International Civil Aviation Organization

Thirteenth Meeting of the Common aeRonautical Virtual Private Network Operations Group (CRV OG/13)
Wellington, New Zealand, 05-08 March 2025

Agenda Item 3: Review outcomes of relevant meetings

REVIEW OF RELEVANT MEETINGS

(Presented by the Secretariat)

SUMMARY

The paper presents the relevant outcomes of the meetings held in 2024 including the Thirty-Fifth Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/35), the Twenty Eighth Meeting of Communication, Navigation, and Surveillance (CNS SG/28), the Eleventh Meeting of the Aeronautical Communication Services Implementation Coordination Group (ACSICG/11), and relevant discussions in other meetings.

1. INTRODUCTION

1.1 The Thirty-Fifth Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/35) was held at the ICAO APAC Regional Office, Bangkok, Thailand, from *25 to 27 November 2024*. The Meeting was attended by **163** participants from **24** Member States, **2** Special Administrative Regions of China, and **6** International Organizations. The APANPIRG/35 meeting report, working papers, information papers, and other resources can be accessed by the following link:

https://www.icao.int/APAC/Meetings/Pages/2024-APANPIRG-35.aspx

1.2 The Twenty-Eighth Meeting of the Communications, Navigation and Surveillance Sub-group (CNS SG/28) of APAC Air Navigation Planning and Implementation Regional Group (APANPIRG) was held at the ICAO APAC Regional Office, Bangkok, Thailand, from *1 to 5 July 2024*. The Meeting was attended by **120** participants from **25** States/Administrations, **3** International Organizations, and **6** participants from industry partners. The Meeting report and other documents of the meeting can be accessed at the ICAO APAC Meeting webpage at:

https://www.icao.int/APAC/Meetings/Pages/2024-CNS-SG-28.aspx

1.3 The Eleventh Meeting of the Aeronautical Communication Services (ACS) Implementation Coordination Group (ACSICG/11) was held at the ICAO APAC Regional Office, Bangkok, Thailand, *from 19 to 22 March 2024*. The Meeting was attended by **82** participants from **20** States/Administrations, **2** International Organizations, and **1** industry partner. The ACSICG/11 meeting report, working papers, information papers, and other resources can be accessed by the following link:

https://www.icao.int/APAC/Meetings/Pages/2024-ACSICG11.aspx

1.4 The Twelfth Meeting of the Common aeRonautical Virtual Private Network Operations Group of APANPIRG (CRV OG/12) was held from *23 to 26 January 2024* in Denarau Island, Fiji. The Meeting was attended by **66** participants from **18** Member States/Administrations and **1** telecommunication provider. The meeting report, working papers, information papers, and other resources can be accessed by the following link:

https://www.icao.int/APAC/Meetings/Pages/2024-CRV-Seminar-and-CRV-OG-12.aspx

1.5 The Eighth Meeting of the System Wide Information Management Task Force (SWIM TF/8) was held from *8 to 10 November 2023* in the ICAO Asia and Pacific Regional Office, Bangkok, Thailand. The Meeting was attended by **79** participants from **15** States/Administrations, **3** International Organizations and **1** telecommunication service provider. The meeting report, working papers, information papers, and other resources can be accessed by:

https://www.icao.int/APAC/Meetings/Pages/2023-workingSessionandSWIMTF8.aspx.

1.6 The Ninth Meeting of the System Wide Information Management Task Force (SWIM TF/9) was held from *14 to 17 May 2024* in the ICAO Asia and Pacific Regional Office, Bangkok, Thailand. The Meeting was attended by **110** participants from **18** States/Administrations, **4** International Organizations and **2** industry partners. The meeting report, working papers, information papers, and other resources can be accessed by the following link:

https://www.icao.int/APAC/Meetings/Pages/2024-SWIM-Seminar-and-SWIM-TF9.aspx

1.7 The Fourth Meeting of the Surveillance Study Group (SURSG/4) was held in Hong Kong, China, from *30 to 31 May 2024*. The Meeting was attended by **63** participants from **12** States/Administrations, **1** International Organization, and **4** industry partners. The Meeting Report, Working Papers, Information Papers, and other resources can be accessed by following the link:

https://www.icao.int/APAC/Meetings/Pages/2024-SURSG-4.aspx

1.8 The APANPIRG/35 Meeting reviewed the outcomes of CNS SG/28 and 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/35 also discussed CNS-related matters and acted on the Report of the CNS SG/28 meeting and other papers presented under Agenda Item 3.4.

1.9 This paper summarized relevant information and updates with the highlight on the reviewed outcomes of CRV OG/12, ACSICG/11, SWIM TF/8, SWIM TF/9, SURSG/4, and relevant discussions of other meetings of CNS SG/28 and APANPIRG/35.

2. DISCUSSION

The actions taken by APANPIRG/35 & CNS SG/28 meetings on Aeronautical Fixed Service (AFS) related matters are highlighted below:

2.1 The CNS SG/28 meeting adopted the following **4 Conclusions and 2 Decisions**:

Reference		Subject
Conclusion CNS SG/28/01 *(ACSICG/11/02)*	-	Review of APAC Region IWXXM Implementation Status/ Readiness
Decision CNS SG/28/03 *(Decision SWIM TF/08/02)*	-	Candidate Baseline SWIM Discovery Service Standard for APAC
Decision CNS SG/28/04	-	APAC SWIM Technical Infrastructure Profiles v1.0

(Decision SWIM TF/09/01)

Conclusion CNS SG/28/08 *(GBAS-SBAS ITF 06/01)*	-	Guidance Document for Implementation of GBAS in the APAC Region
Conclusion CNS SG/28/09	-	Update of Flight Inspection Guidance Material (FIGM)
Conclusion CNS SG/28/11 *(SURICG/9/2)*	-	Guideline on addressing inconsistencies of Aircraft Address (AD) and Target Identification (ID) between Surveillance Data and Flight Plan

2.2 The contents of the above Conclusions/Decisions adopted by the CNS SG/28 are provided in **Attachment A** to this paper.

2.3 Based on the outcome of discussions on various agenda items, the CNS SG/28 meeting developed 4 Draft Conclusions and 1 draft Decision for consideration by APANPIRG/35 Meeting, which were further adopted by APANPIRG/35. The Conclusions/Decisions adopted by APANPIRG/35 are as follows:

Reference		**Subject**
Decision APANPIRG/35/6 *(CNS SG/28/02 (SWIM/TF/08/01))*	-	Information Management Panel to Consider Adoption of SWIM Discovery Service as a Global Standard for Globally Interoperable Service Discovery
Conclusion APANPIRG/35/7 *(CNS SG/28/05 (SRWG/8/1))*	-	Preparation for World Radiocommunication Conference - 2027 (WRC-27)
Conclusion APANPIRG/35/8 *(CNS SG/28/06 (SRWG/8/2))*	-	VHF COM Frequency Allotment Plan for APAC Region
Conclusion APANPIRG/35/9 *(CNS SG/28/07 (SRWG/8/4))*	-	Transition from the regular publication of Frequency List 2 to the global database of frequencies included in the Frequency Finder
Conclusion APANPIRG/35/10 *(CNS SG/28/10 (SURICG/9/1))*	-	Update of the General Strategy on Assignment of and Migration to SI Code in the APAC Region

2.4 All APANPIRG/35 Conclusions related to CNS are provided in **Attachment B** to this paper.

Eleventh Meeting of the Aeronautical Communication Services Implementation Coordination Group (ACSICG/11) and Twelfth Meeting of the Common aeRonautical Virtual Private Network Operations Group (CRV OG/12)

2.5 The CRV OG/12 Meeting requested that States/Administrations exchanging IWXXM data and/or FIXM data on CRV share their experience with bandwidth utilisation to understand potential bandwidth requirements. Singapore informed that bandwidth utilisation is not high based on their

experience sharing IWXXM data on CRV Package A, 2 Mbps. Hong Kong China reported that their bandwidth utilisation for IWXXM data is also moderate. The CRV OG/12 Meeting agreed that PCCWG will provide quarterly bandwidth utilisation reports to the CRV OG Ad-hoc expert group as a periodic update.

58th APAC DGCA Conference Action Items on CRV

2.6 The CRV OG/12 Meeting noted the Air Navigation Services (ANS) related Action Items of the 58th Conference of Directors General of Civil Aviation Asia and Pacific Regions (DGCA/58) held in Dhaka, Bangladesh from 15 to 19 October 2023. The Meeting noted that the Conference formulated 51 Action Items and one action item, 58/23, related to CRV. By action item 58/23, the Conference urged States/Administrations to implement CRV by December 2023 and encouraged Pacific States to work with their partner States to facilitate CRV connectivity.

The Twelfth Meeting of Common aeRonautical VPN Operations Group (CRV OG/12)

Outcomes of CRV Seminar for the Pacific States

2.7 In the CRV Seminar, PCCWG shared a new offer and technical equipment details to encourage Pacific States to join CRV. Cook Island, Samoa, and Tonga shared their strong intention to join CRV and that they should be able to sign service orders with PCCWG before 30 April 2024. The offer has been extended to 31 December 2024.

ICAO ATN/AMHS Guidance Document Tree

2.8 The CRV OG/12 Meeting noted the progress on the ICAO ATN/AMHS Guidance Document Tree update. The CRV OG/12 Meeting agreed that the CRV OG Ad-hoc Expert group would review and present the revised Tree to the next CRV OG meeting for review and endorsement. The CRV OG/12 Meeting advised sharing the Tree with ACSICG for further review and modifications for AMHS and other relevant AFS sections. Additionally, it was suggested that Tree be kept on the ICAO Secure portal or New Zealand-hosted CRV portal.

CRV New Service Implementation Process

2.9 The CRV OG/12 Meeting noted the process for members with CRV services in operation and plans to add more connections/services to other new or existing CRV users. USA informed that as an action item owner for the task resulting from the CRV OG Ad-Hoc Expert Group, USA prepared the list of processes based on its experience in implementing new services with Indonesia and Papua New Guinea. The CRV OG/12 Meeting discussed and reviewed the process for implementing new services in CRV for AMHS and VoIP services, incorporating them in the CRV OG Operations Manual, and developing the process for new service connections in CRV.

2.10 The CRV OG/12 Meeting suggested that the CRV OG Ad-hoc Expert group develop the process for testing new SWIM services. Singapore suggested incorporating standard compression methods while adding the process into the CRV OG Operations Manual's design section, along with additional guidance for VoIP compression, such as the standards recommended by CRV OG.

Outcomes of Ad-hoc Group Meetings

2.11 The CRV OG/12 Meeting noted the outcomes of the three CRV OG Ad-Hoc Expert Group meetings held between CRV OG/11 and CRV OG/12 via Microsoft TEAMS. In addition, the

Ad-hoc group also met with SWIM TF TLs quarterly. The CRV OG/12 Meeting noted the work of the Ad Hoc Expert Group continues to be extremely valuable, appreciated the ongoing contribution, and invited participation to the Ad-hoc group meetings.

Adding A New Service to CRV

2.12 The CRV OG/12 Meeting discussed the steps required to add a new service to the CRV Network. The first draft of the procedure prepared by the CRV OG Ad-hoc Expert group was presented to the CRV OG/12 Meeting to review the process of adding a new service to the CRV Network. The CRV OG/12 Meeting deliberated the process and observed that the process required further modifications. The CRV OG/12 Meeting requested that the CRV OG Ad-hoc Expert group modify the process to incorporate various discussions and suggestions shared during the CRV OG/12 Meeting.

Publish the updated APAC CRV Operations Manual

2.13 The CNS SG/28 Meeting noted the **Decision CRV OG/12/01** - *Publish the updated APAC CRV Operations Manual*. The latest version of the documents has been published on ICAO APAC e-docs under CNS, ICAO APAC CRV Secure portal, and on the CRV portal hosted by Airways New Zealand.

CRV Implementation Plan – IP Address Block Allocated to CRV Users

2.14 Singapore updated the latest status of the Internet Protocol (IP) address block allocated to CRV Users -Industry. To better manage and forecast if the existing IP address blocks are sufficient, the CRV OG/12 Meeting was requested to update CRV OG if there are new CRV Users - Industries intending to provide services over the CRV that need to be assigned IP address blocks. The CRV OG/12 Meeting also requested that all Air Navigation Service Providers (ANSPs) monitor and inform if the allocated IP address block is sufficient. The CRV OG/12 Meeting noted that as of today, no additional industries have requested to join CRV and there are no issues with the number of IP addresses in any ANSP.

National and Local CRV Points of Contacts

2.15 Singapore suggested modifying the local and national point of contact responsibilities mentioned in CRV OG OM to accommodate the new CRV user's definition. Accordingly, the CRV implementation plan may need further modifications to accommodate the definition of new CRV users. The CRV OG/12 Meeting requested that the CRV OG Ad-hoc Expert group incorporate this task into their agenda items.

Outcomes of Ad-Hoc Governance Meetings

2.16 New Zealand presented outcomes of the CRV OG Ad Hoc Governance meetings, held twice since its creation from the 2023 CRV Governance Workshop held in ICAO APAC Office, Bangkok on 31 January 2023. The CRV OG/12 Meeting noted that in the last two meetings, the Ad Hoc Governance group had adopted its Terms of Reference, discussed the Governance Models of REDDIG II and New PENS to understand other regional network's governance models, and resolved the problem, a problem Statement is being drafted.

Outcomes of Third Ad-Hoc Governance Meetings

2.17 The third Meeting of the CRV OG Ad-hoc governance group was conducted on 24 January 2024. The CRV OG/12 Meeting observed that after the second Ad-hoc Governance meeting, States/Administrations were requested to share a list of daily, weekly, monthly, annual, or any other

periodic tasks related to CRV performed in their States/Administrations. Only five states/administrations shared their responses. Based on the response analysis, the problem statement has been revised. However, information from other States/Administrations must be taken into consideration for further analysis. The CRV OG/12 Meeting requested that all States/Administrations that have not submitted the response should submit the response on priority. The fourth CRV OG Ad-hoc governance group meeting conducted on 3 May 2024 further reviewed the responses and the problem statement.

Number of Subscribers to the New Zealand Hosted CRV Portal

2.18 New Zealand shared information about the New Zealand hosted CRV Portal access. The CRV OG/12 Meeting noted future access to the portal would be limited to **three per State** for **the National CRV Point of Contact, the Nominated deputy to the National CRV Point of Contact, and the person responsible for updating the Asia-Pac Telecommunication Infrastructure Routing Plan**. The CRV OG/12 Meeting requested that the States/Administration share information about the latest CRV focal point to access the portal to CRV OG Co-chairs/ICAO Secretariat in a timely manner.

Update the APAC CRV Implementation Table

2.19 The CRV OG/12 meeting reviewed and updated the APAC CRV Implementation Table. The latest updates presented on the planning and implementation status of CRV were as follows:

- **Under Operation**
  Australia, Bhutan, China, Hong Kong China, Fiji, India, Indonesia, Japan, Malaysia, Mongolia, Nepal, New Zealand, Pakistan, Philippines, PNG, Republic of Korea, Singapore, Thailand, the USA and Vietnam.

- **Under Provisioning**
  Cambodia, French Polynesia, Macao China, New Caledonia, Myanmar, Sri Lanka

- **Hot Prospects in 2024**
  Bangladesh, Brunei, Lao PDR, and Maldives

- **Not joined yet**
  Afghanistan, DPRK, Kiribati, Marshal Islands, Micronesia, Nauru, Palau, Samoa, Solomon Islands, Timor Leste, Tonga, Tuvalu, Vanuatu, Russia, ICAO MID States

CRV contract management

2.20 Due to the confidentiality of the CRV contract management process, the report under agenda item 7 is published on the ICAO APAC CRV Secure portal under the CRV group.

CRV Network Yearly Service Review 2023

2.21 PCCWG shared the Latest CRV Updates and CRV Network Yearly Service Review for 2023.

Monitoring and Analyzing CRV Network Traffic in Hong Kong, China

2.22 Hong Kong, China introduced the CRV network traffic capturing equipment deployed in Hong Kong, China, and presented the insights and analysis derived from the captured network traffic. Based on the CRV network traffic captured between 8 and 14 January 2024 in Hong Kong China, there is no immediate need to upgrade bandwidth capacity, assuming no significant changes in bandwidth

usage patterns in the near future. The CRV OG/12 Meeting agreed that the initiative by Hong Kong China is excellent for understanding and analyzing CRV network traffic and encouraged other States/Administrations using CRV to conduct such experiments and share their similar experience.

Bandwidth Extension of CRV to Meet Future Requirements

2.23 PCCWG shared that various States/Administrations raised concerns with PCCWG on bandwidth capacity limitation to match future SWIM applications that might consume large amounts of data in SWIM TF meetings. PCCWG shared that bandwidth up to 2M has been quoted in the tender in 2015 to suit the initial requirement to build the CRV network. Other than the 2M options mentioned in the PCCWG price book, more pricing and bandwidth options can be provided for States/Administrations' consideration on request. As a rule of thumb, PCCWG further clarified the bandwidth upgrade cost concept. The CRV OG/12 Meeting requested that Member States/Administrations review the CRV bandwidth requirement and estimate the cost based on the conceptual diagram PCCWG shared. States/Administrations may contact PCCWG directly for further commercial discussion as needed.

CRV Bandwidth Utilization Rate

2.24 PCCWG presented the bandwidth utilization of each Member State/Administration in 2023. The CRV OG/12 Meeting reviewed the monthly traffic report and it was observed that the average utilization rate cannot share peak bandwidth utilization. Member States/Administrations were requested to make additional efforts to measure and monitor CRV network performance and share it with CRV OG regularly.

The collection of CRV Requirements

2.25 The CRV OG/12 Meeting conferred the expectations of SWIM TF from CRV OG regarding CRV network requirements for providing SWIM services over CRV. The new CRV contract management process also needs CRV requirements to accommodate other future services. The CRV Operations Manual has specific parameters for the CRV network performance, such as bandwidth, latency, jitter, packet loss, QoS and connectivity. To ensure new services and applications provide the CRV OG with sufficient information to decide on any potential changes to the CRV Network, CRV OG needs the application owner to give details. Due to SWIM TF and CRV OG's dependency on each other's information, the discussion is not progressing well.

2.26 To further progress the discussion, CRV OG/12 Meeting developed the first draft of a form, provided to describe the parameters that the CRV Network performs under, validation from the application or service owner that these parameters are acceptable or not and if not acceptable, the application or service owner is to provide in detail what is required.

2.27 The CRV OG/12 Meeting agreed that the first draft of the form will be sent to the Ad Hoc Expert Design Group before **31 January 2024** for comment and feedback, which has been completed. The ICAO Secretariat also shared the draft form with the SWIM Task Force Task Leads to fill in the form and for comments and feedback. CRV OG Ad-hoc Expert Group will review the duly filled form in the 3 May 2024 Meeting.

2.28 Based on the information shared in the form and outcomes of the joint event (trial/demo), **"CRV data requirements for SWIM Workshop"** was planned to be hosted by the USA in late August/September 2024. It was recommended that CRV OG Experts and SWIM TF Task Leads attend the workshop. The workshop objectives would be to review the joint event's outcomes and analyse CRV performance and other crucial information to finalise the requirements and technical specifications for the new CRV contract management process. The workshop is being organised in Guam, USA, from 17-20 September 2024. CRV OG Co-Chair (Pacific) suggested sharing the *Proof of*

Concept test document of CRV with SWIM TF to understand CRV's performance and capabilities by SWIM TF, which was completed.

MPLS/IP-Based Inter-Regional Connection

2.29 The CRV OG/12 Meeting noted the current discussion status for the potential interconnection of CRV and REDDIG II and CRV and New PENS.

2.30 The CRV OG/12 Meeting recalled the efforts made for CRV and REDDIG II Interconnection and noted that the ICAO APAC Office has requested PCCW Global contact Cirion Technologies to discuss the interconnection proposal. However, despite several coordination in 2023, no concert technical proposal is ready to work further for CRV and REDDIG II interconnection.

2.31 After analysis of the issues, it seems that in the current CRV/REDDIG II contract, no clause requires PCCW Global/Cirion Technologies to establish interconnection with different regional networks. It was essential to include a requirement in the new service contracting processes to establish interconnections with other ICAO regional networks.

Regional IP Network Interconnection Discussion

2.32 PCCWG highlighted the status of the interconnection discussion between the CRV Network provider (PCCW Global) and the REDDIG II Network provider (Cirion, previously Lumen). PCCWG updated that they have offered the other high-level interconnection diagram to Cirion for comment, which is still awaiting Cirion's feedback. Concurrently, the CRV OG/12 Meeting requested that the ICAO Secretariat and PCCWG continue their efforts to reach relevant parties to progress the work on CRV-REDDIG II and CRV-New PENS interconnection. During the new CRV contract management process, CRV OG will incorporate the clause of interconnection with other regional networks into the contract document.

2.33 The CRV OG/12 Meeting suggested that the CRV OG Ad-hoc Expert group prepare use cases for regional interconnection of CRV and continue to work to support and encourage MID states to work with PCCWG to join CRV, with the support of the ICAO APAC Secretariat and the ICAO MID office, to implement CRV in the MID region.

Updates on CRV Pioneer States' Remaining Contribution to the ICAO Managed Service Agreement (MSA)

2.34 The paper shared information about the recent development of using the balance fund of the MSA. The CRV OG/12 Meeting was informed that to follow up on Conclusion ACSICG/10/02 (CRV OG/11/03) – Selection of Security Review Options 2 and 5 and Develop a ToR, for utilization of remaining money from CRV Project, the draft ToR was prepared by the CRV OG Ad-hoc Expert Group, which was reviewed by the ACSICG/10 Meeting and endorsed as Conclusion ACSICG/10/03 – Adoption of ToR for CRV Security Review using Options 2 and/or 5. Based on the adopted ToR, CRV OG Ad-hoc Expert Group invited quotations from different vendors to prepare cost estimates for the work. Further information about the cost estimate and way forward was shared by CRV OG Co-Chair (Asia) by WP/08.

Cyber Security Review Update

2.35 CRV OG Co-chair (Asia) presented WP/08 on an update on the proposed Cyber Security Review. The CRV OG/12 Meeting noted that the two cybersecurity organizations specializing in cybersecurity, namely Aura Cyber Security Consultant - IT Risk Assessment - New Zealand and ZX Security Full Spectrum Security Services - ZX Security, had provided quotations. The CRV OG/12

Meeting discussed the way forward for generating two work orders for two tasks to Aura and ZX Security and requested the ICAO Secretariat to suggest the process to transfer money to Aura and ZX Security for assigned tasks if agreed to be appointed by the Meeting in the future.

2.36 ICAO Secretariat informed that it has coordinated with ICAO HQ CDI to share the formal process to transfer the 16 pioneer States' money to the third-party supplier. However, this could be seen as a way to use funds from an ICAO project to solo-source, thus circumventing ICAO regulations on procuring goods and services. ICAO CDI cannot proceed this way, and the funds must agree with ICAO provisions, as described in the MSA/Project Document. ICAO CDI suggested that as it is a Regional project, the best way to do this would be for the CRV OG to take the resolution to close the project, conclude that all objectives have been reached within this project, and advise the project management of ICAO APAC Regional Office. Then, the ICAO APAC Regional Office can request ICAO CDI to proceed to the closure of the project and will transfer the remaining funds requested to each contributor.

2.37 The CRV OG/12 Meeting acknowledged the significance of CRV's security assessment task, an APAC regional network. However, the process would be very complicated if ICAO CDI carried out the project. CRV OG is already working on a new CRV contractual process, which is a very extensive and exhaustive process and requires significant effort, time, and contributions. Given that the timeline to utilize the remaining funds is five years, from December 2022 to December 2027, the CRV OG/12 Meeting suggested not using MSA's remaining money for security assessment work. As the security assessment of CRV is essential and crucial for determining the security and trust of the APAC regional network, the CRV OG/12 Meeting agreed to incorporate this task in the new CRV contract management process.

Japan Concept of Firewall Installation

2.38 Japan presented the concept of introducing firewalls to systems connected to the CRV in Japan and supported discussions on future mandatory firewalls. Japan introduced the overview of the system in Japan for connecting the CRV to the CRV NID. Japan summarized that a uniform firewall mandate could be excessive, as it would be required even for systems that each Member State/Administration considers less necessary to have a firewall in place.

Review ToR and Action Items

2.39 The CRV OG/12 Meeting reviewed the ToR of CRV OG and further updated the Action Items for CRV OG. The revised ToR was adopted by ACSICG by **Decision ACSICG/11/01**.

Update on AFTN/ATSMHS Routing Directory in APAC

2.40 The paper presented a brief history of the ICAO APAC AFTN Routing Directory which was based on the existing AFTN circuits in the Asia and Pacific regions. The meeting was reminded again that the region would follow the AFTN/ATSMHS routing directory during transition period, for inter-regional traffic, it is required to follow the existing entry/exit points and procedure. With the proposal from Russia to correct the tables "AFTN/ATSMHS ROUTING DIRECTORY ASIA AND PACIFIC REGIONS" for the UHHH and UUUU centres, ICAO APAC Office incorporated the amendment into the routing table. Additionally, due to the IT issue of the old computer for Routing Manager failed in January 2024, the new changes to the routing table (page 5-25) may be delayed.

APAC AMHS Implementation Status from AMC

2.41 The paper presented the AMHS implementation status information in the Asia/Pacific Region updated in the ATS Messaging Management Centre (AMC) (OPER 259) on 22 FEB 2024. All

revised AFTN/AMHS connections, links, and line speeds will be updated to the Communication Chart in AMC. The meeting was invited to review and update information to AMC via AEROTHAI, if necessary, including points of contact.

PCAA Coordination with Eurocontrol AMC

2.42 The paper updated the PCAA's coordination with Eurocontrol ATS Messaging Management Centre (AMC). Pakistan provides AMHS services and is responsible for the worldwide distribution/routing of AMHS/AFTN traffic through 06 international circuits as per the ICAO APAC Routing Directory. The meeting was updated that in January 2023, Eurocontrol intimated that a new AMC version 5.1 is live on its portal and requested to nominate experts for registration on its portal. Eurocontrol registered three PCAA officers on its portal for getting AMC data. PCAA can now regularly upload AMC data on AMHS as per the AIRAC cycle and is not facing any issues with the worldwide routing of AMHS / AFTN traffic.

Space-Based Very High Frequency (VHF) Communication Services

2.43 The paper summarized the progress of the technical and regulatory studies of space-based VHF communications (voice and data) in the frequency band 117.975-137 MHz in the International Telecommunication Union ("ITU"), ICAO Future VHF Subgroup ("FVSG"), and ICAO Frequency Spectrum Management Panel ("FSMP"). The paper shared that there are two companies working in parallel to launch prototype satellites with VHF payload for Proof-of-Concept (PoC) Demonstration between 2023 and 2025. To conduct the PoC demonstration, there will be a need for ICAO regional office to assign appropriate VHF frequencies so that verification tests could take place. The meeting was invited to support the ICAO activities on space-based VHF at the FVSG and FSMP, and support the frequency assignments for proof-of-concept demonstration when the need arises.

2.44 Regarding the current plan for the proof-of-concept demonstration, the meeting was informed that any ANSP interested in participating in the demonstration should engage directly with the two service providers and notify and coordinate with ICAO APAC for the frequency that can be used. ICAO Secretariat will maintain communication with the service providers to ensure the region stays updated on developments.

AMHS Readiness Status for Supporting IWXXM Traffic in the APAC Region

2.45 The paper summarised the AMHS readiness status for supporting IWXXM Traffic of the States/Administrations in the APAC Region, including States/Administrations that have no AMHS in operations, to facilitate the relevant Meteorological authorities/organisations with the dissemination of IWXXM messages accordingly. As of CNS SG/27, 14 States/Administrations provided their status on AMHS readiness and experience for supporting IWXXM Traffic with details. Although there has been a significant increase in the AMHS readiness for supporting IWXXM Traffic, the reporting gap was still identified, States/Administrations were urged to inform the ICAO APAC Regional Office on their readiness and implementation progress/plan of AMHS with FTBP as soon as possible. The Meeting updated the AMHS Readiness Table for Supporting IWXXM Traffic.

APAC Region IWXXM Implementation

2.46 To review the IWXXM implement status and gauge the readiness of the APAC Region for full implementation of IWXXM data exchange, the CNS SG/28 adopted the Conclusion: **Conclusion CNS SG/28/01 (ACSICG/11/02)** - *Review of APAC Region IWXXM Implementation Status/ Readiness.*

Description of FAA AMHS SWIM Gateway and IWXXM Status

2.47 The FAA informed that it is currently developing an AMHS SWIM Gateway (ASG) that will be implemented as an enhancement to the FAA's operational AMHS to support the international exchange of XML-formatted messages encoded using the ICAO Meteorological Information Exchange Model (IWXXM). The effort and status of the ASG were summarised in the paper. The Meeting noted that it was anticipated that ASG development would be complete by Q3/2024, followed by internal testing and then external test with international partners. Operational implementation is dependent upon data production/consumption by the National Weather Service (NWS).

PCAA Readiness for ICAO IWXXM Implementation and AMHS Transition to SWIM

2.48 The paper presented Pakistan's readiness of AMHS to support IWXXM and AMHS transition to SWIM. The Meeting noted that PCAA has initiated the implementation of the exchange of data in XML format to support the implementation of SWIM enable data sharing (IWXXM, AIXM and FIXM). The agreement has been reached with the OEM of AMHS for the exchange of meteorological data in IWXXM. Furthermore, PCAA has already replaced the Karachi-Mumbai AFTN data link with the AMHS / X-400 link to support the exchange of IWXXM data. Replacement of the Karachi-Beijing AFTN data link over TCP / IP/MPLS circuit link has been completed.

Fiji AMHS & IWXXM Implementation Status

2.49 The paper presented the update for Fiji to implement AMHS system to enable international exchange of the ICAO Meteorological Information Exchange Model (IWXXM) data for ROBEX IWXXM with the five (5) Regional OPMET Data Bank (RODB) in the Asia/Pacific region. The AMHS & IWXXM is expected to be commissioned in December 2024 to enable the Nadi RODB to exchange ROBEX IWXXM format and perform the TAC to IWXXM translation.

AMHS Operation and Support of XML Based Messages

2.50 The paper presented the current AMHS operation and its capability to support XML based messages. AMHS and its AFTN/AMHS address header based on ASCII is a critical address that allows messages to be distributed globally and is compatible with ATC automation systems. The paper analysed the future of AMHS operational requirements and AMHS to support future data distribution. The Meeting was informed that AMHS is a critical element in routing messages to their intended users using globally adopted and ICAO sanctioned AFTN addressing. Any system that plans to succeed/replace AMHS would likely need to support similar elements of AFTN address functionality.

Leveraging TBO through regional SWIM services and AMHS

2.51 Frequentis introduced the TBO with regional SWIM services and AMHS. The regional ATM operational SWIM services roadmap for TBO and the TBO mix mode transition were explained in detail. It was concluded that by providing a consistent cloud-based ATM operational infrastructure regional SWIM services will speed up the digital transformation towards TBO. The Meeting further discussed the topics interested, including the information loss between FPL2012 and FIXM, the meaning of SWIM governance, the sunset date of FPL2012, etc. For more information, Member States/Administrations were welcome to contact Mr. Ulrich Kaage through email: Ulrich.KAAGE@frequentis.com

AMHS/SWIM Gateway Progress & FF-ICE Migration Plans

2.52 The SWAMWAY Study Group under the cooperation of ICAO EUR NAT/AST TF presented the AMHS/SWIM Gateway Progress & FF-ICE Migration Plans. With the sharing of SWAMWAY SG activities during 2023, the presentation introduced the progress and development of

the AMHS/SWIM Gateway specification, identified use cases, next steps for the AMHS/SWIM Gateway, and European strategy towards FF-ICE migration. The Meeting was invited to provide comments about the proposed use cases, identify potential synergies with the EUR/NAT Region, and promote the exchange of information in terms of activities, projects, and initiatives with a common interest for APAC and EUR/NAT Regions.

Eighth Meeting of System Wide Information Management Task Force (SWIM TF/8)

Updates of APAC SWIM Technical Infrastructure Profiles

2.53 Japan, Task 2 Lead, presented the updated draft of the APAC SWIM Technical Infrastructure Profiles document incorporating comments received from SWIM TF task leads and members after the SWIM TF/7. The modifications done on the previous draft version presented at the SWIM TF/7 were highlighted and the future plans were also shared. During the meeting, feedback was provided on the draft APAC SWIM TI Profiles document, and several action items were adopted to refine the draft further in response to the comments.

2.54 In response to the clarifications about the term "limited capabilities of CRV," Task 2 lead notified that the current available CRV subscription packages come with limited bandwidth and that there is a user type restriction to join CRV. ICAO Secretariat informed that CRV OG has already modified the definition of CRV users to include others who are not ANSPs and that the non-ANSP users can join CRV following the procedure described in the CRV OG Operations Manual. PCCWG, the current CRV provider, shared that CRV has no bandwidth limitation. CRV users subscribing to any available packages can request more bandwidth at an additional cost based on their needs. The Meeting agreed to submit the request, through the ICAO Secretariat, to CRV OG to consider deliberating the enhancement of CRV bandwidth and the cost optimization associated with supporting operational SWIM implementation over CRV.

Progress Update by S3TIG for the Joint Event of SWIM Demonstration over CRV and Surveillance Sharing in SWIM Trial

2.55 The paper presented the progress update of the joint event of SWIM Demonstration over CRV and Surveillance Data Sharing in the SWIM Trial (the Joint Event).

Ninth Meeting of System Wide Information Management Task Force (SWIM TF/9)

Election of Co-Chair

2.56 Nominated by the USA and seconded by USA, Dr. Dr Amornrat Jirattigalachote, Strategic Planning Manager (Engineering), Policy and Strategy Management Bureau of AEROTHAI was re-elected as Co-Chair of the SWIM TF in the SWIM TF/9 Meeting.

Revision of APAC SWIM Technical Infrastructure Profiles

2.57 Considering the benefits of making the draft version of APAC SWIM Technical Infrastructure Profiles available for States/Administrations to refer to as guidance to assist in their SWIM development and implementation, CNS SG/28 adopted **Decision CNS SG/28/04 (Decision SWIM TF/09/01)** - *APAC SWIM Technical Infrastructure Profiles v1.0*.

The Fourth meeting of the Surveillance Study Group (SURSG/4)

Outcomes of Joint event of SWIM over CRV Demonstration and Surveillance data over SWIM Trial

2.58 The Joint event of SWIM over CRV Demonstration (the demo) and Surveillance data over SWIM Trial (the trial) was a collaborative and intricate work of S3TIG. The Joint event was successfully conducted from 28 May to 29 May 2024.

2.59 The SURSG/4 Meeting noted that three scenario-based demonstrations were demonstrated with real-time data exchange among involved parties in the Joint event and the operational benefits brought by SWIM were showcased. The Meeting was informed that a Pseudo CRV network was established among participant States acting as Gateway EMS and Edge EMS. This network supported the demonstration and was noted to include both CRV-based SLA-guaranteed networks and internet-based networks.

2.60 The Meeting discussed the outcomes of the Joint event and agreed that with the successful completion of the Joint event, S3TIG can be dissolved. The S3TIG was dissolved by the SURSG/4 Meeting.

Study on bandwidth used for ADS-B data being transmitted on SWIM CRV

2.61 Hong Kong China shared the outcomes of the Study on bandwidth used for ADS-B data being transmitted on SWIM CRV. Thailand and Singapore requested Hong Kong China to capture and analyse ADS-B data supplied by their surveillance system as the current setup for the Joint event will be accessible for one month until the end of June 2024 for participants. Hong Kong China accepted the request.

Use case of MET information services in SWIM demonstration for ATFM with surveillance data sharing

2.62 The meeting agreed that the demonstration scenario outlined the operational benefits of efficient MET information exchange and surveillance data sharing for improving traffic demand and capacity forecasting in ATFM. In addition, machine-readable MET and surveillance information in SWIM could be used directly in future ATFM Systems for automatic calculations and updates of landing slot allocations.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the outcome of relevant meetings and take any necessary follow-up actions; and

b) discuss any relevant matter as appropriate

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List of Conclusions/Decisions adopted by CNS SG/28 on behalf of APANPIRG on Technical Matters

Conclusion CNS SG/28/01 (ACSICG/11/02) - Review of APAC Region IWXXM Implementation Status/ Readiness	
What: States / Administrations provide ICAO an update on the status and readiness dates for the following: (a) AMHS with FTBP/IHE and configuration for single body part; (b) AMHS connection(s) will have sufficient capacity to support IWXXM exchange;	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: As per Amendment 79 to Annex 3 (applicable November 2020), States/ Administrations are required to exchange meteorological information in IWXXM form.	Follow-up: ☒Required from States
When: 05-Jul-2024	Status: Adopted by Subgroup.
Who: ☒Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: XX	

Decision CNS SG/28/03 (**Decision SWIM TF/08/02)** Candidate Baseline SWIM Discovery Service Standard for APAC	
What: To position the SWIM Discovery Service (SDS) specification as a candidate baseline standard for APAC SWIM implementation.	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: A candidate baseline standard for SDS is needed to support APAC SWIM implementation within the regionally-agreed target implementation timeframe of 2024-2030.	Follow-up: ☐Required from States
When: 5-Jul-24	Status: Adopted by Subgroup
Who: ☒Sub groups ☐APAC States ☐ICAO APAC RO ☐ICAO HQ ☐Other: SWIM TF	

Decision CNS SG/28/04 (Decision SWIM TF/09/01) –APAC SWIM Technical Infrastructure Profiles v1.0	
What: The APAC SWIM Technical Infrastructure Profiles v1.0 is adopted as a living document for immediate use by APAC States/Administrations.	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: To assist APAC States/Administrations in their SWIM development and implementation,	Follow-up: ☐Required from States

guidance specific to the operational environment within APAC is required. The draft APAC SWIM Technical Infrastructure Profiles v1.0 is matured enough to be immediately used by APAC States/Administration.	
When: 5-Jul-24	Status: Adopted by Subgroup
Who: ☒Sub groups ☐APAC States ☐ICAO APAC RO ☐ICAO HQ ☒Other: SWIM TF	

Conclusion CNS SG/28/08 (GBAS-SBAS ITF 06/01) - Guidance Document for Implementation of GBAS in the APAC Region	
What: The Guidance document for the implementation of GBAS in the APAC Region developed by the APAC GBAS/SBAS ITF is adopted.	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: To provide guidance to States for the implementation of GBAS	Follow-up: ☐Required from States
When: 5 Jul 2024	Status: Adopted by CNS SG
Who: ☒CNS Sub group ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other:	

Conclusion CNS/SG/28/09 - Update of Flight Inspection Guidance Material (FIGM)	
What: That, the Edition 4.0 of the Flight Inspection Guidance Material (FIGM) is adopted.	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: The FIGM is subject to regular review and update in the light of on-going development of flight inspection standards and recommended practices.	Follow-up: ☒ Required from States
When: 5-Jul-24	Status: Adopted by Subgroup
Who: ☒Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other:	

Conclusion CNS/SG/28/11 (SURICG/9/2) - Guideline on addressing inconsistencies of Aircraft Address (AD) and Target Identification (ID) between Surveillance Data and Flight Plan

List of Conclusions/Decisions adopted by CNS SG/28 on behalf of APANPIRG on Technical Matters

<table>
<tr><td colspan="2">What: APAC guideline on addressing inconsistencies of ICAO Aircraft Address (AD) and Target Identification (ID) between Surveillance Data and Flight Plan is adopted.</td><td>Expected impact:
☐ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td colspan="2">Why: The guideline consolidated the outcomes of the Workshop on ICAO Aircraft Address and Target Identification between Surveillance Data and Flight Plan held in June 2023.</td><td>Follow-up: ☐Required from States</td></tr>
<tr><td>When: 05-July-24</td><td colspan="2">Status: Adopted by Subgroup</td></tr>
<tr><td colspan="3">Who: ☒Sub groups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: XXXX</td></tr>
</table>

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A List of Conclusions adopted by APANPIRG/35 Meeting related to CNS

<table>
<tr><td colspan="3">Decision APANPIRG/35/6 (Decision CNS SG/28/02 (Decision SWIM TF/08/01)) - Information Management Panel considers the adoption of SWIM Discovery Service as a Global Standard for Globally Interoperable Service Discovery.</td></tr>
<tr><td colspan="2">What: To propose to the Information Management Panel (IMP) to consider adopting the SWIM Discovery Service (SDS) as a global standard for globally interoperable service discovery.</td><td>Expected impact:
☒ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: Considering that APAC regional SWIM will also be part of global SWIM and that SDS was studied and tested by the SWIM TF, the consideration of IMP on the possible adoption of SDS as a global standard is required to ensure cross-regional interoperability of SWIM service discovery,</td><td colspan="2">Follow-up: ☐Required from States</td></tr>
<tr><td>When: 27-Nov-24</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</td></tr>
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<table>
<tr><td colspan="3">Conclusion APANPIRG/35/7 (Conclusion CNS SG/28/05 (SRWG/8/1) -
Preparation for World Radiocommunication Conference - 2027 (WRC-27)</td></tr>
<tr><td colspan="2">That, States,
a) assign high priority to aeronautical spectrum management;
b) participate in the development of the ICAO Position for WRC-27;
c) participate in the development of States' positions for WRCs at the national level to ensure support for the ICAO Position;
d) ensure, to the extent possible, that, aviation representatives are included in States delegations to the APAC Telecommunity (APT) Conference Preparatory Group Meetings and at WRCs;
e) to nominate an ICAO designated focal point or contact person for aviation issues related to the WRC-27; and
f) ensure participation of the designated focal point or contact person at the ICAO Regional Preparatory Group Meetings for WRC-27, APT Conference Preparatory Group Meetings for WRC-27, and at WRC-27.</td><td>Expected impact:
☐ Political / Global
☒ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why:
a) implement Assembly Resolution A41-7;
b) support the early development and dissemination of the draft ICAO Position;
c) actively participate in the preparatory work of the ITU and the Meetings of APT to ensure the development of proposals by the regional telecommunication organizations to the conference are in line with the ICAO Position;</td><td colspan="2">Follow-up: ☐Required from States</td></tr>
</table>

A List of Conclusions adopted by APANPIRG/35 Meeting related to CNS

When: 27-Nov-24	Status: Adopted by PIRG
Who: ☒Sub groups ☐APAC States ☐ICAO APAC RO ☐ICAO HQ ☒Other: SRWG	

Conclusion APANPIRG/35/8 *(Conclusion CNS SG/28/06 (SRWG/8/2))* - **VHF COM Frequency Allotment Plan for APAC Region**		
What: The VHF COM Frequency Allotment Plan for the APAC Region provided in **Appendix A** is adopted.		Expected impact: ☒ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: Per discussion from SRWG, the Region should simplify the VHF COM Frequency Allotment Plan and clarify the function of the twelve frequencies for inclusion in the next edition of the Frequency Guidance Material (Management Manual).	Follow-up: ☐Required from States	
When: 27-Nov- 24	Status: Adopted by PIRG	
Who: ☒Sub groups ☐APAC States ☐ICAO APAC RO ☐ICAO HQ ☒Other: SRWG		

Conclusion APANPIRG/35/9 *(Conclusion CNS SG/28/07 (SRWG/8/4))* - **Transition from the regular publication of Frequency List 2 to the global database of frequencies included in the Frequency Finder**		
What: Transition from the regular publication of Frequency List 2 to the global database of frequencies included in the FF is adopted		Expected impact: ☒ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: The regular publication (currently once a year at the end or beginning of the year) of the Frequency List 2 i.e. List of facilities in the band 108 - 117.975 MHz and 960 - 1215 MHz will no longer be required as the global database of frequencies included in the FF would provide an up-to-date status of frequencies assigned or used by States/Administrations.	Follow-up: ☐Required from States	
When: 27-Nov-24	Status: Adopted by PIRG	
Who: ☒Sub groups ☐APAC States ☐ICAO APAC RO ☐ICAO HQ ☒Other: SRWG		

A List of Conclusions adopted by APANPIRG/35 Meeting related to CNS

<table>
<tr><td colspan="3">Conclusion APANPIRG/35/10 (Conclusion CNS/SG/28/10 (SURICG/9/1)) - Update of the General Strategy on Assignment of and Migration to SI Code in the APAC Region</td></tr>
<tr><td colspan="2">That:
1. The ICAO APAC regional office will manage the assignment of II codes 14 and 15 and their matching SI codes like the rest of the II and SI codes.
2. Revised General Strategy on Assignment of and Migration to SI Code is adopted.</td><td>Expected impact:
☐ Political / Global
☒ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td colspan="2">Why: A study by SURICG concluded that reservation of II codes 14 and 15 and their matching SI codes for research/test radars and military radars on a region-wide basis is not practicable in APAC.</td><td>Follow-up: ☐Required from States</td></tr>
<tr><td>When: 27-Nov-24</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: XXX</td></tr>
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VHF COM Frequency Allotment Plan for APAC Region (March 2024)

Function (revised)	**Function**	**Frequencies (MHz)**
TWR 118.000-118.875MHz 124.300-124.375MHz	TWR	118.000 118.025 118.050 118.075 118.100 118.125 118.150 118.175 118.200 118.225 118.250 118.275 118.300 118.325 118.350 118.375 118.400 118.425 118.450 118.475 118.500 118.525 118.550 118.575 118.600 118.625 118.650 118.675 118.700 118.725 118.750 118.775 118.800 118.825 118.850 118.875 124.300 124.325 124.350 124.375
AS 121.550-121.975MHz	AS	**121.550 121.575** 121.600 121.625 121.650 121.675 121.700 121.725 121.750 121.775 121.800 121.825 121.850 121.875 121.900 121.925 121.950 121.975
APP 119.000-119.275MHz 119.400-120.075MHz 120.200-120.475MHz	APP	119.500 119.525 119.550 119.575 119.600 119.625 119.650 119.675 119.800 119.825 119.850 119.875 119.900 119.925 119.950 119.975
120.600-120.675MHz 120.800-120.875MHz 121.000-121.450MHz 123.800-123.875MHz 124.000-124.075MHz 124.200-124.275MHz 124.400-124.475MHz 124.600-124.875MHz 125.000-125.275MHz 125.400-125.675MHz 125.800-125.875MHz 126.000-126.075MHz 126.300-126.375MHz 126.500-126.575MHz 127.700-127.775MHz 127.900-127.975MHz	APP-L, APP-I, Also used for APP Direction finding or APP Surveillance radar	119.100 119.125 119.150 119.175 119.200 119.225 119.250 119.275 119.400 119.425 119.450 119.475 119.700 119.725 119.750 119.775 120.000 120.025 120.050 120.075 120.200 120.225 120.250 120.275 120.400 120.425 120.450 120.475 120.600 120.625 120.650 120.675 120.800 120.825 120.850 120.875 121.000 121.025 121.050 121.075 121.100 121.125 121.150 121.175 121.200 121.225 121.250 121.275 121.400 **121.425 121.450** 123.800 123.825 123.850 123.875 124.000 124.025 124.050 124.075 124.700 124.725 124.750 124.775 125.100 125.125 125.150 125.175 125.500 125.525 125.550 125.575 126.500 126.525 126.550 126.575 127.700 127.725 127.750 127.775 127.900 127.925 127.950 127.975
	APP-U	120.300 120.325 120.350 120.375 121.300 121.325 121.350 121.375 124.200 124.225 124.250 124.275 124.400 124.425 124.450 124.475 124.600 124.625 124.650 124.675 124.800 124.825 124.850 124.875 125.000 125.025 125.050 125.075 125.200 125.225 125.250 125.275 125.400 125.425 125.450 125.475 125.600 125.625 125.650 125.675

		125.800 125.825 125.850 125.875 126.000 126.025 126.050 126.075 126.300 126.325 126.350 126.375
ACC 118.900-118.975MHz 119.300-119.375MHz 120.500-120.575MHz 120.700-120.775MHz 120.900-120.975MHz 123.700-123.775MHz 124.500-124.575MHz 125.300-125.375MHz 125.700-125.775MHz 125.900-125.975MHz 126.100-126.175MHz 127.500-127.575MHz 128.100-128.175MHz 128.300-128.375MHz 128.700-128.775MHz 132.050-134.575MHz 135.825-135.975MHz	ACC-L Also used for ACC-L Surveillance Radar	126.100 126.125 126.150 126.175 127.500 127.525 127.550 127.575 128.300 128.325 128.350 128.375 128.700 128.725 128.750 128.775
	ACC-U ACC-L	118.900 118.925 118.950 118.975 119.300 119.325 119.350 119.375 120.500 120.525 120.550 120.575 120.700 120.725 120.750 120.775 120.900 120.925 120.950 120.975 123.700 123.725 123.750 123.775 124.500 124.525 124.550 124.575 125.300 125.325 125.350 125.375 125.700 125.725 125.750 125.775 125.900 125.925 125.950 125.975 128.100 128.125 128.150 128.175 132.050 132.075 132.100 132.125 132.150 132.175 132.200 132.225 132.250 132.275 132.300 132.325 132.350 132.375 132.400 132.425 132.450 132.475 132.500 132.525 132.550 132.575 132.600 132.625 132.650 132.675 132.700 132.725 132.750 132.775 132.800 132.825 132.850 132.875 132.900 132.925 132.950 132.975 133.000 133.025 133.050 133.075 133.100 133.125 133.150 133.175 133.200 133.225 133.250 133.275 133.300 133.325 133.350 133.375 133.400 133.425 133.450 133.475 133.500 133.525 133.550 133.575 133.600 133.625 133.650 133.675 133.700 133.725 133.750 133.775 133.800 133.825 133.850 133.875 133.900 133.925 133.950 133.975 134.000 134.025 134.050 134.075 134.100 134.125 134.150 134.175 134.200 134.225 134.250 134.275 134.300 134.325 134.350 134.375 134.400 134.425 134.450 134.475 134.500 134.525 134.550 134.575 135.825 135.850 135.875 135.900 135.925 135.950 135.975
FIS 120.100-120.175MHz 123.900-123.975MHz 124.100-124.175MHz 124.900-124.975MHz 126.700-126.775MHz 126.900-126.975MHz	FIS-L FIS-U	120.100 120.125 120.150 120.175 123.900 123.925 123.950 123.975 124.100 124.125 124.150 124.175 124.900 124.925 124.950 124.975 126.700 126.725 126.750 126.775 126.900 126.925 126.950 126.975 127.100 127.125 127.150 127.175

127.100-127.175MHz 127.300-127.375MHz 128.500-128.575MHz 134.600-135.800MHz		127.300 127.325 127.350 127.375 128.500 128.525 128.550 128.575
	FIS-U Also used for General purpose communications	134.600 134.625 134.650 134.675 134.700 134.725 134.750 134.775 134.800 134.825 134.850 134.875 134.900 134.925 134.950 134.975 135.000 135.025 135.050 135.075 135.100 135.125 135.150 135.175 135.200 135.225 135.250 135.275 135.300 135.325 135.350 135.375 135.400 135.425 135.450 135.475 135.500 135.525 135.550 135.575 135.600 135.625 135.650 135.675 135.700 135.725 135.750 135.775 135.800
VOLMET/ATIS 126.200-126.275MHz 126.400-126.475MHz 126.600-126.675MHz 126.800-126.875MHz 127.000-127.075MHz 127.200-127.275MHz 127.400-127.475MHz 127.600-127.675MHz 127.800-127.875MHz 128.000-128.075MHz 128.200-128.275MHz 128.400-128.475MHz 128.600-128.675MHz 128.800-128.875MHz	VOLMET/ATIS	126.200 126.225 126.250 126.275 126.400 126.425 126.450 126.475 126.600 126.625 126.650 126.675 126.800 126.825 126.850 126.875 127.000 127.025 127.050 127.075 127.200 127.225 127.250 127.275 127.400 127.425 127.450 127.475 127.600 127.625 127.650 127.675 127.800 127.825 127.850 127.875 128.000 128.025 128.050 128.075 128.200 128.225 128.250 128.275 128.400 128.425 128.450 128.475 128.600 128.625 128.650 128.675 128.800 128.825 128.850 128.875
AOC	AOC	128.900-132.025(Except 128.950MHz)
DATA LINK	DATA LINK	136.000-136.975
AIR-TO-AIR	AIR-TO-AIR	123.450 128.950 (TIBA)
NOT ALLOTED	NOT ALLOTED	122.000-123.675(Except 123.100MHz, 123.450MHz)

Note: The allotment of 12 yellow highlighted frequencies for ACC services has not been included in the Asia-Pacific conference outcomes.

VHF COM Frequency Allotment Plan for APAC Region (March 2024)