

*International Civil Aviation Organization*

ICAO

**Ninth Meeting of the Aeronautical Communication  
Services Implementation Coordination Group  
(ACSICG/9)**
*Video Tele-Conference, 19 - 21 April 2022*

**Agenda Item 3:** Review the report of the Ninth and Tenth meeting of Common aeRonautical VPN Operations Group (CRV OG/9 and CRV OG/10)

**REVIEW OF 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 video tele-conference. 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 with the highlight on the outcomes of CRV OG/9 to be reviewed by 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**

*Outcomes of Ad-hoc expert Strategy, Design, Transition and, Operations Groups – New Zealand (WP/03)*

2.1 This paper presented an update on the progress of the Ad Hoc expert groups for Strategy, Design, Transition and Operations. CRV OG/8 meeting held via VTC during 17-19 May 2021 created an Ad Hoc Group of experts to progress sections of the CRV Operations Manual. The outcomes of three ad-hoc group meeting held on 13th September 2021, 12th November 2021, and 13th January 2022, all by VTC, were presented to the meeting. The meeting noted that the next meeting of ad-hoc group is planned for 10th March 2022 with the aim to publish the next version by 31st March 2022.

*ICAO ATN/AMHS Guidance Document Tree – Sec (WP/04)*

2.2 This paper presented the ICAO ATN/AMHS Guidance Document Tree and proposed to add CRV reference documents into the ATN Guidance Document tree, including CRV operations manual, CRV Implementation Plan, Voice over Internet Protocol (VoIP) and Analog Voice Interface Control Document for CRV, and [CRV Landing Page](#) published on ICAO APAC Website to provide integrated ATN/AMHS structure for APAC States/Administrations.

2.3 Mr. Hoang Tran, ACSICG Chair suggested that ASIA/PAC Regional ATN Documentation Tree should include CRV Reference documents. It was suggested that CRV manual may be added under Policy & Service Definition documents, Voice over Internet Protocol (VoIP) and Analog Voice Interface Control Document for CRV may be added under Interface Control Documents (ICDs) and CRV Implementation plan may be added under Implementation Documents. The meeting recommended that ACSICG/9 to be held from 19 April 2022 to 22 April 2022 may create an ad-hoc group to update the ATN/AMHS Guidance Tree. The meeting agree that Member States would provide the suggestion for modification related to CRV in the tree **ACTION ITEM 9-1**.

*CRV Implementation Plan – Sec (WP/05)*

2.4 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), 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 **ACTION ITEM 9-2**. The action item has been completed.

*VoIP Regional dial plan - USA (WP/16)*

2.5 The paper provided an overview of the Voice over Internet Protocol (VoIP) dial plan implemented in the CRV network. The meeting noted that the dialing plan was created to bridge the gap between these voice switches to allow seamless communications between the different ANSPs and guidance for the dial plan is given in section 7 of the PCCW System Engineering Plan. The digits formats were introduced with some examples given in this paper. The meeting was informed that USA has accepted responsibility for maintaining the CRV dial plan for all member states and any updates/changes should be submitted to be added to the dial plan by contacting USA or CRV OG Co-Chairs.

*CRV Operations Manual - New Zealand (WP/20)*

2.6 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 coming from the Ad Hoc Groups presented by WP/03. The updates are currently in DRAFT for publication pending updates from PCCW and the next Ad Hoc Groups meeting. The updates in different sections were explained.

*Latest CRV operational performance report - PCCWG (SP/01)*

2.7 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.

*Update the APAC CRV Implementation Table - Sec (WP/06)*

2.8 The meeting was informed that the format of CRV Implementation table updated by CRV OG/8 is modified to accommodate other necessary information required by ICAO Secretariat time-to-time for monitoring the progress and implementation status of CRV, and connected States by CRV for each member State. The meeting reviewed and updated the APAC CRV Implementation Table. Several member states updated the table after the meeting. The latest APAC CRV Implementation Table is provided in **Appendix A** to this paper.

*Extension of CRV Contract – Sec (WP/10)*

2.9 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 join CRV after 31 December, 2022, any additional charges may be imposed.

2.10 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.

*Upgrade/Downgrade CRV Circuits Subscribed – Sec (WP/08)*

2.11 The paper summarized the outcomes of discussion of ad-hoc group formed by action item 8-3 of ACSICG/8 that States should have option to upgrade/downgrade the circuits based on the need. 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 (WP/09)*

2.12 In WP/09, 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. PCCWG informed that CRV user committed to pay the agreed monthly charges over the contract period known as TCV (The total contract value (TCV) = one time installation charge + monthly charges x 60 months (i.e., 5 years)). The hypothesis cases were listed in order to illustrate different scenario. The meeting was informed that termination will require cancellation charges( = monthly charge x remaining months ), while downgrade or upgrade if the new “Package” contract is less than 5-year term, the new monthly charge will be confirmed once a formal request is submitted. The estimation of budget based on remaining contract period was presented to the meeting as follows:

Contract period	
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5 years	Quotation is based on "price sheet_6 Package"
4 years	budgetary 10% increase loading under on "price sheet_6 Package"
3 years	budgetary 20% increase loading under on "price sheet_6 Package"
2 years	budgetary 30% increase loading under on "price sheet_6 Package"
1 year	budgetary 40% increase loading under on "price sheet_6 Package"

2.13 PCCWG invited States/Administrations to understand their contract commitment as well as the cost implications due to amendment of the contract and suggested States to plan and dimension their CRV requirement before placing the order.

2.14 The meeting further discussed the questions raised by States, including any charges for upgrade/downgrade/terminate the contract during renewal period, upgrade/downgrade/addition of new services/ addition of new sites, should not considered as a new contract, the current terms and conditions did not mention the cases of upgrade/downgrade of services, no additional charges in case of upgrading CRV packages in previous discussion, etc.

2.15 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**

2.16 The meeting recommended that ICAO APAC Office would send a State Letter to APAC Member States, who have not joined/not initiated process to join CRV to share their intention to join CRV and when they intend to do so. **ACTION ITEM 9-4** The abovementioned **ICAO CRV Steering Group** will discuss and finalise the requirements of current CRV contract extension based on feedback received from Member States who would join CRV in next few years. **ACTION ITEM 9-5**

2.17 The meeting agreed for one day CRV OG/10 meeting on **18 April 2022** before ACSICG/9 meeting. The CRV OG/10 would recommend draft conclusion related to extension of contract, if required, for CNS SG/26 consideration.

*Non-aviation providers joining CRV - PCCWG (WP/17)*

2.18 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.

*CRV Post Implementation Issues in Bhutan – Sec, Bhutan & New Zealand (WP/11)*

2.19 The meeting was informed about the issues faced by Bhutan related to CRV post implementation due to the non-readiness of peer States and the action taken by CRV OG and ACSICG for its resolution. After first meeting of the ad-hoc group established by ACSICG/8 and CRV OG/8, the ad-hoc group agreed that Bhutan connects to AMHS through CRV tunnel directly to New Zealand, and

New Zealand acts as a bridge between CRV and existing AMHS circuits for Bhutan. The second meeting of the Ad-hoc group discussed the AFTN Routing Directory changes and agreed that Bhutan and New Zealand will bilaterally coordinate to implement CRV connectivity and the next meeting will be based on the request from Bhutan and New Zealand. Bhutan and New Zealand further updated that they have completed System Engineering Plan (SEP), signed a technical letter, managed router service, were ready to perform the acceptance and bidirectional test.

*Status Update and Experience Sharing of CRV Operations in Hong Kong China (IP/04)*

2.20 The meeting was informed about the status update and experience sharing of CRV operations in Hong Kong, China since its first operational use in 2018, including the cost benefits achieved and network performance observed. Furthermore, the future plan for AMHS on CRV operations and migration to CRV to replace the legacy AFTN connection in Hong Kong China were shared.

2.21 Fiji responded to the question raised by Sri Lanka about the performance of Package D that if the internet connection performance from Internet Service Provider (ISP) is good, Package D performance would be as good as for International Private Leased Circuit (IPLC). Fiji also informed that as per Fiji's view, Package D may be better option for small ANSP and for small Pacific states for AMHS and voice services but not for SWIM services.

*Current Status of CRV Implementation in India (IP/06)*

2.22 The meeting was informed about the latest progress of CRV implementation in India. India informed that India had planned to implement the CRV after the CRV trials were successful but the implementation got delayed due to issues related to taxation and some other clauses along with delay due to the COVID-19 Pandemic. Furthermore, India has been informed by PCCW that lead time requirements for setup of CRV network in India may take 8 months after signing of the agreement, and India requested PCCW to keep themselves in the readiness and reduce the lead-time to get the network established at the earliest after signing of the agreement.

2.23 The meeting shared the concern of high lead time of 8 months given the situation that many states are waiting for India to join CRV, as India is BBIS. PCCWG informed that high lead time is due to shortage of chips for the NID routers, local fiber providers need to install fiber at customer site with approval from local government, and due to pandemic situation and PCCWG is trying its best to take necessary action to reduce the lead time.

2.24 Sri Lanka shared a concern for high lead time and PCCW indicated that if there are lead time issues for a state, they would work with member state on the agreed installation date. PCCWG informed the meeting that PCCWG is considering the current situation and will provide an official response if there is any contractual and commercial impacts for member states who sign the contract in 2022 but the installation date exceeds the standard lead time in **4 weeks** to Sri Lanka, CRV OG Chairs, and ICAO Secretariat. **ACTION ITEM 9-6.**

*Update on Fiji's CRV Network Upgrade – Fiji (IP/12)*

2.25 The paper presented information about Fiji's CRV network upgrade from Package C+ to CRV Package B+ for voice and AMHS services. The meeting was informed that Fiji has signed and implemented CRV Package C+ with PCCWG in 2019 and requested PCCWG to downgrade the CRV SLA to Package D to reduce operational cost due to impact of COVID-19 pandemic in April 2020. Fiji further explained CRV Package C+ and the downgraded CRV Package D for the Fiji CRV Connection

by diagrams, and shared the plan to upgrade its CRV network from CRV Package C+ to Package B+ to support voice and AMHS services to Australia, New Zealand & USA in the 2nd Quarter of 2022.

2.26 In response to a question, Fiji informed that Fiji neither paid any penalty for downgrading the package or upgrading it back nor signed any new service order for 5 years. Fiji added that downgrade of CRV package was discussed with PCCW global on a special condition to return to the original package in a certain timeframe due to the impact of COVID 19 on the revenue.

*Current Status of CRV Implementation at DSNA - France (IP/13)*

2.27 The paper provided information on the latest progress of CRV implementation in French Pacific Territories (New-Caledonia, French Polynesia and Wallis & Futuna). Only one contract is foreseen for the three of them, including three different possible options (packages) for the connection to CRV network. In June 21, DSNA administration board acknowledged the principle of joining CRV. A progressive solution was envisaged with a phased implementation by Phase 1 in New-Caledonia only, Phase 2 in French Polynesia (foreseen), and optional Phase 3 in Wallis & Futuna.

*SWIM User Network Requirements analysis – USA (WP/18)*

2.28 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.

2.29 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. **ACTION ITEM 9-7**. 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. **ACTION ITEM 9-8**

*SWIM Providers joining CRV - New Zealand (WP/19)*

2.30 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 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. **ACTION ITEM 9-9**

*Technical Proposal for Regional IP Network Interconnection – PCCWG (WP/07)*

2.31 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 - Sec (WP/12)*

2.32 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.

*Updates on CRV Pioneer State Contribution to the ICAO Managed Service Agreement (MSA) - Sec (WP/13)*

2.33 The ICAO Secretariat informed meeting in CRV OG/2 about the fund balance of USD 104,596 and proposed a draft of revision of Annex 1b to the MSA, and adopted by APANPIRG/28 as Conclusion APANPIRG/28/19: *Amendment of the Management Service Agreement for CRV project (RAS14801)* which remains as one of outstanding Conclusions/Decisions up to APANPIRG/32 held in December 2021. The paper presented an update on the relevant development of using the balance of the MSA.

2.34 With the efforts of ICAO Secretariat, ICAO TCB, CRV OG co-chairs and ACSICG Chair, the Revised Annex 1 to Management Service Agreement (MSA) was prepared that the fund will be utilised in the span of 5 years starting from 31 March 2022 to 31 March 2027. The meeting requested Member States to provide examples of activities under different categories provided in scope of supporting CRV Network as described in section 10.5. **ACTION ITEM 9-10**

2.35 With TCB suggestion, the parties will need to decide to either reduce scope of activities, inject additional funds and/or a combination thereof. The following draft conclusion for the next step for using the rest of CRV Pioneer State Contribution to the ICAO Managed Service Agreement (MSA) was proposed for consideration by the meeting. The draft conclusion was endorsed by the meeting for ACSICG/9 consideration.

<b>Draft Conclusion ACSICG/09/XX (CRV OG/09/01): Revised Amendment of the Management Service Agreement for CRV project (RAS14801)</b>		
<b>What:</b>	Recognizing that ICAO Technical Cooperation Bureau satisfactorily completed all the defined work items in the initial Management Service Agreement (MSA) and Project Document of RAS14801, that the required payments were settled, and that in end 2016, all the requirements of both parties have been fully completed and closed on record, That, i) all Pioneer States are encouraged to counter-sign the <b>Revised amended Pro Document provided in Appendix B</b> to the paper; ii) any Pioneer State not countersigning is entitled to get its share of the remaining fund balance back. and iii) a Pioneer State for which a direct CRV connection is not considered feasible in 2017 by the selected vendor is entitled to get its initial contribution in full	<b>Expected impact:</b> <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input checked="" type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
<b>Why:</b>	The initial scope of MSA was completed by ICAO TCB which allowed for a successful evaluation	<b>Follow-up:</b> <input type="checkbox"/> Required from States

process and selection of a best and final offer; a majority of Pioneer States is willing to use the rest of their initial contribution to continue to support CRV implementation.	
When: 22-Apr-22	Status: Draft to be adopted by PIRG
Who: <input checked="" type="checkbox"/> Sub groups <input checked="" type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	

2.36 If approved, this draft conclusion will be presented to APANPIRG/33 and may supersede outstanding Conclusion **APANPIRG/28/19: Amendment of the Management Service Agreement for CRV project (RAS14801)**.

*Estimate of work for safety assessment/ security assessment - New Zealand (WP/15)*

2.37 New Zealand presented an estimate of work for a safety assessment or security assessment of the CRV network. It was explained that the possible assessments are Physical Inventory, Overall Security Review, Visibility and Management Audit, Performance Analysis and Quantitative Data. The options and pricings of assessments were shared in details through this paper. New Zealand volunteered to lead the task to prepare the Terms of Reference (ToR) of Security and safety assessment of CRV. **ACTION ITEM 9-11.**

*CRV Diversity and Security Implementation - USA (IP/09)*

2.38 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. 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 Airservices have implemented a backup Internet VPN. USA shared that some degree of privacy is accomplished using GRE (Generic Routing Encapsulation) tunnels over MPLS between corresponding CRV users and additional network level security is provided by the FAA’s firewall infrastructure.

*Action Item 7-8 Charging structure for an ANSP service provider on Surveillance - Australia, Fiji, and PCCWG (IP/11)*

2.39 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. Two scenarios were presented in detail in the paper.

*Review ToR and Subject Task List - Sec (WP/14)*

2.40 The meeting reviewed the ToR of CRV OG and reviewed and further updated the Subject Task list for CRV OG. The Meeting identified that there is no need for revision of ToR of CRV OG other than minor editorial correction while the meeting identified some new Items for the work programme of CRV OG. The ToR of CRV OG after minor editorial is provided in **Appendix C** to this paper and revised updated Subject Task list for CRV OG is provided in **Appendix D** to this paper.

*Date and Venue for the Next Meeting*

2.41 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) review the outcome of the CRV OG/9 and take any necessary follow-up actions;
- b) endorse the draft Conclusion formulated by CRV OG/9; and
- c) discuss any relevant matters as appropriate.

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CRV IMPLEMENTATION TABLE

SN	State/ Administrati on (with* is BBIS; marked in blue- not yet join CRV/ no updates provided)	States /Administrati ons connected	Intended date for CRV cut- over	Applications targeted	Migration scheme	Prerequisites/ dependencies
1	Afghanistan					
2	Australia*	Fiji New Zealand Indonesia PNG Singapore Japan	Contract in May2018 and service readiness in 3Q 2018	AFTN, ADS-B, AMHS, Voice With: <b>Australia</b> February,2019(AMHS/AIDC), March,2019(Voice) <b>Fiji</b> March,2019 (AMHS June 2019/AIDC, Voice completed April) <b>New Zealand</b> , February, 2019 (AMHS June 2019, AFTN May 2019/AIDC), March, 2019 (Voice April 2019 completed) <b>Indonesia</b> 4Q2019 (TBC) (AMHS/AIDC, Voice, ADS-B); <b>PNG</b> 4Q2019(TBC), (AMHS/AIDC, Voice) <b>Singapore</b> 2Q2019 TBC (AMHS/AIDC, Voice); <b>South Africa</b> TBC3Q2019 TBC (AMHS/AIDC, Voice); <b>Japan</b> would be end of 2019. <b>PNG</b> AFTN June 2021,	Staged approach	Termination of current COM contract

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Appendix A to WP/03

SN	State/ Administrati on (with* is BBIS; marked in blue- not yet join CRV/ no updates provided)	States /Administrati ons connected	Intended date for CRV cut- over	Applications targeted	Migration scheme	Prerequisites/ dependencies
				Voice Oct 2021		
3	Bangladesh					
4	Bhutan		<p>Contract signed on Oct 2019.</p> <p>CRV installed successfully in Dec 2021.</p> <p>CRV P2P Test between Paro-Mumbai &amp; Paro-Bangkok to be done once India and Thailand join CRV</p>	AMHS first and Voice & ADS-B will follow up after AMHS.	Staged Approach	Dependent on India and Thailand for utilization of CRV network.
5	Brunei Darussalam					

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Appendix A to WP/03

SN	State/ Administrati on (with* is BBIS; marked in blue- not yet join CRV/ no updates provided)	States /Administrati ons connected	Intended date for CRV cut- over	Applications targeted	Migration scheme	Prerequisites/ dependencies
6	Cambodia		As early as convenient, dependent on neighbouring countries			Internal decision making
7	China*	Hong Kong China Japan Republic of Korea	Contract signed on 21 June 2020.	Applications targeted: Data(AMHS) With: Hong Kong 3Q2020; Japan 4Q2020; Thailand TBD; India 2022. Republic of Korea 4Q2022 Mongolia 4Q2022 ATFM test with Japan and ROK at Sep 2020 over CRV ADP exchange with Mongolia 4Q2022	staged approach	

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SN	State/ Administrati on (with* is BBIS; marked in blue- not yet join CRV/ no updates provided)	States /Administrati ons connected	Intended date for CRV cut- over	Applications targeted	Migration scheme	Prerequisites/ dependencies
8	<b>Hong Kong, China*</b>	Philippines China Japan Thailand Vietnam	Contract signed on 6 April 2018.  Connection was installed successfully in June 2018.	<b>With Manila</b> CRV-Voice put into operation in August 2018 CRV-AMHS put into operation in May 2019  <b>With Fukuoka</b> CRV-AMHS put into operation in September 2020  <b>With Beijing</b> CRV - AMHS POT in March and operation in April 2021  <b>Bangkok and Hochiminh</b> Subject to their readiness	staged approach	Need to coordinate with relevant CAAs/ANSPs in joining CRV in a harmonized manner, etc.
9	Macau China		December 2022	To be confirmed	Staged approach	Migration from X.25 to IPS
10	Cook Islands					
11	Democratic People's Republic of Korea		Contract in 3Q2018 and service readiness in 4Q2018	AFTN and VoIP		

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Appendix A to WP/03

SN	State/ Administrati on <small>(with* is BBIS; marked in blue- not yet join CRV/ no updates provided)</small>	States /Administrati ons connected	Intended date for CRV cut- over	Applications targeted	Migration scheme	Prerequisites/ dependencies
12	<b>Fiji*</b>	Australia New Zealand USA	Contract in May 2018 and service readiness in 3Q 2018.	Data (AMHS) and VoIP With: Australia ATS voice April 2019 completed, AMHS completed in July 2019, NZ ATS voice completed April 2019 and USA ATS voice completed in March 2019 and AMHS completed in April 2019.	Staged approach	CBA, safety case
13	<b>France:</b>  -New Caledonia  -French Polynesia	<b>Fiji</b>  <b>New-Zealand &amp;USA</b>	<b>Q2/2022</b>  <b>Q1/2023</b>	<b>ATS Voice, AMHS</b>  <b>AIDC, AMHS with USA, AFTN/AMHS with NZ.</b>	<b>Staged approach</b>	<b>Depends on :</b> - <b>solving legal issues raised in 2021 with PCCWG</b>  - <b>an agreement with peer States on adding a layer of encryption (PSK) over CRV</b>  <b>if we are able to sign the contract in 2022</b>

ACSICG/9  
Appendix A to WP/03

SN	State/ Administrati on (with* is BBIS; marked in blue- not yet join CRV/ no updates provided)	States /Administrati ons connected	Intended date for CRV cut- over	Applications targeted	Migration scheme	Prerequisites/ dependencies
14	India*		Contract for CRV implementation with M/s PCCW in India will be signed by Feb 2022.	AFTN/AMHS,ADS-B,AIDC,ATS Voice	Staged approach	Internal Administrative/financial approvals & safety case
15	Indonesia		Contract in 3Q2021 and service readiness in 4Q2021.	AFTN, AMHS, ADS-B and voice		CBA completed  Delayed by 2022 due to COVID-19 (CRV OG/9 updates)
16	Japan*	Hong Kong China USA Singapore China RoK	Contract signed in Nov.2017 and service readiness in1Q 2018 for Fukuoka	Data first with: Hong Kong completed 3Q2020 USA completed 1Q2019 Singapore completed 4Q2020 China completed 1Q2021  Voice Plan with: USA 2Q 2021 Daegu and Incheon (R.O.K) started in1Q2021 Philippines, Taipei FIR, add R.O.K will start from 1Q 2022	In progress	

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SN	State/ Administrati on (with* is BBIS; marked in blue- not yet join CRV/ no updates provided)	States /Administrati ons connected	Intended date for CRV cut- over	Applications targeted	Migration scheme	Prerequisites/ dependencies
17	Kiribati					
18	Lao PDR					
19	Malaysia		<p>In the process of settling the CRV contract terms and signing of the CRV contract between Malaysia and PCCWG</p> <p>Implementation status: CRV service started in Nov 2021. Service cut over will be in stages, starting with AHMS in Q1 2022.</p>	AFTN, AMHS, ADS-B and ATS voice	staged approach	
20	Maldives					
21	Marshall Islands					

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SN	State/ Administrati on (with* is BBIS; marked in blue- not yet join CRV/ no updates provided)	States /Administrati ons connected	Intended date for CRV cut- over	Applications targeted	Migration scheme	Prerequisites/ dependencies
22	<b>Micronesia (Federated States of)</b>					
23	<b>Mongolia</b>	CAAM and PCCWG made ICMP package test in 2021.	Contract in 1Q2022 and service readiness in 4Q2022	AFTN, ADS-B, AMHS, Voice With: <b>China</b> Dec, 2022(AMHS), (ADP) TBD Voice, ADS-B, AFTN <b>Russia</b> TBD (AFTN, ADS-B, AMHS, Voice)	staged approach	Negotiations with neighbouring countries and stakeholders on CRVs and its use are critical to implementation.
24	<b>Myanmar</b>		Contract will be signed after discussed with PCCW Global. Implementation was targeted in 3Q/2023 depends on PCCW's proposal quotation, and getting the Budget approval from Authority concerned.	AFTN/AMHS, AIDC, ADS-B and Voice	staged approach	One of counterparts join in
25	<b>Nauru</b>					

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SN	State/ Administrati on (with* is BBIS; marked in blue- not yet join CRV// no updates provided)	States /Administrati ons connected	Intended date for CRV cut- over	Applications targeted	Migration scheme	Prerequisites/ dependencies
26	<b>Nepal</b>		SO signed with PCCW	AFTN/AMHS	Staged Approach	BBIS-state India joining the CRV network, as most traffic is routed through it
27	<b>New Zealand</b>	Australia USA Fiji French Polynesia Chile	Contract signed in July 2018 and service implemented December 2018	Australia Voice Completed March 2019 and AMHS June 2019 Completed USA Voice Completed March 2019 and AMHS March 2019 Completed  Fiji Voice Completed April 2019  French Polynesia AMHS and Voice  Chile AMHS (SAM regional network REDDIG)	Awaiting French Polynesia joining.  Awaiting outcome of inter-regional network connectivity discussion. For Chile	CBA attractive if all counterparts join in.
28	<b>Pakistan</b>					
29	<b>Palau</b>					

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SN	State/ Administrati on <small>(with* is BBIS; marked in blue- not yet join CRV/ no updates provided)</small>	States /Administrati ons connected	Intended date for CRV cut- over	Applications targeted	Migration scheme	Prerequisites/ dependencies
30	<b>Papua New Guinea</b>	Australia USA-Oakland USA-Aireon		Australia: AFTN June 2021, Voice Oct 2021 USA-Oakland Voice November 2021 USA-Aireon Space based ADSB-July 2021	Staged approach	Completed
31	<b>Philippines</b>	Hong Kong China Singapore USA	Contract signed in March 2018 and service readiness in 2Q2018	Completed: with <b>HONG KONG</b> AIDC - 2Q2019; AMHS - 2Q2019; Voice - 3Q2018.  with <b>SINGAPORE</b> AIDC – 4Q2019; AMHS – 4Q2020; Voice – 1Q2020.  with <b>USA</b> AMHS – 2Q2021; Voice – 4Q2019. Planned: with <b>JAPAN</b> Voice – 1Q2022.	staged approach	Success transition to the New ATM center in 4Q2018

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SN	State/ Administrati on (with* is BBIS; marked in blue- not yet join CRV/ no updates provided)	States /Administrati ons connected	Intended date for CRV cut- over	Applications targeted	Migration scheme	Prerequisites/ dependencies
32	<b>Republic of Korea</b>	Japan China	Contract in 3Q 2019 and service readiness in 4Q 2022	Completed: with Japan Voice –March 2021  Planned; With Japan Voice additional lines-from 2022 to 2023 Data(AMHS) POT in 4Q and operation from 4Q 2022  With China Data(AMHS) POT in July and operation from 4Q 2022	staged approach	
33	<b>Samoa</b>					
34	<b>Singapore*</b>	Australia Japan Philippines	Contract signed in May 2019 and service readiness in Dec 2019	Data (AMHS over IP) with: Australia Dec 2020 (completed); Japan Nov 2020 (completed); Philippines Dec 2020 (completed); Malaysia 2022.  Voice with: Philippines Mar 2020 (completed).	Staged approach	
35	<b>Solomon Islands</b>					

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SN	State/ Administrati on (with* is BBIS; marked in blue- not yet join CRV/ no updates provided)	States /Administrati ons connected	Intended date for CRV cut- over	Applications targeted	Migration scheme	Prerequisites/ dependencies
36	Sri Lanka	Planned: Australia India Indonesia Maldives Singapore	Q1 2023	Q1 2023 - AMHS with Singapore  TBD - AMHS connectivity with Mumbai, and Male.  TBD - Direct Speech facilities with Chennai, Trivandrum, Mumbai, Male, Jakarta, Melbourne, Singapore.	Phased Approach	Package D is planned based on CBA conducted. Comparison of performance of Package D and existing IPLC circuit.
37	Thailand*		1. Contract in 3Q2021 Status: Completed 2. Service readiness in 2Q2022	Data first Then voice, subject to safety case: China 2Q2022 Hong Kong 2Q2022; Singapore 2Q2022; India 2022.	Staged approach	
38	Timor Leste					
39	Tonga					
40	Tuvalu					

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SN	State/ Administrati on  (with* is BBIS; marked in blue- not yet join CRV/ no updates provided)	States /Administrati ons connected	Intended date for CRV cut- over	Applications targeted	Migration scheme	Prerequisites/ dependencies
41	United States*	Australia Fiji Japan Philippines New Zealand Papua New Guinea Tahiti Russia	Contract in January 2018	1) AMHS with Australia Fiji Japan Philippines New Zealand Papua New Guinea (2021) Indonesia (2022)  2) AIDC with Fiji Japan New Zealand Papua New Guinea (Direct planned 2021) Tahiti (via New Zealand) Indonesia (Direct planned 2022) Russia (when join CRV)  3) VoIP with Fiji Japan Philippines New Zealand Papua New Guinea (direct planned 2021) Indonesia (2022)	Staged approach	

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SN	State/ Administrati on (with* is BBIS; marked in blue- not yet join CRV/ no updates provided)	States /Administrati ons connected	Intended date for CRV cut- over	Applications targeted	Migration scheme	Prerequisites/ dependencies
42	Vanuatu					
43	Viet Nam	Hong Kong, China	4Q/2022	AFTN, AMHS connectivity with Hong Kong		

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## INTERNATIONAL CIVIL AVIATION ORGANIZATION

### ANNEX 1 TO THE MANAGEMENT SERVICE AGREEMENT BETWEEN THE INTERNATIONAL CIVIL AVIATION ORGANIZATION AND THE CIVIL AVIATION AUTHORITIES AND/OR RELATED AIR NAVIGATION SERVICE PROVIDERS HAVING SIGNED THE AGREEMENT

<b>Project Title:</b>	Common Regional Virtual Private Network (CRV) multinational service with a common service provider
<b>Project No.:</b>	RAS/14/801 – Revision B
<b>Duration:</b>	5 years
<b>Sector and Sub-Sector:</b>	Transport and Civil Aviation
<b>Country Implementing Agency:</b>	Civil Aviation Authorities and/or related ANSPs
<b>Executing Agency:</b>	International Civil Aviation Organization (ICAO)
<b>Location:</b>	Asia Pacific
<b>Estimated Start Date:</b>	31 March 2022
<b>Estimated Project Cost:</b>	US\$ 88,000

**Brief Description:** Under Revision B, ICAO will assist the Civil Aviation Authorities and/or related ANSPs in the continuation of the APAC CRV Project through the provision of expertise and support to the CRV Network (Stage 2). The ICAO assistance covers the specific work scope outlined in this project document.

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## 1. BACKGROUND

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1.1 The Civil Aviation Authorities and/or related ANSPs as listed in Appendix A, hereinafter collectively referred to as the “Parties” and individually as the “Party”, have determined that the Common Regional Virtual Private Network (CRV) multinational service with a common service provider can more effectively:

- provide network services to the Parties;
- support a common Internet Protocol (IP) network;
- establish services based on Voice over IP (VoIP); and
- enhance network diversity and timely service implementation and delivery.

1.2 In 2014, all Parties jointly agreed to appoint ICAO Technical Cooperation Bureau or TCB to assist in the procurement management (i.e. Stage 1) of the CRV project and in the selection of the common Service Provider (RAS14801 Revision A). Upon selection of the common service provider after a Sealed Tender (ST) process through TCB, each Party were expected to subscribed to the Services by signing an individual Service Contract with the Service Provider for the procurement, installation, training, testing, commissioning and operation of the CRV network and the associated services.

1.3 After selection of the common service provider in 2016, a fund balance of USD 104,596 remained as on 31 March 2017. CNS SG/21 (17 to 21 July 2017) and APANPIRG/28 (11 to 14 September 2017) agreed to manage the remaining funds not used for the CRV selection process, to procure common services or expertise to support the implementation of the CRV Network (Stage 2).

1.4 As at 31 December 2021, the remaining fund for use are approximately USD 88,000 allowing for the return of funds to two pioneer Member States in terms of the Conclusion APANPIRG/28/19 “Amendment to the Management Service Agreement for CRV Project (RAS14801)”.

1.5 As a result of the discussions between the Parties, Revision B has been developed to utilise the carry-over funds from the completion of the activities of Stage 1 to procure common services or expertise to support the implementation of the CRV Network (Stage 2).

## **2. SCOPE OF SERVICES TO BE PROVIDED**

2.1 Through this Revision, the following services will be provided by ICAO within the scope of supporting the CRV Network (Stage 2), as may be required:

- a) Provision of expertise through engagement of subject matter experts;
- b) Capacity building through training;
- c) Procurement of common services to support the implementation of the CRV Network;
- d) Other support, as needed.

### **3. IMPLEMENTATION STRATEGY**

3.1 The Parties, through the CRV OG will be agreed on which activities to undertake based on needs priority assessment. Upon determination, the decision will be communicated to TCB through the APAC Regional Office for execution, as appropriate.

3.2 In case the proposed activities exceed the available funds, TCB will communicate this to the Parties through the Regional Office. At this point, the parties will need to decide to either reduce scope of activities, inject additional funds and/or a combination thereof.

### **4. BUDGET**

4.1 The detailed budget is as attached at Appendix A.

4.2 Funds will be equally shared among the Civil Aviation Authorities and/or related ANSPs that have signed the MSA and continue to be party to this Revision, and provided by them in advance of commencement of the project.

4.3 The total estimated amount is of US\$ 88,000 as per Appendix A. This amount is the total estimated amount including administrative and technical support.

### **5. RISK ASSESSMENT**

5.1 Delay in the signing of this project document.

*Risk Level: Medium*

Mitigation: ICAO will work through the APAC Regional Office to facilitate the signing of the Project Document Revision B.

### **6. PROJECT MONITORING, REVIEW AND REPORTING**

#### **6.1 Monitoring activities**

6.1.1 The overall implementation of the project is monitored through regular reporting and project review meetings as appropriate.

6.1.2 ICAO will execute and monitor the project in close consultation with the focal point designated by each Party.

6.1.3 ICAO will maintain the financial accounting and budgetary control of the project, in accordance with its policies and practices.

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6.1.4 ICAO may carry out missions on site to monitor the progress of the project, in accordance with the approved work plan or as required.

**6.2 ICAO roles and responsibilities include:**

- a) to execute and monitor the project under the direction of the Director, TCB. The Director, TCB will delegate the responsibility for the monitoring/oversight of project activities to the appropriate level within the designated/nominated representatives of the Parties;
- b) to provide financial management and budgetary control in accordance with its policies, rules, practices, processes and procedures;
- c) briefing of personnel;
- d) administering ICAO experts' contracts;
- e) to provide financial statements in accordance with ICAO policies, rules, practices, processes and procedures;
- f) organizing experts' travel to duty station;
- g) formalizing acceptance of the completed project deliverables;
- h) revising the project document (PRODOC) as requested;
- i) formalizing all activities required to close the project.

This Project Document is not intended and should not be construed as a recognition or endorsement by ICAO of any functions and/or responsibilities entrusted to or performed by regional entities.

## **7 PROJECT RULES AND REGULATIONS**

### **7.1 International experts/personnel**

7.1.2 ICAO will recruit and deploy international experts/personnel in accordance with ICAO policies, practices, ICAO/TCB Field Staff Services Rules and applicable process and procedures. In particular, as consultants engaged by ICAO, their entitlement payments will be issued by ICAO. The lead-time required for the recruitment of the experts may range between six (6) weeks to three (3) months, from the moment the funds are committed until the deployment of the experts. In the eventuality of a contract extension being required for one or more ICAO expert(s), the Implementing Agency will need to issue the necessary request at least three (3) months prior to the end of the ICAO expert(s)' contract, subject to availability of funds; the request will include a justification and corresponding additional duration, as appropriate.

### **7.2 Procurement**

7.1.1 The procurement of equipment or services are carried out in accordance with ICAO's Procurement Code, Financial Regulations and Rules, and applicable process and procedures.

### **7.2 Finance**

7.2.1 The reception and management of funds for this project are subject to ICAO's Financial Regulations and Rules, and applicable process and procedures. The use of any of the resources for this project will be processed upon reception of proper formal authorization.

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7.2.2 The unauthorized use of project resources is not allowed and could result in project delay and the discontinuation of the project's activities.

7.2.3 The provision of financial management and budgetary control of the project and submitting financial reports will be in accordance with ICAO rules, regulations, process and procedures.

7.2.4 ICAO will provide the financial statements concerning the services covered by this document, indicating the status of the funds, in US dollars. Any clarification or discrepancy with the financial statements must be officially communicated to ICAO within 30 days of receiving them, after which they are deemed accepted by the Parties.

7.2.5 If additional information is required after the deadlines set in the previous paragraph, costs related to such information will be charged to the project, with prior approval from the Parties.

### **7.3 General regulations**

7.3.1 All project's activities are managed in accordance with the applicable ICAO policies, rules, regulations, processes and practices and applicable process and procedures.

7.3.2 Project activities, including reports and/or deliverables prepared by the ICAO experts may be reviewed by ICAO Headquarters and/or Regional Office, as appropriate.

7.3.3 This document was developed in English by the parties. Any document related to the implementation of this project that is required to be translated into another official language of ICAO, as may be required, shall be performed by ICAO and charged to the project, as appropriate. Any document related to the implementation of this project that is required to be translated into any other language not an official language of ICAO, shall be translated independently by that Party at its own cost. In case of disagreements on the text of any of the documents, the prevailing version will be the text in the original English language.

## **8 LEGAL FRAMEWORK**

8.1 This project document shall constitute Revision B to Annex 1 (RAS14801) to the Management Service Agreement between the Parties.

8.2 The Project Document Revision B will come into force upon its signing by the Parties.

8.3 Any change, amendment or revision to this Project Document Revision (including scope, duration, budget, responsibilities, or other), will need to be formally approved in writing by the Parties.

8.4 Nothing contained in or relating to this Project Document Revision B shall be deemed a waiver, express or implied, of any of the privileges and immunities of ICAO and its personnel.

## **9 LIABILITY**

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9.1 The Parties shall indemnify, defend, and hold and save harmless, ICAO and its officials, agents and employees, from and against all suits, proceedings, claims, demands, losses, and liability of any kind or nature brought against ICAO, including, but not limited to, all litigation costs and expenses, attorney's fees, settlement payments, and damages. For the avoidance of doubt, the Parties shall be obligated, at their sole expense, to defend ICAO and its officials, agents, and employees, regardless of whether the suits, proceedings, claims, and demands in question actually give rise to or otherwise result in any loss or liability.

9.2 ICAO shall advise the Parties about any such suits, proceedings, claims, demands, losses, or liability within a reasonable period of time after having received actual notice thereof. ICAO shall have control over any assertion or defense of the privileges and immunities of ICAO or any matter relating thereto, including the assertion or defense that ICAO is acting as mandatory for the Parties, for which only ICAO itself is authorized to assert and maintain. ICAO shall have the right to be represented in any such suit, proceeding, claim or demand by independent counsel of its own choosing and shall also be indemnified, held, and saved harmless by the Parties for such litigation costs and expenses and attorney's fees.

9.3 ICAO shall have the right to set-off any costs incurred pursuant to this Article from any remaining funds received under this Agreement.

9.4 The obligation under this clause shall survive the termination of this Agreement.

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**APPENDIX A**

**PROJECT BUDGET COVERING MSA CONTRIBUTION  
(IN UNITED STATES DOLLARS)**

COUNTRY: REGIONAL PROJECT  
PROJECT NO: RAS14801  
PROJECT TITLE: COMMON REGIONAL VIRTUAL PRIVATE NETWORK (CRV) APAC  
WORK ORDER: RAS14801-01  
VERSION: 3

	<b>TOTAL</b>		<b>2022</b>		<b>2023</b>		<b>2024</b>		<b>2025</b>		<b>2026</b>	
	w/m	\$	w/m	\$	w/m	\$	w/m	\$	w/m	\$	w/m	\$
PROJECT PERSONNEL												
INTERNATIONAL PROFESSIONAL POSTS												
11.501 CONSULTANCIES AND CONTRACTORS (TSS FEE)		35 000	5 000		10 000		10 000		10 000			
SUB-TOTAL (INTERNATIONAL PROFESSIONAL POSTS)		35 000	5 000		10 000		10 000		10 000			
16.001 INTERNATIONAL TRAVEL		11 000	2 000		2 000		2 000		3 000			2 000
TOTAL (PROJECT PERSONNEL)		46 000	7 000		12 000		12 000		13 000			2 000
EQUIPMENT												
41.001 EXPENDABLE EQUIPMENT - INTERNATIONAL		30 000	10 000		20 000							
TOTAL (EQUIPMENT)		30 000	10 000		20 000							
MISCELLANEOUS												
51.001 REPORTING COSTS		2 200										2 200
52.001 MISCELLANEOUS EXPENSES		2 000	500		800		300		300			400
B807F PROFESSIONAL LIABILITY INSURANCE												
53.001 OVERHEAD CHARGES		7 500	2 100		2 700		1 200		1 300			200
TOTAL (MISCELLANEOUS)		12 000	2 600		3 500		1 500		1 600			2 800
PROJECT TOTAL		88 000	19 600		35 500		13 500		14 600			4 800

**Common ~~Regional~~ aeRonautical Virtual Private Network (VPN) Operations Group (OG) of  
Asia/Pacific Air Navigation Planning and  
Implementation Regional Group (APANPIRG) (APANPIRG CRV OG)**

**TERMS OF REFERENCE**

**1. Background**

The establishment of APANPIRG CRV OG was proposed during the deliberations of the CRV Task Force (TF) as a dedicated group to provide oversight of the CRV operations and the performance of the CRV Service Provider. The APANPIRG CRV OG is formally established by APANPIRG Decision 27/33.

**2. Terms of Reference**

The Common aeRonautical Virtual Private Network (VPN) Operations Group (OG) will provide oversight of the function and performance of the CRV and the performance of the Service Provider. The following are the activities to be performed:

- a) Oversee the implementation of the CRV post Contract Award;
- b) Manage issues arising from the transition with CRV TF, if any;
- c) Co-ordinate and standardize the establishment or upgrade of CRV services as required;
- d) Co-ordinate activities with other ICAO CRV OGs, if any, to make sure that decision making and communication with CRV Service Provider is consistent and timely;
- e) Oversee the performance of the CRV Service Provider, including customer service;
- f) Oversee the performance of the CRV network;
- g) Oversee the escalation and solving by the CRV Service Provider of issues associated with the provision of the CRV, including safety and security related issues;
- h) Assist with the resolution of issues associated with the provision of the CRV among the CRV Users as required, including safety and security related issues;
- i) Assist with the migration of Aeronautical Fixed Services (AFS) onto the CRV, in line with the GANP and seamless ATM plan;
- j) Maintain CRV OG documentation associated with the function, performance and management of the CRV, including the CRV OG Operations Manual, a list of CRV users and a record of variations to the common tender package;
- k) Accept deliverables from the CRV Service Provider on behalf of the CRV Users as required;
- l) Promote the use of CRV;

- m) Undertake continuous service improvements review to ensure CRV meets future needs; and
- n) Perform any other activity as required by CRV operations.

**3. Reporting**

The CRV OG will report to Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) through ACSICG and CNS SG.

**4. Participation**

The CRV OG will include all APAC Member States/Administrations, and any other organization as needed. Member States and/or inter-regional entry/exit Administrations in other ICAO regions may also be invited or request to participate in the activities of CRV OG.

**5. Conduct of the work**

It is anticipated that the CRV OG will conduct its work primarily by Web Conferences, teleconferences and other electronic means of communications. Face to Face meetings of CRV OG may be required on an annual basis.

The ICAO APAC Regional Office will provide secretariat support for the CRV OG.

**6. Rapporteur**

There will be two Co-Chairpersons of the CRV OG, one primarily responsible for Asia coordination and the other for Pacific coordination.

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