International Civil Aviation Organization

NINTH MEETING OF SPECTRUM REVIEW WORKING GROUP (SRWG/9)

Bangkok, Thailand, 07 – 09 May 2025

Agenda Item 3: Review outcomes of relevant meetings

REVIEW OF OUTCOMES 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 Eighth Meeting of the Spectrum Review Working Group (SRWG/8), 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 Eighth Meeting of the Spectrum Review Working Group (SRWG/8) of APANPIRG was held in ICAO APAC Regional Office, Bangkok, Thailand with the hybrid option of video teleconferencing on 5 – 7 March 2024. The meeting was attended by 48 participants (41 in-person attendance and 7 virtual attendance) from 14 States/Administrations and 2 International Organizations. The working papers, information papers, meeting report, and other resources of SRWG/8 are available at:

https://www.icao.int/APAC/Meetings/Pages/2024-SRWG8.aspx

1.4 The APANPIRG/35 Meeting reviewed the outcomes of CNS SG/28, 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.

1.5 This paper summarized relevant information and updates with the highlight of the reviewed outcomes of 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 *(Decision SWIM TF/09/01)*	-	APAC SWIM Technical Infrastructure Profiles v1.0
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 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	-	Preparation for World Radiocommunication

(CNS SG/28/05 (SRWG/8/1))		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.

2.5 The following captures the highlights of previous discussions relevant to this Meeting.

Outcome of SRWG/8 Meeting and Frequency Spectrum related Issues

Review of the Report on the Results of the International Telecommunication Union (ITU) World Radiocommunication Conference (2023) (WRC-23)

2.6 APANPIRG/35 approved the **Conclusion APANPIRG/35/7** *(Conclusion CNS SG/28/05 (SRWG/8/1)* – **Preparation for World Radiocommunication Conference - 2027 (WRC-27)**, endorsed by CNS SG/28 to initiate actions for timely and effective preparation for WRC-27 in the APAC Region.

2.7 APANPIRG/35 noted that States/Administrations intended to use or using VHF frequencies for Satellite-based VHF experimental systems during the time the relevant SARPs and planning criteria were being developed should inform ICAO of their use and frequency spectrum. Point of Contact (PoC) should ensure that corresponding State/Administration be aware of and to monitor any possible interference it might cause to VHF terrestrial systems. States/Administrations should also inform ICAO of any interference from VHF Satellite-based experimental systems. In the event of interference, the correction action should be taken as soon as practicable. **ACTION ITEM 8-1**

Progress on VHF COM Frequency Allotment Plan for APAC Region

2.8 APANPIRG/35 adopted the **Conclusion APANPIRG/35/8** *(Conclusion CNS SG/28/06 (SRWG/8/2)* – **VHF COM Frequency Allotment Plan for APAC Region** to simplify the VHF COM Frequency Allotment Plan and to clarify the function of these twelve frequencies for ACC service in the APAC Region, which was endorsed by CNS SG/28.

2.9 The Secretariat will notify the CNSS of the ANB about updates of the regional VHF COM Allotment Plan to ensure the Frequency Finder tool incorporates the latest revisions. To enhance the efficiency of frequency use in the APAC region, Member States/Administrations were requested to review and update the frequencies uploaded in the Frequency Finder (FF), ensuring the database remains current. **ACTION ITEM 8-2**

Survey Result of the Necessity to Implement 128.950 MHZ for Traffic Information Broadcasts by Aircraft (TIBA) in the Asia/Pacific

2.10 China and the Secretariat presented the results of the questionnaire on the necessity to implement 128.950 MHz for traffic information broadcasts by aircraft (TIBA) in the APAC region. To

follow up the discussion in SRWG/7 to review the necessity to implement 128.95MHz for TIBA, the ad-hoc expert group formed by SRWG/7 has worked with the ICAO Secretariat and published a questionnaire through the ICAO APAC State Letter Ref.: T 8/8.6 – AP066/23(CNS). A total of eighteen (18) responses from States/Administrations have been received and analyzed.

2.11 Based on the survey results obtained, four States/Administrations among the eighteen responses have allotted 128.950MHz for TIBA, and four States/Administrations among the eighteen responses have allotted 128.950MHz to other services. Considering the 128.950 MHz for TIBA in the APAC region has been included in the contingency plan and to avoid potential interference to the States have implemented 128.950 MHz for TIBA, the SRWG/8 meeting agreed that any assignment for 128.950 MHz to other services by States shall not impact the airspace that has been allotted or plan to use 128.950 MHz for TIBA, States/Administrations were also encouraged to move forward to the global frequency for air to air service at 123.450 MHz, and further study the utilization and protection of 128.950MHz in the future. Furthermore, States/Administrations who have not yet replied to the Survey are encouraged to do so by replying to the State Letter with the Survey. Further discussion will be needed in the SRWG/9 meeting.

The Utilization of HF Bands in the APAC Region

2.12 The SRWG/8 meeting formulated and endorsed the **Decision SRWG/8/3** – Survey on the Utilization of HF Spectrum Frequency bands, and requested the HF ad-hoc working group with Indonesia as a rapporteur to persist in their efforts to refine the survey and table, ensuring that they are clear and comprehensive enough to collect information effectively from States and facilitate their responses. The Secretariat will subsequently disseminate the revised survey and updated table through a State Letter once the revisions have been finalized. In addition, China also suggested to include the useful information of WP/15 into the revised regional guidance material. **ACTION ITEM 8-3**

2.13 APANPIRG/35 noted the **Decision SRWG/8/3** and the Secretariat of CNS SG disseminated the revised Survey through a State Letter Ref: T 8/8.1 - AP094/24 (CNS). A total of fifteen (**15**) responses from States/Administrations have been received and analyzed, presented in WP/05 under Agenda Item 4 of SRWG/9 for further review and discussion.

Outcomes of Workshop on Frequency Finder (FF)

2.14 APANPIRG/35 noted the importance of the Frequency Finder (FF) tool and highly recommended that Member States/Administrations to coordinate frequency through the FF tool and to ensure the FF database remained up-to-date. Based on recommendations from Workshop on Frequency Finder (FF) held at the ICAO Asia and Pacific (APAC) Regional Office (Bangkok, Thailand, 9-13 October 2023), APANPIRG/35 adopted the **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**, which was endorsed by CNS SG/28.

Review of Frequency Lists

2.15 ICAO APAC Regional Office duplicated its work on the VHF NAV module of Frequency Finder as well as on the existing Frequency Manager for new facility frequency planning upon request from States. Recognizing the need to migrate Frequency List 2 database from Frequency Manager to Frequency Finder, ICAO APAC Office synchronized all registered assignments on Frequency List 2 in the Frequency Manager into Frequency Finder in 2022 and has been using Frequency Finder on frequency assignments for NAV systems. During SRWG/7, the Secretariat proposed an interim solution to publish Frequency List 2 (36th edition) by Frequency Finder, which was supported by the SRWG/8 meeting. The SRWG/8 meeting was informed that the publication of Frequency List 2 (37th edition) will be prepared by Frequency Finder in 2024. After the adoption of the **Conclusion APANPIRG/35/9** *(Conclusion CNS SG/28/07 (SRWG/8/4)*, the ICAO APAC Regional Office will stop the regular publication of Frequency List 2.

2.16 Additionally, the SRWG/8 meeting noted that Frequency Manager is now used only for NDB assignments and the maintenance of Frequency List 1. Unfortunately, the computer for running Frequency Manager failed in January 2024. The publication of Frequency List 1 (38th edition) in 2024 may be delayed. Furthermore, it was informed that in 2023, ICAO APAC Regional Office coordinated 507 Frequency registrations in total, including 408 VHF COM frequencies (List 3), 88 NAV frequencies (List 2), and 11 NDB frequencies (List 1), the most among 7 ICAO regions.

Issues in Aeronautical Frequency Use by Oil Rigs

2.17 The SRWG/8 meeting noted that ICAO is planning a Seminar on Frequency Use by Oilrigs in Q3 2024 to analyze the existing frequency management process and planning criteria for oilrigs, as well as the need of frequency assignment for oilrigs and ships in aeronautical bands. The SRWG/8 meeting urged States/Administrations to register all aeronautical frequencies for NDB and AOC on oil rigs with ICAO APAC Office, share the best practices in States/Administrations to regional forum, e.g. SRWG, and nominate experts to support and participate in the Seminar. **ACTION ITEM 8-4**

Guidance Material on the Protection of Radio Altimeter from Potential Harmful Interference from Cellular 5G Communications

2.18 The ICAO Secretariat has been working with FSMP and the ICAO MID Regional Office Radio Altimeter (RADALT) Action Group (AG) to develop and finalise guidance material to protect radio altimeters from potential harmful interference from new cellular broadband technologies such as 5G. The WP/02 of FSMP-WG/16 presented the latest draft of this guidance material for comments and endorsement before processing its publication as an ICAO circular.

2.19 On 19 January 2024, it was informed that the draft Circular 360 Guidance on Safeguarding Measures to Protect Radio Altimeters from Potential Harmful Interference was at the final stage of development/publication in the ICAO HQ. In June 2024, the ICAO Circular 360 was approved by and published under the authority of the Secretary-General. The official publication was available at the ICAO store in digital or printed format for USD 33.

ICAO Recommendations and Guidance on GNSS Vulnerability

2.20 An overview of ICAO's Recommendations and Guidance on Global Navigation Satellite System (GNSS) vulnerability was presented in SRWG/8, including the Resolution COM5/5 (WRC-23), ongoing work in NSP and regional efforts in APAC. The relevant discussions in the 11th Air Navigation Conference (ANConf/11) in 2003, 12th Air Navigation Conference (ANConf/12) in 2012, 40th Session of the Assembly / State Letter 2020/89 / ITU Circular Letter 488, and 41st Session of the Assembly were summarized. The SRWG/8 meeting also reviewed the Memorandum of Cooperation with the International Telecommunication Union (ITU), Electronic Bulletin 2011/56 on Interference to GNSS Signals, ICAO NSP Liaison Statements to RTCA and EUROCAE on Increased Protection of GNSS Receivers, GNSS Manual (DOC 9849), Amendment 93 to Annex 10, Volume I, and ongoing NSP work.

2.21 By introducing the CNS Challenges in 2024, it was noted the APANPIRG/34 meeting urged States and airspace users (through IATA) to report GNSS occurrences to ICAO APAC Office using the reporting templates which would be circulated in a State Letter. The Secretariat proposed a GNSS Interference Reporting Form for APAC, with reference to the RASG-MID SAFETY ADVISORY – 14 (RSA-14).

2.22 The SRWG/8 meeting reviewed the proposed form and identified it was sourced from Doc 9849 Edition 3. Recognizing the original forms have been further revised in Doc 9849 Edition 4, the SRWG/8 meeting agreed to adopt the example forms for GNSS RFI Reporting to States in Attachment to Appendix F of Doc 9849 Edition 4, through **Decision SRWG/8/5** – GNSS Interference Reporting Form for APAC, which was also noted by APANPIRG/35.

GNSS Radio Frequency Interference: IATA Analysis

2.23 The SRWG/8 meeting noted that the workshop jointly hosted by the European Union Aviation Safety Agency (EASA) and IATA on January 25th, 2024, came up with a high-level conclusion that interference with satellite-based services can pose significant challenges to aviation safety. Mitigating measures agreed by the workshop to make PNT services provided by GNSS more resilient were elaborated, including reporting and sharing of GNSS interference event data, providing guidance from aircraft and avionic original equipment manufacturers (OEMs), alerting, and backup. It was emphasized that GNSS RFI is a significant concern for the aviation industry, and collaborative efforts among regulatory authorities, industry stakeholders, and international organizations are essential to effectively mitigate associated risks.

Asia/Pacific Regional Aeronautical Radio Frequency Management Guidance Material

2.24 Recognizing that certain refinements are required for new paragraphs concerning HF, TIBA, backup frequency, and GBAS, the SRWG/8 meeting agreed to adopted the proposed revision in WP/13 as Edition 1.1 with clear presentation for the proposed amendments to differentiate the status of text as original, agreed, to be determined (TBD). The SRWG will discuss and review the pertinent paragraphs in future meetings. **ACTION ITEM 8-5**

2.25 The SRWG/8 meeting formulated and adopted the **Conclusion SRWG/8/6** - APAC Regional Aeronautical Radio Frequency Management Guidance Material Edition 1.1. which was noted by APANPIRG/35.

Space based VHF Communication Service

2.26 Singapore updated the CNS SG/28 meeting on the progress of the technical and regulatory studies of space-based VHF communications (voice and data) in the frequency band 117.975-137 MHz. Singapore recalled that Space-based VHF communications are envisaged to extend the coverage of the following aeronautical VHF communication services using satellites. The objectives that should be considered in the design of the space-based VHF system were discussed. The CNS SG/28 meeting noted that Spacebased VHF frequency allocation was an Agenda Item 1.7 for the World Radiocommunication Conference 2023 (WRC-23) and WRC-23 approved the use of the frequency band 117.975-137 MHz to be allocated for aeronautical mobile-satellite (R) service (AMS(R)S), enabling satellite-aircraft communications in the VHF frequency spectrum. The CNS SG/28 meeting noted the formation of the Future VHF Subgroup ("FVSG") in October 2020. The latest Meeting report of FVSG was shared. The CNS SG/28 meeting noted a space-based VHF Correspondence Group (CG) set up in December 2023.

2.27 Singapore informed that there are two companies working in parallel with the launch of prototype satellites with VHF payload for PoC demonstrations between 2023 and 2025: Skykraft, an Australian space services company and Startical, a joint venture of Enaire and Indra. Both companies plan to launch a constellation of satellites specifically designed for ATM to provide space-based VHF communications and ADS-B surveillance services with global coverage. The Meeting noted that to conduct the PoC demonstration, the ICAO regional office will need to assign appropriate VHF frequencies so that verification tests can take place. The CNS SG/28 meeting was requested 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 needed.

2.28 ICAO Secretariat supplemented the ICAO Position in WRC-23 Agenda Item 1.7 for preventing any undue constraints on existing VHF systems operating in the AM(R)S, the ARNS, and in adjacent frequency bands, is recapped below:

> *To support a global primary allocation to the aeronautical mobile-satellite (route) service for both the Earth-to-space and space-to-Earth directions in all or part of the frequency band 117.975-137 MHz subject to the following conditions:*

• the use of any new AMS(R)S allocation be limited to aeronautical VHF communications for safety and regularity of flight.

• ensure the protection of existing primary terrestrial aeronautical systems in the 117.975-137 MHz band, and not constrain the planned usage of those systems.

The systems shall be planned, implemented and operated in accordance with international Standards and Recommended Practices and procedures established in accordance with the Convention on International Civil Aviation

2.29 Australia also supplemented that additional measure has been considered to avoid such interference to existing VHF facilities.

ITU WRC23 Updates

2.30 ICAO Secretariat reproduced ANB Working Paper AN-WP/9721 for the Air Navigation Commission, which presented a report to the Council on addressing the results of the International Telecommunication Union (ITU) World Radiocommunication Conference (2023) (WRC23) (20 November to 15 December 2023, Dubai, United Arab Emirates).

2.31 A preliminary list of WRC-27 agenda items of prime interest to aviation, including Secretariat commentary, was included in the report to the Council. Although there were no specific items on the agenda of WRC-27 through which aviation is seeking a new spectrum for the provision of aeronautical safety services, there were numerous items as a consequence of which the existing spectrum for the provision of such services could be negatively affected.

2.32 Taking account of the successful outcome of WRC-23, the Meeting noted that a significant element in the ICAO preparatory activities for this conference was the early awareness and involvement of Member States in the development of the ICAO Position. The Secretariat, assisted by the Frequency Spectrum Management Panel (FSMP), will prioritise developing the ICAO Position for the WRC-27 in full coordination with other relevant bodies and taking due account of spectrum management activities in the regions.

AeroMACS Sub-Group progress under the CP-DCIWG-WG-M

2.33 China summarised the activities of the AeroMACS Sub-Group of the CP-DCIWG-WG-M since the last report submitted to CNS SG/27. The CNS SG/28 members were requested to support and participate in the AeroMACS Sub-Group. The CNS SG/28 meeting appreciated the information shared in the paper and requested that China provide further information and updates in the next CNS SG and other relevant Meetings.

2.34 China supplemented that AeroMACS enables uploading of real-time aeronautical/aerodrome information and images for visual display in the cockpit to pilots, thus further enhancing aviation safety and operational efficiency. AeroMACS is currently derived from the IEEE 802.16-2009 mobile standards using WiMAX. The fast emerging of new mobile technologies, such as cellular 5G, offering greater data security, higher spectrum efficiency and performance, for new applications of air traffic management, airline operation control, and passenger service. The ICAO Integrated CNS and Spectrum Task Force (ICNSS) recommends performance-based ICAO SARPs for AeroMACS using the latest 5G technology, within the ITU allocated spectrum of 5091 MHz to 5150 MHz, should be developed. As AeroMACS is a key element under ICAO GANP / ASBU, the Chair encouraged China to continue updating the Meeting on the latest development in future Meetings.

Space Based VHF Update

2.35 Australia informed that at WRC-23, a new AMS(R)S allocation was approved to support Space-Based VHF. The new allocation was required to be operated following international aeronautical

standards. Resolution 406 (WRC-23) was also approved, inviting the ICAO to take into account this Resolution in the course of developing SARPs for the AMS(R)S and planning the AM(R)S and AMS(R)S in the frequency band 117.975-137 MHz.

2.36 The CNS SG/28 meeting was informed that Twelve States/Administrations from the APAC region co-signed a submission to the conference (C-0083), supporting a new allocation and proposing the threshold for coordination with other services in the band. The administrations continued to support and work proactively towards the allocation that is included in the Final Act of the WRC-23. It was added that within ICAO, the work to standardise Space-Based VHF within Annex 10 has begun in the Space-Based VHF Correspondence Group (CG) groups reporting to the FSMP and Future VHF Subgroup (FVSG) reporting to the CP-DCIWG. The Meeting noted that the most optimistic estimates for the development and review of the SAPRS to support Space-Based VHF have the applicability date of the new SARPS as November 2028. To achieve the presented ambitious timeline, all states interested in developing these documents were encouraged to have their members on the CP-DCIWG and FSMP actively engage in the groups conducting the work.

Research and Validation of Data Link Technology Based on The Integration of CPDLC and ACARS ATS

2.37 China shared the research and validation experience of data link technology based on integrating CPDLC and ACARS ATS. The Meeting noted that the successful validation of this research on data link technology based on integrating CPDLC and ACARS ATS has laid a solid foundation for promoting ATS applications in China.

Status of LDACS Development in China

2.38 China introduced the status of L-band digital aeronautical communication system (LDACS) development. The paper shared information about LDACS standardisation progress in ICAO, followed by the introduction of the LDACS development activities in China, which included policy support, the LDACS prototype development, compatibility test, LDACS mobility management and multi-link, flight trial planning, etc.

2.39 The ICAO Secretariat informed that for GNSS interference, LDACS could be considered a primary candidate for APNT solution and requested information about relevant research in China for this consideration. China informed that LDACS is an integrated communication navigation and surveillance system. It can provide APNT functionality being developed and tested in China, along with compatibility checks between LDACS and other navigation and surveillance systems.

2.40 Hong Kong, China congratulated China on their progress in research on the potential development of LDACS, and suggested China to consider the research and potential application of LDACS for drone detection, considering the recommendation from Amendment 92 to Annex 10 Volume III that to withhold assigning aircraft address to unmanned aircrafts unless certain criteria have been met. China will consider the potential use of LDACS in the drone detection aspect in their future research work.

2.41 The Chair commented that with the fast global development and deployment of Advanced Air Mobility (AAM), the co-existence of AAM with existing airspace users should be duly considered to ensure aviation safety. In such connection, CNS SG should start early consideration on the provisions of the CNS infrastructure (such as tracking of AAM and interfacing with existing systems etc.) to support AAM development in the Region. The Chair suggested that relevant topics on such CNS provisions should be included in future CNS SG Meetings.

Communication and Satellite Service Provider Outages and Service Degradations Impacting Air Traffic Operations

2.42 The USA discussed the complexity of the overall data link network and the impacts of outages and degradations on air traffic services. It urged increased effort towards achieving the necessary

levels of availability, communication, coordination, and performance. USA informed that during Calendar Year 2023 (CY23) and CY24, USA has experienced several significant outages or service degradations by communication and/or satellite service providers (CSPs/SSPs) that have impacted oceanic air traffic services in all FAA delegated airspace. These outages and degradations have resulted in the unavailability of controller-pilot data link communication (CPDLC) and ADS-C position reporting, requiring controllers to revert to high-frequency (HF) voice communication via a third-party voice CSP. In addition, the loss of services means that aircraft are no longer eligible for performance-based communication and surveillance (PBCS) services, which requires controllers to revert to other forms of larger separation minima.

2.43 USA informed that the collective network provided by the CSPs and SSPs is the backbone of the Future Air Navigation System (FANS). It added that when any segment of data link services is lost or degraded, not only are the aircraft with the lost capability impacted, but aircraft with full capability may also be impacted by less-than-optimal altitude or route changes to re-establish required separation. USA shared records of degradations or outages impacting data link services for each oceanic FIR.

2.44 USA added that in addition to ongoing work between the FAA, CSPs, SSPs, and airlines, the FAA has also participated in efforts at the ICAO North Atlantic Technical Interoperability Group (NAT TIG). In 2018, the NAT TIG created the Network Outage Detection and Reporting (NODAR) Project Team (PT) to work collectively between data link system stakeholders to improve the detection and reporting related to outages within the CSP and SSP subnetworks and systems. In 2022, the NODAR PT was disbanded, having reached the limit of what could be accomplished without further action by the CSPs and SSPs. The remaining work was rolled into the NAT TIG Work Program. USA shared that during the most recent NAT TIG/17 Meeting held 8-11 April 2024 at the ICAO EURNAT Regional Office in Paris, updates on NODAR work, including a draft NODAR template and Network Outage Reporting and Impact Assessment (NORIA) Handbook were presented to the Meeting in NAT TIG WP/10. USA suggested that the Meeting consider the NODAR template and NORIA Handbook for use and implementation in the APAC Region.

2.45 The CNS SG/28 meeting requested that the ICAO Secretariat coordinate with the FANS Interoperability Team – Asia (FIT- Asia) and RASMAG to share the information presented in the paper along with the proposal to consider the NODAR template and NORIA Handbook to use and implement in the APAC and check the equivalent documents availability for APAC region.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper; 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

Decision APANPIRG/35/6 *(Decision CNS SG/28/02 (Decision SWIM TF/08/01))* - The **Information Management Panel considers the adoption of SWIM Discovery Service as a Global Standard for Globally Interoperable Service Discovery.**	
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.	Expected impact: ☒ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
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,	Follow-up: ☐Required from States
When: 27-Nov-24	Status: Adopted by PIRG
Who: ☒Sub groups ☐APAC States ☒ICAO APAC RO ☒ICAO HQ ☒Other: SWIM TF	

Conclusion APANPIRG/35/7 *(Conclusion CNS SG/28/05 (SRWG/8/1)* - **Preparation for World Radiocommunication Conference - 2027 (WRC-27)**	
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.	Expected impact: ☐ Political / Global ☒ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
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;	Follow-up: ☐Required from States

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>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 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: 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 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	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
	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)