



ICAO

*International Civil Aviation Organization***Second Meeting of the Surveillance Study Group (SURSG/2)***Video Tele-Conference (VTC), 15 - 17 March 2022***Agenda Item 2:** Review of outcome of relevant meetings**OUTCOMES OF CRV OG/9 MEETING**

(Presented by the Secretariat)

**SUMMARY**

This paper presents the relevant outcomes of the Ninth Meeting of the Common aeRonautical Virtual Private Network Operations Group of APANPIRG (CRV OG/9).

**1. INTRODUCTION**

1.1 The Ninth Meeting of the Common aeRonautical Virtual Private Network Operations Group of APANPIRG (CRV OG/9) was held *from 25 to 27 January 2022* via VTC. The meeting was attended by 119 participants from 21 Member States/Administration, 1 International Organizations, and 1 industry. CRV OG/9 meeting report, working papers, information papers, and other resources can be accessed by following link:

<https://www.icao.int/APAC/Meetings/Pages/2022-CRV-OG-9.aspx>

1.2 This paper summarized relevant information and updates on the outcomes of CRV OG/9 to be reviewed by the Ninth Meeting of the Aeronautical Communication Services Implementation Coordination Group (ACSICG/9) of APANPIRG, the twenty sixth meeting of Communications, Navigation, and Surveillance Sub Group (CNS SG/26) of APANPIRG, and the thirty third meeting of Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/33).

**2. DISCUSSION***CRV Implementation Plan*

2.1 The ICAO Secretariat shared the information about latest version of published CRV Implementation plan on ICAO APAC e-documents portal and concern raised by some states for publication of some information. The meeting agreed that ICAO Implementation Plan will be continued to upload on ICAO APAC e-documents portal. Under Table 1 (National Points of Contact), Table 2 (Local Points of Contact), Appendix A and Appendix B (Network Assignment for APAC and MID region respectively), a message would be added to refer to ICAO APAC CRV Secure portal or CRV Portal hosted by New Zealand to get required information along with the instructions needed.

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*CRV Operations Manual- New Zealand*

2.2 New Zealand presented the status of the current draft of the CRV Operations Manual. The meeting was informed that since publication of the CRV Operations Manual in December 2020, there have been many updates including those from the Ad Hoc Groups presented by WP/03 of the meeting. The updates are currently in draft stage for publication.

*Latest CRV operational performance report- PCCWG*

2.3 PCCWG shared Latest CRV Updates and CRV Network Yearly Service Review for 2021. Meeting was informed about 2021 Ticket Summary by Ticket Type and their overview. PCCWG informed that there are 45 circuits in 27 cities with different CRV packages, A, B+, C+, C and D. There are 2 service providers in the CRV network and 5 circuits (A, B+ and C+) are under implementation. It was further informed that 9 cities are joining CRV in 2022, which are Mumbai (India), Jakarta (Indonesia), Makassar (Indonesia), Kathmandu (Nepal), Moscow (Russia), Khabarovsk (Russia), New Caledonia, Sri Lanka, and French Polynesia.

*Extension of CRV Contract- Secretariat*

2.4 The paper presented the request received by APAC Member States for extension of current contract of CRV with PCCWG for one year due to current pandemic situation. The meeting was informed that as per the current contract, all Authorities shall join the CRV program and sign the relevant Service Contract(s) with PCCWG with the billing start date on or before **31 December, 2022**. For authorities, which will join CRV after 31 December, 2022, any additional charges may be imposed.

2.5 ICAO TCB informed that CRV OG may decide autonomously to extend the contract. Furthermore, France informed that it has plan to join CRV by 2022. The meeting invited Member States who have not already contracted or initiated CRV contract process to share their intention to join CRV in next few year, if there is any plan. No states shared their interest.

2.6 The meeting agreed that ICAO Secretariat will send a State Letter to request expression of interest to join CRV by APAC Member States, which will be basis for extension of current CRV contract. ICAO Secretariat sent a State letter Ref.: T 8/2.15 – AP026/22(CNS) dated 01 February 2022 Subject: - *Request to share the intention to join CRV and its Tentative Timelines*. Till date, only one State has shared its expression of interest to join CRV in Q3-Q4 of 2023.

*Upgrade/Downgrade CRV Circuits Subscribed – Secretariat*

2.7 The paper summarized the outcomes of discussion of ad-hoc group formed by action item 8-3 of ACSICG/8. Meeting was reminded that during the CRV OG/8, Bhutan put forward some problems being faced by Bhutan related to CRV post implementation and to follow up this issue, the Ad-hoc group was formed by CRV OG/8. Additionally, as per ACTION ITEM 8-3 from ACSICG/8, States should have option to upgrade/downgrade the circuits based on the need. The ad-hoc group proposed one of the potential solutions to downgrade the CRV Package for Bhutan by PCCWG. However, Bhutan was informed by PCCWG that PCCWG has not agreed to downgrade CRV Package C to Package D.

2.8 The first meeting of Ad-hoc group formed by ACSICG/8 as per ACTION ITEM 8-3 discussed and agreed that PCCWG will draft relevant clauses to add in Terms and conditions document of CRV contract for consideration of CRV OG/9 and PCCWG will present sample calculation of penalty charges in case package degradation are opted by any contracting States within their terms of contract

of CRV in CRV OG/9 for Member State's understanding. In response, PCCWG presented next described WP/09 to the meeting for further discussion.

*Upgrade/Downgrade CRV Circuits Subscribed – PCCWG*

2.9 PCCWG highlighted the CRV contract T&Cs and listed some examples to illustrate the cost implications in related to upgrade / downgrade the existing CRV services within the contract period.

2.10 Several discussion held on the proposal presented by PCCWG. The meeting did not agree to the proposal presented by PCCWG by WP/09 and it was proposed to create an ad-hoc group named as ICAO CRV Steering Group comprised of Fiji, India, Japan, Singapore, New Zealand, USA, PCCWG, and ICAO Secretariat. The ad-hoc group would devise the terms and conditions for addition of new services, for upgrade/downgrade of packages along with addition of new sites by contracted states into their contract. ACTION ITEM 9-3. The first meeting of ad-hoc group is scheduled on 31 March 2022.

*Non-aviation providers joining CRV - PCCWG*

2.11 PCCWG introduced PCCW Console Connect Aviation Platform for non-ANSP users to exchange SWIM Data with CRV members. PCCWG informed that in order to provide an easy, managed, flexible and scalable mechanism for non ANSP users to exchange SWIM data with those CRV users, PCCW Global planned to extend its EMS node with its own developed software defined interconnection platform - Console Connect for Aviation and purposed built SWIM as Service Platform. Additionally, PCCWG informed that the SWIM services from ANSPs on CRV will be listed on PCCW SWIM Registry where users can select and subscribe and concluded that the Console Connect Platform provides an alternative path for non-ANSP users to exchange SWIM data with ANSPs who are on the CRV Network. Furthermore, Fiji added that if ANSPs will be SWIM providers, SWIM data can be shared on CRV among ANSPs.

*SWIM User Network Requirements analysis- USA*

2.12 USA presented an analysis of the network requirements for SWIM users. CRV has been considered as an underlying Internet Protocol (IP) network for SWIM services. The meeting was informed that from the network point of view, SWIM users can be categorized into three different groups: a) SWIM subscribers (can be ANSPs or any entities), b) Global Enterprise Messaging Service (GEMS) providers, and c) ANSP based SWIM providers (and subscribers). USA added that the use of CRV to support SWIM may result in additional bandwidth demands due to the nature of XML based messages. However, CRV can provide a reliable and better secured network compared with the Public Internet.

2.13 The meeting was recommended to consider this approach and coordinate with the SWIM Task Force for network connection planning. The meeting agreed that ICAO Secretariat would present a paper to SWIM TF on behalf of CRV OG to inform about the relevant discussion in CRV OG. It was also agreed that CRV ad-hoc expert Strategy and Design group would join SWIM TF meetings to note important discussions related to CRV and to inform CRV OG about the relevant outcomes.

*SWIM Providers joining CRV- New Zealand*

2.14 The paper presented discussion on SWIM Meteorological providers joining CRV for the delivery of SWIM based Meteorological Data. New Zealand shared the concerns about *whether or*

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*not Meteorological Services need to go through the documented process to add a new service to the CRV as a Service Provider.* The meeting agreed that the process to join CRV by non-aviation service providers such as Meteorological Service providers required detailed deliberations. The meeting agreed that a specialised meeting would be organised to discuss and devise a method for non-aviation service provider's joining process to CRV. The meeting will be organised in Q2 of 2022.

*Technical Proposal for Regional IP Network Interconnection- PCCWG*

2.15 PCCWG shared the meeting how States in CRV Network can communicate with States in REDDIG II Network. PCCWG proposed to establish two (2) Interconnection Points between CRV Network and REDDIG II Network for Primary and Backup respectively. Additional resources are required to build these connections were explained in the paper. PCCWG invited the meeting to confirm which States will require communication between CRV Network and REDDIG II Network and the meeting did not receive any immediate request and interest from Member States to join REDDIG II network. However, France informed that in future France is interested to interconnect with REDDIG II as well as with New PENS.

*MPLS/IP Based Inter-Regional Connection- Secretariat*

2.16 The paper provided current status of discussion being done for potential interconnection of CRV and REDDIG II (presented by PCCWG through WP/07), and CRV and New PENS. APAC member states were requested to record their interest, willingness, or need for interconnection of the CRV with other regional networks such as REDDIG II / New PENS with the ICAO secretariat. In order to enhanced global connectivity among states of different regions, it was suggested to States that connect to the CRV should also connect to other regional networks such as REDDIG and New PENS.

*Action Item 7-8 Charging structure for an ANSP service provider on Surveillance*

2.17 This paper presented the procurement process for ANSP to operate surveillance services like Space ADS-B over the CRV network. The meeting was informed that PCCWG has confirmed that there is no special charging structure for adding the Space Based ADS-B services and stated that for ANSP that have implemented CRV, there is no additional cost to setup the new GRE tunnel between CRV Users under the CRV network, noting that Aireon LLC has already connected to the CRV. However, CRV Users have to consider whether the CRV bandwidth is enough to do so. The additional bandwidth cost is provided the CRV Pricing Schedule in the CRV Common Packages. It was concluded that for State that is planning to implement CRV and wishes to have a GRE tunnel for connection to Aireon LL for the provision of Space Based ADS-B services, they will need to specify this clearly in the System Engineering Plan (SEP) in the procurement of the required bandwidth from PCCWG to operate these services over the CRV network.

2.18 Two scenarios were presented in detail in the paper. The meeting was informed that PCCWG has also confirmed that States that wishes to change their existing contractual agreement with PCCWG like upgrading the bandwidth as stated in Scenario 2 will require a new 5-year contract for Package C - 3MB. The meeting noted that the provision presented in section 12.3 would be discussed in ICAO CRV Steering Group under ACTION ITEM 9-3.

*CRV Diversity and Security Implementation- USA*

2.19 The meeting was informed about the methods used by the FAA in the CRV network to provide security and diversity for AMHS and voice services. USA informed that FAA has a total of 4 connections into the CRV network: **two** for data traffic (AMHS) and **two** for voice traffic. Diversity

implementation for AMHS traffic and voice traffic which both have primary and backup method were introduced respectively in detail. Additionally, FAA shared that in the event of failure on CRV access, the FAA and Aircservices have implemented a backup Internet VPN which can be used for carrying AMHS traffic.

2.20 Although data security is not a requirement of the CRV network, some degree of privacy is accomplished using GRE (Generic Routing Encapsulation) tunnels over MPLS between corresponding CRV users. Each tunnel only allows routing between the member states that the particular tunnel services. In this way, users can limit traffic only to partners who have agreed to establish tunnels and, in a security incident, could deny traffic from one or more tunnels. Furthermore, the meeting was informed that additional network level security is provided within the FAA's framework by the FAA's firewall infrastructure that terminates external sessions and performs data inspection.

2.21 Co-Chair (Asia) shared with meeting [PCCWG Security Management Plan](#) which can be accessed on CRV portal hosted by New Zealand.

*Date and Venue for the Next Meeting*

2.22 Based on the need for current CRV OG contract extension decision before ACSICG/9, CRV OG/10 is planned on **18 April 2022 via VTC**.

**3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) discuss any relevant matters as appropriate.

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