International Civil Aviation Organization

Eighth Meeting of the Common aeRonautical Virtual Private Network Operations Group (CRV OG/8)

Video Teleconference, 17 – 19 May 2021

Agenda Item 7: Revisit the CRV solution for small Pacific Islands and small ANSPs in APAC

DISTRIBUTION OF SURVEILLANCE DATA TO PNG VIA CRV

Presented by Aireon LLC (a member of ICCAIA) and NuiSky Pacific (PNG)

SUMMARY

This paper presents the status of Space based ADS-B data distribution using CRV. PNG has operationally commissioned Space based ADS-B being delivered by CRV.

1. INTRODUCTION

1.1 NiuSky Pacific Limited has designed and is in the final stages of implementing a country-wide CNS/ATM modernisation program

2. SURVEILLANCE IN PNG

2.1 The previous operational surveillance is one radar at Port Moresby Airport, one ADS-B ground station at Burns Peak as well as Aireon Space based ADS-B data.

2.2 The initial Space based ADS-B service has been provided to NiuSky Pacific Ltd via dual MPLS links. The service has been accepted and is operational. Feedback from ATC has been very positive.

2.3 Space Based ADS-B will provide ADS-B coverage over the complete PNG FIR, and also in the 50 NM outside the FIR to support FIR boundary safety as shown by the red polygon in Figure 2.

Figure 2 : Complete FIR coverage plus 100 NM

2.4 Space based ADS-B operates in tandem with the existing radar and ADS-B ground stations. This deployment significantly improves coverage, safety and efficiency within this airspace.

3. CRV

3.1 NuiSky Pacific Limited has signed a contract with PCCW for a CRV connection which has now been installed. It will be used for the following applications:

- AFTN/ AMHS
- Voice coordination with Australia, Indonesia, Oakland
- ADS-B data sharing with Australia & Indonesia
- AIDC with Australia, Indonesia, Oakland
- Space based ADS-B

3.2 In 2020 the CRV Operations Group authorised Aireon to connect and contracts with the CRV provider have been signed by both Aireon and NiuSky Pacific Limited.

3.3 Aireon has established the first of two connections to CRV

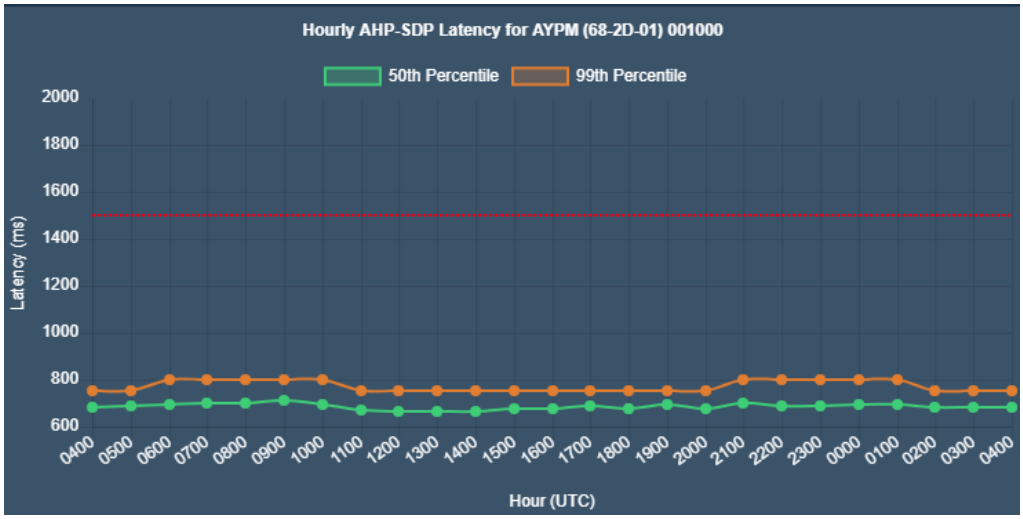
3.4 NuiSky Pacific Limited implemented and tested the initial CRV connections.

3.5 PNG has chosen a dual CRV package C. A dual package C means that both A and B channel are always active and there is no surveillance outage if one path fails. Other packages have a short outage during changeover which is unacceptable for a Tier 1 surveillance service. No additional bandwidth is required to serve Space based ADS-B.

3.6 One path of the dual CRV uses a MPLS line to Hong Kong (PCCW node) and the other path is via VSAT to Hong Kong.

3.7 The CRV connection (via VSAT) has already replaced one of the MPLS circuits. It is expected that the second circuit will deployed later this year. A multistage careful transition plan is

being executed. The observed latency performance of the CRV channel via VSAT is well within acceptable bounds as shown below:



3.8 The performance of the operational single channel CRV path will be monitored before transition to the dual CRV solution, Of course, PNG will include consideration of the dual CRV solution in the safety case.

3.9 Thanks to this work, Space based ADS-B data can now be delivered to other Aireon customers in Asia Pacific via CRV, potentially without need for any additional communication links or telecommunications costs!

3.10 An additional benefit flows to NiuSky Pacific because the same CRV physical connection could be used to exchange ADS-B ground station data with both Australia and Indonesia. This is likely to remove the need for the existing point to point circuit between Australia & PNG.[1]

4. ACTION BY THE MEETING

4.1 The meeting is invited to take note of

a) the implementation of Space-Based ADS-B system in PNG and in particular that Space based ADS-B is now operational – and one path is already using CRV for operational surveillance data.

b) Space based ADS-B is now available on the CRV and can be supplied to other ANSPs without the additional cost of dedicated point to point circuits.

c) When developing a CRV solution for small Pacific Islands and small ANSPs in APAC, members may wish to take note of this capability

4.2 Note the PNG plan to use CRV to allow data sharing between FIRs; and

4.3 Discuss any relevant matter as appropriate.

– – – – – – – – – – –

[1] This is a benefit of ADS-B on CRV rather than Space based ADS-B on CRV.