International Civil Aviation Organization

Sixth Meeting of the Asia/Pacific Air Traffic Management Automation System Task Force (APAC ATMAS TF/6)

Bangkok, Thailand 2-4 June 2025

Agenda Item 3: Review of Outcomes of Relevant Meetings

OUTCOMES OF THE TWELFTH MEETING OF THE AERONAUTICAL COMMUNICATION SERVICES IMPLEMENTATION COORDINATION GROUP (ACSICG/12)

(Presented by the Secretariat)

SUMMARY

This paper presents the discussions and relevant outcomes on AMC Workshop and the Twelfth Meeting of the Aeronautical Communication Services Implementation Coordination Group (ACSICG/12) of APANPIRG for meeting information and review.

1. INTRODUCTION

1.1 The half-day AMC Workshop and the Twelfth Meeting of the Aeronautical Communication Services (ACS) Implementation Coordination Group (ACSICG/12) was held at the ICAO APAC Regional Office, Bangkok, Thailand, from 25 to 28 March 2025. The AMC workshop and ACSICG/12 Meeting were attended by 75 participants from 18 States/Administrations, 2 international organizations and 1 industry partner. The meeting report, working papers, information papers, and other resources can be accessed by the following link:

https://www.icao.int/APAC/Meetings/Pages/2025-AMC-ACSICG12.aspx

1.2 This paper presents relevant information and updates from the meeting.

2. DISCUSSION

2.1 The summary of the discussion in the Meeting is given in the following paragraphs.

Review the Report of the Thirteenth Meeting of Common aeRonautical VPN Operations Group (CRV OG/13) - Sec (WP/05)

2.2 Singapore shared the list of achievements that have been made by CRV OG under the leadership of Mr. Vaughan Hickford, Manager Enterprise Architecture & Networks, Airways New Zealand, in the last four years and nominated Mr. Vaughan Hickford as a candidate for CRV OG Co-Chair (Asia). The proposed nomination was seconded by Fiji, Hong Kong China and USA. No other nomination was proposed by any other member state for Meeting consideration. With the aforementioned, Mr. Vaughan Hickford was unanimously re-elected as the CRV OG Co-Chair (Asia).

2.3 Mr. Vaughan Hickford shared his appreciation to the Meeting for proposing and supporting his nomination. He recalled working on the CRV network from its inception till its

implementation for more than a decade and relationships built over several years with all CRV OG members.

2.4 Singapore requested the ICAO Secretariat to prepare a list of regional IP networks in various ICAO regions, their service provider, and contract duration for working on harmonizing these dates in the future so that interconnection of regional networks can be planned strategically. The ICAO Secretariat prepared the following list in coordination with other regional offices:

SN	Region	Regional IP Network name	Service Provider	Contract start year	Contract end year
1.	APAC	CRV	PCCW Global	2017	2028
2.	MID	In process	NA	NA	NA
3.	WACAF/ESAF	No dedicated IP network AFISNET NAFISAT SADC networks	 ASECNA ATNS and IATA ATNS and IATA	NA	NA
4.	SAM	REDDIG II	Cirion/Intelsat	2015	2025
5.	NACC	MEVA III	FREQUENTIS AG	2015	March 2026
		CARSNET	Contract process ongoing	2026	2036
6.	EUR/NAT	New PENS	British Telecom	2018	2028

2.5 Some details of AFI networks were as follows:

1. **AFISNET**: The AFI Satellite Telecommunications Network covers Central and Western African States as well as Southern African and Indian Ocean States (ASECNA Member States).
2. **SADC VSAT/2**: A network launched by the Southern African Development Community (SADC) States in 2008.
3. **NAFISAT**: A network designed for the North-Eastern African States.
4. **CAFSAT:** The Central Atlantic FIRs Satellite Telecommunications Network, which involves African, European, and South American States

Note: AFISNET, SADC VSAT/2 and NAFISAT are capable of IP technology. Upgrades are still undergoing for CAFSAT for the integration of IP-based services.

2.6 CARSNET is the Caribbean Air Navigation Services Network, which is the replacement contract for MEVA. CARSNET will be a combination of dual networks, a primary one MPLS and a satellite network as a backup.

Outcomes of ICAO APAC-MID CRV Workshop – Sec (WP/03)

2.7 The CRV OG/13 Meeting reviewed the ICAO APAC-MID CRV Workshop held in Jeddah, Saudi Arabia, from 20-23 October 2024. The Workshop noted the benefits of implementing an IP Network for voice and data, recalled past ICAO MID Meetings and related decisions relevant to CRV implementation and discussed the roadblocks for CRV implementation efforts from MID States from 2017-2019. It was noted that price was one of the critical factors in the decision-making process. The ICAO Secretariat outlined reasons for encouraging MID States to join CRV and the associated benefits.

2.8 PCCWG provided details about the CRV network, including package offerings and technical solutions for MID States, along with a special promotion for Package D and D+. In response to cybersecurity concerns, it was clarified that security is the responsibility of the contracting States and the CRV service provider, with PCCWG utilizing GRE tunneling for security and being ISO 27001 certified. The ICAO Secretariat mentioned ongoing efforts to establish minimum security requirements and the need for global provisions from the Trust Framework Panel.

2.9 The CRV OG/13 Meeting noted that the CRV contract mandates States to join CRV for an initial term of a minimum of 5 years. However, as the current CRV contract is expiring on 31 December 2028, a special exception has been provided to MID States in the offer presented by PCCWG. Most MID States expressed interest in Package A and agreed to contact PCCWG individually for negotiations, with coordination support available from the ICAO MID office.

2.10 The CRV OG/13 Meeting proposed that Pakistan and India encourage Oman's higher authorities to join CRV by sharing letters detailing successful implementation experiences. Additionally, a group similar to the CRV Task Force in the APAC region was suggested for the MID region to study the CRV network and its implementation. China informed that it is planning for an AMHS connection with Kuwait and requested contact information. ICAO Secretariat will share information about the focal point from Kuwait with China.

Outcomes of SIPG WS/1 - Sec (WP/04)

2.11 The CRV OG/13 Meeting reviewed the outcomes of the First Working Session of the SWIM Implementation Pioneer Ad-Hoc Group (SIPG WS/1) held from 14 to 17 January 2025 in the ICAO Asia Pacific Regional Office, Bangkok, Thailand. The session was attended by 51 Participants from 13 States/Administrations and 2 International Organizations. The Working Session report and presentations can be accessed at:

https://www/icao.int/APAC/Meetings/Pages/2025-SWIM-SIPG-Working-Session.aspx

2.12 The CRV OG/13 Meeting shared the concern of routing to be done by EMS in the proposed SWIM architecture. It was agreed that such architecture would not meet the purpose of SWIM implementation as routing will need to be done at the EMS/application level, which is not recommended.

2.13 For the three possible options to establish the APAC regional SWIM over CRV and the Internet, the Meeting deliberated the proposal mentioned in the SIPG WS/1 report from sections 3.12 to 3.13. The CRV OG/13 Meeting indicated that the third proposed option is not feasible, and it was noted that the two remaining options have flaws due to misunderstandings regarding how SWIM EMS will be connected over CRV and the Internet. It was agreed that there is a need for further discussion among CRV and SWIM experts to clarify the shortcomings of proposed options and make SWIM experts understand the integration of SWIM with CRV. This matter was further discussed and clarified in CRV OG Ad-hoc Experts and SWIM TF Task Leads Online Meeting on 13 March 2025.

2.14 During 13 March meeting, it was clarified that EMS for SWIM physically connectivity to the CRV is well understood by SWIM experts. In addition, it was clarified that SIPG is not doing IP-based routing but message routing, which is in layer 7.

Proposed SOP for Dispute Resolution on CRV Matters – Fiji (WP/07)

2.15 Fiji presented the Proposed Standard Operating Procedure (SOP) for Dispute Resolution on CRV Matters to be adopted in the CRV Operations Manual. The CRV OG/13 Meeting reviewed and modified the proposed SOP for dispute resolution on CRV matters, and the final SOP was

endorsed by the Meeting by the **Decision CRV OG/13/02**. It was informed that SOP has been incorporated in CRV OG Operations Manual v1.4, adopted by CRV OG/13 by Decision CRV OG/13/02.

Criteria to add a new service in the Operations Manual – New Zealand (WP/08)

2.16 New Zealand presented a procedure to connect **a non-ANSP system** to the CRV for data communication. The proposed procedure was summarized as follows:

a) Develop a security assessment of the new non-ANSP system.
b) Determine if alternative routing or diversity is required.
c) Determine the criteria for alternative routing and diversity (application versus network).
d) Coordinate with respective CRV members to ensure bandwidth sufficiency if alternative routing or diversity is required.
e) Sponsoring ANSP is required to establish a GRE tunnel with the new non-ANSP system.
f) Update GRE tunnels for the respective users if alternative routing is required.
g) Increase the sponsoring ANSP's access bandwidth, as required (peak and off-peak times): coordinate requirements from the new non-ANSP system.
h) Determine the new system IP address, either from the system owner or by using the private IPv4 addresses that have been assigned by ICAO for the region.
i) Provide the CRV vendor with each user's new system IP address subnet(s) to be advertised through the GRE tunnel.
j) Perform an operational acceptance test between sponsoring ANSP with the sponsored new data system, which should include, but not be limited to, a ping test, application (the new non-ANSP system) test, and bandwidth test, including other GRE tunnels if required.
k) The sponsoring ASNP is responsible for accepting the new service if it has performed satisfactorily for a minimum of 24 hours.
l) The CRV vendor should update the respective SEPs.
m) Inform ICAO, CRV OG, and respective ICAO groups of the new routing to be recorded in various documents (e.g., Telecommunication Infrastructure Routing, etc.)

2.17 The CRV OG/13 Meeting noted that CRV OG will allocate an IP address to the new non-ANSP from the dedicated address block for other service providers. The CRV OG/13 Meeting deliberated the proposed procedure and adopted it to incorporate it into the CRV OG Operations Manual. The procedure is incorporated in CRV OG Operations Manual v1.4, adopted by **Decision CRV OG/13/02**. The procedure for adding SWIM services over CRV could be defined once the APAC SWIM architecture is finalized and other necessary details for SWIM implementation are available. The ICAO Secretariat will share this information with SWIM experts.

CRV OG Operations Manual Status - New Zealand (WP/09)

2.18 New Zealand presented the status of the CRV OG Operations Manual. The Meeting noted that since the publication of the CRV OG Operations Manual in April 2022, there have been many updates, mostly from discussions within the various Ad Hoc groups. The Meeting was informed that the current DRAFT version of the Operations Manual is ready for publication with various modifications, which were presented at the Meeting. It was announced that the latest version of the CRV OG Operational Manual will be published on ICAO APAC e-docs under CNS, ICAO APAC CRV Secure portal, and on the CRV portal hosted by Airways New Zealand. The CRV OG/13 Meeting

reviewed the draft CRV OG Operations Manual and adopted the document by **Decision CRV OG/13/02** - Publish the updated APAC CRV Operations Manual.

Update to the CRV Implementation Plan - Singapore (WP/10)

2.19 Singapore presented the proposed updates, editorial changes, and formatting adjustments to the CRV Implementation Plan. The Meeting was informed that the CRV OG/12 Meeting tasked the CRV Ad-hoc Expert group to update the CRV Implementation Plan to refine the roles of the National and Local CRV Points of Contact (i.e., CRV User – State/Administration). The proposed updates to the CRV Implementation Plan, including editorial changes and formatting adjustments, were shared with the Meeting. The CRV OG/13 Meeting reviewed the proposed updates and agreed to adopt the document by **Decision CRV OG/13/03 – Update to the CRV Implementation Plan v2.3**.

Common Package Update - New Zealand (WP/11)

2.20 New Zealand presented an update to the Common Package document naming convention. It was reported that the current naming convention for the documents in the Common Package is mixed. The CRV OG/13 Meeting noted that, as discussed at the APAC CRV Ad Hoc Expert Meeting on 12 December 2024, it was proposed to standardize the document naming, with each document being prefixed with an Owner number followed by a Document number. The proposed Owner numbers were 1. ICAO, 2. CRV OG and 3. PCCWG. The CRV OG/13 Meeting reviewed the common package and agreed to adopt a revised common package. The revised common package can be accessed on the New Zealand-hosted CRV Portal.

Outcomes of Fifth Ad-Hoc Governance Meetings

2.21 The Fifth Meeting of the CRV OG Ad-hoc governance group was conducted on 5 March 2025. The Meeting further reviewed the list of tasks and problem statement. It was observed that based on a list of tasks provided, there is not much of a workload on CRV Users for operations and management of the CRV network. However, many tasks such as CRV documentation, contract-related documents, and further work required to improve future CRV performance are not being done at the State level but by the CRV OG Ad-hoc Expert Group. In addition, a regular Meeting with CRV service providers must be conducted by States as a standard practice to manage the operations of a network, which is being done by the CRV OG Co-Chair (Asia) on behalf of CRV OG Member States. Therefore, it was concluded that various tasks related to the regular operations of the CRV network could be done.

2.22 The CRV OG/13 Meeting discussed the New PENS and REDDIG II governance models, agreeing that REDDIG II better suits the APAC region. The ICAO Secretariat was requested to organize a Meeting with REDDIG network administration members to discuss and understand the current structure and governance model. The ICAO Secretariat will coordinate with the ICAO SAM Office to schedule an online Meeting in Q4 2025.

2.23 The CRV OG/13 Meeting realized the need to know the total amount APAC States/Administrations pay for CRV contracts. It was agreed that CRV users would share their monthly CRV contract price with the ICAO Secretariat. It was stated that the ICAO Secretariat will share the total price for the region in a future forum for discussion. No individual data shared by each State will be disclosed to other States/Administrations.

2.24 Another suggestion was to send a state letter from the ICAO APAC Office to Member States to provide subject matter experts to support CRV OG in the management of various tasks. It was decided to first gather more information about the future CRV governance model before taking further action.

New Zealand hosted CRV Portal Content Update - New Zealand (WP/12)

2.25 New Zealand shared information about the New Zealand hosted CRV Portal. It was informed that New Zealand hosted CRV Portal provides a common platform to compile all necessary information related to CRV, such as the Operations Manual, Transition Plan and Common Package for all CRV Users. Having this portal provides the flexibility of updating the various documents and providing access to these under the control of the CRV Operations Group. It was noted that the contents of the portal remain reasonably stable, with the main updates being to the Operations Manual, Common Package items, and the Implementation Progress updates from PCCWG. Recent additions to the portal were shared and described. It was added that future enhancements include the provision of a sitemap and a history and timeline of the CRV being developed.

Review and update the APAC CRV Implementation Table and Telecommunication Infrastructure Table - Sec (WP/13)

2.26 The latest updates presented on the planning and implementation status of CRV were as follows:

- **Under Operation**
  Australia, Bhutan, Cambodia, China, Hong Kong China, Fiji, French Polynesia, India, Indonesia, Japan, Macau China, Malaysia, Mongolia, Myanmar, Nepal, New Zealand, Pakistan, Philippines, PNG, Republic of Korea, Singapore, Sri Lanka, Thailand, USA and Vietnam

- **Under Provisioning**
  New Caledonia and Maldives

- **Hot Prospects in 2025**
  Bangladesh, Brunei, Cook Island, Lao PDR, Oman, Niue, Samoa and Tonga

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

2.27 Lao PDR informed ACSICG/12 Meeting that it is in contact with the CRV service provider to implement CRV. However, there is a delay in the internal procedure. It is expected that CRV implementation will be done in Lao PDR in 2026. ACSICG Co-Chair suggested informing CRV OG and ICAO Secretariat in case any issues are observed following the new SOP process adopted by CRV OG/13 by **Conclusion CRV OG/13/01**.

2.28 The CRV OG/13 Meeting reviewed the APAC CRV Implementation Table and agreed that after the Telecommunication Infrastructure Table, CRV Implementation Table updates are not required. The meeting updated the Telecommunication Infrastructure Table, which can be accessed on the New Zealand-hosted CRV Portal.

Review of CRV Information in TABLE CNS II-2 Required ATN Infrastructure Routing Plan In e-ANP Vol II - Sec (WP/14)

2.29 The ICAO Secretariat summarized the need for review and update to the **TABLE CNS II-2**- *REQUIRED ATN INFRASTRUCTURE ROUTING PLAN* specified in ICAO APAC e-ANP Vol II by APAC States/Administrations. It reminded States/Administrations to review the data affecting their

administration and provide feedback to ICAO on the data's accuracy in the requisite format to update the relevant CNS requirements in all volumes of e-ANP.

2.30 The CRV OG/13 Meeting was requested to deliberate on **three options** and choose the appropriate one: 1) the need to change the template of TABLE CNS II-2 of e-ANP Vol II as per the agreed revised ATN Infrastructure Table, 2) add a table to incorporate CRV under specific regional requirements or 3) utilize the existing template of TABLE CNS II-2 of e-ANP Vol II to incorporate CRV at the appropriate place. The pros and cons of all three options were explained at the Meeting. After discussion, the Meeting agreed on **option three** and suggested that **CRV information be added to column number 7**.

2.31 It was noted that the current CNS-related table in ICAO APAC e-ANP is outdated and has not been updated by States/Administrations for many years. The CRV OG/13 Meeting urged states to verify and update **the TABLE CNS II-2- REQUIRED ATN INFRASTRUCTURE ROUTING PLAN** of e-ANP Vol II following the PfA process, as data provided in e-ANP must be up-to-date. It was suggested that data updated in the Telecommunication Infrastructure Table on the New Zealand-hosted CRV Portal can be utilized to update the required information. The ICAO Secretariat informed that **all CNS tables in the Word file** mentioned in ICAO APAC e-ANP Vol II are uploaded to the ICAO APAC ANP Webpage with instructions on how to file a PfA.

2.32 With the abovementioned, the following draft conclusion was proposed, which was endorsed by the Meeting for CNS SG/29 adoption.

<table>
<tr><td colspan="3">Draft Conclusion ACSICG/12/01 (CRV OG/13/04) - Update the TABLE CNS II-2- REQUIRED ATN INFRASTRUCTURE ROUTING PLAN</td></tr>
<tr><td colspan="2">What: The current TABLE CNS II-2- REQUIRED ATN INFRASTRUCTURE ROUTING PLAN of ICAO APAC e-ANP Vol II is outdated and requires immediate updates.</td><td>Expected impact:
☐ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: to update e-ANP Vol II</td><td colspan="2">Follow-up: ☒Required from States</td></tr>
<tr><td>When: 28 March 2025</td><td colspan="2">Status: Draft to be adopted by Sub-group</td></tr>
<tr><td colspan="3">Who: ☒Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☒Other: ACSICG/CRV OG</td></tr>
</table>

Update of CRV National and Local Focal Points - Sec (WP/28)

2.33 The CRV OG/13 Meeting requested that States/Administrations update National and local PoC information in case of any changes. The updated list of national and local points of contact will be uploaded to the ICAO APAC CRV Secure portal under the CRV OG/13 folder.

CRV contract management

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

CRV Additions in AMC – Sec (WP/20)

2.35 This paper presented information about ongoing work on the addition of CRV Implementation status in AMC by Eurocontrol. During the Joint Meeting of CRV OG Experts and SWIM TF TLs on 12 November 2024, it was noted that the COM chart from the AMC portal shows interconnections between various ANSPs in the APAC region but does not specify the type of network used. CRV and SWIM experts recommended that the ICAO Secretariat coordinate with AMC to explore adding CRV network information to the AMC portal. In response, the ICAO Secretariat communicated this request to Eurocontrol, which agreed to update the AMC application to incorporate pan-regional networks for each ICAO region, instructing states to populate the "Supplier" field with "CRV" in the Network Inventory/Connections section. Eurocontrol aims to align with the PENS approach by March 2025 and will notify ICAO upon completion, with progress updates to be shared at future CRV OG and ACSICG Meetings. Further updates on this topic were presented in the ACSICG/12 Meeting by WP/06.

Future Bandwidth Requirements Based on Outcomes of Joint Event - Hong Kong China (WP/22)

2.36 Hong Kong China presented a study on the bandwidth used for the ADS-B data transmitted over the SWIM/CRV environment and analyzed outcomes. The Meeting noted that during various CRV OG Meetings, there was a recognized need to review and analyze the bandwidth usage of CRV in each State/Administration. Such analysis was crucial to the proactive planning of upgrades and accommodating future applications, ensuring that necessary actions will be taken in a timely manner. Hong Kong China added that since bandwidth in CRV is considered a crucial resource, especially for States/Administrations with higher bandwidth demand due to a higher number of applications and States that are geographically remote and understandably have higher bandwidth costs. This study offered insights into the bandwidth requirements of surveillance data on SWIM so that CRV experts could consider incorporating them into the tendering process for improved support of new applications.

2.37 Hong Kong China explained the system setup used for Joint events and various scenarios considered, along with records of analysis results based on the size of an AMQP message received from different EMSes. It was concluded that in Hong Kong China's operational environment, during peak hours, the Hong Kong ADS-B system detects approximately 300 targets within Hong Kong FIR and partial Mainland China FIR. Assuming that ADS-B data associated with Flight Plan information for all these 300 targets are sent in 1 second in the SWIM environment with each target of size of 1.2K bytes (refer to ROK track), a total of 360K bytes per second is necessary (i.e., 2.88Mbps). As Hong Kong is one of the busiest FIRs in the region, this figure should offer additional insights into the bandwidth demand, which may be capped at this level in the worst scenario. The Meeting was requested to encourage States/Administrations using SWIM/CRV to share their experience in conducting similar monitoring and analysis. It was concluded that the bandwidth requirement highly depends on different use cases. Several aspects, particularly the frequency of data sent, should be considered by different States/Administrations when calculating the bandwidth requirements.

2.38 The CRV OG/13 Meeting appreciated the study done by Hong Kong China and agreed that it is beneficial to the Meeting and that the formula used to calculate bandwidth would be helpful for CRV Users to evaluate the bandwidth requirements for ADS-B data. Hong Kong China would work on deriving a formula based on analysis to compute the bandwidth required for surveillance data sharing and suggest it to the CRV OG Ad-hoc Expert Group to incorporate it into the CRV OG Operations Manual.

Package D+ For PSIDS/Small ANSPS – Fiji (WP/23)

2.39 Fiji proposed CRV SLA Package D+ for PSIDS and small ANSPs in the APAC region for implementation for CRV. Fiji informed that CRV Package D+ was formalized and incorporated in the CRV Operations manual. CRV Package D+ was presented to the Meeting as the preferred CRV

Package for the PSIDS and small ANSP Member States in the APAC region through the following Draft Conclusion.

2.40 The ACSICG/12 Meeting was informed that the proposed draft conclusion would supersede Conclusion APANPIRG/32/07- Implementation of CRV for small Pacific Island and small ANSP in the region using CRV Solution, PCCWG SLA Package D if adopted by APANPIRG/36 in 2025. The ACSICG/12 Meeting endorsed the proposed draft conclusion for APANPIRG/36 adoption through CNS SG/29.

<table>
<tr><td colspan="3">Draft Conclusion ACSICG/12/02 (CRV OG/13/06) - Implementation of CRV for small Pacific Island and small ANSP in the region using CRV Solution, PCCWG SLA Package D+.</td></tr>
<tr><td colspan="2">What: That, the CRV OG agreed to the following to assist small Pacific Islands & small ANSPs in APAC in the implementation of CRV:
a) CRV SLA Package D+ is reliable and addresses lead time for acquiring spares and PCCWG to import licenses and clearance for customer sites
b) Small Pacific Island and small ANSP in the region to consider using CRV SLA package D+ as the CRV solution to implement CRV for the exchange of voice & AMHS services
c) With a target date to implement CRV by 2025, it was recommended that the CRV OG work closely with the small Pacific Islands, small ANSP in the region and PCCWG on a cost-effective CRV solution to implement CRV.</td><td>Expected impact:
☐ Political / Global
☐ Inter-regional
☒ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td colspan="2">Why: To facilitate the implementation of CRV for the small Pacific Island & small ANSP in the region</td><td>Follow-up: ☒Required from States</td></tr>
<tr><td>When: 28-Mar-25</td><td colspan="2">Status: Draft to be adopted by PIRG</td></tr>
<tr><td colspan="3">Who: ☒Sub groups ☒APAC States ☐ICAO APAC RO ☐ICAO HQ ☐Other: XXXX</td></tr>
</table>

CRV Operational performance report- PCCWG (SP/01)

2.41 PCCW Global presented the CRV Operational Performance Report, which analyzed the reliability and overall performance of the CRV network in 2024. It was informed that the CRV network consists of 68 circuits across 38 locations, supported by various service packages. Two service providers currently support the network, and four new circuits are under implementation, targeting New Caledonia, the Maldives, and two locations in Hong Kong, with completion expected in 2025. Additionally, eight new member states are expected to join the CRV network in 2025. CRV OG/13 Meeting noted the service inventory and site availability details, which highlighted high service reliability across various administrations. It also took note of ongoing contract negotiations with prospective member states. The CRV OG/13 Meeting discussed various incidents that resulted in unserviceability in various APAC States/Administrations and their impact on the operational environment. The CRV OG/13 Meeting suggested that PCCW Global provide an analysis of various incidents in all APAC States/Administrations that have severely impacted SLA.

Analysis of APAC CRV Bandwidth Utilization – PCCWG (SP/02)

2.42 The paper presented the bandwidth utilization of each member State in 2024, providing a comprehensive understanding of how network bandwidth is utilized within the organization. PCCWG informed that the reporting tool captured and recorded the average traffic value from the NID interface

at 5-minute intervals and averaged the collected data to generate the monthly traffic report. The 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.

CRV Post Implementation issues in Sri Lanka (WP/31)

2.43 Sri Lanka informed that the CRV circuit for Sri Lanka was interrupted by two major service failures. The CRV OG/13 Meeting deliberated on the root cause of the two incidents and the issues Sri Lanka faced in resolving them. It was advised that PCCW Global should notify their support desk staff to respond to filed tickets promptly and clearly make them understand the responsibilities for managing the serviceability of Package D, where PCCW Global and ISP of States are responsible for maintaining operational performance required for the CRV network. PCCW Global informed that they have initiated an educational process for their customer support staff to enhance service and improve communication.

2.44 It was advised that the maintenance window should be agreed upon between PCCW Global and the State to avoid peak traffic periods. The CRV OG Operations Manual outlines the maintenance notification process, which should be referenced. Regarding the proposal to establish a maintenance window at the sub-regional level in the APAC region, it was agreed that further discussions are necessary, and this topic will be included in the CRV OG Ad-hoc Expert Group discussions.

Proposed CRV Connections to the Cloud – Singapore (SP/03)

2.45 Singapore highlighted that a cloud platform offers scalability, cost efficiency, performance optimization, and reliability for handling workloads. Singapore will implement some of its next-generation systems on a cloud platform. However, scaling its on-premises infrastructure to match the cloud's scalability is challenging, and currently, there was no connectivity between cloud providers and the CRV.

2.46 It was proposed that the CRV service provider establish interconnectivity between Government Commercial Cloud and Commercial Cloud platforms with the CRV. The CRV OG/13 Meeting agreed that there are some complexities in the implementation of the cloud within the CRV network and integration of it with another cloud network. PCCW Global stated that it is technically feasible, but security concerns must be addressed while implementing it in current or future CRV networks. It was agreed that there is a need to understand various options for this implementation and recommend a path with the support of cloud service providers such as Microsoft, AWS, Azure, etc. It was agreed that New Zealand will facilitate this discussion with the cloud service provider to progress on this matter.

Space-based ADS-B on CRV – Aireon (SP/04)

2.47 The CRV OG/13 Meeting noted that ground-based ADS-B and space-based ADS-B are equally vulnerable to GNSS RFI and spoofing. However, space-based ADS-B services provided by Aireon have the capability to detect unauthenticated GNSS signals.

2.48 The CRV OG/13 Meeting requested documentation on the process to follow if they want to utilize CRV for space-based ADS-B data transmission. Aireon suggested that the Philippines initially draft the document based on their recent experience of contracting space-based ADS-B services over CRV. Aireon will provide further addition to the process, adding coordination required between Aireon and the CRV service provider. The Philippines will draft the procedure and present it at the next CRV OG Ad-hoc Expert Group Meeting, which is planned for **12 June 2025**.

Com Chart update based on the Asia-Pac ATN Infrastructure Routing Plan- New Zealand (WP/33)

2.49 New Zealand informed that during the 12 November 2024 APAC CRV Ad-Hoc Experts and SWIM Taskforce Team Leaders Meeting, the SWIM Taskforce leads raised the concept of updating the COM Chart to show the use of CRV to deliver the relevant services to aid their understanding of the connectivity. It was informed that using the AMC, CNS II-2 required ATN infrastructure routing plan, the COM Chart was updated to show the CRV connections in two formats: a) Retaining the current COM Chart layout and replacing the link speed with CRV and b) Retaining the COM Chart layout and adding all of the sites and GRE tunnels. It was informed that using the COM chart in this way allows the visual representation of the connectivity based on the AMC CNS II-2 required ATN infrastructure routing plan and the Implementation Updates provided by PCCWG.

2.50 The CRV OG/13 Meeting appreciated the task completed by New Zealand. It was added that after CRV display integration into AMC, it will be easier for States to download the latest and updated chart from the AMC portal.

Japan's support for PSIDS and international collaboration – Japan (WP/30)

2.51 Japan presented its efforts to enhance ATS network capacity and build sustainable capacity in the Pacific Small Island Developing States (PSIDS). Additionally, Japan invited operational and technical personnel designated by the PSIDS to participate in training programs in Japan (with costs covered by Japan) in December 2024.

2.52 Japan proposed to host a PSIDS capacity-building workshop along with Special Session- CRV OG/14 on 27 October 2025 week. They informed that they will cover the cost of PSIDS to attend the workshop along with Special Session- CRV OG/14. The Meeting appreciated the offer of Japan and shared their support to the workshop.

Outcomes of the ICAO Workshop for the preparation of new CRV requirements and specifications for future System Wide Information Management (SWIM)/other aviation services – New Zealand (WP/24)

2.53 New Zealand presented a summary of the *Outcomes of the ICAO Workshop for the preparation of new CRV requirements and specifications for future System Wide Information Management (SWIM)/other aviation services*. This detailed information can be found in the Report of the Meeting.

Retention of Pseudo CRV for SIPG- New Zealand (WP/32)

2.54 New Zealand informed that PCCWG built a "Pseudo CRV" (using Package D connections with 2MBps bandwidth) to support the SWIM TF, SIPG, and S3TIG with SWIM trials and demonstrations. The SWIM TF found it useful, and its use was extended twice until 30 March 2024.

2.55 During the 12 November 2024 APAC CRV Ad-Hoc Experts and SWIM Taskforce Team Leaders Meeting, the SWIM TF Task leads requested the possibility of retaining the Pseudo CRV for continued testing, which requires agreement from either all or some of the currently connected states of Thailand, Singapore, China, Malaysia, India, Republic of Korea, Japan and Hong Kong China, or any states wishing to contribute to this connectivity. PCCWG was asked by CRV OG for indicative pricing, and PCCWG provided two further options for the current pricing of Package D.

a) USD500/month per connection with no SLA.
b) USD900/month with a limited SLA

2.56 Both options were deliberated in the CRV OG/13 Meeting. Some states found the costs high for infrequent testing. Alternatives were considered to support ongoing testing for SWIM TF and SIPG, with SIPG WS/1 noting that using operational CRV residual bandwidth was not feasible for many states and that moving to the internet would require significant effort. The best way to move forward was to find a way to keep Pseudo CRV till needed. One proposal suggested that states purchase Pseudo CRV equipment and request PCCW Global to utilize it as needed, with payments arranged accordingly. PCCW Global supported this initiative, highlighting the ease of contracting without an SLA, but requested clarification on what period the setup would be required by SIPG/SWIM TF. Additionally, PCCW Global expressed willingness to negotiate the proposed prices with each State/administration needing the Pseudo CRV and offered support to new members wishing to join the network. It was agreed that CRV OG will discuss the expected timelines for the setup and future plans with SWIM TF. PCCW Global shared their willingness to extend Pseudo CRV till June 2025 to facilitate CRV OG to conduct discussions with SWIM TF.

2.57 The CRV OG Co-Chair (Asia) informed that currently, there is no procedure in the CRV OG Operations Manual for utilizing CRV residual bandwidth for testing. It was agreed that the procedure would be incorporated into the CRV OG Operations Manual after discussion in the CRV OG Ad-hoc Expert Group. Japan shared a request with PCCW Global to prepare a document explaining the configuration of Pseudo CRV to make States understand this network along with the procedure to request connection to this network. It was agreed that this document would be beneficial for States. PCCW Global will draft the document and share it in the next CRV OG Ad-hoc Group Meeting on 12 June 2025.

2.58 The CRV OG/13 Meeting noted that Hong Kong China uses residual bandwidth to conduct testing on CRV.

Use of L2 VPN channels to support interaction between AMHS centers of the Russian Federation and APAC Region – Russia (WP/21)

2.59 The CRV OG/13 Meeting noted that the most challenging situation involved the transition to AMHS between the Moscow and Fukuoka communication centers. Japan informed that it is continuing to commit to the implementation of AMHS with Russia.

2.60 Japan shared progress on this matter during the CRV OG/13 Meeting. As requested by the CRV OG/13 Meeting, Japan presented WP/18 and Russia presented WP/20 at the ACSICG/12 Meeting to request to resolve the issues on priority.

2.61 The CRV OG/13 Meeting was informed that ICAO CDI will support the implementation of RAS14801 Rev B. The Meeting noted that ICAO CDI shared that the document has been approved and signed, and ICAO CDI considers that the implementation is ongoing under APAC management. ICAO CDI will support any request for the recruitment and deployment of experts (budget of 46,000 USD) and the purchase of equipment and/or services (budget of 30,000 USD). ICAO's overhead will be applied accordingly, as agreed in the approved budget (BL 53.001). In addition, if the project wants to implement the budget in one year, there will be no problem.

Cyber-safety/security and resilience – Review of the CANSO Cyber Security Guide – New Zealand (WP/26)

2.62 New Zealand informed that during the 12 December 2024 Ad Hoc Experts Group Meeting, it was suggested that the CANSO Standard of Excellence in Cyber Security could be a good document for the CRV OG to review and potentially adopt. It informed that the CANSO Standard of Excellence in Cyber Security is a document freely available from the CANSO website. It was added that the Standard of Excellence (SoE) contained the cybersecurity maturity model to enable an Air

Navigation Service Provider (ANSP) to assess its own as well as their suppliers' cybersecurity maturity. It was informed that the maturity model comprised thirteen elements based on six functions that would be expected in an organization with an effective approach to cybersecurity. Each element was described in detail in the maturity model, with five different levels of maturity ranging from having informal arrangements in place to an optimized approach. The assessment against each element was conducted using a scoring form containing probing questions, which enables an organization and its supply chain to identify their current level of maturity.

2.63 Some document references and an example output were described in detailed. The idea was to first agree a maturity level that is acceptable and then to carry out the maturity assessment. Once the assessment has been carried out, a plan is created to improve any score that is below the agreed acceptable level. Using CANSO Standard of Excellence in Cyber Security to assess the CRV, the result was as follows:

	CRV OG CANSO SoE Maturity Assessment	Target Score	Assessed Score
	Element		
LEAD AND GOVERN	Leadership and Governance	C	A
	Information Security Management System (ISMS)	C	A
IDENTIFY	Risk Assessment	C	A
	Information sharing	C	A
	Supply Chain Risk Management	C	A
PROTECT	Identity Management and Access Control	C	B
	Human Centred Security	C	A
	Protective Technology	C	B
DETECT	Anomalies and Events	C	B
RESPOND	Response Planning	C	B
	Mitigation	C	A
RECOVER	Recovery Planning	C	A

2.64 With the aforementioned, the following draft conclusion was proposed for Meeting adoption, which was endorsed by the Meeting for CNS SG/29 adoption:

Draft Conclusion ACSICG/12/03 (*CRV OG/13/07)*- Adopt the CANSO Standard of Excellence in Cyber Security	
What: The CRV OG recommends the CANSO Standard of Excellence in Cyber Security and: a) Prefers an acceptable maturity level of Target Score 'C'. b) Carries out the maturity assessment on the CRV.	Expected impact: ☐ Political / Global ☐ Inter-regional

c) Request that PCCWG also carry out the maturity assessment. d) Request each state to carry out the maturity assessment. e) Create a plan to address the gaps in the maturity score for the CRV.	☐ Economic ☐ Environmental ☒ Ops/Technical
Why: To have a standard Cyber Security maturity applied to the CRV.	Follow-up: ☒Required from States
When: 28-Mar-25	Status: Draft to be adopted by Subgroup
Who: ☒Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: XXXX	

2.65 The CRV OG/13 Meeting noted that many States/Administrations have their own cybersecurity framework and standards to follow. However, it was agreed that the proposed maturity assessment on the CRV is not time-consuming and challenging, and it is recommended that all CRV users do it.

2.66 The ACSICG/12 Meeting discussed concerns about further actions for States/Administrations where the maturity assessment on the CRV is below Target Score 'C.' It is recommended that CRV OG create guidelines for the next steps in these cases, including associated timelines to achieve Target Score 'C.'.

Doc 10169: ACCP Development Update and SWIM TF's need for PKI- (WP/27) Singapore

2.67 The paper presented the development of the ICAO Document 10169: Aviation Common Certificate Policy (ACCP) and the need for a Trust Framework Instance (TFI) for the Asia and Pacific SWIM Implementation. During the First Working Session of the SWIM Implementation Pioneer Ad-hoc Group (SIPG WS/1), the need for a TFI was emphasized, noting that PKI is essential for various use cases beyond SWIM, including CPDLC and SBAS. The CRV OG, responsible for the APAC regional common network, should be kept informed about the ACCP and TFI developments. However, the CRV OG expressed that it cannot support the implementation of provisions from several key documents related to PKI and cybersecurity due to its existing responsibilities.

2.68 The CRV OG recommended establishing additional contributory bodies to assist APAC States with these provisions and further discussion on this at the ACSICG/12 Meeting. New Zealand agreed to prepare a working paper advocating for dedicated contributory bodies to implement cybersecurity provisions for consideration at CNS SG/29, scheduled for June 16-20, 2025.

CRV Security Evolutions in AMHS- (WP/35)- France

2.69 France provided a recap of the DSNA security context within the CRV framework and shared information about the standardization progress regarding AMHS security through the recent publication of ICAO Doc 9880 Edition 3, Part II (end of 2024). Additionally, France highlighted the work done at various levels (ICAO, Eurocontrol, and Europe) to establish a PKI dedicated to ANSPs.

2.70 The CRV OG/13 Meeting was informed that "AMHS Security" in Doc 9880 Part II refers to X.400 security functionalities implemented in the application layer. Three major security upgrades are introduced in Doc 9880 Edition 3: Introduction of strong authentication from UA to MTA and MTA to MTA (use a cryptographic "Bind-token" instead of the current password in clear); Message origin authentication and content integrity for messages generated by AFTN/AMHS Gateways (MTCU: Message Transfer and Control Unit), so as to cover 99% of the AMHS traffic; and Update of cryptographic algorithms: Doc 9880 Edition 2 cryptographic settings were 20+ years old, they are replaced with state-of-the-art cryptographic algorithms.

2.71 It was concluded that X.400-based AMHS Security requires the provisioning of trustworthy public key certificates delivered by a commonly trusted PKI, and it will considerably enhance Cybersecurity in the AMHS environment when implemented. It was reiterated that cybersecurity in the AMHS environment is not only "AMHS Security" but also a PKI deployment, which is a prerequisite to deploying AMHS security to meet the ICAO standards.

2.72 France recommended that the implementation of security at the application level or at least with end-to-end network encryption mechanism aside from the ICAO Regional IP network should be given the level of priority corresponding to the level of threat against organization integrity and air traffic control safety. Security might have a substantial impact on safety. It was added that the standardization is available in the ICAO Doc 9880 to provide a high level of security for AMHS, and a PKI deployment is a prerequisite to deploying AMHS security to meet the ICAO standards. The CRV OG/13 Meeting appreciated France for such vital information, and as requested, this information was shared with the ACSICG/12 Meeting.

Review of the CANSO Cyber Security Risk Assessment Guide- New Zealand (WP/37)

2.73 The CRV OG/13 Meeting noted that the CANSO cyber security risk assessment guide is freely available on the CANSO website.

2.74 It was informed that whilst the cyber security risk assessment guide focused on cybersecurity risk, the concepts in this document could be used to provide a risk assessment framework for the CRV. The CRV OG/13 Meeting noted that the guide guides risk assessment scope, risk assessment, risk mitigation and monitoring, risk acceptance, and risk communication and consultation. In addition, the risk assessment matrix focuses on whether the risk is Unacceptable, Tolerable or acceptable. It was added that whilst the ICAO Doc 9859 - Safety Management Manual (SMM) covers the same concepts, it is possible to use the CANSO framework to create a CRV Risk assessment and associated process and procedure at an acceptable level for the CRV.

PCCWG Re-organization – Sec (IP/02)

2.75 The CRV OG/13 Meeting noted that PCCW Global informed the ICAO APAC Office about an internal reorganization effective 1 April, 2024, involving the novation and transfer of services agreements to PCCW Global Limited and HKT Global Operation (HK) Limited. This information was communicated to APAC States through ICAO APAC State Letter Ref.: T 8/2.15 – AP141/24 (CNS) dated 3 December, 2024.

2.76 Some States shared their concerns about the current approach of information sharing by PCCW Global about the PCCW Global reorganization to the States only a few weeks before the next billing cycle, resulting in several legal issues within the States. The CRV OG/13 Meeting agreed that such changes must be discussed bilaterally rather than directly informing the states to avoid problems in the contract. PCCW Global shared that they will enhance communication with States and do advance coordination for any organizational changes that affect States in the future.

Date and Venue for the Next Meeting

2.77 The CRV OG/13 Meeting agreed on the need to organize the **Special Session- CRV OG/14** as an In-Person Meeting for **5 days** to progress to the next stage of the CRV contract management process from **27-31 October 2025**.

2.78 Japan offered to host the **Special Session- CRV OG/14** in Tokyo, Japan, along with the PSIDS capacity-building workshop planned from 23-24 October 2025. It was noted that Japan will

organize and manage the PSIDS capacity-building workshop. Japan added that it would also support the cost for one member from each PSIDS to attend the workshop and *Special Session- CRV OG/14* in Tokyo, Japan.

Election of Co-Chair of ACSICG

2.79 Proposed by Thailand and seconded by Fiji, Nepal, Malaysia, New Zealand, and Sri Lanka, Mr. Augustine Lau, Head (Communications Systems), Civil Aviation Authority of Singapore, was unanimously elected as a Co-Chair of the Aeronautical Communication Service Implementation Group of APANPIRG.

2.80 Mr. Augustine Lau thanked all Member State representatives who had nominated or supported his nomination as a Co-Chair of ACSICG. He also extended his gratitude to Mr. Chonlawit Banphawatthanarak for his contributions to ACSICG during his term. He shared that Mr. Chonlawit Banphawatthanarak's efforts advanced communication services in the Asia and Pacific region and laid the foundation for future modernization of communications services.

CNS Deficiency

2.81 In response to the latest status of an outstanding issue on the list of Air Navigation Deficiencies in the CNS field, which was related to the unreliability of AFS communication between Afghanistan and Pakistan, Pakistan informed that the link with Afghanistan has already been established. The AMHS system installation is in progress at Afghanistan's end. It was also added that Afghanistan had not given any tentative timelines for the completion of the AMHS installation in Afghanistan. The Meeting requested that Pakistan follow up with Afghanistan in a timely manner and inform the ICAO APAC Office about the progress made.

2.82 A question was raised about the inclusion of interregional interconnection requirements in the new regional IP network contract management process in various ICAO regions; the ICAO Secretariat informed that the CRV II contract management process formulated interregional interconnection criteria as a requirement in its technical specifications, and the same had been done in the REDDIG III procurement process. For other regions' IP networks, this information is not available. ICAO Secretariat will coordinate with other regions and share the recommendations of ACSICG/12 to incorporate interregional interconnection criteria as a requirement in their regional IP network technical specifications and request information if this criterion has already been incorporated in their new network contract management process. **ACTION ITEM 12-1**

Review of outcomes of the CRV Workshop for PSIDS- Sec (WP/04)

2.83 The paper presented the key outcomes of the ICAO APAC CRV Workshop for Pacific Small Island Developing States (PSIDS), which was held from 3-4 March 2025 in Wellington, New Zealand. CRV OG/13 Meeting report, working papers, information papers, and other resources can be accessed by the following link. The report and other documents of the Workshop can be accessed at the ICAO APAC Meeting webpage at:

http://www.icao.int/APAC/Meetings/Pages/2025-CRV-Workshop-and-CRV-OG-13.aspx

2.84 The ACSICG/12 Meeting discussed the importance of the proposed white paper. However, it was agreed that CRV benefits had been explained by the ICAO Secretariat, PSIDS partner States and many other States in various forums such as CRV OG, ACSICG, CNS SG, and APANPIRG. In addition, DGCA Conferences have also recognized the importance of CRV and agreed to implement CRV by formulating various action items in past conferences. In addition, until now, ICAO has not considered not implementing CRV a deficiency. Therefore, the existing mechanism is sufficient to promote the benefits of CRV in the APAC region, and there is no need for a separate white paper.

Other key discussions of the Workshop:

2.85 CRV OG Co-Chair Asia informed that as per the current plan shared by the USA in past Meetings, Micronesia, Palau, and the Marshall Islands will not join CRV.

2.86 USA informed that FAA, USA supported enhanced telecommunications services at uncontrolled airports in the Pacific Islands under the US Government's Compact of Free Association agreements with the Federated States of Micronesia, the Republic of Marshall Islands, and the Republic of Palau. The USA informed about the current infrastructure at these airports and the new requirements. The Meeting noted that the planned enhancement included implementing satellite-based internet terminals, which will provide more bandwidth to support RMMC and MET/AFTN terminals and COTS VoIP to provide a dedicated voice channel. It was anticipated that enhancement benefits would include higher bandwidth, reduced operational costs, offering dedicated voice channels, and ensuring improved reliability of telecommunications systems. Lastly, it was informed that the USA intends to provide ongoing life cycle maintenance support to sustain these improvements. USA explained the high cost associated with CRV and other networks and the rationale for choosing high bandwidth internet over them. It was clarified that in the future, the USA may consider choosing CRV as the preferred method for communication over the Internet.

2.87 The Meeting recommended that PSIDS consider Package D+ as their preferred CRV package to meet reliability requirements.

2.88 The Meeting updated the plan and tentative timelines for each PSIDS to join CRV.

2.89 Timelines- States' action:

State Name	Letter of Agreement with Peers	High-level Questionnaire	Service Order	System Engineering Plan (SEP) – shared Doc with PCCWG
Cook Islands	Done	Done	Ongoing /first week of April	End of May
French Polynesia	Done	Done	Done	Done
Kiribati	Q2 2025	Q2 2025	Q3 2025	Q3 2025
Samoa	Done	Done	Ongoing /first week of April	End of May

Solomon Islands	In Progress	Before 10 March 2025	May-June	July-August
Tonga	Done	Done	Ongoing /first week of April	End of May
Vanuatu	Q2 2025	Q2 2025	Q3 2025	Q3 2025
Nauru	Q2 2025	Q2 2025	Q3 2025	Q3 2025
Niue	Done	Done	Ongoing	End of May

2.90 Timelines- PCCWG action

State Name	**Service Provider documents received by States (Ops Manual)**	**Installation and testing by PCCWG**	**Three days to carry out tests with peers before migrating services**
Cook Islands	Mid-April (done in parallel with SEP)	August (order to installation of a router)	August
French Polynesia	Done	Done	Done
Kiribati	Q4 2025	Q4 2025	Q4 2025
Samoa	Mid-April (done in parallel with SEP)	August	August
Solomon Islands	Q4 2024	Q4 2024	Q4 2024
Tonga	Mid-April (done in parallel with SEP)	August	August
Vanuatu	Q4 2025	Q4 2025	Q4 2025

Nauru	Q4 2025	Q4 2025	Q4 2025
Niue	Mid-April (done in parallel with SEP)	August (order to installation of a router)	August

2.91 It was recalled that PCCWG promotional offers for PSIDS were based on a number of countries. There was an option for special prices for more than seven and more than 10 States.

Bandwidth: 2M		Package D		Package D+	
Tiers and required countries:		NRC (USD)	MRC(USD)	NRC (USD)	MRC(USD)
>10 countries	Tier 3	1000	1500	1000	2000
>7 countries	Tier 2	1000	1800	1000	2400
>3 countries	Tier 1	1000	2000	1000	2600
Cisco 1000 series will be provided as the NID The above packages are for data only					

Figure 1- Promotional Price shared in CRV OG/12 Meeting

2.92 Based on current updates, there is a plan for eight States to join CRV. Therefore, the Meeting requested that PCCWG consider providing another offer for eight states. PCCWG agreed to provide an offer within CRV OG/13 weeks.

2.93 The Meeting noted that once eight PSIDS submitted high-level questionnaires, it can be considered a stage where the tier offer shared in the promotional plan is applicable. Therefore, further processes for installation can be initiated for sites that have already signed the service order and completed other prerequisites to join the CRV network.

2.94 Several bilateral and trilateral discussions were organized among PSIDS in the process of implementing CRV, their partner States, and PCCWG to progress on the next stage of CRV implementation.

Updates on regional IP network addition in AMC – Sec (WP/06)

2.95 This paper presented information about the ongoing work on adding the CRV Implementation status in AMC by Eurocontrol. The Meeting was informed that concerning the data entry, the Supplier field in the Network Inventory/Connections has to be populated with “CRV” by all applicable states. However, no action has been requested from the ICAO APAC States as of today. It

was also informed that **backup sites are not added to the Com Charts**, and in case of **updating bandwidth**, if this needs to be done for an AMHS connection, it should be **amended in the Background Network Inventory area** for the respective Com Centre, under the connections tab. The Meeting was invited to review and update the information to AMC via AEROTHAI, if necessary, including points of contact.

AMHS Gateway Issue on Unrecognized MTS ID – Philippines (IP/03)

2.96 This paper addressed issues related to the Flight Planning and Briefing Service system's handling of unfamiliar MTS ID, which resulted in system gateway isolation. A specific case in June 2024 highlighted how the unrecognized MTS ID led to the P1 gateway closing, isolating the system. Corrective actions were implemented through coordination with the originator and ensuring proper message routing via the AMHS system. The document presented the event, resolution, and the need for continued coordination to prevent future occurrences. The ACSICG/12 Meeting queried about various technical details related to this issue and appreciated the Philippines sharing its experience.

Outcomes of ICAO APAC AMC Workshop – Sec (WP/03) and SOP for updating AMC AFTN/AMHS Routing Table in Asia/Pacific Region- Thailand (WP/19)

2.97 A half-day AMC Workshop was held on 25 March 2025 to help AMC users refresh their knowledge of the standard procedures for using the AMC tool. The AMC tool, managed by Eurocontrol, provides support for AMHS operations, address management, and user capabilities management. The workshop was moderated and chaired by Aerothai, Thailand.

2.98 The workshop started with sharing information about AMC, its significance and functionalities in the APAC Region, followed by the Standard procedure for using the AMC tool to ensure the overall quality of service for ATS Messaging. Aerothai demonstrated how to use the AMC tool. Furthermore, the Meeting drafted, reviewed, and finalized the Standard Operating Procedure (SOP) for using the AMC tool for APAC States/Administrations to manage and ensure proper coordination between COM centers, which is essential for maintaining the overall quality of service for ATS Messaging. It was agreed that the SOP will be presented to ACSICG/12 for further review and adoption.

2.99 The workshop noted that ICAO regularly publishes the AFTN-AMHS Routing Directory for the Asia and Pacific Regions, which is more current than the AFTN/AHMS Routing Directory on the AMC portal, but the format is different from the AFTN/AHMS Routing Directory, which can be downloaded from the AMC portal. It was also added that the format of both tables is different. ICAO Secretariat informed that due to the obsolescence of the tool used to generate the AFTN-AMHS Routing Directory for the Asia and Pacific Regions, publishing the directory is becoming increasingly difficult for the ICAO Secretariat. The workshop agreed that States/Administrations should update their routing directory on the AMC portal, and there is no need to publish another formatted AFTN-AMHS Routing Directory by ICAO. Therefore, the ICAO Secretariat will promote checking and updating information in the AFTN-AMHS Routing Directory on the AMC portal and discontinue publishing other formats of the AFTN-AMHS Routing Directory. **ACTION ITEM 12-4**

2.100 It was recommended that States/Administrations download the AFTN/AMHS Routing Directory after each AIRAC cycle and verify the consistency of the data. If any discrepancies are discovered, they should be reported to the Aerothai focal point and the ICAO Secretariat.

2.101 It was recommended that any proposed modifications to the AFTN/AMHS Routing directory should be preceded by thorough coordination with all concerned States/Administrations by the proposer. If any assistance is needed, States/Administrations are advised to seek support from the

ICAO APAC Office. The ACSICG/12 Meeting reviewed and modified the proposed SOP. The Meeting endorsed the following draft decision for CNS SG/29 adoption:

Draft Decision ACSICG/12/04 - Adoption of SOP to update the AMC AFTN/AMHS Routing Table in the Asia/Pacific Region	
What: The proposed Standard Operating Procedures (SOP) for all ICAO Asia/Pacific (APAC) members who operate as CCC Operators (Coordination COM Centres) or External COM Centre Operators to update the AMC AFTN/AMHS Routing Table in the Asia/Pacific Region be adopted.	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: Enhance coordination between COM centers and ensure quality service for ATS Messaging.	Follow-up: ☒Required from States
When: 28-Mar-25	Status: Draft to be adopted by Subgroup
Who: ☒Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☒Other: ACSICG	

AMHS Implementation Status in the APAC Region – Sec (WP/07)

2.102 The paper requested the Meeting to review and update the AMHS implementation status. The implementation status of ATN/AMHS in the APAC Region was updated by the ACSICG/12 Meeting. Russia provided additional updates to be included in the table for China, Mongolia and Japan, to which Russia is connected. Since APAC States/Administrations are responsible for providing the updates, the ICAO Secretariat will coordinate with China, Mongolia, and Japan to update other interregional connections in the table. **ACTION ITEM 12-5** Other States/Administrations were encouraged to review the table further and update all interconnection information.

Repository of AIDC Implementation Status in APAC- Sec (WP/08)

2.103 The paper presented the latest repository of AIDC Implementation Status in the APAC region, the preliminary analysis of the current status, and invites States/Administrations to review and continue to update the AIDC implementation status if necessary. The ACSICG/12 Meeting updated the table of AIDC Implementation Status in the APAC region and the list of focal points for AIDC Implementation.

Educational material to manage the distribution of IWXXM information for Comm Experts in the event of primary link failure- Australia, Fiji, Hong Kong China, Singapore, and the USA (WP/10)

2.104 This paper provides educational material for COM Centre operators to understand that the distribution of IWXXM information requires links to possess specific capabilities, and in the event of a primary link failure, any alternate/secondary links must also possess the same or similar specific capabilities. The ACSICG/12 Meeting adopted the draft educational material as a living document and endorsed the following draft conclusion for consideration by CNS SG/29:

Draft Conclusion ACSICG/12/05- Educational material to manage the distribution of IWXXM information for COMM experts in the event of primary link failure	
What: The educational material to support COM/MET experts in managing the distribution of IWXXM in case of primary	Expected impact: ☐ Political / Global ☐ Inter-regional

link failure, provided in **Appendix A**, be adopted as a living document.	☐ Economic ☐ Environmental ☒ Ops/Technical
Why: Educational material that identifies the required link capabilities to maintain IWXXM message distribution in the event of a primary link failure is necessary for uninterrupted service.	Follow-up: ☐Required from States
When: 28-Mar-25	Status: Draft to be adopted by Subgroup
Who: ☒Sub groups ☒APAC States ☐ICAO APAC RO ☐ICAO HQ ☐Other: ACSICG	

2.105 It was agreed that if the document is adopted by CNS SG/29, it will be shared by the ICAO Secretariat for APAC States/Administrations' feedback. **ACTION ITEM 12-6** The ICAO Secretariat will compile comments received from members for further review by the Ad-hoc group, and the Ad-hoc group will prepare revised educational material incorporating all received comments and present it in the next ACSICG Meeting. **ACTION ITEM 12-7**

2.106 It was also agreed that after the adoption of the document by CNS SG/29, the document will be uploaded on the ICAO APAC e-docs portal under CNS->COM and MET. **ACTION ITEM 12-8**

Checklist of steps required to operational IWXXM exchange- Singapore (WP/11)

2.107 It was recalled that during the joint session of ACSICS/11 and MET IE/22 in 2024, the Meeting acknowledged the necessity to support the prompt implementation of capable primary and, where relevant, secondary links for the exchange of IWXXM messages. A team of Communications and Meteorological experts from Australia, Hong Kong China, Fiji and Singapore (lead) volunteered to create a checklist to facilitate the operational implementation of IWXXM message exchange.

2.108 This paper introduced a checklist created by a team of Communications and Meteorological experts to facilitate the *implementation of ICAO Meteorological Information Exchange Model (IWXXM) message exchange.* The overview of the checklist was as follows:

(a) **Preparation and System Requirements**: Stakeholders should be informed and involved, and ICAO guidelines should be reviewed. Verify AMHS supports File Transfer Body Part (FTBP) and compatibility with IWXXM data formats;

(b) **Network Configuration**: Ensure network settings support IWXXM data exchange, secure and reliable connections, and P1 and P3 AMHS connections with neighboring COM Centres;

(c) **Testing and Documentation**: Conduct initial tests with internal and external stakeholders, verify data integrity, maintain detailed records, and document issues and resolutions; and

(d) **IWXXM Data Generation and Quality Control**: Gather and format meteorological data according to IWXXM schema, validate XML, ensure compliance, and perform quality checks and interoperability tests.

2.109 The ACSICG/12 Meeting reviewed and modified the checklist based on the comments received from the participants. It was suggested that the Meeting adopt the checklist as a living

document, similar to educational material presented by WP/10 and adopted by the Meeting as a living document, allowing for feedback for further updates. The checklist could also be adopted as a living document further based on feedback. **ACTION ITEM 12-9**

2.110 The ACSICG/12 Meeting endorsed the following draft conclusion for consideration by CNS SG/29. The updated checklist is provided in **Appendix B** of this paper.

<table>
<tr><td colspan="3">Draft Conclusion ACSICG/12/06- Checklist of steps required to operational IWXXM exchange</td></tr>
<tr><td colspan="2">What: A checklist to facilitate the operational implementation of the IWXXM message exchange, provided in Appendix B, be adopted as a living document.</td><td>Expected impact:
☐ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: To support the prompt implementation of capable primary and, where relevant, secondary links for the exchange of IWXXM messages</td><td colspan="2">Follow-up: ☐Required from States</td></tr>
<tr><td>When: 28-Mar-25</td><td colspan="2">Status: Draft to be adopted by Subgroup</td></tr>
<tr><td colspan="3">Who: ☒Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☒Other: ACSICG</td></tr>
</table>

<u>Review of Asia and Pacific Region IWXXM Implementation Status/ Readiness – Sec (WP/09)</u>

2.111 The paper presented the IWXXM implementation status and the Asia/Pacific Region's readiness to fully implement IWXXM data exchange and encouraged States/Administrations to review and update the IWXXM implementation status as required. The Meeting updated the AMHS Readiness Table for Supporting IWXXM Traffic.

2.112 A discussion was initiated on the Colom E *"Readiness Status of AMHS for supporting File Transfer Body Part (FTBP), the Interpersonal Message (IPM) Heading Extension (IHE) to support for exchanging IWXXM reports of a maximum size of 4MB and FTBP of maximum 2MB"* of Appendix A of this WP for the size of 4MB for IWXXM reports and 2 MB for FTBP.

2.113 ACSICG Co-Chair informed that in Singapore, the size of IWXXM messages utilization is much lower than 4MB. MET/IE WG Chair informed that the size mentioned in column E was suggested by MET experts based on *Guidelines for the Implementation of OPMET Data Exchange Using IWXXM guidelines* defined at a global level many years ago. The fixation of the maximum size of messages was based on the accommodation of requirements of potential users who will use IWXXM messages extensively or moderately. However, the meeting agreed on the need for an analysis to estimate this size requirement based on APAC usage. It was decided that all APAC States/Administrations having the capability to transmit IWXXM messages over AMHS can monitor the IWXXM traffic size and contribute to this analysis. The MET/IE WG Chair also noted that future IWXXM products are likely to be larger than the current product based IWXXM variants. Also, the USA has the largest TAC bulletins and they are yet to distribute their corresponding IWXXM bulletins and encouraged the ACSICG to seek advice from the US on the size of their IWXXM bulletins. The ICAO Secretariat will coordinate with COM experts from these States and support the ACISCG Co-Chairs in conducting this study.

FIJI AMHS Upgrade to Support IWXXM (IP/04)

2.114 Fiji presented the progress of upgrading its AMHS to support the Nadi RODB in exchanging the IWXXM ROBEX bulletin with RODB centers. The Meeting noted that Fiji Airports hosted the Nadi RODB, one of the five (5) designated RODBs in the APAC region. To comply with the ICAO mandate for the APAC RODB centers to exchange the ROBEX bulletin in IWXXM format in 2019, Fiji is upgrading its AMHS to support IWXXM. The Meeting noted that the AMHS has to be upgraded to support the IWXXM requirement for Nadi RODB for the exchange of IWXXM ROBEX. While the existing COMSOFT AMHS supports extended services for File Transfer Body Parts (FTBP), it does not support the file size to exchange IWXXM. AMHS system requires support up to 4.0MB file size, including FTBP for ATS extended service in the exchange of IWXXM messages.

2.115 The Joint Meeting was informed that in mitigating the ICAO mandated for designated RODB to exchange the IWXXM ROBEX bulletin, New Zealand Meteorology has been supporting the Nadi RODB to translate the TAC ROBEX bulletin to IWXXM ROBEX bulletin and exchange with the RODB centers over the AMHS. Fiji's AMHS upgrade has been delayed due to COVID-19 impact. The contract for the AMHS upgrade with IWXXM was signed in 2024, and the system has now been deployed on-site for installation. It is expected to commission the new AMHS to support IWXXM in May 2025. It was added that Nadi RODB is expected to generate and exchange the IWXXM ROBEX bulletin directly with RODB centers when the AMHS & IWXXM system is commissioned.

2.116 The Joint Meeting shared appreciation to Fiji for enhancing their efforts for upgrading its AMHS to support the Nadi RODB in exchanging the IWXXM ROBEX bulletin with RODB centers. It requested to provide further updates on this matter in future Meetings.

2.117 In response to a question about the view of ICAO on the practice of translation of the TAC ROBEX bulletin to the IWXXM ROBEX bulletin, the MET IE WG Chair informed that as per ICAO Annex 3, every State would provide or arrange the provision of IWXXM and translation services by translation center are allowed. However, IWXXM generation from the source is a preferred method for ICAO. It was also added that the translation of TAC messages to IWXXM currently meets the requirements specified in ICAO SARPs; however, with the evolution of IWXXM products, such translation options may not be acceptable in the future.

2.118 It was also added that even after ceasing the exchange of TAC in 2030, APAC States/Administrations can generate and consume TAC messages for national usage as ICAO SARPs are applicable for international operations.

2.119 The Joint Meeting noted that the *Online Register of APAC IWXXM Exchange Status* can be accessed on the ICAO APAC e-docs webpage under MET. However, as currently, States update this online register annually during MET IE WG, which is not as frequent as needed, it was agreed that there is a need for a notification method so that when a Regional OPMET Centre (ROC) enhanced AMHS capability and can disseminate IWXXM reports to other ROCs or National OPMET Centers (NOCs), relevant NOC and ROC can be notified automatically and table can be updated. It was agreed that MET experts from Australia and Hong Kong China will work on this requirement. As the proposed action was not for COM experts, it was not recorded as an action item in this report.

Brainstorming Session

2.120 During this session, the following agenda item was discussed. The session was moderator by the MET IE WG Chair.

1. Operational exchange of IWXXM in a hybrid AMHS/SWIM environment
2. Use of the Internet for MET-SWIM

3. A list of MET-SWIM information services which will be/preferred to be transmitted over CRV
4. The benefit of aggregation functions for MET-SWIM in APAC

2.121 MET IE WG Chair presented the current OPMET Exchange model and hierarchical architecture. He introduced different stakeholders and actors in the OPMET exchange in the APAC region and planned future evolutions based on the latest edition of the Global Air Navigation Plan. Several questions were asked for the presented diagram of OPMET Exchange in blocks 1 to 4, which were answered by the MET IE WG Chair.

2.122 The Joint Meeting noted the intention of some States to move to SWIM directly without implementing AMHS. The benefits and disadvantages of bypassing AMHS and migrating directly to SWIM were discussed. However, due to limited time and knowledge about SWIM implementation, the discussion could not be completed. The meeting requested SWIM TF to discuss this topic during any SWIM event and share information, if possible, in future ACSICG and MEIT IE WG meetings.

2.123 It was stated that currently, various States/Administrations use multiple methods to transmit MET information. It included AFTN/AMHS, IP links, public internet, web-based applications, etc. Some States shared that for their ANSP, MET, information is critical and transmitted through a secure channel. However, some have the view that MET information can be exchanged over the public internet with encryption and PKI implementation to meet security requirements.

2.124 One State informed that **ICAO Annex 3** *Meteorological Service for International Air Navigation*, Chapter 11, section 11.2 *Use of aeronautical fixed service communications and the public Internet — meteorological bulletins* mentioned public Internet and AFS for MET message exchanges.

11.2 Use of aeronautical fixed service communications and the public Internet — meteorological bulletins

Meteorological bulletins containing operational meteorological information to be transmitted via the aeronautical fixed service or the public Internet shall be originated by the appropriate meteorological office or aeronautical meteorological station.

Note.— Meteorological bulletins containing operational meteorological information authorized for transmission via the aeronautical fixed service are listed in Annex 10, Volume II, Chapter 4, together with the relevant priorities and priority indicators.

2.125 However, the Joint Meeting was informed that the current ICAO Annex 3 is not modified to meet future SWIM requirements, and a new version of ICAO Annex 3 will provide updated information.

2.126 Due to the limited time available, it was concluded that the discussion could not be finalized during the ongoing plenary. In addition, operational experts need to be involved in these discussions to understand operational experts' views on the criticality and sensitivity of various MET information services in future SWIM environments. To further progress on this topic, it was suggested that offline discussions be held on the effective way to bring CRV, MET, SWIM, and operational experts together to discuss this topic further. ACSICG and MET IE WG Secretariat will discuss this matter and inform the Meeting about further updates. **ACTION ITEM 12-12**

2.127 The Meeting participants shared the value of conducting the joint session. However, it was stated that there is a need for a joint session of MET and SWIM experts in the future. Therefore, it was agreed that offline discussion would be done among ACSICG, MET IE WG and SWIM TF chairs and secretariat for agreement on a way forward for an effective way of close collaboration among these groups to discuss various common topics in future joint Meetings. **ACTION ITEM 12-13**

2.128 Due to a shortage of time, the discussion on the last agenda item, *the benefit of aggregation functions for MET-SWIM in APAC,* could not be initiated.

2.129 For the Meeting report, working/information papers, and other documents discussed in MET/IE WG/23, please refer to the following link for detailed information:
https://www.icao.int/APAC/Meetings/Pages/2025-MET-IE-WG-23.aspx

Updates on the progress of the APAC AMHS to SWIM transition Correspondence Group (ATSGC) – Singapore (WP/12)

2.130 In 2024, ACSICG/11 noted that there was a lack of information on the AMHS to SWIM transition at the Asia Pacific regional level and agreed to form an APAC AMHS to SWIM transition Correspondence Group (ATSCG) to study the transition strategy by experts from States/Administrations, industry partners and concerned international organizations, on a voluntary basis.

2.131 Initially, it was essential to establish the terms of reference for ATSCG since the transition from AMHS to SWIM is a joint responsibility of ACSICG and SWIM TF. Clearly delineating the tasks to be managed under the leadership of ACSICG and SWIM TF was necessary. Consequently, following the formation of ATSCG, the members, led by Singapore, drafted the group's terms of reference. Additionally, ATSCG outlined its scope, objectives, and deliverables within the ToR. The drafted ToR was then reviewed and commented upon by the SWIM TF Task Leads.

2.132 The Meeting reviewed the draft Terms of Reference (ToR), and the following conclusion was adopted by the ACSICG/12 Meeting.

<table>
<tr><td colspan="3">Decision ACSICG/12/07 - Terms of Reference for the AMHS to SWIM Transition Correspondence Group</td></tr>
<tr><td colspan="2">What: The Terms of Reference (ToR) (provided in Appendix C) for the ATSCG is adopted.</td><td>Expected impact:
☐ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: The ToR for the ATSCG outlines its scope, objectives and deliverables, which will support further work of ATSCG.</td><td colspan="2">Follow-up: ☐Required from States</td></tr>
<tr><td>When: 28-Mar-25</td><td colspan="2">Status: Adopted by ACSICG</td></tr>
<tr><td colspan="3">Who: ☐Sub groups ☒APAC States ☐ICAO APAC RO ☐ICAO HQ ☒Other: ACSICG</td></tr>
</table>

2.133 The Meeting requested more participants to join the ATSCG. Australia, China, New Zealand and ROK shared their intention to participate in the group. ICAO Secretariat will contact Australia, China, New Zealand, and ROK to nominate experts and update the list of participants in ATSCG.

2.134 To proceed, it was decided to await the conclusions from the second SIPG working session (SIPG WS/2), scheduled to take place from 26-30 May 2025 at the ICAO APAC Office in Bangkok, Thailand. Following the SIPG WS/2 Meeting, an online meeting of the ATSCG will be organized.

Transition to the AMHS procedures between the COM centers of Russia and Japan – Russia (WP/20)

2.135 The Meeting noted that during CRV OG/13 from 5 to 8 March 2025 in Wellington, New Zealand, a Working Paper (WP/21) was presented regarding the use of L2 VPN channels for the interaction between Russian and APAC AMHS centers. The paper highlighted challenges in the transition between Moscow and Fukuoka communication centers. The CRV OG/13 Meeting, in its report (para. 2.76), requested Russia to submit a working paper at the ACSICG/12 Meeting to address this issue as a matter of priority.

2.136 Russia informed that the most challenging situation is with the transition to AMHS between the Moscow and Fukuoka communication centers. The X.25 equipment used to support the exchange via the AFTN/X.25 protocol has exhausted its service limits and cannot be replaced, as it is no longer manufactured nor supported by the manufacturers. In the event of equipment failure and the impossibility of its recovery, the Moscow-Fukuoka channel will have to be temporarily closed.

2.137 The Meeting noted that Japan confirmed in February 2024 the possibility of using L2 VPN channels for AMHS procedures between Moscow and Fukuoka, but implementation has been delayed. At present, providers from Russia (TTK) and Japan (KDDI) have agreed to open a virtual channel as of 1 July 2025. To expedite the transition, the two communication centers must coordinate a work schedule for AMHS testing per ICAO requirements. If the X.25 equipment fails, routing between Russian and APAC COM centers will need to be reviewed to prevent message transmission delays.

2.138 Japan informed that KDDI has not agreed to open a virtual channel as of 1 July 2025. Russia and Japan agreed on the need for further communication exchanges with their service providers on this matter.

Current Status of AMHS Implementation in Japan (WP/18)

2.139 Japan presented the status of the transition from AFTN to AMHS between Fukuoka and Moscow. In order to ensure stable international aviation communications operations, Japan confirmed with Russia that a dedicated IP-VPN connection proposed by Japanese telecommunications company KDDI and a Russian telecommunications company will be implemented. The target for the latest transition date is now set for the end of December 2025.

2.140 It was informed that if AFTN operations between Fukuoka and Moscow are suspended for some reason before the transition to AMHS, an alternative route for destination U based on the AFTN routing directory, via Fukuoka → Beijing → Khabarovsk, will be necessary, and at that time Japan would like to ask Beijing for its cooperation.

2.141 The ACSICG/12 Meeting noted that Fukuoka → Beijing → Khabarovsk is already an alternative route. In addition, China shared its full support in taking necessary action in case of need. Therefore, COM centers in Japan, China, and Russia can take appropriate action to use the alternate route in case of an unexpected failure of the primary link. The Meeting appreciated the efforts of both parties to maintain communication links and recommended that Japan and Russia resolve the problem as soon as possible, preferably before December 2025.

ACSICG ToR and Action Items Updates– Sec (WP/13)

2.142 The ACSICG/12 Meeting reviewed the current Terms of Reference (ToR) of ACSICG and agreed that there was no need to modify it. The Meeting was suggested to share their views about further modifications in the next ACSICG Meeting.

2.143 In response to the request to share recordings of past events organized by the ICAO APAC Office on different CNS-related matters, the ICAO Secretariat informed that some webinars/workshops conducted in the past on CRV and SWIM implementation were recorded and can be accessed on CRV and APAC-SWIM secure portal. In addition, ICAO published recordings of past webinars, Sky Talks and other discussion topics information on the ICAO YouTube channel.

The ICAO Doc 9880: Manual on detailed technical specifications for the ATN using ISO/OSI Standards and Protocols- Sec (WP/14)

2.144 This paper presented the development and latest status of ICAO Document 9880: Manual on Detailed Technical Specifications for the Aeronautical Telecommunication Network (ATN) using ISO/OSI Standards and Protocols for the information and reference of Member States. The Meeting noted that the latest edition, the third edition, was published in 2024 and specified enhancements to AMHS security standardization. It was highlighted that three significant security upgrades were introduced in Document 9880 Edition 3. At the Meeting, it was recommended that the latest version of ICAO documents be downloaded from the ICAO Secure portal on "ICAONET" and that a plan be prepared for the implementation of new provisions.

ICAO Doc 9896- Manual on the ATN using Internet Protocol Suite (IPS) standards and protocols- Sec (WP/15)

2.145 This paper presented the development and latest status of the ICAO Document 9896: Manual on the Aeronautical Telecommunication Network (ATN) using Internet Protocol Suite (IPS) Standards and Protocols. It was noted that the latest published edition of Document 9896 is edition 2, released in 2015. The Meeting was informed that a third revision was anticipated to be issued this year.

Review of ATN information in CNS TABLES in e-ANP Vol II– Sec (WP/17)

2.146 ICAO Secretariat presented the need for review and update to the TABLE CNS II tables specified in ICAO APAC e-ANP Vol II by APAC States/Administrations. The paper reminded States/Administrations to review the data affecting their administration and provide feedback to ICAO on the data's accuracy in the requisite format to update the relevant CNS requirements in all volumes of e-ANP.

2.147 It was noted that the current CNS-related table in ICAO APAC e-ANP is outdated and has not been updated by States/Administrations for many years. The ACSICG/12 Meeting urged States/Administrations to review and update the **TABLE CNS II-1 AERONAUTICAL FIXED TELECOMMUNICATIONS NETWORK (AFTN) PLAN**, **TABLE CNS II-3 ATS DIRECT SPEECH CIRCUITS PLAN** and **TABLE CNS II-APAC-1 ATS INTER-FACILITY DATA COMMUNICATION (AIDC) IMPLEMENTATION PLAN** of e-ANP Vol II following the PfA process.

2.148 With the abovementioned, the following draft conclusion was proposed, which was endorsed by the ACSICG/12 Meeting for CNS SG/29 adoption.

Draft Conclusion ACSICG/12/08- Update the TABLE CNS II-1, TABLE CNS II-3 and TABLE CNS II-APAC-1	
What: The following tables of ICAO APAC e-ANP Vol II are outdated and require immediate updates. **General Regional Requirements**	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental

TABLE CNS II-1 AERONAUTICAL FIXED TELECOMMUNICATIONS NETWORK (AFTN) PLAN **TABLE CNS II-3** ATS DIRECT SPEECH CIRCUITS PLAN **Specific Regional Requirements** **TABLE CNS II-APAC-1** ATS INTER-FACILITY DATA COMMUNICATION (AIDC) IMPLEMENTATION PLAN	☒ Ops/Technical

Why:	to update e-ANP Vol II	Follow-up:	☒Required from States
When:	28 March 2025	Status:	Draft to be adopted by Sub-group
Who:	☒Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☒Other: ACSICG		

Date and Venue for the Next Meeting

2.149 The Meeting decided to conduct the ACSICG/13 Meeting as an in-person Meeting with a tentative date in the third week of April 2026 to further progress the tasks listed in the Terms of Reference. Fiji proposed hosting the Meeting from April 20-24, 2026, in Fiji. The ICAO Secretariat will coordinate with Fiji for further host agreements. It was informed that a State Letter would be issued before 3 months of the Meeting.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) review the outcome of the AMC Workshop and ACSICG/12 and CRV OG/13 and take any necessary follow-up actions; and

b) discuss any relevant matter as appropriate

– – – – – – – – – – – – – –

Distribution of IWXXM when the primary AMHS link fails

1 Purpose

This document provides educational material about a capability-based approach to thinking about *ICAO Meteorological Information Exchange Model* (IWXXM) message distribution for Asia Pacific (APAC) Com Centre (COMM) operators in the event of a primary link failure.

2 Assumptions

Link and connection enablement and establishment are pre-requisites to this educational material.

IWXXM message is assumed to be fully correct and compliant.

IWXXM message structure and content details are not required knowledge.

IWXXM/TAC Translation services are out of scope, due to data loss resulting from message conversion.

Originator capabilities for IWXXM handling are assumed to be fully compliant.

Recipient capabilities for IWXXM handling are assumed to be fully compliant.

COMMs are expected to ensure and provide assurance that data loss and data corruption do not occur when transiting their own COMM and network.

Full end-to-end delivery enablement for IWXXM is the objective, but not within scope of this document.

3 IWXXM Message Transfer Considerations

3.1 Message Addressing and Routing

APAC States are using **address-based routing** for IWXXM messages.

APAC States are not using content-based routing nor pathname-based routing for IWXXM messages.

Address-based routing provides some flexibility to the COMM operator to optionally divert IWXXM messages down a specific alternate link, while all other AMHS traffic can be diverted via a separate alternate link.

Address-based routing simplifies COMM operator assessments of alternate connections, since this shifts more decision-making to a coarser link-level decision instead of fine-grained content-based or pathname-based decisions.

3.2 Link Capabilities

AFTN links for IWXXM should not be used, because:

- IWXXM message sizes can far exceed AFTN message sizes
- IWXXM character sets are generally incompatible with AFTN connection character sets
- Down-converting IWXXM messages for transmission via AFTN has high risk of **data loss** and/or **data corruption**

Care should also be taken to consider any internal COMM links that may prevent unmodified IWXXM message traversal.

AMHS links should meet the following minimum requirements:

- Message size supported up to a maximum 4MB
- FTBP supported
- IHE supported
- Link speeds higher than 64kbps are recommended, required bandwidth is dependent upon connection use

Information about AMHS connection capabilities is stored at the AMC.

The AMC can store information about AMHS connection capability (linked via “Network Inventory”, then in the “AMHS Capabilities” tab), allowing for future retrieval.

However, there may be limitations with AMC data accuracy and freshness.

Outside of the AMC, connection capabilities prior to commissioning by the COMM should already be known, recorded, and kept fresh.

3.3 Message Structure and Content

When compared to TAC products, IWXXM messages have complex message structures and complex content requirements.

However, so long as the AMHS connection capabilities are satisfied, IWXXM message transfer can occur.

MTS supporting IWXXM transfer do not need to be able to parse IWXXM message contents.

4 Actions

In the event of a primary link failure, the COMM operator will now have sufficient background knowledge to be able to assess whether an alternate link is acceptable for transferring IWXXM messages.

In all circumstances,

- AFTN links are excluded from consideration
- Alternate links should have similar or better connection capabilities to the failed primary link

The following four major actions can be used:

- Link-based diversion
- Address-based diversion
- Content-based diversion / pathname-based diversion
- Traffic hold

4.1 Link-based Diversion

This is simply diverting all traffic via an alternate same-type link.

This is a common diversion tactic currently accomplished via the RQP mechanism.

4.2 Address-based Diversion

APAC IWXXM messages currently utilise address-based routing, for which specific address-based diversions can be activated.

Recipient addresses within APAC are listed in the Online Register of APAC IWXXM Exchange Status (Link: https://docs.google.com/spreadsheets/d/1WEcGfMRZq2dgHsfdpFhiefJEcA8OeMhfbCJHTqA7NX0/edit#gid=0).

This means that IWXXM messages can be routed via a suitable alternate AMHS link, whilst all other traffic is routed via a different alternate AMHS link.

This may be useful to load-balance traffic between different alternate AMHS links.

4.3 Content-based Diversion / Pathname-based Diversion

Content-based and pathname-based diversions follow similarly to address-based diversions, but may require additional functionality.

4.4 Traffic Hold

Given the importance of meteorological information, data loss should be avoided as much as reasonably possible.

Where no alternate exists, then a traffic hold may be considered.

CHECKLIST FOR IWXXM IMPLEMENTATION

1. ATS MESSAGE HANDLING SYSTEM (AMHS) CHECKLIST

☐	Preparation - Ensure all stakeholders (e.g. COMMS and MET experts) are informed and involved.
☐	Preparation - Review ICAO guidelines for IWXXM exchange implementation (i.e. Guidelines for the Implementation of OPMET Data Exchange using IWXXM, Fifth Edition – October 2023 (*IWXXM Guidelines*))
☐	System Requirements - Verify that your AMHS supports File Transfer Body Part (FTBP) feature. A total size of AMHS message (including FTBP) up to 4MB is required. The support by User Agents (UAs) of Interpersonal Messaging (IPM) Heading Extensions (IHE) is required.
☐	System Requirements - Verify that the IPM body shall contain exactly one body-part which is an FTBP (*IWXXM Guidelines, Appendix A, Section 2.3 refers*).
☐	System Requirements – Verify there is sufficient bandwidth to support the new addition of IWXXM traffic.
☐	System Requirements - Ensure components in the processing and exchanging chains are able to handle payloads in IWXXM and their compressed counterparts in gzip formats.
☐	Network Configuration – Configure network settings to support IWXXM data exchange (e.g. configure firewalls to allow IWXXM data traffic).
☐	Network Configuration – Ensure secure and reliable network connections. The available bandwidth for each 'hop' in the network should be considered by COM Centres when switching to AMHS FTBP operations.
☐	Network Configuration – Ensure P1 AMHS connection(s) (direct and alternate paths) with neighbouring COM Centres.
☐	Network Configuration – Ensure the support of IWXXM exchange for P3 connection(s).
☐	Testing – Conduct initial tests with internal stakeholders (e.g. local meteorological service provider) to ensure successful data exchange.
☐	Testing – Conduct initial tests with external stakeholders (e.g. connecting COM Centres) to ensure successful data exchange.
☐	Testing – Verify data integrity and accuracy with internal and external stakeholders.
☐	Documentation – Maintain detailed records of the implementation process.
☐	Documentation – Document any issues and resolutions for future reference.
☐	Distribution – Only distribute operational IWXXM AMHS messages to APAC ROCs and IROGs who have indicated to be ready for receival in the "IWXXM - Online Register of APAC IWXXM Exchange Status".
☐	Operation – Ensure all stakeholders are informed with commencement, taking into consideration Aeronautical Information Regulation and Control (AIRAC) and the use of METNO.

2. IWXXM DATA GENERATION CHECKLIST

☐ Data Collection - Gather meteorological data (observations, forecasts).

- ☐ Data Collection - Ensure data is sourced from reliable meteorological services.
- ☐ Data Collection - Confirm the completeness of required elements (temperature, wind, visibility, etc.).
- ☐ Data Encoding - Encode data in IWXXM format as per IWXXM schema. Compress the IWXXM message with gzip, a globally agreed compression technique for meteorological data. Give the output file a name in accordance to the file name conventions mentioned on Page 138 of WMO No.386[1].
- ☐ Data Encoding - Validate the IWXXM message against the IWXXM schema (XML Schema Definition (XSD) and schematron (SCH) files with a suitable XML validator.
- ☐ Data Encoding - Ensure compliance with IWXXM TAC-to-XML-Guidance.
- ☐ IWXXM Elements - Include required IWXXM elements: **Metadata**: Identifier, issue time, etc. **Observation**: Current weather conditions. **Forecast**: Forecast data, including start and end times. **Significant Weather**: Any notable weather phenomena.
- ☐ IWXXM Elements - Ensure proper units of measurement (e.g., meters, degrees Celsius).
- ☐ Quality Control - Perform quality checks on the data for accuracy.
- ☐ Quality Control - Review for consistency and coherence in message content.
- ☐ Quality Control - Verify that timestamps and time zones are correctly formatted.
- ☐ Testing - Test the IWXXM message with parsing tools.
- ☐ Testing - Simulate real-world scenarios to ensure robustness.
- ☐ Testing - Conduct interoperability tests with recipient systems, including internal and external stakeholders (refer to AMHS Checklist).
- ☐ Final Review - Have a second party review the IWXXM message.
- ☐ Final Review - Confirm compliance with relevant regulations and standards.
- ☐ Distribution - Prepare for distribution through appropriate channels (e.g. AMHS).
- ☐ Distribution - Ensure proper encoding and transmission protocols are followed.
- ☐ Monitoring and Feedback - Monitor reception and processing of IWXXM messages.
- ☐ Monitoring and Feedback - Collect feedback from users and stakeholders for continuous improvement.

3. ADDITIONAL CONSIDERATION

- ☐ Stay updated on changes to ICAO IWXXM specifications. Also refer to the IWXXM FAQs under ICAO Asia Pacific Document portal if needed.
- ☐ When planning the implementation of IWXXM, consider the IWXXM package compatibility table to determine the appropriate version of IWXXM messages. Also, plan a regular review to ensure compliance with this table.
- ☐ Document any anomalies or issues encountered during generation and testing with internal and external stakeholders.
- ☐ Update the IWXXM – Online Register of APAC IWXXM Exchange Status for your state when ready.
- ☐ Those States using IWXXM extensions to provide optional information for national use should make available relevant schemas and documentations for all intended consumers.

[1] https://library.wmo.int/viewer/35800/download?file=386_2023-edition_en.pdf&type=pdf&navigator=1

AMHS to SWIM transition Correspondence Group (ATSGC)

Terms of Reference ("TOR")

Establishment

The Asia and Pacific ("APAC") AMHS to SWIM transition Correspondence Group ("ATSGC") was established during the Eleventh Meeting of the Aeronautical Communication Services Implementation Coordination Group (ACSICG/11) held from 19 March to 22 March 2024 at the ICAO APAC Office to study the transition strategy from AMHS to SWIM for the APAC Region.

Objectives

a) Identify challenges in transitioning from AMHS to SWIM in the APAC Region and monitor States' development and implementation of action plans to address these challenges, ensuring a safe, smooth, and continuous flow of message and/ or data exchange;

b) Formulate the implementation plan for transitioning from AMHS to SWIM in the APAC region and revise it as required;

c) Track and consider APAC regional developments in AMHS and SWIM and incorporate them in the ICAO APAC AMHS to SWIM Implementation plan as required;

d) Coordinate with APAC regional groups (such as CRV OG, MET IE, SWIM TF, etc.) for a smooth transition from AMHS to SWIM in the APAC Region while maintaining operational continuity;

e) Monitor the development of SWIM in the APAC Region and track the implementation status of those projects;

f) Provide regular progress reports to the ACSICG; and

g) Consider other issues as directed by the ACSICG.

Composition of the ATSCG

a) Experts (e.g., AMHS and SWIM) nominated by APAC States; and

b) Other stakeholders, including the aviation system manufacturing Industry, may be invited as observers.

Meetings

ATSCG will conduct its work using teleconferences and other electronic means of communication. The ICAO Regional Office will provide secretariat support for the ATSCG.