented by the Secretariat)

SUMMARY

This paper presents the (open) list of APANPIRG air navigation deficiencies – in the field of meteorology – and invites the meeting to review and update, as necessary, the list of deficiencies, including the associated corrective action plans (CAPs) for the resolution of deficiencies.

1. INTRODUCTION

1.1 An APANPIRG air navigation deficiency 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 aviation¹.

1.2 This paper invites the meeting to review the (open) list of APANPIRG air navigation deficiencies – in the field of meteorology – and provide updates, as necessary, including associated corrective action plans (CAPs) for the resolution of deficiencies.

2. DISCUSSION

2.1 Under the terms of reference, the MET/S WG supports the MET SG and ICAO with assisting APAC States with rectification of air navigation deficiencies in the field of meteorological services.

2.2 The previous meeting of MET/S WG (MET/S WG/10, held in conjunction with MET/IE WG/18 in July 2020) agreed to action item 32: *Air navigation deficiencies*, to continue to support States, as necessary, such as Nepal, with developing and implementing their corrective action plans for the resolution of air navigation deficiencies. This was reflected in the MET/S WG work plan, activity 6.

2.3 Subsequently, at the last meeting of the MET SG (MET SG/24, November 2020) with the adoption of Decision MET SG/24-05: *MET Deficiencies*, MET/S WG formed an ad hoc group to assist

¹ APANPIRG Procedural Handbook (08/09/2016), Part V, section 2, paragraph 1.3

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the ICAO Secretariat with the process of identifying, reporting and supporting the resolution of air navigation deficiencies in the field of aeronautical meteorology in the APAC Region, as shown below:

Decision MET SG/24-05: MET Deficiencies	
What: That a MET/S WG ad hoc group be formed* to work with relevant members of the MET/IE WG and, utilizing the guidance in the APANPIRG Procedural Handbook, Part V: <i>Uniform methodology for the identification, assessment and reporting of air navigation shortcomings and deficiencies</i> and other relevant ICAO documentation, assist the ICAO Secretariat with the following:	
<ul style="list-style-type: none"> a) Define a process, based on the APANPIRG Procedural Handbook, for identifying, analysing, removing and proposing MET Deficiencies; b) Develop templates to be used for Deficiency Corrective Action Plans (CAP), Progress Reports and Final Reports; c) Develop thresholds for Deficiencies based on OPMET Monitoring performance indicators and SIGMET testing; d) Review the analysis of the annual, and any ad hoc, OPMET Monitoring, and SIGMET Tests against agreed thresholds; e) Identify deficiencies from the OPMET Monitoring and SIGMET Test analysis, along with other tests and exercises, mission reports, analysis of differences against ICAO provisions, aircraft accident and incident reports and reports provided by users of air navigation services; f) Work with States concerned to develop a CAP, arrange for testing and monitoring and assist with the reporting to ICAO on the resolution of air navigation deficiencies; and g) Report recommended updates to MET Deficiencies, through MET/S WG, to MET SG. 	
Why: To optimize the MET SG assistance to APANPIRG towards the identification and resolution of specific air navigation deficiencies in the field of aeronautical meteorological (MET) services.	
Expected impact:	
<input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical	
Follow-up: <input type="checkbox"/> Required from States	
When: November 2020	Status: Adopted by Subgroup
Who: <input checked="" type="checkbox"/> Sub groups <input type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input checked="" type="checkbox"/> Other: MET/S WG	

2.4 APANPIRG/31 (December 2020) endorsed the current list of APANPIRG air navigation deficiencies and adopted Conclusion 31/19 – *Update of Information in APANPIRG Air Navigation Deficiencies Reporting Form*, which subsumed the MET SG/24 Draft Conclusion MET SG/24-04 endorsing the removal from the open list the APANPIRG air navigation deficiency, AP-MET-01, concerning aerodrome meteorological observations or reports at Honiara (AGGH), Solomon Islands.

2.5 In addition, APANPIRG Conclusion 31/19 urged States/Administrations to establish action plans with defined target dates for resolution of air navigation deficiencies, update the status of the corrective action taken and report progress in the *Reporting Form of Air Navigation Deficiencies*, and update contact details of a Focal Point to coordinate actions to resolve the APANPIRG air navigation deficiencies.

2.6 The current list of air navigation deficiencies, as endorsed by APANPIRG/31, contains thirteen (13) open deficiencies in the MET field related to facilities and services in seven (7) APAC States. These are listed in **Table 1**, below. A detailed copy of the APANPIRG *Reporting Form on Air Navigation Deficiencies* in the MET field is at the **Appendix A** to this paper.

Table 1: Summary of APANPIRG air navigation deficiencies in the MET field

MET facilities and services	Asia/Pacific States	Def. ID	Status
Aerodrome meteorological observations or reports	Kiribati	AP-MET-02	open
	Nauru	AP-MET-21	open
Meteorological watch office (MWO) or SIGMET information	Democratic Peoples' Republic of Korea	AP-MET-16	open
	Nauru	AP-MET-24	open
	Nepal	AP-MET-14	open
	Papua New Guinea	AP-MET-08	open
	Papua New Guinea	AP-MET-22	open
	Solomon Islands	AP-MET-23	open
Volcanic ash/activity information	Papua New Guinea	AP-MET-04	open
	Tonga	AP-MET-17	open
WAFS forecasts and/or flight briefings	Kiribati	AP-MET-18	open
	Nauru	AP-MET-19	open
	Solomon Islands	AP-MET-20	open

1. ACTION BY THE MEETING

1.1 This paper invites the meeting to:

- a) Review the (open) list of APANPIRG air navigation deficiencies – in the field of meteorology – as presented at the **Appendix A** to this paper; and
- b) Provide further updates, as necessary, to the list of deficiencies, including the associated corrective action plans (CAPs) for the resolution of deficiencies.

APPENDIX A

Adapted from APANPIRG/31, Appendix D to the Report on Agenda Item 4

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION								
Identification		Deficiencies			Corrective action			
Requirements	States/ Facilities (Index No.)	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action *
MWO and SIGMET service (Annex 3: Chapter 3, 3.4 and Chapter 7)	Democratic Peoples' Republic of Korea (DPRK) (AP-MET-16)	Requirements for MWO and SIGMET service not established for Pyongyang FIR	2008	Reported by ICAO Regional Office mission	Establish MWO to provide required service, including SIGMET information for Phnom Penh FIR. See notes below for more information.	GACA, Democratic Peoples' Republic of Korea	TBC	A
Meteorological observations and reports. (Annex 3: Chapter 4)	Kiribati (AP-MET-02)	METAR from Kiribati not available on regular basis.	1998	Reported by airlines	Equipment to be installed and arrangements to be made for regular observations and reports, including: training of personnel; maintenance of equipment; calibration and verification of meteorological observations; and proper/secure transmission of data. See notes below for more information.	State designated MET authority	TBC	A
Meteorological information for operators and flight crew members, including forecasts provided by the WAFCs (Annex 3: Chapter 9)	Kiribati (AP-MET-18)	WAFC forecasts not available for inclusion in flight briefings and documentation	2008	Reported by TCB CAEMSA-SP Technical Expert	Implement procedures and systems for the required meteorological information to be supplied to operators and flight crew members, including forecasts generated from the digital forecasts provided by the WAFCs. See notes below for more information.	State designated MET authority	TBC	U

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION								
Identification		Deficiencies			Corrective action			
Requirements	States/ Facilities (Index No.)	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action *
Meteorological information for operators and flight crew members, including forecasts provided by the WAFCS (Annex 3: Chapter 9)	Nauru (AP-MET-19)	WAFCS forecasts not available for inclusion in flight briefings and documentation	2008	Reported by TCB CAEMSA-SP Technical Expert	Implement procedures and systems for the required meteorological information to be supplied to operators and flight crew members, including forecasts generated from the digital forecasts provided by the WAFCS. See notes below for more information.	State designated MET authority	TBC	U
Meteorological observations and reports. (Annex 3: Chapter 4)	Nauru (AP-MET-21)	METAR/SPECI service not provided	2008	Reported by TCB CAEMSA-SP Technical Expert	Equipment to be installed and arrangements to be made for regular observations and reports, including: training of personnel; maintenance of equipment; calibration and verification of meteorological observations; and proper/secure transmission of data. See notes below for more information.	State designated MET authority	TBC	U
Provision of SIGMET information (Annex 3, Chapter 7)	Nauru (AP-MET-24)	Lack of SIGMET issued for the Nauru FIR.	Sep 2011	IATA deemed this situation unsafe and unacceptable to airline operations.	Implement procedures for SIGMET information to be issued by the designated meteorological watch office/s concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations. See notes below for more information.	State designated MET authority	TBC	U

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Identification		Deficiencies			Corrective action			
Requirements	States/ Facilities (Index No.)	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action *
Provision of SIGMET information (Annex 3: Chapter 7)	Nepal (AP-MET-14)	Requirements for issuance and dissemination of SIGMET information for Kathmandu FIR have not been fully implemented	2000		Implement procedures for SIGMET information to be issued by the designated meteorological watch office/s concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations. See notes below for more information.	State designated MET authority	TBC	A
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, MWOs and VAACs.	1995	Observed by States concerned. Reported at the WMO/ICAO Workshop on Volcanic Ash Hazards (Darwin, 1995)	Establish arrangements for State volcano observatories to send the required volcano observation information as quickly as practicable to the associated ACC/FIC, MWO and VAAC. See notes below for more information.	Rabaul Volcano Observatory, NWS and ASL of Papua New Guinea	TBC	A
Provision of SIGMET for volcanic ash (Annex 3: Chapter 7)	Papua New Guinea (AP-MET-08)	Requirements for issuance and proper dissemination of SIGMET for volcanic ash have not been fully implemented	Dec 2003	Reported by airlines, noted by Volcanic Ash Advisory Centres and confirmed by ICAO mission	Implement procedures for SIGMET information to be issued by the designated meteorological watch office/s concerning the occurrence or expected occurrence of volcanic ash. See notes below for more information.	NWS of Papua New Guinea	TBC	U

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Identification		Deficiencies			Corrective action			
Requirements	States/ Facilities (Index No.)	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action *
Provision of SIGMET information (Annex 3, Chapter 7)	Papua New Guinea (AP-MET-22)	Lack of SIGMET issued for the Port Moresby FIR.	Sep 2011	IATA deemed this situation unsafe and unacceptable to airline operations.	Implement procedures for SIGMET information to be issued by the designated meteorological watch office/s concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations. See notes below for more information.	State designated MET authority	TBC	U
Meteorological information for operators and flight crew members, including forecasts provided by the WAFCS (Annex 3: Chapter 9)	Solomon Islands (AP-MET-20)	WAFCS forecasts not available for inclusion in flight briefings and documentation	2008	Reported by TCB CAEMSA-SP Technical Expert	Implement procedures and systems for the required meteorological information to be supplied to operators and flight crew members, including forecasts generated from the digital forecasts provided by the WAFCS. See notes below for more information.	State designated MET authority	TBC	U
Provision of SIGMET information (Annex 3, Chapter 7)	Solomon Islands (AP-MET-23)	Lack of SIGMET issued for the Honiara FIRs.	Sep 2011	IATA deemed this situation unsafe and unacceptable to airline operations.	Implement procedures for SIGMET information to be issued by the designated meteorological watch office/s concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations. See notes below for more information.	State designated MET authority	TBC	U

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Identification		Deficiencies			Corrective action			
Requirements	States/ Facilities (Index No.)	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action *
Reporting of information on volcanic eruptions to civil aviation units. (Annex 3: 3.6, 4.8)	Tonga (AP-MET-17)	Information on volcanic activity not provided regularly to ATS units, MWOs and VAACs	2008	Reported by TCB CAEMSA-SP technical expert	Establish arrangements for State volcano observatories to send the required volcano observation information as quickly as practicable to the associated ACC/FIC, MWO and VAAC. See notes below for more information.	MOI and MEIDECC	TBC	U

NOTES:

Index No.	State	Update Date	NOTES ON <u>OPEN</u> DEFICIENCIES
AP-MET-02	Kiribati	September 2017	APANPIRG/28 noted that Kiribati should: <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the deficiency.
AP-MET-04	Papua New Guinea	September 2017	APANPIRG/28 noted that Papua New Guinea should: <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the deficiency.
AP-MET-08	Papua New Guinea	September 2017	APANPIRG/28 noted that Papua New Guinea should: <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the deficiency.
AP-MET-14	Nepal	September 2017	APANPIRG/28 noted that Nepal should: <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the deficiency.

Index No.	State	Update Date	NOTES ON <u>OPEN</u> DEFICIENCIES
AP-MET-16	Democratic People's Republic of Korea	September 2017	APANPIRG/28 noted that DPRK should: <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the deficiency.
AP-MET-17	Tonga	10 May 2013 29 May 2017 September 2017 June 2018	Ministry of Infrastructure (MOI), Civil Aviation Division, advised that: <ul style="list-style-type: none"> • MOU established between the national authority providing volcano monitoring (Ministry of Lands, Environment, Climate Change and Natural Resources – MLECCNR) and the national authority providing meteorological service for international air navigation (MOI) for the reporting of volcanic activity to the associated ACCs, MWOs and VAACs in accordance with the relevant ICAO SARPs. MOI, Civil Aviation Division, advised that: <ul style="list-style-type: none"> • Relevant operating procedures implemented in the units concerned and case studies of real volcanic events presented as evidence of the State volcano observatory's issuance of the required volcano observation information. APANPIRG/28 noted that: <ul style="list-style-type: none"> • Removal of the deficiency from the open list is subject to the concurrence of the ATS units, MWOs and VAACs concerned that the deficiency is resolved. MET SG/22 noted that: <ul style="list-style-type: none"> • VAAC Wellington was coordinating with Tonga on the validation of corrective action taken to resolve the deficiency.
AP-MET-18	Kiribati	September 2017	APANPIRG/28 noted that Kiribati should: <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the deficiency.
AP-MET-19	Nauru	September 2017	APANPIRG/28 noted that Nauru should: <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the deficiency.
AP-MET-20	Solomon Islands	September 2017	APANPIRG/28 noted that Solomon Islands should: <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the deficiency.

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Index No.	State	Update Date	NOTES ON <u>OPEN</u> DEFICIENCIES
		June 2019	MET SG/23 requested the Secretary in conjunction with support from other States to provide Solomon Islands with assistance in preparing the full report on rectification of the deficiency.
AP-MET-21	Nauru	September 2017	<p>APANPIRG/28 noted that Nauru should:</p> <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the deficiency.
AP-MET-22	Papua New Guinea	September 2017	<p>APANPIRG/28 noted that Papua New Guinea should:</p> <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the deficiency.
AP-MET-23	Solomon Islands	September 2017 June 2019	<p>APANPIRG/28 noted that Solomon Islands should:</p> <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the deficiency. <p>MET SG/23 requested the Secretary in conjunction with support from other States to provide Solomon Islands with assistance in preparing the full report on rectification of the deficiency.</p>
AP-MET-24	Nauru	September 2017	<p>APANPIRG/28 noted that Nauru should:</p> <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the deficiency.

Index No.	State	Update Date	NOTES ON <u>CLOSED</u> DEFICIENCIES
AP-MET-01	Solomon Islands	December 2020	Removed from the open list; APANPIRG/31 Conclusion 31/19, refers.
AP-MET-03	Indonesia	September 2017	Removed from the open list, APANPIRG/28 Conclusion 28/29 refers.
AP-MET-05	–	–	This Index No. is not used.

Index No.	State	Update Date	NOTES ON <u>CLOSED DEFICIENCIES</u>
AP-MET-06	Indonesia	September 2017	Removed from the open list, APANPIRG/28 Conclusion 28/29 refers.
AP-MET-07	Philippines	November 2019	Removed from the open list, Conclusion APANPIRG/30/19, refers.
AP-MET-09	Cambodia	September 2018	Removed from the open list, APANPIRG/29 Decision 29/23 refers
AP-MET-10	–	–	This Index No. is not used.
AP-MET-11	Cambodia	September 2018	Removed from the open list, APANPIRG/29 Decision 29/24 refers
AP-MET-12	Lao PDR	September 2018	Removed from the open list, APANPIRG/29 Decision 29/24 refers
AP-MET-13	–	–	This Index No. is not used.
AP-MET-15	–	–	This Index No. is not used.

Acronyms/Abbreviations/Definitions

- ACC — Area control centre
- ASL — Air Services Ltd.
- ATS — Air traffic services
- CAEMSA-SP — Cooperative Agreement for the Enhancement of Meteorological Services to Aviation - South Pacific
- CAAP — Civil Aviation Authority Philippines
- CAP — Corrective action plan
- FIC — Flight information centre
- FIR — Flight information region
- GACA — General Administration of Civil Aviation

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Acronyms/Abbreviations/Definitions

IATA	— International Air Transport Association
MEIDECC	— Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication
MET	— Meteorological
METAR	— Aerodrome routine meteorological report (<i>in meteorological code</i>)
MWO	— Meteorological watch office
NWS	— National Weather Service
PAGASA	— Philippine Atmospheric, Geophysical and Astronomical Services Administration
PHIVOLCS	— Philippine Institute of Volcanology and Seismology
SIGMET	— Information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations
SPECI	— Aerodrome special meteorological report (<i>in meteorological code</i>)
SSCA	— State Secretariat of Civil Aviation
TBC	— To be confirmed
TCB	— Technical Cooperation Bureau (of ICAO)
VAAC	— Volcanic ash advisory centre
W AFC	— World area forecast centre
WMO	— World Meteorological Organization