International Civil Aviation Organization

Fifth Meeting of the Asia/Pacific Air Traffic Management Automation System Task Force (APAC ATMAS TF/5)

Chengdu, China, 5 - 7 June 2024

Agenda Item 2: Review of outcomes of relevant meetings on Surveillance

REVIEW OF RELEVANT ICAO MEETINGS

(Presented by the Secretariat)

SUMMARY

The paper presents the relevant outcomes of the meetings held in 2023 including the Thirty-Fourth Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/34), the Twenty Seventh Meeting of Communication, Navigation, and Surveillance (CNS SG/27), and relevant discussions in other meetings.

1. INTRODUCTION

1.1 The Thirty-Fourth Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/34) was held at the Hong Kong Civil Aviation Department (HKCAD) Headquarters Auditorium *from 11 to 13 December 2023*, which was graciously hosted by Hong Kong, China. The Meeting was attended by **146** participants from **26** Member States, 2 Special Administrative Regions of China, and **7** International Organizations. The APANPIRG/34 meeting report, working papers, information papers, and other resources can be accessed by following link:

https://www.icao.int/APAC/Meetings/Pages/2023-APANPIRG-34.aspx

1.2 The Twenty Seventh Meeting of the Communications, Navigation and Surveillance Sub-group (CNS SG/27) of Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) was held at the ICAO APAC Regional Office, Bangkok, Thailand, from *28 August to 1 September 2023.* The Meeting was attended by **108** participants (94 In Person + 14 virtual) from **24** States/Administrations, **3** International Organizations, and **2** industry partners. The Meeting report and other documents of the meeting can be accessed at ICAO APAC Meeting webpage at:

https://www.icao.int/APAC/Meetings/Pages/2023-CNS-SG-27.aspx

1.3 The APANPIRG/34 Meeting reviewed the outcomes of CNS SG/27, noted with appreciation the following work done and achievements by the CNS SG and the contributory bodies reporting to APANPIRG through the CNS SG. APANPIRG/34 also discussed CNS related matters and acted on the Report of the CNS SG/27 meeting and other papers presented under Agenda Item 3.4.

1.4 This paper summarized relevant information and updates with the highlight of the reviewed outcomes of relevant discussions of CNS SG/27 and APANPIRG/34.

2. DISCUSSION

The actions taken by APANPIRG/34 meeting on ATM Automation System related matters (CNS) are as follows:

2.1 The meeting noted that the CNS SG/27 meeting adopted the following **8** Conclusions and **2** Decisions:

Reference		Subject
Conclusion CNS SG/27/01 *(ACSICG/10/01)*	-	Adoption of the Asia/Pacific Regional ATN Documentation Tree
Conclusion CNS SG/27/02 *(ACSICG/10/04)*	-	Telecommunication Infrastructure Table
Decision CNS SG/27/03 *(ACSICG/10/06)*	-	Revised ToR of Aeronautical Communication Services Implementation Coordination Group (ACSICG)
Conclusion CNS SG/27/05 *(SRWG/7/1)*	-	Asia Pacific Regional Aeronautical Radio Frequency Management Guidance Material Edition 1.0
Conclusion CNS SG/27/06	-	Revised GBAS safety assessment guidance document related to anomalous ionospheric conditions
Conclusion CNS SG 27/07	-	Revised SBAS safety assessment guidance document related to anomalous ionospheric conditions
Conclusion CNS SG/27/08	-	Extension of the Asia/Pacific GBAS/SBAS Implementation Task Force to complete tasks as per ToRs of GBAS/SBAS ITF
Conclusion CNS SG/27/11 *(SURICG/8/2 (Mode S and DAPs WG/6/2))*	-	Mode S DAPs IGD Edition 5.0
Decision CNS SG/27/12 *(SURICG/8/4)*	-	Revised ToR of Surveillance Implementation Coordination Group (SURICG)
Conclusion CNS SG/27/13	-	Regional Guidance Document for Addressing Human Factor Issues of ATSEP

2.2 The contents of above Conclusions/Decisions adopted by the CNS SG/27 are provided in **Attachment A** to this paper.

2.3 Based on the outcome of discussions on various agenda items, the CNS SG/27 meeting developed **3** Draft Conclusions for consideration by APANPIRG/34 Meeting, which were further adopted by APANPIRG/34. The Conclusions/Decisions adopted by APANPIRG/34 are as follows:

Reference		Subject
Conclusion APANPIRG/34/9 *(CNS SG/27/04 (SWIM/TF/07/04))*	-	Asia/Pacific Regional FIXM version 4.2 Extension

Conclusion APANPIRG/34/10 *(CNS SG/27/09)*	-	Revised Navigation Strategy- APAC
Conclusion APANPIRG/34/11 *(CNS SG/27/10 (SURICG/8/1 (Mode S and DAPs WG/6/1)))*	-	General Strategy on Assignment of and Migration to SI Code in the APAC Region

2.4 All APANPIRG/34 Conclusions related to CNS are provided in **Attachment B** to this paper.

2.5 The following captures the highlights of previous discussions in APANPIRG/34 relevant to this Meeting.

Surveillance

Outcomes of SURICG/8 Meeting

2.6 CNS SG/27 reviewed the outcomes of SURICG/8 including the achievements made by the Sixth Meeting of the Mode S Downlinked Aircraft Parameters Working Group (Mode S and DAPs WG/6) and the Third Meeting of the Surveillance Study Group (SURSG/3), and the discussions during the ICAO Aircraft Address and Target Identification in Surveillance Data and Flight Plan Workshop.

2.7 To synchronize the APAC region on the general principles applied for assignment of and migration to SI codes, the following Conclusion, which was formulated by Mode S and DAPs WG/6 Meeting and endorsed by CNS SG/27, was further adopted by APANPIRG/34.

<table>
<tr><td colspan="3">Conclusion APANPIRG/34/11 (CNS SG/27/10 (SURICG/8/1 (Mode S and DAPs WG/6/1))): General Strategy on Assignment of and Migration to SI Code in the APAC Region</td></tr>
<tr><td colspan="2">What: The General Strategy on Assignment of and Migration to SI Code in the APAC Region provided in Appendix C to Agenda Item 3.4 be adopted.</td><td>Expected impact:
☐ Political / Global
☒ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: To synchronize the APAC region on the general principles applied for assignment of and migration to SI codes.</td><td colspan="2">Follow-up: ☐Required from States</td></tr>
<tr><td>When: 13-Dec-23</td><td colspan="2">Status: Adopted by PIRG</td></tr>
<tr><td colspan="3">Who: ☒Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: -</td></tr>
</table>

2.8 A full copy of the adopted General Strategy on Assignment of and Migration to SI Code in the APAC Region is reproduced in **Attachment C** to this paper.

2.9 The CNS SG/27 adopted the Mode S DAPs IGD Edition 5.0 as **Conclusion CNS SG/27/11**, agreed to dissolve the Mode S and DAPs Working Group, and endorsed **Decision CNS SG/27/12 -** *Revised ToR of Surveillance Implementation Coordination Group* to reflect the change due to the dissolution of Mode S and DAPs WG. The Mode S DAPs IGD Edition 5.0 has been published at https://www.icao.int/APAC/Pages/eDocs.aspx under CNS section SUR&ADS-B group, the endorsed Revised ToR of SURICG is provided in **Attachment D** of this paper.

2.10 The CNS SG/27 discussed the work and progress of updating the coverage charts of

ATS Surveillance and Direct Controller and Pilot Communication (DCPC) VHF for the APAC Region, which was expected to be incorporated in the next update of the APAC Seamless ANS Plan, highlighted regional requirements specified in Table CNS II-APAC-3 in APAC e-ANP Volume II, and reviewed the ADS-B Implementation Status in the APAC Region.

Automation

Outcome of ATMAS TF/4 Meeting and ATM Automation System related Issues

Seminar on Air Traffic Management Automation System

2.11 The Seminar on Air Traffic Management Automation System was organized in conjunction with the ATMAS TF/4 meeting on 27 June 2023. The objective of the Seminar is to promote a better understanding of the future development tendency of the Air Traffic Management Automation System (ATMAS), highlight the importance of GANP and the relevant ASBU blocks such as FF-ICE, SWIM, etc., consider contingency plan for any emergency situations, share individual valuable implementation experiences, and deliberate on concerned topics/issues among the Asia/Pacific (APAC) Member States.

Global Development Updates

2.12 The paper presented discussions during Assembly 41, updates on the new GANP, and global development related to ATMAS TF for meeting information and reference.

Complexities Experienced by Nepal in Procuring ATM Systems Incorporating COTS Components

2.13 The paper presented the complexities faced by Nepal while attempting to incorporate different components of air traffic management systems that employ commercial-off-the-shelf (COTS) hardware and software that makes compliance with the safety and security aspects of a safety critical becomes difficult. The ATMAS TF/4 meeting noted the difficulties being faced by Nepal and shared relevant experiences from various perspectives. The ATMAS TF/4 meeting was further informed that the Work Stream 1 of the Asia and Pacific ANSP Committee (AAC) is working on capacity building, sharing requirements and best practices in the procurement of ANS systems particularly, the discussion may be further explored under AAC Work Stream 1, which might be relevant to States with similar issues.

Architecture Design to Address System Upgrade and Interoperability Challenges

2.14 Singapore shared the constraints of current system architecture to meet the needs for frequent system upgrades and encouraged the use of open architecture and modern technologies to improve the implementation of upgrades and interoperability in the modernization of ATM systems.

Repository of the ATMAS in APAC

2.15 The paper presented the updated table of the ATMAS Status in the APAC region, the preliminary analysis of the current status, and invited States/Administrations to review and take necessary actions to make the regional repository. Based on the ATM automation systems status collected, the preliminary analysis of the key performance indicators on the ATMAS Repository has also been summarized for meeting review. The ATMAS TF/4 meeting was also advised to note the possibility to develop a table for regional ANP to record the status and future planning of ATMAS implementation in the APAC region. The updated ATMAS Repository will be discussed in **WP/04** of this meeting.

Updates to the Air Traffic Management Automation System Implementation and Operations Guidance Document

2.16 China, Hong Kong China, and Singapore presented the revised draft (Edition 1.3) of the Air Traffic Management Automation System Implementation and Operations Guidance Document (ATMAS IGD). The new draft includes activities and experience about Flight Inspection by adding a new chapter, System Readiness for consideration and endorsement by the meeting. Based on the additional comments by New Zealand and Philippines during the meeting, the ATMAS IGD was further updated for final review by the ATMAS TF/4 meeting. The ATMAS TF/4 meeting adopted the revised ATMAS IGD through **Conclusion ATMAS TF/04/01** - ATMAS IGD Edition 1.3.

Repository of AIDC Implementation Status in APAC

2.17 To follow up the ACTION ITEM 7-1 of APA TF/7, the Meeting reviewed and updated the latest repository of AIDC Implementation Status in APAC region, and noted the preliminary analysis of the current status.

2.18 The ATMAS TF/4 meeting discussed the proposals raised by ACSICG/10 and agreed to keep the name of Column 16 as "Coordination by CDN or Voice" but add "Re-coordination or Coordination Negotiation" to the explanation table to avoid ambiguity. Since Column 7 "Transmission Means" has been included in the APAC Air Navigation Plan Volume II, which could reflect the difference of transmission means used for the messages exchanged between the corresponding AIDC pair, the ATMAS TF/4 meeting agreed to keep the item in the AIDC table to make a comprehensive repository.

AIDC Implementation Issues Report

2.19 The ATMAS TF/4 meeting reviewed and discussed the consolidated implementation issues collected and presented by Indonesia with supports by India and Singapore. The meeting was updated that there are no new reported AIDC implementation issues provided in the ATMAS TF/4, while few updates on AIDC implementation issues are reported from India (17 reports) and Singapore (2 reports). Indonesia and Vietnam informed that there are no issues arising since the last ATMAS TF meeting. The number of AIDC implementation issues reported by Member States/ Administration, based on fault categories are as shown in the table below:

Fault Categories	ATMAS TF/4 (2023)		
	Issues Reported	Closed	Open
a. Communication Link	9	8	1
b. ATM System	65	40	25
c. AIDC Message	23	19	4
d. Airspace Design/Procedures	13	10	3
e. Other	6	3	3
Total	**116**	**80**	**36**

Regional implementation review and updates

2.20 APANPIRG/34 noted CNS SG/27 was updated about the current development status of the new APAC Seamless ANS Reporting Portal, reminded the latest updates by States/Administrations on CNS requirements specified in ICAO APAC e-ANP, and reviewed the regional commitment progress on Beijing Declaration Implementation Related to CNS.

2.21 The CNS SG/27 noted the latest updates by States/Administrations on CNS requirements specified in ICAO APAC e-ANP and reminded States/Administrations to review the data

affecting their administration and provide feedback to ICAO on the data's accuracy in requisite format to update the relevant CNS requirements. It was also informed that the TABLE CNS II-APAC-1 ATS INTER-FACILITY DATA COMMUNICATION (AIDC) IMPLEMENTATION PLAN has been replaced by the repository of AIDC Implementation Status in APAC region (Table of AIDC Implementation Status in APAC) which now is maintained by ATMAS TF and ACSICG on yearly basis.

Preparation of Emergency Equipment for ATC

2.22 The CNS SG/27 was presented by Japan on the operation of a Transportable Radar Control System (TRCS) and Emergency VFR system for ATC (EVA), which enabled the early recovery of ATC systems required for the operation of commercial flights after catastrophes such as earthquake, fire, Tsunami, and the training for the early resumption at the airport.

2.23 The CNS SG/27 recognized the need for regular maintenance and calibration of the contingency system to ensure its availability in emergencies, advised about the importance of a contingency or business continuity plan, only with the plan in place and exercised the ANSP could ensure continuous operation without interruption. The Meeting also encouraged States to join the work of the third work stream of the APAC ANSP Committee, "Collaborate on business continuity and contingency planning".

Asia/Pacific Seamless ANS Plan (the plan) Update

2.24 The CNS SG/27 was presented about the Seamless ANS Plan (the plan) related discussion outcomes from the APANPIRG/33 Meeting and a proposed update of the Performance Improvement Plan of the Asia/Pacific Seamless ANS Plan for initial review by CNS SG. As a way forward, the CNS SG/27 Meeting agreed to form a "CNS related ASBUs review Ad-hoc Group for next edition of Seamless ANS Plan", which will review the proposed ASBUs, prepare a list of CNS related ASBUs to include in the plan, share interim report to APANPIRG/34, and seek consent from CNS SG/28. The Meeting agreed that the available timelines to complete the task are very difficult to accomplish. Therefore, an ad-hoc group will try its best to fulfill the expectations by preparing revised content for providing an interim report to APANPIRG/34.

Status of CNS Deficiencies

2.25 The CNS SG/27 meeting reviewed the only outstanding issue on the list of Air Navigation Deficiencies in the CNS field, which was related to the unreliability of AFS communication between Afghanistan and Pakistan.

Capacity Building

Study on Human Factor Issues of ATSEP

2.26 APANPIRG/34 noted the revised regional ATSEP human factor guidance document was reviewed and adopted by CNS SG/27 Meeting through **Conclusion CNS SG/27/13** - *Regional Guidance Document for Addressing Human Factor Issues of ATSEP*. The Guidance document is prepared for the improvisation of the existing human resource management process towards ATSEP to address the factors adding stress and fatigue, improving job performance, and achieving organizational resilience and cost benefits. It was further noted that IFATSEA agreed to update the guidance document's contents continuously and promote the guidance material in the other regions and in the ICAO Assembly in the coming days.

ATM Infrastructure Operations Capability Building in Lao PDR

2.27 The ICAO funded Implementation Support Project in Lao People's Democratic

Republic (Lao PDR) - ATM Infrastructure Operations Capability Building was successfully conducted from October 2022 to May 2023, which was managed by the ICAO APAC Office as Special Implementation Projects under ANB. The onsite support was contributed by expert team from ATMB of CAAC. A Technical Evaluation Report was produced by ATMB, which summarized the project background and work plans and provided a comprehensive and systematic analysis of CNS implementation in Lao ANS.

CNS Works and Other Business

CNS Points of Contact

2.28 The CNS SG/27 meeting reviewed the CNS Points of Contact of Member States and requested States/Administrations to update points of contact of CNS contingency planning and administrative support for effective and efficient coordination in the CNS aspect.

CNS Challenges in 2024

2.29 Apart from the outcomes of CNS SG/27, APANPIRG/34 noted some CNS challenges which would be further discussed in 2024, including ADS-B implementation in LDCs, GNSS interference, AMHS support for IWXXM information traffic, and Aeronautical frequency use for oil rigs.

2.30 The Secretariat informed the meeting that the GNSS issues went beyond signal interference leading to serious occurrences related to signal jamming and spoofing. The meeting noted that the matter would be addressed by the relevant ICAO expert groups in Headquarters for a global solution.

2.31 The APANPIRG/34 also discussed and noted the following papers under AI 3.4:

Leveraging Innovative Technologies to Support Safe, Secure and Efficient Facilities Management for Outlying Critical Aeronautical Infrastructures (WP/20) - Hong Kong China

2.32 Hong Kong China shared its experience in conducting trials to explore potential applications and benefits of using innovative technologies to enhance facilities management of outlying Critical Aeronautical Infrastructures (CAI), and encouraged States/Administrations to consider adopting cost-effective innovative technologies with a view to further enhancing safety, security and efficiency in air navigation. Examples of Inspection by Drones to Reduce Occupation Safety and Health (OSH) Hazards, AI-powered Defect Detection, Reality Capture for Building a Realistic 3-dimensional (3D) Model, and AI-powered VA with Detection of Potential Intrusion have been introduced, respectively.

2.33 ROK supported the effort by Hong Kong China and highlighted the value of AI and digitization to improve operational safety and efficiency of air navigation services.

Implementation of Licensing and Rating for Air Traffic Safety Electronics Personnel in Indonesia (WP/22)

2.34 Indonesia shared the proposal for potentially integrating the Air Traffic Safety Electronic Personnel (ATSEP) System provision into ICAO Annex 1 Personnel Licensing. The Meeting was informed that *ICAO Annex 1 Personal Licensing* does not mention licensing requirements and procedures for ATSEP. Therefore, ICAO Member States develop their standards and requirements for ATSEP to ensure that the personnel are well-trained, qualified, and competent for the maintenance and operation of the advanced technology and complex system. The Meeting noted that a similar discussion was raised in the CNS SG/27 meeting about IFATSEA initiation to identify the ATSEP provision to

incorporate in Annex 1. To standardize the ATSEP personnel licensing system worldwide to overcome the diversity of national requirements and regulations, Indonesia proposed that the ATSEP personal licensing system be included in Annex 1.

2.35 ICAO HQ informed that the Personnel Training & Licensing Panel (PTLP) is deliberating the licensing requirements of ATSEP and AIS personnel, along with reviewing the ICAO provisions concerning training and personnel licensing in Annex 1 - Personnel Licensing and PANS-Training. The Meeting encouraged APAC States/Administrations to share experiences of their ATSEP Personnel Licensing System if applicable and requested ICAO to facilitate sharing experiences related to ATSEP personnel Licensing System shared by APAC States. Additionally, the Meeting recommended that ICAO HQ continue deliberating on potentially incorporating the ATSEP Personnel Licensing System into ICAO Annex 1 – Personnel Licensing and share updates with APANPIRG in further meetings.

Air Traffic Safety Electronics Personnel Licensing System in Indonesia (IP/06)

2.36 APANPIRG/34 noted the information provided by Indonesia on its' Air Traffic Safety Electronics (ATSEP) Personnel Licensing System. Indonesia shared the general requirements concerning ratings and licenses for ATSEP Personnel, the general process of ATSEP training and competency assessment, and the roles of ANSP and DGCA.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the outcome of the APANPIRG/34, CNS SG/27, and relevant contributory bodies, and take any necessary follow-up actions; and

b) discuss any relevant matters as appropriate.

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List of Conclusion/Decisions adopted by CNS SG/27

Conclusion CNS SG/27/01 *(ACSICG/10/01)* – Adoption of the Asia/Pacific Regional ATN Documentation Tree	
What: **a.** the ATN Technical Document be published in a loose-leaf form to include future amendments to the Document Tree; and **b.** The ATN Documentation Tree provided in **Appendix A** of the Report is adopted.	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: The current ATN/AMHS Documentation Tree published on the ICAO APAC Website has not been updated for a few years. Therefore, it required updates. Additionally, some documents related to CRV are needed to be added, and others are required to be deleted from the Tree due to obsolete documentation.	Follow-up: ☒Required from States
When: 01-Sep-23	Status: Adopted by Subgroup
Who: ☒Sub groups ☒APAC States ☐ICAO APAC RO ☐ICAO HQ ☒Other: CRV OG	

Conclusion CNS SG/27/02 *(ACSICG/10/04)* **- Telecommunication Infrastructure Table**	
What: TRACKING TABLE To have a single tracking table with online update capability to support implementing future services managing bandwidth. This table will supersede telecommunication tables maintained by CRV OG and ACSICG.	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: Managing Telecommunication Infrastructure	Follow-up: ☒Required from States
When: 01-Sep-23	Status: Adopted by Sub-group
Who: ☒Sub groups ☐APAC States ☐ICAO APAC RO ☐ICAO HQ ☒Other: ACSICG	

Decision CNS SG/27/03 *(ACSICG/10/06)***: Revised ToR of Aeronautical Communication Services Implementation Coordination Group (ACSICG)**	
That, The Revised Terms of Reference of the Aeronautical Communication Services Implementation Coordination Group (ACSICG) provided in **Appendix B** to the Report is adopted.	Expected impact: ☐ Political /Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical

List of Conclusion/Decisions adopted by CNS SG/27

Why: The proposed ToR of the ACSICG includes the new direction given by APANPIRG in the fields of Aeronautical Communication Services.	Follow-up: ☐Required from States
When: 01-Sep-2023	Status: Adopted by Sub-Group
Who:☒Sub groups ☐ APAC States ☐ICAO APAC RO ☐ICAO HQ ☐APANPIRG ☒ Other: ACSICG	

Conclusion CNS SG/27/05 *(SRWG/7/1)* - Asia Pacific Regional Aeronautical Radio Frequency Management Guidance Material Edition 1.0	
What: Asia Pacific Regional Aeronautical Radio Frequency Management Guidance Material provided in **Appendix D** to the Report is adopted.	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: Per discussion from SRWG/7 for the region to utilize the Guidance Material	Follow-up: ☐Required from States
When: 01-Sep-2023	Status: Adopted by Subgroup
Who: ☒Sub groups ☐APAC States ☐ICAO APAC RO ☐ICAO HQ ☒Other: SRWG	

Conclusion CNS SG/27/06 – Revised GBAS safety assessment guidance document related to anomalous ionospheric conditions	
What: That, the revised GBAS safety assessment guidance document related to anomalous ionospheric conditions (Edition 2.0) provided in **Appendix E** to the report is adopted.	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: Major updates to reflect the development of GAST D SARPs and the progress of GBAS development and implementation in the region.	Follow-up: ☐Required from States
When: 1-Sep-23	Status: Adopted by Subgroup
Who: ☒ CNS Sub group ☐APAC States ☒ ICAO APAC RO ☐ICAO HQ ☐Other:	

Conclusion CNS SG 27/07 – Revised SBAS safety assessment guidance document related to anomalous ionospheric conditions	
What: That, the revised SBAS safety assessment guidance document related to anomalous ionospheric conditions (Edition 2.0) provided in **Appendix F** to the report is adopted.	Expected impact: ☐ Political / Global ☐ Inter-regional

	☐ Economic ☐ Environmental ☒ Ops/Technical
Why: Major updates to enrich the contents and reflect the progress of SBAS development and implementation in the Region and DFMC SBAS SARPs development.	Follow-up: ☐Required from States
When: 1-Sep-23	Status: Adopted by Subgroup
Who: ☒ CNS Sub group ☐APAC States ☒ ICAO APAC RO ☐ICAO HQ ☐Other:	

Conclusion CNS SG/27/08 - Extension of the Asia/Pacific GBAS/SBAS Implementation Task Force to complete tasks as per ToRs of GBAS/SBAS ITF	
What: To extend the period of Asia/Pacific GBAS/SBAS Implementation Task Force for another 3 years (i.e., up to 2026) for completing the following remaining tasks with high priority in the Action List and considered essential for fulfilling the objectives stated in the Terms of Reference (ToRs) of the APAC GBAS/SBAS ITF: - GBAS and SBAS implementation guidance documents; - Workshop/Meeting for APAC airspace users and regulators; and - Discussion and deliberation on technical issues in relation to GBAS/SBAS Safety Assessment and Performance Demonstration.	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: To complete tasks, such as guidance reference for GBAS/SBAS Implementation, under the TORs of Asia/Pacific GBAS/SBAS Implementation Task Force	Follow-up: ☒ Required from States
When: 1-Sep-23	Status: Adopted by CNS SG
Who: ☒ CNS Sub group ☒ APAC States ☒ ICAO APAC RO ☐ICAO HQ ☐Other:	

Conclusion CNS SG/27/11 *(SURICG/8/2 (Mode S and DAPs WG/6/2))***: Mode S DAPs IGD Edition 5.0**	
What: The Mode S DAPs Implementation and Operation Guidance Document Edition 5.0 provided in **Appendix I** of the Report is adopted	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: Inclusion of new/supplementary content discussed in Mode S and DAPs WG/6.	Follow-up: ☐Required from States
When: 1-Sep-23	Status: Adopted by Subgroup

List of Conclusion/Decisions adopted by CNS SG/27

Who: ☒Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: -

Decision CNS SG/27/12 *(SURICG/8/4)***: Revised ToR of Surveillance Implementation Coordination Group (SURICG)**	
What: That, the Revised Terms of Reference of the Surveillance Implementation Coordination Group (SURICG) provided in **Appendix J** to this paper be adopted.	Expected impact: ☐ Political /Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: The ToR from dissolved Mode S and DAPs WG was reviewed and necessary updates were identified.	Follow-up: ☐Required from States
When: 1-Sep-2023	Status: Adopted by Subgroup
Who:☒Sub groups ☐ APAC States ☐ICAO APAC RO ☐ICAO HQ ☐APANPIRG ☒ Other: SURICG	

Conclusion CNS SG/27/13 - Regional Guidance Document for Addressing Human Factor Issues of ATSEP	
What: a) ICAO APAC Guidance Document for Addressing Human Factor Issues of ATSEP provided in **Appendix M** is adopted.	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: The Guidance document is prepared for the improvisation of existing human resource management process towards ATSEP for addressing the factors adding stress and fatigue, improve their job performance and for achieving organizational resilience and cost benefits.	Follow-up:☐Required from States
When: 1-Sep-23	Status: Adopted by Subgroup
Who: ☒Sub groups ☐APAC States ☐ICAO APAC RO ☐ICAO HQ ☐Other: XXXX	

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A List of Conclusions adopted by APANPIRG/33 Meeting related to CNS

<table>
<tr><td colspan="3">Conclusion APANPIRG/34/9 (CNS SG/27/04 (SWIM/TF/07/04)) – Asia/Pacific Regional FIXM version 4.2 Extension</td></tr>
<tr><td colspan="2">What: The FIXM version 4.2 Extension provided in Appendix A to Agenda Item 3.4 be:
a) adopted as the Asia/Pacific FIXM version 4.2 Extension;
b) uploaded to the ICAO Asia/Pacific Regional Office website for immediate use by Asia/Pacific Administrations, where the capability to do so exists, for cross-border ATFM information exchange and to support ATFM/A-CDM integration; and
c) presented to the FIXM CCB for review and publication on the FIXM official website.</td><td>Expected impact:
☐ Political / Global
☒ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: To provide the information exchange model necessary to support cross-border ATFM and ATFM/A-CDM integration in the Asia/Pacific Region, in order to support the implementation of performance objectives of the Asia/Pacific Regional Framework for Collaborative ATFM</td><td colspan="2">Follow-up: ☐Required from States</td></tr>
<tr><td>When: 13-Dec-23</td><td colspan="2">Status: Adopted by PIRG</td></tr>
<tr><td colspan="3">Who:☒Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☒Other: SWIM TF, ATFM SG</td></tr>
</table>

<table>
<tr><td colspan="3">Conclusion APANPIRG/34/10 (CNS SG/27/09) - Revised Navigation Strategy - APAC</td></tr>
<tr><td colspan="2">What: Draft Revised Navigation Strategy-APAC in view of the latest development in GNSS navigation provided in Appendix B to Agenda Item 3.4 be adopted.</td><td>Expected impact:
☒ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: To update the revised Navigation Strategy-APAC</td><td colspan="2">Follow-up: ☐Required from States</td></tr>
<tr><td>When: 13-Dec-23</td><td colspan="2">Status: Adopted by PIRG</td></tr>
<tr><td colspan="3">Who: ☒Sub groups ☐APAC States ☐ICAO APAC RO ☐ICAO HQ ☐Other: -</td></tr>
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<tr><td>Conclusion APANPIRG/34/11 (CNS SG/27/10 (SURICG/8/1 (Mode S and DAPs WG/6/1))): General Strategy on Assignment of and Migration to SI Code in the APAC Region</td></tr>
</table>

A List of Conclusions adopted by APANPIRG/33 Meeting related to CNS

<table>
<tr><td colspan="2">What: The General Strategy on Assignment of and Migration to SI Code in the APAC Region provided in Appendix C to Agenda Item 3.4 be adopted.</td><td>Expected impact:
☐ Political / Global
☒ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td colspan="2">Why: To synchronize the APAC region on the general principles applied for assignment of and migration to SI codes.</td><td>Follow-up: ☐Required from States</td></tr>
<tr><td colspan="2">When: 13-Dec-23</td><td>Status: Adopted by PIRG</td></tr>
<tr><td colspan="3">Who: ☒Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: -</td></tr>
</table>

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GENERAL STRATEGY ON ASSIGNMENT OF AND MIGRATION TO SI CODE

Consider that when formulating the general strategy:

a) It was previously shared that radars using SI code cannot detect II-only transponders unless a work-around known as the II/SI code operation is used;

b) Even if a radar using SI code supports the II/SI code operation, it will not be able to detect an II-only transponder if that transponder is already locked to a matching II code by a radar using that matching II code. A way to overcome this is for II radars to also use the II/SI code operations whereby it will only lock out SI-capable transponders and not II-only transponders. However, it is difficult to ensure that all radars (including old radars) can support the II/SI code operations;

c) Transponders that support only II codes are unlikely to disappear totally. Even with strict enforcement by ICAO, there will still be aircraft not subjected to ICAO's provision;

d) While it is possible to configure the lock-out coverage to be smaller than the designated operating coverage, such configuration may not be intuitive and may be subjected to error;

e) The European region is reserving II 14 and 15 (and their matching SI codes) for special use (i.e. research/test and military purposes);

f) The Surveillance Panel is deliberating on a proposal to include a **requirement** for use of II/SI code operations for radars using SI code and a **recommendation** for the use of II/SI code operations for radars using II code; and

g) The strategy is to be kept simple,

The following general strategy is thus proposed for the assignment of SI codes:

a) ICAO APAC regional office will assign SSR Mode S II or Mode S SI codes in accordance with the planning criteria in *Appendix A-1*, at the same time ensuring support for Mode S II-only transponders;

b) ICAO APAC regional office will only assign an SI code if the radar can support II/SI code operations;

c) ICAO APAC regional office will only assign an SI code to radars having overlapping coverage with another radar using "matching" II code when the radar using "matching" II code can support II/SI code operations;

d) The ICAO APAC Regional Office will assume that the designated operating coverage is the same as the lockout coverage. There will be a 5NM buffer between the coverages of two radars using the same II or SI code. States can, as necessary, select a lockout coverage that is smaller than the Designated Operational Coverage; and

e) The ICAO APAC regional office will generally avoid assigning II 14 and 15 (and their matching SI codes) to new radars.

The following general strategy for migration is proposed:

a) States with Mode S radars that can support II/SI code operation are encouraged to coordinate with the ICAO APAC Office to assign or re-assign SI codes to these radars.

b) The ICAO APAC Regional Office may also approach certain States to start migrating to SI codes.

Appendix A-1

The following planning criteria for assigning SSR Mode S II or SSR Mode S SI codes have been agreed by the Surveillance Panel and will be incorporated in the ICAO Aeronautical Surveillance Manual (DOC 9924)

(Editorial Note: Some of the texts below are edited from the original material in DOC. 9924)

Table 1: Considered interrogator (interrogator for which an Interrogator Code is demanded)
Mode S II-only interrogator
Operating on II code
Can operate with Mode S II-only and Mode S II/SI transponders

Case	Capability of the overlapping interrogator	Operating code	Condition	Transponder Type
A	A Mode S II only	Different II code	Overlap OK	II-only and II/SI
		Same II code	No overlap	
B	Mode S SI operating with II code (1)	Different II code	Overlap OK	II-only and II/SI
		Same II code	No overlap	
C	Mode S SI operating with SI code (1)	Any SI code, including a "matching" SI code	Overlap OK	II/SI
D	Mode S II/SI+ operating with II code (2)	Different II code	Overlap OK	II-only and II/SI
		Same II code	No overlap	
E	Mode S II/SI+ operating with SI code (2)	Non-matching SI code	Overlap OK	II-only and II/SI
		Matching SI code	No overlap	

Note 1: Mode S SI means Mode S II/SI capable interrogator which does not support the II/SI code operation
Note 2: Mode S II/SI+ means Mode S II/SI capable interrogator which does support the II/SI code operation

Table 2: Considered interrogator (interrogator for which an Interrogator Code is demanded)
Mode S II/SI interrogator that does not support the use of II/SI code operation.
Operating on II code
Can operate with Mode S II-only and Mode S II/SI transponders

Case	Capability of the overlapping interrogator	Operating code	Condition	Transponder Type
A	A Mode S II only	Different II code	Overlap OK	II-only and II/SI
		Same II code	No overlap	
B	Mode S SI operating with II code (1)	Different II code	Overlap OK	II-only and II/SI
		Same II code	No overlap	
C	Mode S SI operating with SI code (1)	Any SI code, including a "matching" SI code	Overlap OK	II/SI
D	Mode S II/SI+ operating with II code (2)	Different II code	Overlap OK	II-only and II/SI
		Same II code	No overlap	
E	Mode S II/SI+ operating with SI code (2)	Non-matching SI code	Overlap OK	II-only and II/SI
		Matching SI code	No overlap	

Note 1: Mode S SI means Mode S II/SI capable interrogator which does not support the II/SI code operation
Note 2: Mode S II/S+I means Mode S II/SI capable interrogator which does support the II/SI code operation

Table 3: Considered interrogator (interrogator for which an Interrogator Code is demanded) Mode S II/SI interrogator that does not support the use of II/SI code operation.
Operating on SI code
Can only operate with Mode S II/SI transponders

Case	Capability of the overlapping interrogator	Operating code	Condition	Transponder Type
A	A Mode S II only	Any II code including the matching II code	Overlap OK	II/SI
B	Mode S SI operating with II code (1)	Any II code including the matching II code	Overlap OK	II/SI
C	Mode S SI operating with SI code (1)	Different SI code	Overlap OK	II/SI
		Same SI code	No overlap	
D	Mode S II/SI+ operating with II code (2)	Any II code including the matching II Code	Overlap OK	II/SI
E	Mode S II/SI+ operating with SI code (2)	Different SI code	Overlap OK	II/SI
		Same SI code	No overlap	

Note 1: Mode S SI means Mode S II/SI capable interrogator which does not support the II/SI code operation
Note 2: Mode S II/SI+ means Mode S II/SI capable interrogator which does support the II/SI code operation

Table 4: Considered interrogator (interrogator for which an Interrogator Code is demanded) Mode S II/SI+ interrogator that supports the use of II/SI code operation.
Operating on II code
Can operate with Mode S II-only and Mode S II/SI transponders

Case	Capability of the overlapping interrogator	Operating code	Condition	Transponder Type
A	A Mode S II only	Different II code	Overlap OK	II-only and II/SI
		Same II code	No overlap	
B	Mode S SI operating with II code (1)	Different II code	Overlap OK	II-only and II/SI
		Same II code	No overlap	
C	Mode S SI operating with SI code (1)	Any SI code including a matching SI code	Overlap OK	II/SI
D	Mode S II/SI+ operating with II code (2)	Different II code	Overlap OK	II-only and II/SI
		Same II code	No overlap	
E	Mode S II/SI+ operating with SI code (2)	Any SI code including a matching SI code	Overlap OK	II-only and II/SI

Note 1: Mode S SI means Mode S II/SI capable interrogator which does not support the II/SI code operation
Note 2: Mode S II/SI+ means Mode S II/SI capable interrogator which does support the II/SI code operation

Table 5: Considered interrogator (interrogator for which an Interrogator Code is demanded) Mode S II/SI+ interrogator that supports the use of II/SI code operation.
Operating on SI code
Can operate with Mode S II-only and Mode S II/SI transponders

Case	Capability of the overlapping interrogator	Operating code	Condition	Transponder Type
A	A Mode S II only	Non-matching II code	Overlap OK	II-only and II/SI
		Matching II code	No overlap	
B	Mode S SI operating with II code (1)	Non-matching II code	Overlap OK	II-only and II/SI
		Matching II code	No overlap	
C	Mode S SI operating with SI code (1)	Different SI code	Overlap OK	II/SI
		Same SI code	No overlap	
D	Mode S II/SI+ operating with II code (2)	Any II code including a matching II code	Overlap OK	II-only and II/SI
E	Mode S II/SI+ operating with SI code (2)	Different SI code	Overlap OK	II-only and II/SI
		Same SI code	No overlap	

Note 1: Mode S SI means Mode S II/SI capable interrogator which does not support the II/SI code operation
Note 2: Mode S II/SI+ means Mode S II/SI capable interrogator which does support the II/SI code operation

TERMS OF REFERENCE OF
SURVEILLANCE IMPLEMNTATION COORDINTION GROUP (SURICG)

Consists of objectives and deliverables as follows:

The Objectives of the SURICG are to:

1) *Ensure continuous and coherent development of the Surveillance parts of the Asia/Pacific Regional Air Navigation Plan (APAC e-ANP) in a manner that is harmonized with adjacent regions, consistent with ICAO SARPs, the Global Air Navigation Plan and the Global Aviation Safety Plan;*

2) *Facilitate the implementation of Surveillance systems and services identified in the Aviation System Block Upgrades (ASBU) modules, APAC ANP, and Asia/Pacific Seamless ATM Plan elements using the project management principles where appropriate; and*

3) *Review, identify and address major issues in technical, operational, safety and regulatory aspects to facilitate the implementation or provision of efficient Surveillance services in the Asia and Pacific Regions.*

Deliverables to meet the Objectives:

1) *Progress report to be submitted to CNS SG addressing the SURICG deliverables (listed in 2 to 13 below);*

2) *Surveillance parts of the APAC ANP to be reviewed and aligned with work programme of States and, as necessary, amendment proposals prepared to update the APAC ANP to reflect changes in the operational and global requirements;*

3) *To review the outcome of the Surveillance Panel, SAS Panel, AN-Conf, APANPIRG and CNS SG related to surveillance, revise and update a tasks list and action items for the SURICG and formulate relevant Working Groups to work on those tasks / action items;*

4) *To develop regional targets/metrics for planning, implementation, measurement and monitoring of Surveillance systems and services;*

5) *To review and update the Surveillance Strategy by considering currently available and emerging technologies with respect to concept of operations, relative costing, technical and operational performance and maturity of alternative technology/solutions such as primary radar, secondary radar including Mode-S, ADS-B, Multilateration, ADS-C, multi-static primary radar (MPSR) and existing and emerging technology for detection of UAS including RPAS;*

6) *To study and identify applicable multilateration applications in the Asia and Pacific Regions considering:*

   - *Concept of use/operation*
   - *Required site and network architecture*
   - *Expected surveillance coverage*
   - *Cost Benefits Analysis*
   - *Recommended separation minimums*

7) To study and identify applicable Mode S ~~radar~~ and DAPs applications in the Asia and Pacific Regions considering:

- *Concept of use/operation;*
- *Assignment of and migration to SI code in APAC;*
- *Required site and network architecture;*
- *Expected surveillance coverage;*
- *Cost of system;*
- *Requirement of surveillance systems (focusing on radar)*
- *Matching functionality required in ~~ATC~~ ATM automation system;*
- ~~*the use of Enhanced MODE S data (DAPS)*~~
- *Other currently available or emerging technologies;*
- ~~*ICAO GANP and ASBU; and*~~
- *Evaluation method for Mode S and DAPs performance.*

8) To develop an implementation plan for ADS-B applications in the Asia and Pacific Regions including implementation target dates taking into account:

- *available equipment standards;*
- *readiness of airspace users and ATS providers;*
- *identifying sub-regional areas (FIRs) where there is a positive cost/benefit for implementation of ADS-B and associated VHF voice communications;*
- *developing a standardised and systematic task-list approach to ADS-B implementation; and*
- *major traffic flows.*

9) To coordinate ADS-B implementation plan and concept of operations with other ICAO regions where ADS-B implementation is going on and with relevant external bodies such as EUROCONTROL, EUROCAE, RTCA and Industry;

10) To encourage research and development, trials and demonstrations in the field of Surveillance and other relevant areas; ~~,~~

11) Facilitate implementation of surveillance data sharing (including DCPC) and sharing surveillance information and expertise between States through organizing educational seminars and providing guidance materials to educate States and airspace users

12) To support the ICAO in making specific recommendations, developing guidance materials, aimed at improving the Surveillance services by the use of existing and/or new procedures, facilities and technologies; and

13) Draft Conclusions and Decisions to be formulated relating to matters in the field of Surveillance that come within the scope of the APANPIRG or CNS Sub-group work plan.

[Note: The Implementation Coordination Group, while undertaking the tasks, should take into account of the work being undertaken by SAS, Surveillance Panels with a view to avoid any duplication.

The Implementation Coordination Group will report to CNS Sub-group and CNS Sub-group will coordinate with ATM Sub-group.]

Membership:

All APAC member States/Administrations providing air navigation services in the Asia and Pacific Regions.

The Surveillance Implementation Coordination Group shall normally invite representatives of International Organizations recognized by the ICAO Council and Industry partners as required by the group which represent important civil aviation interests to participate in its work in a consultative capacity.

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