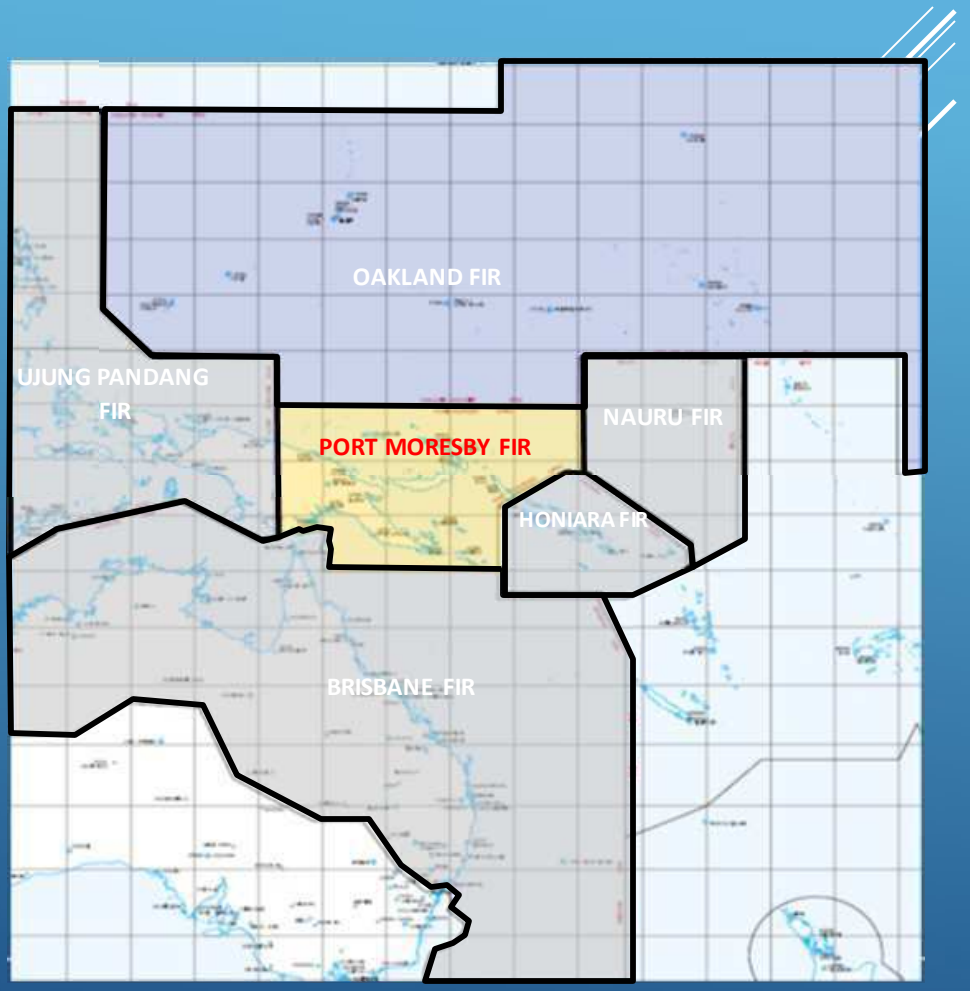

NIUSKY
PACIFIC

INTRODUCTION

NiuSky Pacific (formerly known as PNG Air Services) manages the Port Moresby FIR from the main Air Traffic Services Centre in Port Moresby and five Control Towers throughout the country.



INTRODUCTION

Transport throughout the country is heavily reliant on aviation due mountainous terrain and remote locations.

CNS/ATM MODERNISATION

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

- Thales TopSky ATM system
- MircoNav 240deg 3D Tower Simulator
- ATC Training Facility
- Frequentis VoIP VCS
- AFTN over IP
- Mode S radar
- Ground based ADS-B network
- Datalink Services (ADS-C/CPDLC)
- Redundant Wide Area Network (WAN) – data/voice communications
- VoIP VHF Radios from Park Air Electronics
- New HF TX/RX site
- GNSS Instrument Approach Procedures
- Power Systems (UPS, Solar hybrid)

MODERNISATION DRIVERS

The drivers for modernisation were:

- Enhanced safety and service provision
- Previous systems were old, of different manufacturers/types, unable to integrate, no longer maintainable, obsolete, etc.
- Need to support aviation operators in realising the benefits of their significant investments to achieve efficiencies and to support environmental initiatives (less fuel burn) etc.
- Through application of less restrictive separation standards (optimum flight levels sooner and for longer periods), flexible routing.
- Regional compatibility to support seamless services from DEP to DEST.

SEAMLESS SERVICE ENABLERS

Enablers of seamless service provision include:

- Broad (FIR wide) surveillance coverage
- Immediate Controller-Pilot communications
- Capable ATM system
- System integration and connectivity
- Through redundant communications networks that are reliable and stable

REMOTE SITE ISSUES

Historically, the CNS/ATM system connectivity relied on terrestrial links provided by third-party service providers at remote, mostly mountain top sites. There have been many reliability issues with the remote sites and links caused by factors including:

- Year round tropical weather making maintenance related access difficult
- Service provider issues (and their lack of maintenance)
- Land ownership
- Vandalism
- Theft

REMOTE SITE ISSUES

The result is unreliable connectivity which defeats the purpose of the deployment. Significant costs are brought about by:

- Initial deployment
- Access to site for maintenance and fault rectification visits (Helicopter)
- Power systems
- Replacement of vandalized/stolen equipment
- Unreliable third-party links

To overcome the reliability and cost issues, NiuSky Pacific is transitioning to satellite-based systems and services.

SATELLITE-BASED SYSTEMS

Through the transition to satellite-based systems and services, the problems are immediately overcome meaning significantly better reliability and confidence in service continuity.

To date the transition to satellite-based systems and services includes:

- V-SAT network (One already commissioned and an additional V-SAT network under consideration)
- GNSS
- ADS-C/CPDLC

TRIAL of SATELLITE-BASED ADS-B

A trial of the Aireon Space based ADS-B service (using VPN) in 2019 produced outstanding results in terms of coverage, latency and update rates.

The outcomes of the trial indicated that the data was in basic terms ‘rock solid’ and especially for PNG, adoption of space-based ADS-B was easily justified in terms of cost/benefit alone.

SATELLITE-BASED ADS-B

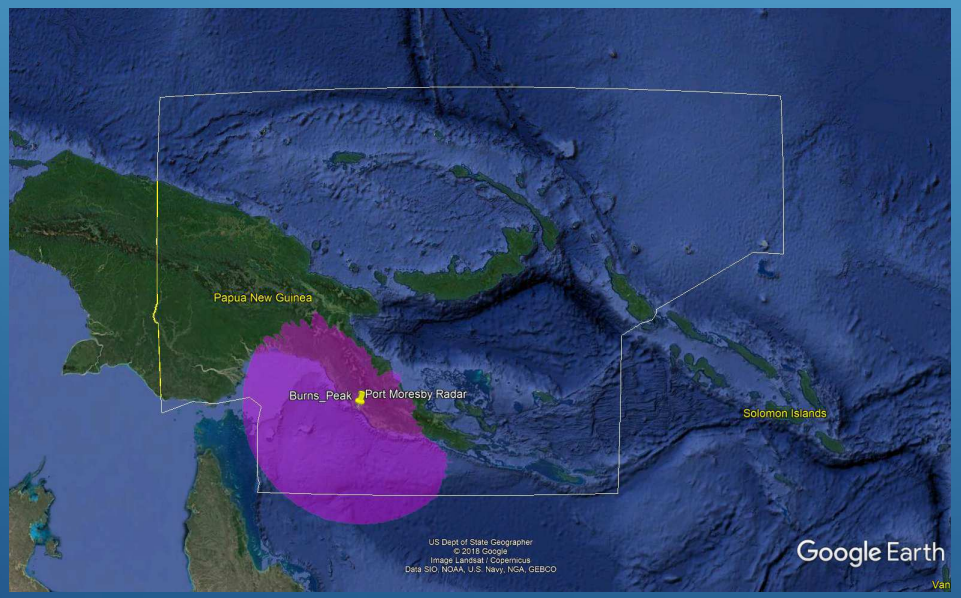
The problems associated with remote terrestrial sites that will be immediately overcome include:

- Unreliable third party communication links
- Power supply issues
- Landowner issues
- Vandalism and theft issues.

The costs that will be immediately removed include:

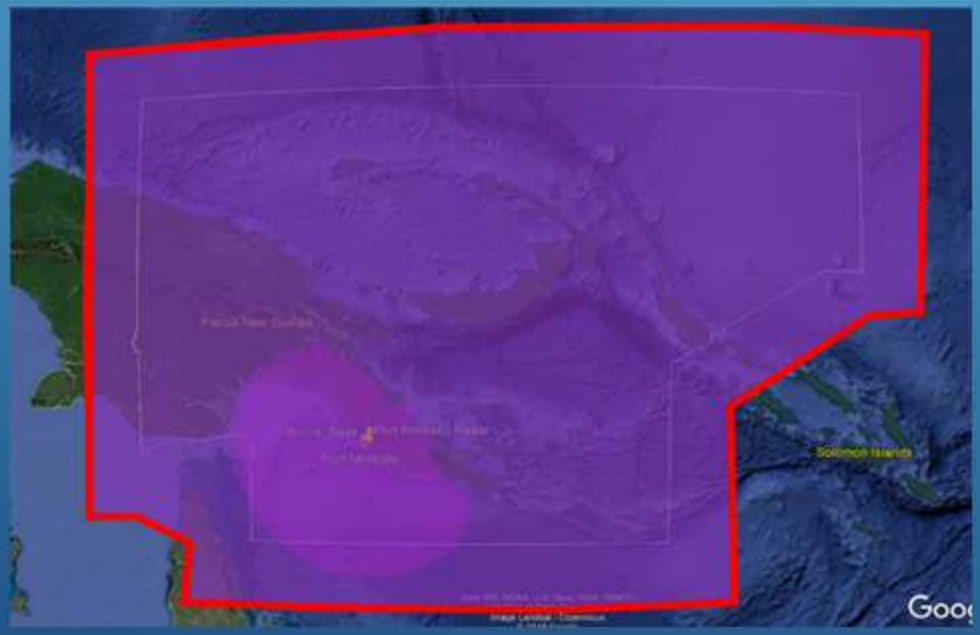
- Remote site access and maintenance costs
- Third party communications link costs
- Power supply costs

CURRENT SURVEILLANCE



Currently 1 radar and 1 ADS-B ground station are operational

SPACE BASED SURVEILLANCE



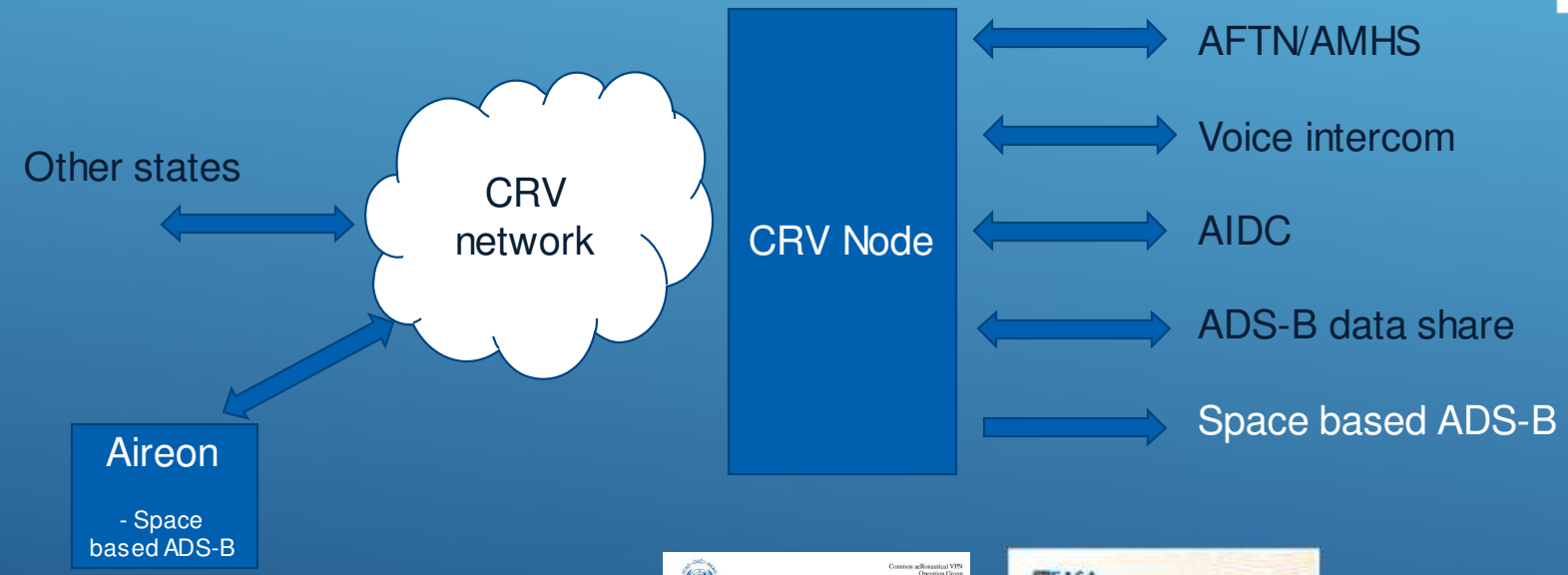
- A contract has been signed for whole FIR + 50 miles
- Equipment installed and data is now flowing
- In tandem to existing radar and ADS-B
- Installation by NiuSky Pacific (the ANSP) staff with Aireon support (due COVID)
- Service acceptance tests in next weeks
- Development of a full Safety Case is in progress

BENEFITS

Importantly, there will be a number of benefits arising from the adoption of space-based ADS-B:

- Reliability of data
- Confidence in application of surveillance-based separation
- Enables more efficient flight through less restrictive separation standards, flexible routing etc.
- Cost effective when balanced against previous costs with ground-based systems

Data communication links and CRV



- EASA Certified as an ANSP
- CRV OG Approved to connect

Common aeRonautical VPN Operation Group

Mr Greg Dunstone, FRAeS
Sales Engineer
Aireon LLC. 1750 Tysons Blvd, Suite 1150
McLean, VA, USA 22102

17 June 2020

Dear Mr Dunstone.

Approval for Aireon LLC to connect to the CRV network.

We are happy to inform Aireon that their application "Aireon LLC connection to CRV to support PNG ASLV3/4" to connect to the CRV network as a Service Provider has been approved.

This connection will enable all CRV member States to consume Air Traffic Control Quality ADS-B surveillance data from Aireon over the CRV.

Aireon must take all reason steps as outlined in their application to ensure that Aireon protects the CRV from the Aireon network.

Please do not hesitate to contact either the Co-Chair (Asia) or Co-Chair (Pacific) if you have any questions.

Yours Sincerely

Terence Palmer
CRV OG co-chair (Asia)

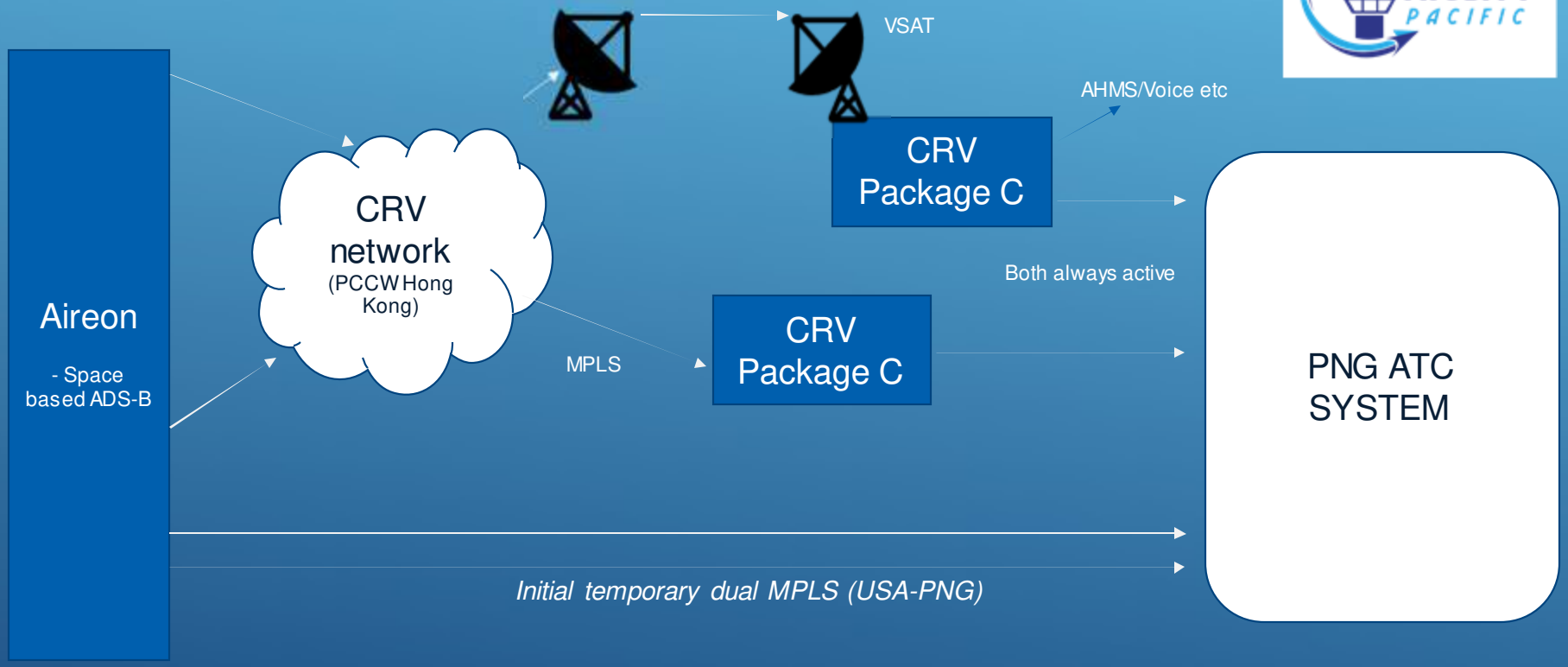
Kelepi Dainaki
CRV OG co-chair (Pacific)

EASA

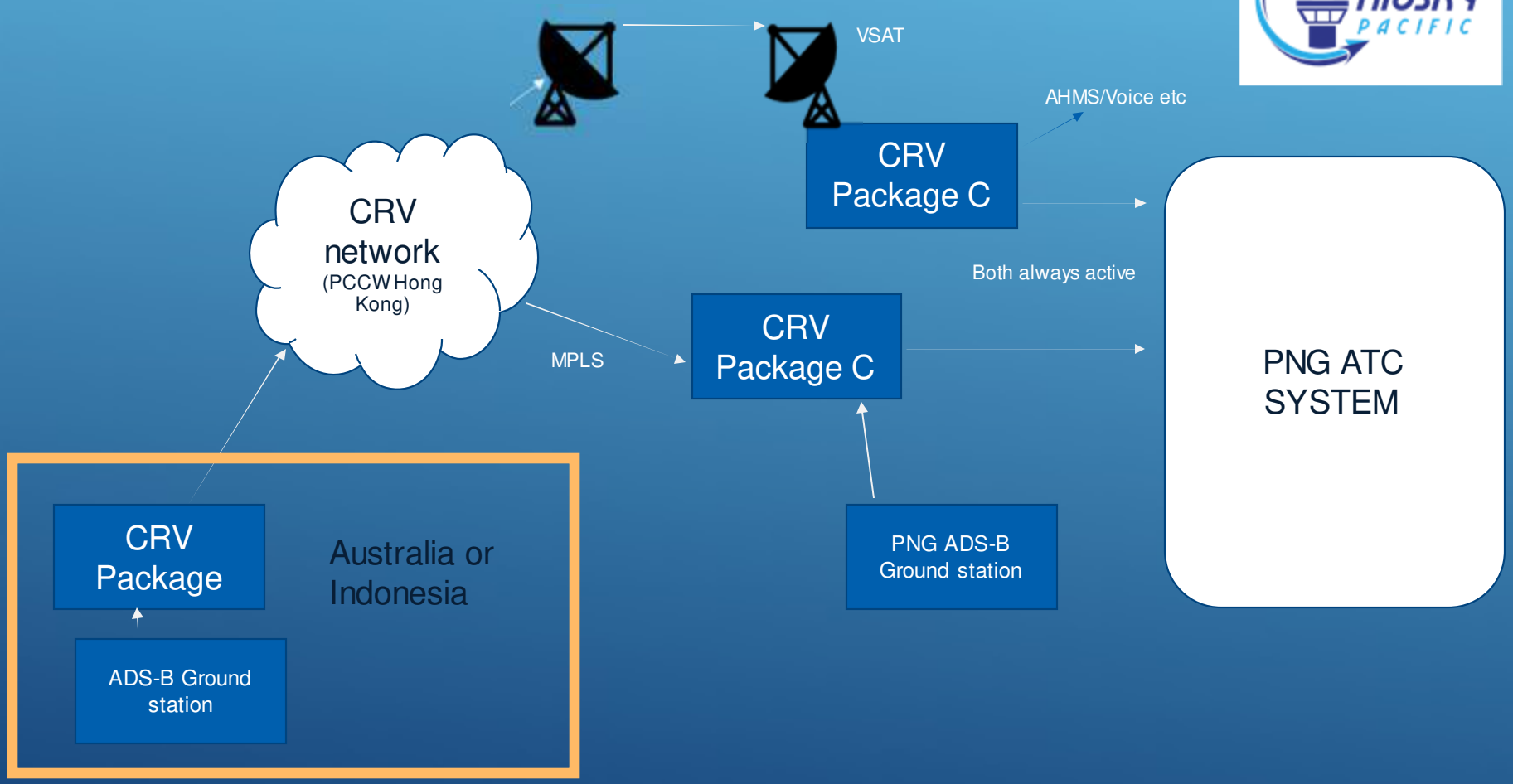
APPROVAL CERTIFICATE

AIREON LLC

Data communication links and CRV



Potential Future ADS-B Data sharing



THANK YOU. Questions?