

*International Civil Aviation Organization***WORKING PAPER**

ICAO

ASIA AND PACIFIC (APAC)**Thirteenth Meeting of the Meteorological Services Working Group (MET/S WG/13)**

Bangkok, Thailand, 29 to 31 March 2023

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 List of (open) APANPIRG air navigation deficiencies – in the field of meteorology (MET) – 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 or efficiency of international civil aviation¹.

1.2 This paper invites the meeting to review the List of air navigation deficiencies – in the field of MET – as recorded by the APAC Air Navigation Planning and Implementation Regional Group (APANPIRG) 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 Meteorological Services Working Group (MET/S WG) supports the Meteorology Sub-Group (MET SG) and APANPIRG in assisting APAC States with resolving air navigation deficiencies in the field of MET services.

2.2 As endorsed by the Thirty-third Meeting of APANPIRG (APANPIRG/33, 22 – 24 November 2022), the current List of air navigation deficiencies contains twelve (12) (open) deficiencies in the MET field [Conclusion APANPIRG/33/14 – *Update of Information in APANPIRG Air Navigation Deficiencies Reporting Form*, refers].

¹ APANPIRG Procedural Handbook, 6th Ed., 1 June 2020, Part V, section 2, paragraph 1.3

2.3 APANPIRG/33 noted that the Solomon Islands had reported significant progress at MET SG/26 towards rectifying the deficiency AP-MET-23 (concerning the lack of SIGMET issued for the Honiara FIR). In addition, APANPIRG/33 acknowledged further information submitted by the Solomon Islands to validate the rectification of the deficiency. Therefore, based on the recommendation of MET SG/26, APANPIRG endorsed the removal of deficiency AP-MET-23 from the Open List.

2.4 APANPIRG/33 also noted that Papua New Guinea (PNG) and Tonga had reported significant progress at MET SG/26 towards rectifying the deficiencies AP-MET-04 and AP-MET-17 (concerning information on volcanic activity not provided regularly to ATS units, MWOs and VAACs). Furthermore, subject to additional corrective actions, confirmation from the recipient operational units, and evidence of relevant, established procedures, APANPIRG/33 noted that PNG and Tonga could report the rectification of the deficiencies to ICAO.

2.5 A copy of the APANPIRG Reporting Form on Air Navigation Deficiencies in the MET field, including detailed notes, is provided in **Appendix A** of this paper. The (open) deficiencies concern MET facilities and services provided in seven (7) APAC States, as summarised in **Table 1** below:

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
Volcanic ash/activity information	Papua New Guinea	AP-MET-04	open
	Tonga	AP-MET-17	open
WAFS forecasts or flight briefings	Kiribati	AP-MET-18	open
	Nauru	AP-MET-19	open
	Solomon Islands	AP-MET-20	open

3. ACTION BY THE MEETING

3.1 This paper invites the meeting to:

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

MET/S WG/13
Appendix A to WP/06

APPENDIX A

Adapted from APANPIRG/33, Appendix D to the Report on Agenda Item 4.

Updates endorsed by APANPIRG/33 show deleted text using strikethrough (~~text to be deleted~~) and added text with grey shading (text to be inserted).

REPORTING FORM ON (OPEN) 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
Meteorological information for operators and flight crew members, including forecasts provided by the WAFCs (Annex 3: Chapter 9)	Nauru (AP-MET-19)	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
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

MET/S WG/13
Appendix A to WP/06

REPORTING FORM ON (OPEN) 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 *
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
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
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

MET/S WG/13
Appendix A to WP/06

REPORTING FORM ON (OPEN) 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)	Solomon Islands (AP-MET-20)	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
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
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 ON THE (OPEN AND CLOSED) AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION				
Index No.	State	Update Date	NOTES ON OPEN AND CLOSED DEFICIENCIES	Status
AP-MET-01	Solomon Islands	December 2020	Removed from the open List; APANPIRG/31 Conclusion 31/19, refers.	Closed
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. 	Open
AP-MET-03	Indonesia	September 2017	Removed from the open List, APANPIRG/28 Conclusion 28/29 refers.	Closed
AP-MET-04	Papua New Guinea	November 2022	APANPIRG/33 noted MET SG/26 recommended that Papua New Guinea: <ul style="list-style-type: none"> • Conduct additional corrective actions, including seeking confirmation from the recipient operational units and providing evidence of the relevant established procedures; and • Submit an official report to ICAO providing complete details of the action taken. 	Open

MET/S WG/13
Appendix A to WP/06

NOTES ON THE (OPEN AND CLOSED) AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION				
Index No.	State	Update Date	NOTES ON OPEN AND CLOSED DEFICIENCIES	Status
		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-05	–	–	This Index No. is not used.	Closed
AP-MET-06	Indonesia	September 2017	Removed from the open List, APANPIRG/28 Conclusion 28/29 refers.	Closed
AP-MET-07	Philippines	November 2019	Removed from the open List, Conclusion APANPIRG/30/19, refers.	Closed
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. 	Open
AP-MET-09	Cambodia	September 2018	Removed from the open List, APANPIRG/29 Decision 29/23 refers	Closed
AP-MET-10	–	–	This Index No. is not used.	Closed
AP-MET-11	Cambodia	September 2018	Removed from the open List, APANPIRG/29 Decision 29/24 refers	Closed
AP-MET-12	Lao PDR	September 2018	Removed from the open List, APANPIRG/29 Decision 29/24 refers	Closed
AP-MET-13	–	–	This Index No. is not used.	Closed
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. 	Open
AP-MET-15	–	–	This Index No. is not used.	Closed
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. 	Open
AP-MET-17	Tonga	November 2022	APANPIRG/33 noted MET SG/26 recommended that Tonga: <ul style="list-style-type: none"> • Conduct additional corrective actions, including seeking confirmation from the recipient operational units and providing evidence of the relevant established procedures; and • Submit an official report to ICAO providing complete details of the action taken. 	Open
		September 2017	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/S WG/13
Appendix A to WP/06

NOTES ON THE (OPEN AND CLOSED) AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION				
Index No.	State	Update Date	NOTES ON OPEN AND CLOSED DEFICIENCIES	Status
		June 2018 29 May 2017	<p>MET SG/22 noted that:</p> <ul style="list-style-type: none"> • VAAC Wellington was coordinating with Tonga on the validation of corrective action taken to resolve the Deficiency. <p>MOI, Civil Aviation Division, advised that:</p> <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. 	
		10 May 2013	<p>Ministry of Infrastructure (MOI), Civil Aviation Division, advised that:</p> <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. 	
AP-MET-18	Kiribati	September 2017	<p>APANPIRG/28 noted that Kiribati 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. 	Open
AP-MET-19	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. 	Open
AP-MET-20	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>	Open
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. 	Open
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. 	Open
AP-MET-23	Solomon Islands	November 2022	<p>Removed from the open List; refer to:</p> <ul style="list-style-type: none"> • Conclusion APANPIRG/33/14 – <i>Update of information in APANPIRG Air Navigation Deficiencies Reporting Form</i>; • APANPIRG/33 WP/14 – <i>STATUS OF AIR NAVIGATION DEFICIENCIES IN THE ASIA/PAC REGION</i>; • APANPIRG/33 WP/13 – <i>METEOROLOGY SUB-GROUP (MET SG/26) REPORT</i>; and • APANPIRG/33 IP/08 – <i>RECTIFICATION OF APANPIRG AN DEFICIENCY AP-MET-23</i> 	Closed

MET/S WG/13
Appendix A to WP/06

NOTES ON THE (OPEN AND CLOSED) AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION				
Index No.	State	Update Date	NOTES ON OPEN AND CLOSED DEFICIENCIES	Status
		October 2021	MET SG/25 requested the Solomon Islands, with assistance from its partner States, to conduct additional corrective action to enable the MET SG to confirm that Solomon Islands had fully resolved the Deficiency; maintain a log of all SIGMETs issued over at least one month to capture the operational WC-, WS- and WV-SIGMETs, plus any test WV-SIGMETs; pass the details [of the log] to the ad hoc group [on AN Deficiencies] to compare against SIGMETs received by RODB Brisbane [MET SG/25, Action No. 25/10]. Subject to Solomon Islands demonstrating resolution of the issues concerning content, format and timeliness of SIGMET information (as discussed in MET SG/25, WP/12) and sustainable provision of ICAO-compliant SIGMET service, MET SG would support the removal of Deficiency AP-MET-23 from the APANPIRG open list. Therefore, to facilitate the removal of the Deficiency from the open List, MET SG/25 requested the Secretariat coordinate with the Solomon Islands to report the resolution of the Deficiency to APANPIRG [MET SG/25, Action No. 25/11].	
		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.	
		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. 	
AP-MET-24	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. 	Open

Acronyms/Abbreviations/Definitions (used in this document)

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
CAP	— Corrective action plan
FIC	— Flight information centre
FIR	— Flight information region
GACA	— General Administration of Civil Aviation
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

MET/S WG/13
Appendix A to WP/06

Acronyms/Abbreviations/Definitions (used in this document)

NWS	— National Weather Service
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>)
TBC	— To be confirmed
TCB	— Technical Cooperation Bureau (of ICAO)
VAAC	— Volcanic ash advisory centre
WAFC	— World area forecast centre
WMO	— World Meteorological Organization
