International Civil Aviation Organization

Twenty Eighth Meeting of the Communications/ Navigation and Surveillance Sub-group (CNS SG/28) of APANPIRG

Bangkok, Thailand, 01–05 July 2024

Agenda Item 2: Review outcomes of APANPIRG, APAC ANSP Committee, ATM Sub-group, MET Sub-group and other meetings relevant to CNS Sub-group

AIR TRAFFIC MANAGEMENT AND AIRSPACE SAFETY MONITORING OUTCOMES

(Presented by Secretariat)

SUMMARY

This paper presents key outcomes from the technical working groups established under the oversight of the Air Traffic Management and Regional Airspace Safety Monitoring Advisory Sub-Groups of APANPIRG, and other information relevant to CNS Sub-Group.

1. INTRODUCTION

1.1 The Eleventh Meeting of the Air Traffic Management Sub-Group of APANPIRG (ATM/SG/11) was held from 02 to 06 October 2023.

1.2 ATM/SG/12, scheduled to be held from 23 to 27 September 2024, will consider outcomes from the following meetings:

- The Third Meeting of the South Asia, Indian Ocean and Southeast Asia ATM Coordination Group (SAIOSEACG/3, 16 to 19 April 2024);
- The Fourteenth Meeting of the ATFM Steering Group (ATFM/SG/14, 22 to 26 April 2024);
- The Nineth Meeting of Asia Pacific Search and Rescue Work Group (APSAR/WG/9, 7 to 10 May 2024); and
- The Nineteenth Meeting of the Aeronautical Information Services (AIS) – Aeronautical Information Management (AIM) Implementation Task Force (AAITF/19, 10 to 13 June 2024).

1.3 **DISCLAIMER:** The presentation of material in this report does not imply the expression of any opinion whatsoever on the part of ICAO, APANPIRG or the ATM Sub-Group of APANPIRG concerning the legal status of any country, territory, city or area of its authorities, or concerning the delimitation of its frontiers or boundaries.

2. DISCUSSION

ATM/SG/11 Outcomes

ANS USOAP Update

2.1 The Secretariat provided information on the ICAO Universal Safety Oversight Audit Programme (USOAP) Continuous Monitoring Approach (CMA). The paper discussed the Protocol Questions (PQs) used to assess a State's safety oversight system, and an annual update of ANS USOAP status.

2.2 The average ANS Effective Implementation (EI) of APAC region was 64.24%, as at September 2023. **Figure 1** illustrated the EI ratings for ANS-related PQs of the 37 APAC States that had been audited or received USOAP activity:

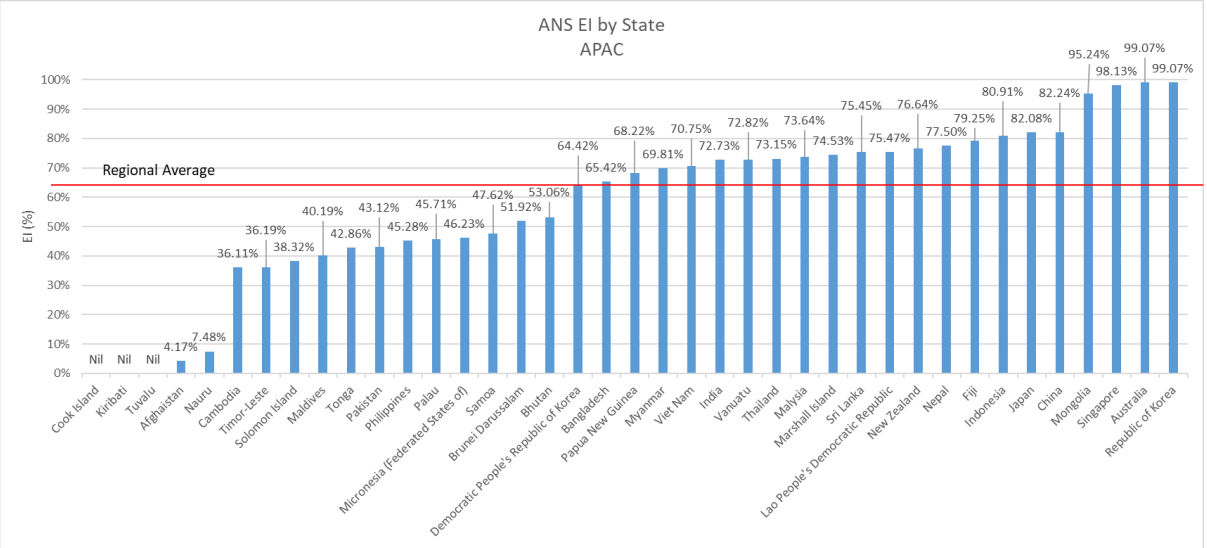

Figure 1: USOAP ANS EI Comparisons by State (September 2023)

2.3 The meeting was informed that the data source was the USOAP Continuous Monitoring Approach (CMA) Online Framework (OLF), which reflected the 2020 version of PQs and recent USOAP activities such as CMA Audit (CMAA), ICAO Coordinated Validation Mission (ICVM), and Off-Site Validation Activity (OSVA).

Application of ATC Separation Minimums

2.4 The Secretariat provided information on the Seamless ATM survey conducted to determine which Air Traffic Control (ATC) separation minima were being applied within the Asia/Pacific Region. The survey measured the minimum horizontal separation standard within State/Administration's FIR in Category R, Category S and Category T airspace[1]. **Figures 2-7** illustrated

[1] Asia/Pacific Seamless ANS Plan paragraph 1.4:

> Category R: remote en-route airspace with Air Traffic Services (ATS) HF or CPDLC communications and outside the coverage of ground-based surveillance coverage; or
>
> Category S: serviced (or potentially serviced) en-route airspace – by direct (not dependent on a Communication Service Provider (CSP) ATS communications and surveillance; or

the efficiency of ATC spacing between aircraft at the same level as it is theoretically being applied inbound at FIR TOC Points, and within FIRs.

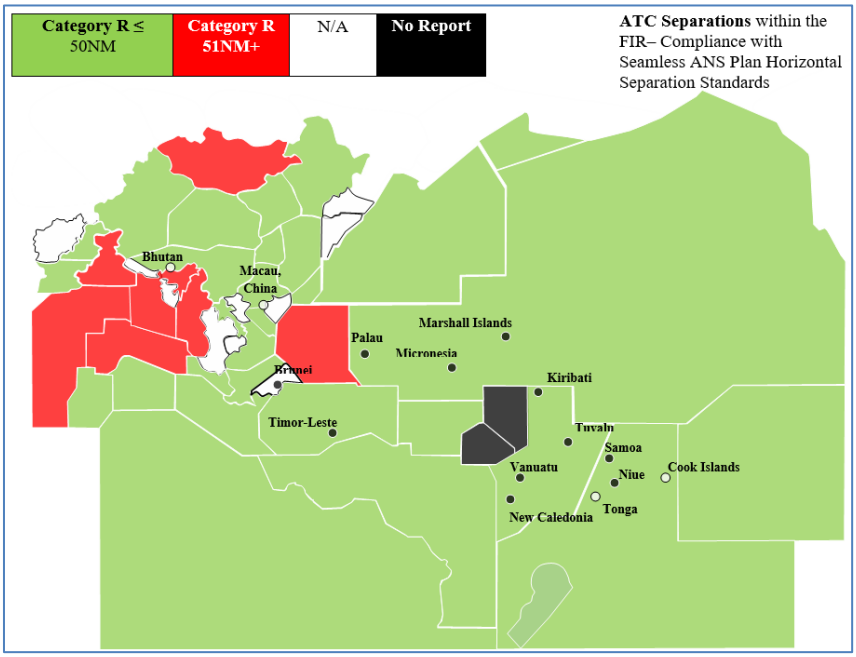

Figure 2: Category R Horizontal Separation Minima <u>within</u> the FIR, October 2023

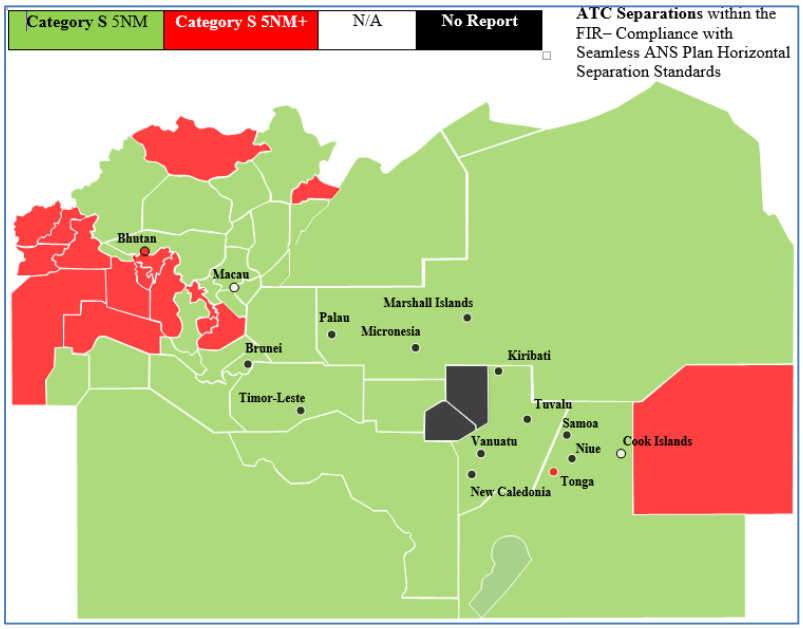

Figure 3: Category S Horizontal Separation Minima <u>within</u> the FIR, October 2023

<u>Category T</u>: terminal operations serviced by direct ATS communications and surveillance.

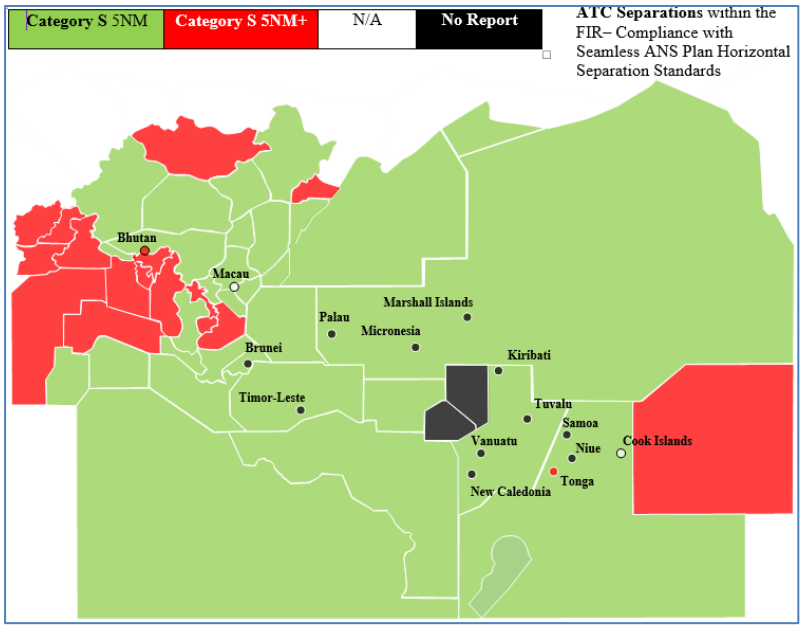

Figure 4: Category T Horizontal Separation Minima <u>within</u> the FIR, October 2023

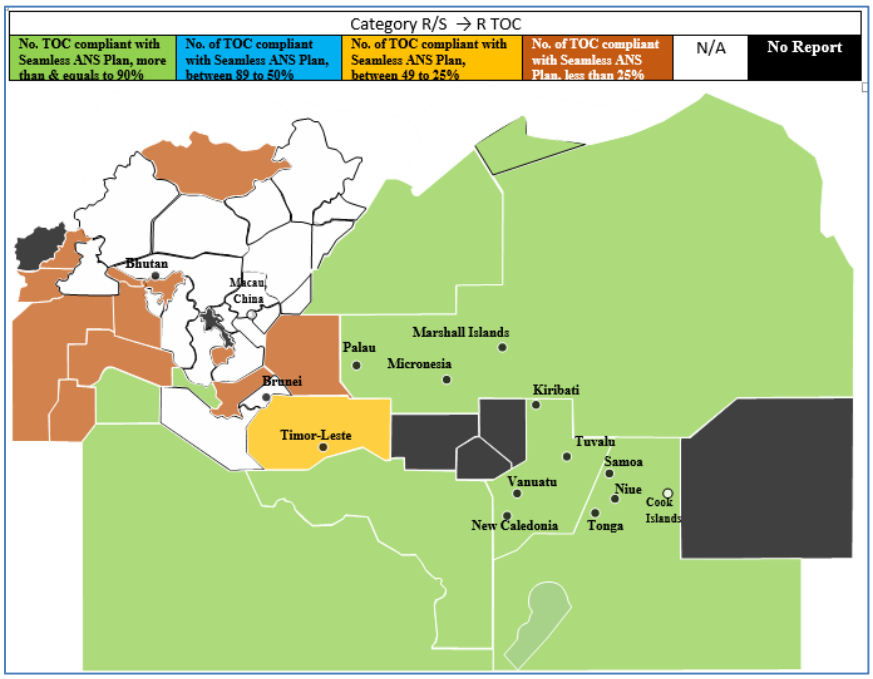

Figure 5: Category R/S → R TOC ATC Horizontal Spacing at <u>Inbound FIR TOC</u> points, October 2023

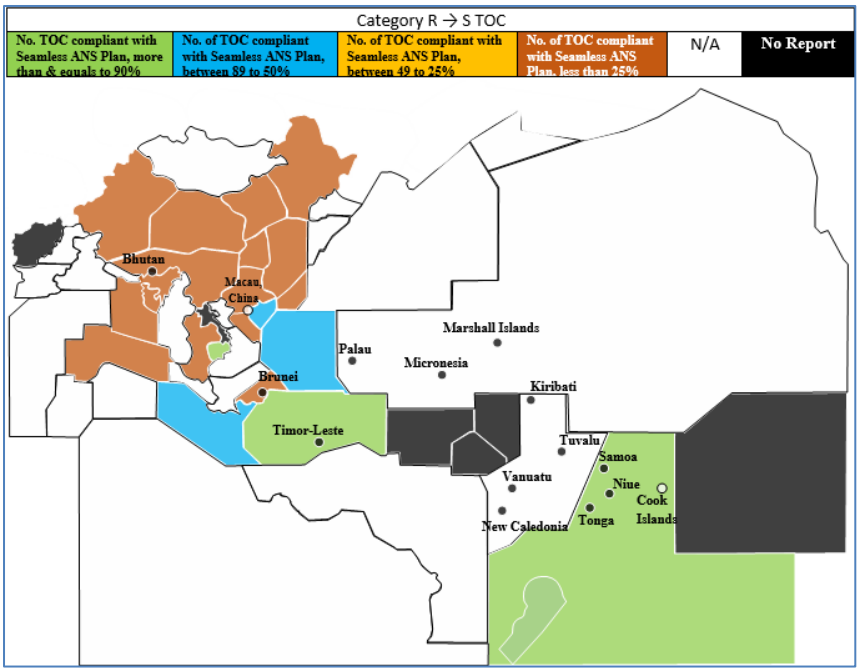

Figure 6: Category R → S TOC ATC Horizontal Spacing at Inbound FIR TOC points, October 2023

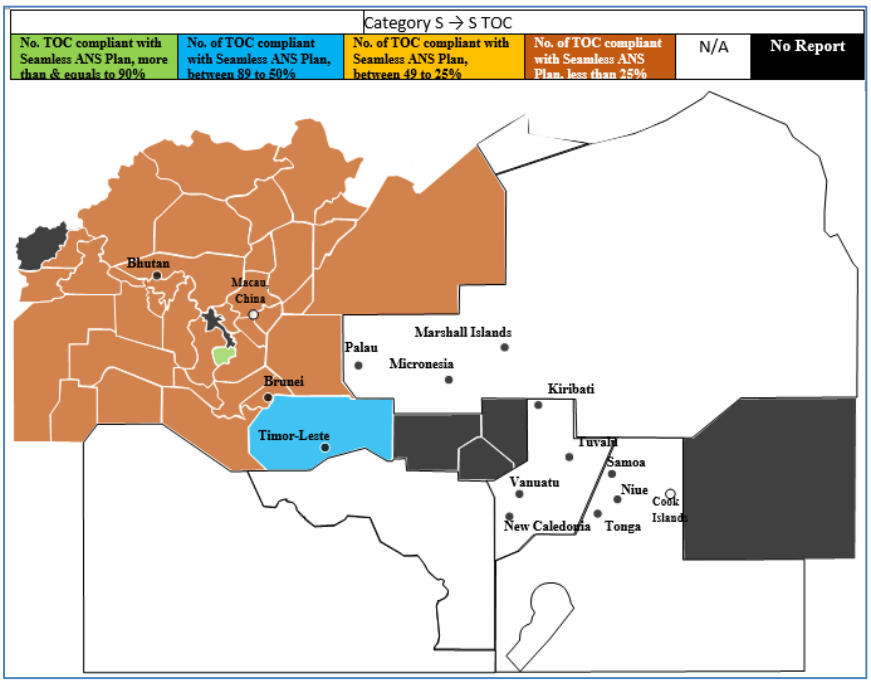

Figure 7: Category S → S TOC ATC Horizontal Spacing at Inbound FIR TOC points, October 2023

Formation of Data Analytics Group to Establish ATM Performance Management in APAC

2.5 The meeting agreed to ***Decision ATM/SG/11-1: Establish Performance Management Data Analytics Ad hoc Group***, in accordance with the terms of reference, task list and data collection guide provided in **ATM/SG/11 WP/8 Appendices A and B**.

2.6 The group considered the eight Phase 1 Key Performance Indicators (KPIs), plus GANP KPI16 (Additional Fuel Burn) to measure the impact of sustainability efforts. **Table 1** listed the group's consensus on suitable KPI variants.

KPA	KPI	Variant	GANP KPI Code
Capacity	Airport peak capacity	Departure	KPI09-D
		Arrival	KPI09-A
		Total	KPI09-AD
Capacity	Airport peak throughput	Departure	KPI10-1D
		Arrival	KPI10-1A
		Total	KPI10-1AD
Efficiency	Additional taxi-out time	Advanced	KPI02-2
Efficiency	Additional taxi-in time	Advanced	KPI13-2
Predictability	Departure punctuality	± 15 mins	KPI01-2A
Predictability	Arrival punctuality	± 15 mins	KPI14-2A

Table 1: Survey results summary

2.7 The purpose of establishing the proposed data analysis framework was to establish performance analysis capabilities to support enhancement to ATM performance. It was not intended for performance scoring and reporting.

Proposal on the Establishment of a Study Group to Prepare a Set of Harmonised Operational Requirements of FF-ICE for Asia/Pacific

2.8 The meeting agreed to ***Decision ATM/SG/10-3: Establish FF-ICE Operational Requirements Small Working Group*** to prepare a set of harmonised operational requirements of Flight and Flow Information for a Collaborative Environment (FF-ICE) and recommend an approach to devise an FF-ICE implementation strategy for Asia/Pacific, aligned with Asia/Pacific Seamless ANS objectives. FF-ICE would require changes in operational processes and flight planning procedures. New processes would be required to cater to a mixed mode environment where both current flight plan (FPL2012) and FF-ICE flight plan co-exist. The interaction of FF-ICE with other ATM initiatives such as Air Traffic Flow Management (ATFM) would also need to be studied.

2.9 The first meeting of the FF-ICE Operational Requirements Ad hoc Group was held from 18 to 21 June 2024 at the ICAO Asia and Pacific Regional Office in Bangkok, Thailand. A total of 47 participants from Australia, Cambodia, Hong Kong China, Japan, Philippines, Singapore, Thailand, United States, Viet Nam, IATA, Industry, and ICAO attended the meeting. The following subjects were included in the meeting programme.

- FF-ICE Developments
- FF-ICE's role in TBO
- FF-ICE/R1 Services
- Tabletop Exercise
- Discussion on mixed mode considerations
- Sharing on FF-ICE implementation plans and timeline by ANSP and industry

2.10 The meeting materials are available on the ICAO Asia/Pacific (APAC) Regional Office web-page at icao.int/APAC/Meetings/Pages/2024-FF-ICE-and-WS-with-TTX.aspx. The meeting outcomes and future plans will be reported to the ATM/SG/12 (23-27 September 2024 in Bangkok).

TBO Session/Seminar

2.11 The Trajectory Based Operations (TBO) session/seminar was held on 3rd October during the ATM/SG /11 meeting. The session consisted of five presentations:

- Introduction to TBO and ICAO resources by ICAO:
- Progress Update of FF-ICE OR SWG, provided by the SWG:
- Multi Regional TBO demo by Singapore, Thailand and US:
- Multi Regional TBO demo by Boeing:
- TBO Implementation in the Asia Pacific by CANSO

SAIOSEACG/3 Outcomes

2.12 The objective of the SAIOSEACG is to identify the need for, plan and implement Air Traffic Management (ATM) improvements in the Indian Ocean, South Asia and Southeast Asia areas.

2.13 The meeting discussed on:

- improvements to airspace and Air Traffic Services (ATS) route structures, in order to optimise safety and efficiency;
- improvements to ATS facilities such as communication and surveillance capability in support of flight operations; and
- airspace and facility requirements based on future technologies, Performance-based Navigation (PBN) and other advanced capabilities.

ATFM/SG/14 Outcomes

2.14 The ATFM-on-SWIM trial has helped identify potential issues in establishing the operation. During the trial, it was highlighted that a common FIXM version was necessary to facilitate early cross-border ATFM system-to-system data exchanges. To ensure effective governance and system management, it was also necessary to establish a change process that could address any changes required in the common FIXM version used for the ATFM-on-SWIM trial and operation in the future.

2.15 Therefore, the ATFM/SG/14 agreed that FIXM v4.3 should be formalized as an agreed upon version to support information exchange between operational ATFM systems. Furthermore, a change process should be further developed in coordination with SWIM TF.

2.16 It is expected that the Draft Conclusion ATFM/SG/14-01 below would assist States to transition ATFM-on-SWIM trial into an operational environment.

Draft Conclusion ATFM/SG/14-01 – Asia/Pacific Regional FIXM 4.3

That, the FIXM Core 4.3.0 released by FIXM CCB be adopted as an agreed-upon version (referred to as “FIXM 4.3” in Asia/Pacific region) from Q3 2026 to support information exchange between cross-border operational ATFM systems in SWIM environment.

AAITF/19 Outcomes

NOTAM Proliferation Analysis

2.17 Detailed statistical data on old NOTAMs and very old NOTAMs was provided for Asia/Pacific Administration **Figures 8** illustrated APAC NOTAM statistics since 2021. At 01 May 2024, a total of 6057 NOTAMs were active in the APAC Region. 294 (5%) of these were old (i.e. more than three months but less than one year), and 179 (3%) were very old (one year or more). Compared with June 2023 the number of very old NOTAM had decreased by 380 (68%), and the number of old NOTAMs had decreased by 90 (23%). Compared with June 2023 the number of very old NOTAM had decreased by 380 (68%), and the number of old NOTAMs had decreased by 90 (23%).

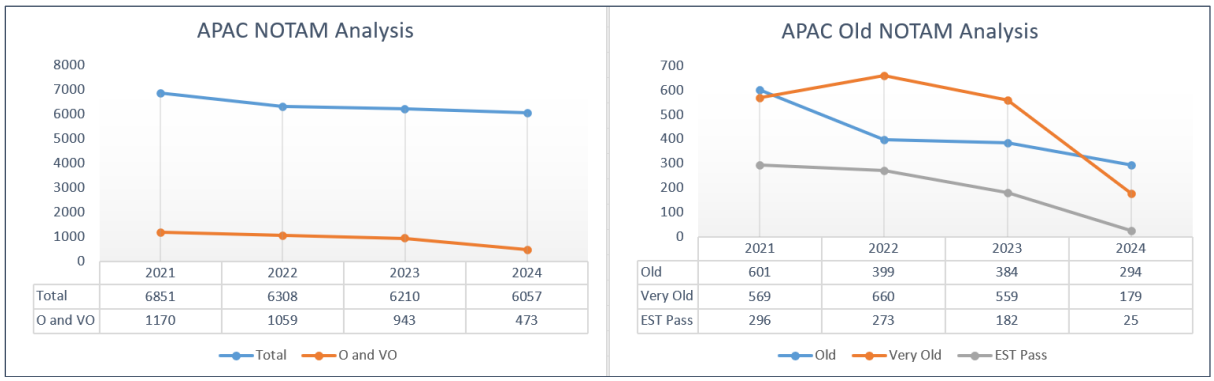

Figure 8: APAC NOTAM Statistics (Total, old and very old)

2.18 APAC Administrations were invited to take immediate action to ensure full compliance with NOTAM procedures in ICAO Doc 10066 *Procedures for Air Navigation Services – Aeronautical Information Management* (PANS-AIM) and ***Conclusion ATM/SG/6-14***, and to ensure the consistent distribution of NOTAMN, NOTAMR, NOTAMC and NOTAM Checklists to international NOTAM Offices and multinational NOTAM processing units.

2.19 Two WPs presented the updates on the work of the ICAO APAC SWIM TF Task Team on Information Services to identify the business functionality to be supported by APAC Common SWIM Information Services for addressing the operational needs in APAC.

2.20 The list of recommended services in the initial APAC Common SWIM Information Services was further reviewed and modified by SWIM TF/9, and the list updated by SWIM TF/9 was provided in Appendix A of WP/24.

2.21 Realizing a need for further discussion, the meeting agreed to form an Ad Hoc group to discuss both technical and operational aspect of this subject rather than reaching a consensus at AAITF/19. The following States/Administrations and International Organizations were willing to volunteer the task.

Australia, Hong Kong China, Indonesia, Japan, Singapore, Thailand, USA, IATA, IFAIMA

2.22 The meeting agreed to the following Decision:

Decision AAITF/19-3: Establish APAC Common SWIM Aeronautical Information Services Ad hoc Group
That, AAITF establishes the APAC Common SWIM Aeronautical Information Services Ad hoc Group, that will:

a) Review and discuss the proposed business functionality of APAC Common SWIM Aeronautical Information Services by SWIM TF, including but not limited to;

- Business functionality of the service;
- Brief description of the service;
- Type of information to be exchanged;
- Information exchange model / Message type;
- Message exchange pattern; and
- Recommended service in initial APAC Common SWIM IS.

b) Coordinate and collaborate with APAC SWIM TF, ATM/SG and AOP/SG; review the development of AIXM revisions and, if needed, propose AIXM extension for regional adoption;

c) Submit inputs and recommendations to the AAITF, ATM/SG, AOP/SG and APAC SWIM TF when deemed necessary; and

d) Undertake any other tasks related to APAC Common SWIM Aeronautical implementation that may arise in the future.

2.23 The meeting agreed to report the establishment of the Ad Hoc Group to the upcoming AOP/SG for further discussion.

RASMAG/28 Outcomes

2.24 RASMAG/28 (21 – 24 August 2023) included, in its airspace safety analysis, discussion of Asia/Pacific Region Combined PBCS Monitoring Report and Large Height Deviation (LHD) Hot Spots.

Asia/Pacific Region Combined PBCS Monitoring Report

2.25 The report highlighted consolidated performance data and issues associated with Actual Surveillance Performance (ASP) and Actual Communications Performance (ACP) for the region. Overall ASP for the region had met the 95% criterion (**Table 2**). Overall ACP for the region met the 95% criterion (**Table 3**).

ACTUAL SURVEILLANCE PERFORMANCE - FIR AGGREGATE (ALL MEDIA TYPES)						
Region	Asia-Pacific Region					
Performance Criteria	RSP180					
Time Period	2022 January-June			2022 July-December		
Colour Key: Meets Criteria; 99.0%-99.84%; Under Criteria	Message Counts	Criteria		Message Counts	Criteria	
		95%	99.90%		95%	99.90%
FIR		% < = 90sec	% <= 180sec		% < = 90sec	% <= 180sec
PAZA	1342364	98.94%	99.70%	1477614	98.94%	99.68%
RJJJ	1843788	98.49%	99.66%	2417297	98.69%	99.69%
KZAK	4301850	98.81%	99.66%	4831234	98.90%	99.72%
NFFF	186590	99.31%	99.69%	175745	99.13%	99.63%
NTTT	49699	99.76%	99.90%	72521	99.64%	99.84%
NZZO	196553	99.15%	99.83%	344849	98.91%	99.69%
YBBB	517841	99.93%	99.97%	952694	99.60%	99.88%
YMMM	306436	99.84%	99.93%	745742	99.47%	99.76%
RPHI	27832	99.25%	99.76%	344955	98.89%	99.58%
VCCF	385121	99.31%	99.83%	463887	99.55%	99.91%
VOMF	182599	98.44%	99.32%	241622	98.24%	99.19%
VECF	349179	98.95%	99.61%	364483	98.92%	99.54%
VVTS	154613	98.81%	99.83%	194999	99.06%	99.83%
WAAF	90840	99.42%	99.80%	121362	99.39%	99.75%
WSJC	408788	99.18%	99.87%	608655	99.12%	99.84%
ZLLL	188643	98.90%	99.60%	238034	98.90%	99.70%
ZWWW	103500	98.70%	99.60%	101848	98.80%	99.70%
WMFC	169757	98.89%	99.72%	390920	99.23%	99.80%

Table 2: Asia/Pacific Region ASP (RSP180)

ACTUAL COMMUNICATION PERFORMANCE - FIR AGGREGATE (ALL MEDIA TYPES)									
Region	Asia-Pacific Region								
Performance Criteria	RCP240								
Time Period	2022 January-June					2022 July-December			
	Message Counts	ACP Criteria		ACTP Criteria		Message Counts	ACP Criteria		ACTP Criteria	
		95%	99.90%	95%	99.90%		95%	99.90%	95%	99.90%
FIR		% < = 180sec	% <= 210sec	% < = 120sec	% <= 150sec		% < = 180sec	% <= 210sec	% < = 120sec	% <= 150sec
PAZA	81331	98.89%	98.89%	98.77%	99.18%	95762	99.31%	99.54%	99.36%	99.57%
RJJJ	112574	99.63%	99.75%	99.79%	99.85%	151986	99.57%	99.71%	99.72%	99.82%
KZAK	246180	99.22%	99.49%	99.35%	99.60%	311405	99.38%	99.60%	99.59%	99.73%
NFFF	6607	99.51%	99.72%	99.65%	99.72%	6685	99.26%	99.41%	99.55%	99.62%
NTTT	4492	99.81%	99.83%	99.95%	99.97%	7138	99.57%	99.64%	99.94%	99.94%
NZZO	36564	99.21%	99.47%	99.58%	99.74%	65032	99.16%	99.43%	99.58%	99.72%
YBBB	11278	99.81%	99.88%	99.82%	99.85%	24371	99.57%	99.73%		
YMMM	12812	99.34%	99.51%	99.52%	99.69%	32204	99.61%	99.71%		
RPHI	9782	98.40%	98.59%	98.98%	99.19%	17065	98.12%	98.36%	98.63%	98.89%
VCCF	20125	98.22%	99.71%	99.91%	100.00%	25443	98.57%	99.49%	99.94%	99.96%
VOMF	66300	99.82%	99.89%	99.87%	99.92%	95889	99.82%	99.88%	99.88%	99.92%
VECF	20325	99.15%	99.35%	99.44%	99.64%	27629	99.08%	99.36%	99.40%	99.58%
VVTS	84045	95.94%	96.46%	99.62%	99.79%	60881	95.20%	95.76%	99.57%	99.73%
WAAF	17664	99.01%	99.22%	99.67%	99.75%	20604	99.27%	99.48%	99.77%	99.86%
WSJC	28819	99.00%	99.24%	99.10%	99.34%	49453	99.07%	99.32%	99.18%	99.39%
ZLLL	867	97.80%	97.92%	99.53%	99.53%	751	98.53%	98.66%	98.40%	98.80%
ZWWW	31	100.00%	100.00%	100.00%	100.00%	4	100.00%	100.00%	100.00%	100.00%
WMFC	52457	98.81%	99.17%	99.06%	99.41%	74495	99.17%	99.43%	99.38%	99.59%

Table 3: Asia/Pacific Region ACP (RCP240)

Large Height Deviation Hot Spots

2.26 RASMAG/28 (21 – 24 August 2023) included, in its airspace safety analysis, discussion of Large Height Deviation (LHD) Hot Spots.

2.27 **Table 4** summarizes current Large Height Deviation (LHD) Hot Spots, the FIRs involved, the year of identification, and status remarks.

Hot Spot	Involved FIRs	Identified	Remarks
A1	Kolkata/Dhaka-Yangon	2015	Cat. E LHDs. Risk reduced.
A2	Chennai – Yangon/Kuala Lumpur	2015	Cat. E LHDs reduced. Risk reduced. Potential non-hot spot 2023 (RASMAG/28)
B	Incheon (AKARA Airspace)	2015	- Risk at Incheon-Fukuoka ACC interface mitigated. - Cat. E LHDs and risk at Incheon-Shanghai ACC interface reduced
D	Manila – all adjacent FIRs	2015	- Cat. E LHDs and risk at Manila/ Fukuoka FIR boundary reduced. - Risk at all other Manila FIR boundaries mitigated.
F	Mogadishu – Mumbai	2015	Cat. E LHDs reducing. Risk reducing.
G	Sanaa/Muscat – Mumbai	2015	Cat. E LHDs. Risk reducing.
J	Jakarta – Singapore/Kota Kinabalu	2018	Cat. E LHDs.
M	Colombo – Melbourne	2019	LHDs and risk reducing. Awaiting response to establish a POC before removing from the hot spot list.
N	Oakland USA – Hawaii CEP	2019	Cat. E LHDs increasing. Risk increasing
O	Bangkok /Ho Chi Minh/Kuala Lumpur -Singapore	2023	Cat. E LHDs.

Table 4: LHD Hot Spots in the Asia/Pacific Region

2.28 CNS SG is invited to note that Air Traffic Services (ATS) Interfacility Data Communication (AIDC), while not a new technology, can be a significant mitigator of LHD incidents. However, there appeared to be cases where alerts to controllers when AIDC messaging had failed may have been either not presented, not seen, or not responded to. At the RASMAG/27 meeting IFATCA stressed the need for robust ATC training to ensure compliant use of new technology and application of contingency procedures when system operation failed.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) Note the information provided on:

i. ATM/SG/11 and subsequent APANPIRG Conclusions;

ii. SAIOSEACG/3;

iii. AAITF/19;

iv. ATFM/SG/14; and

v. RASMAG/28.

b) Discuss any other relevant matters, as appropriate.

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